

SCANNED

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NUMBER 5739

PEL 5 AND PEL 6; MURTA BLOCK

EROMANGA BASIN AND COOPER BASIN

WANCOOCHA 2

TEST REPORTS

Submitted by

Delhi Petroleum Pty Ltd
1988

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MINES and ENERGY
RESOURCES SOUTH
AUSTRALIA



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ENVELOPE 5739

TENEMENT: PELs 5 and 6, Murta Block; Eromanga and Cooper Basins

TENEMENT HOLDER: Delhi Petroleum Pty Ltd (operator), Santos Ltd, Vamgas Ltd, South Australian Oil and Gas Corp. Pty Ltd and Hartogen Energy Ltd

CONTENTS OF VOLUME ONE

REPORTS:	Gearhart Australia Pty Ltd, 1984. Wancoocha 2 separator DST [fluid flow measurement at surface] reports for open hole DSTs 2, 3, 6 and 7 (well production testing contractor's report for Delhi, 15/11/84).	MESA NO. 5739 R 1 Pgs 3-11
	Marty, P. and Koutrouzas, A., 1985. Results of laboratory analysis of an oil sample collected from the Patchawarra Formation reservoir on 21/1/85 (Amdel Ltd report no. F3341/85 for Delhi Petroleum, 13/3/85).	5739 R 2 Pgs 12-15
	Flopetrol-Johnston/Schlumberger, 1985. Report on a PVT study of reservoir fluid bottomhole samples taken from the Patchawarra Formation oil and gas reservoir on 13/1/85 (Adelaide Laboratory report no. 85ADL006, March 1985).	5739 R 3 Pgs 16-71
	Flopetrol-Johnston/Schlumberger, 1985. Report on a PVT study of reservoir fluid bottomhole samples taken from the Birkhead Formation oil reservoir on 7/2/85 (Adelaide Laboratory report no. 85ADL007, March 1985).	5739 R 4 Pgs 72-116

CONTENTS OF VOLUME TWO

REPORT:	Provias, D., 1985. Field operator's reservoir engineering interpretation report on the clean-up flow test and reservoir pressure buildup survey, plus results of the preliminary extended production test, of the Birkhead oil reservoir perforated interval 5102-5120 feet depth KB, conducted during February-May 1985 (16/5/85).	5739 R 5 Pgs 117-149
APPENDIX 1:	Method of calculating theoretical buildup curve for a steady-state reservoir.	Pgs 150-154
ATTACH 1:	Flow/buildup test raw data (Expertest Pty Ltd).	Pgs 155-177
ATTACH 2:	Extended production test raw data (Expertest Pty Ltd).	Pgs 178-228
REPORT:	Provias, D., 1985. Field operator's reservoir engineering interpretation report on the clean-up flow test and reservoir pressure buildup survey of the Patchawarra oil and gas reservoir perforated interval 5720-5739 feet depth KB, conducted over the period 15-30/1/85 (16/5/85).	5739 R 6 Pgs 229-259
ATTACH 1:	Flow/buildup test raw data (Expertest Pty Ltd).	Pgs 260-307

CONTENTS OF VOLUME THREE

REPORT:	Gearhart Australia Pty Ltd, 1985. Field maintenance contractor's results of the flowing bottomhole pressure and 26 hour reservoir pressure buildup surveys of the Birkhead producing zone, conducted over the period 20-22/6/85.	5739 R 7 Pgs 308-339
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REPORT:	Provias, D.A., 1985. Field operator's reservoir engineering interpretation report on the above flow and buildup test (16/11/85).	MESA NO. 5739 R 8 Pgs 340-376
	Campbell, R., 1987. Operator's summary and field maintenance contractor's results of the single rate oil production test, 48.5 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the Patchawarra producing zone, conducted over the period 20-24/11/87 (Expertest Pty Ltd).	5739 R 9 Pgs 377-392
	Mueller, M., 1988. Operator's summary and field maintenance contractor's results of the single rate oil production test, 47 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the Patchawarra producing zone, conducted over the period 5-9/2/88 (Expertest Pty Ltd).	5739 R 10 Pgs 393-406
	Peterson, G. and Oakman, S., 1988. Operator's summary and field maintenance contractor's results of the single rate oil production test, 49.25 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the Hutton Sandstone oil reservoir perforated interval 1564.8-1568.5 metres depth KB, conducted over the period 19-23/3/88 (Expertest Pty Ltd).	5739 R 11 Pgs 407-422
	Peterson, G. 1988. Operator's summary and field maintenance contractor's results of the single rate oil production test of the Patchawarra producing zone, conducted over the period 23-24/3/88 (Expertest Pty Ltd).	5739 R 12 Pgs 423-424

END OF CONTENTS

SANTOS / DELHI

WANCOOCHA #2

SEPARATOR DST REPORT
15th NOVEMBER 1984

SCANNED

GEARHART AUSTRALIA

GEARHART PTY. LTD
1/138 MUSGRAVE AVE.,
WELLAND, S.A. 5007.

DRILL STEM TEST REPORT

DST # 2

COMPANY... SONTQS. / DELHI FIELD. WANGOOCHA. WELL #. 2. STATE.. S.A. ...

DATE.. 14/11/1984. INTERVAL TESTED. 5591' TO. 5684'. FORMATION. PATCHAWARRA

LATITUDE : .. 28° 32' 34.9 South

LONGITUDE : .. 139° 59' 29.2 East

ELEVATION : .. 76' ASL

GL TO KB : .. 16'

OPEN HOLE / ~~CASED HOLE~~ CUSHION USED:.. NIL FT : ..

HOLE TOTAL DEPTH:..... 5684' PLUG BACK DEPTH:.....

FORMATION TESTED:..... PATCHAWARRA DEPTH:..... 5591' to 5684'

PACKER (S) SET AT :..... 5591' DRILL PIPE / ~~TBG SIZE~~ 3 1/2"

TOOL USED :..... HYDRO SPRING TESTER SET AT :..... 5591'

SIZE BOTTOM CHOKE :..... .750" SIZE SURFACE CHOKE :..... .500"

INITIAL FLOW :..... 0538 hrs INITIAL FLOW SHUT IN :.....

SHUT IN PERIOD :..... Nil

TOTAL FLOW PERIOD : FROM..... 0538 hrs TO..... 0738 hrs

STABLE FLOW PERIOD : FROM TO.....

FLOWING TBG PRESSURE :..... 4 psig PSI

FLOWING TBG TEMPERATURE :..... DEG. F

A.P.I. OIL :..... 60 DEG F

P.P. :..... DEG F

OIL :..... Nil BOPD GAS :..... Estimate 80,000 MSCFPD

WATER :..... Nil BWPD GOR :..... CF/BBL

REMARKS :..... 0552 hrs Gas to surface

0636 hrs Flow trimmed through separator to catch any fluid

0738 hrs Unable to close DST tool due to stuck drill pipe

0800 hrs Drop bar to reverse circulation and pull out of hole

GEARHART PTY. LTD
1/138 MUSGRAVE AVE.,
WELLAND, S.A. 5007.

DRILL STEM TEST REPORT DST # ~~1~~ 3

COMPANY SANTOS / DELHI FIELD WANCOOCHA WELL # 2 STATE S.A.
DATE 15/11/1984 INTERVAL TESTED 5678' TO 5746' FORMATION PATCHAWARRA

LATITUDE : 28° 32' 34.9 South
LONGITUDE : 139° 59' 29.2 East
ELEVATION : 76' ASL
GL TO KB : 16

OPEN HOLE / ~~WASERXNOEXX~~ CUSHION USED: Nil FT : 0

HOLE TOTAL DEPTH: 5746' PLUG BACK DEPTH:

FORMATION TESTED: PATCHAWARRA DEPTH: 5678' to 5746'

PACKER (S) SET AT 5678' DRILL PIPE / ~~TBG SIZE~~ 3 1/2"

TOOL USED : HYDROSPRING TESTER SET AT 5678'

SIZE BOTTOM CHOKE : 750" SIZE SURFACE CHOKE : 500"

INITIAL FLOW : 1124 hrs INITIAL FLOW SHUT IN : 1328 hrs

SHUT IN PERIOD : 4 hrs

TOTAL FLOW PERIOD : FROM 1124 hrs TO 1328 hrs

STABLE FLOW PERIOD : FROM 1150 hrs TO 1328 hrs

FLOWING TBG PRESSURE : 970 psig PSI

FLOWING TBG TEMPERATURE : 120° DEG F

A.P.I. OIL : 43.9 2 60 DEG F

P.P. : DEG F

OIL : 1747 BOPD GAS : 2.099 MSCFPD

WATER : Nil BWPD GOR : 1201 CF/BBL

REMARKS : 1126 hrs Gas to surface
1133 hrs Fluid to surface (Mud)
1137 hrs Oil to surface
1145 hrs Trim well through separator for test

SEPARATOR DATA SHEET

COMPANY SANTOS / DELHI FIELD WANCOOCHA WELL No. #2 COUNTRY South Australia
 DATE 15/11/1984 TYPE OF TEST Drill stem test # 2 INTERVAL TESTED 5678' TO 5746' FORMATION Patchawarra
 GAS GRAVITY .831 OIL GRAVITY 43.9 DEG. API STATIC BHP..... AT..... FBHP..... AT.....

TIME DATA		WELLHEAD DATA				SEPERATOR DATA									PRODUCTION DATA			
DATE AND TIME	DEAD WEIGHT TESTER	CHOKE SIZE	TUBING PRESS	CASING PRESS	WELL HEAD TEMP.	OIL TANK No. 1	OIL TANK No. 2	CHOKE	OIL METER No. 1	WATER METER No. 1	ORIFICE METER PLATE	DIFF. PRESS H2O	STATIC PRESS	SEPARATOR TEMP. OF	GAS VOLUME MCF/DAY	OIL VOLUME BBLS/DAY	WATER VOLUME BBLS/DAY	GAS/OIL RATIO CF/BSL
1124	OPEN	UP DRILL STEM	TEST TOOL START OF TEST															
1126			10	GAS TO SURFACE														
1127			60															
1128			120															
1129			220															
1130			240															
1132			260															
1133	FLUID TO SURFACE (Mud)																	
1137	FLOW OIL AND GAS TO FLARE PIT																	
1138			660															
1145			970	TRIM WELL THROUGH SEPARATOR														
1150			970															
1151	TRIM WELL TO FLARE PIT, LEAKS ON OIL LINES TO TANK																	
1155			970															
1200	TRIM WELL BACK THROUGH SEPARATOR																	
1220		.500	970	0		0			0	1.750	54	300	108	2.063				
1245		.500	970	0					186.0	0	1.750	54	300	111	2.063			
1300		.500	970	0					204.2	0	1.750	56	300	118	2.094	1747	0	1201

TEST SUMMARY

METER RUN SIZE 5.761" ORIFICE SIZE 1.750" AVG. TEMP. OF 110 AVG. DIFF. (h2o) 54 AVG. PRESS + 15. 315 PSIA
 GAS VOLUME - COEFFICIENT 671.79 x Vhw Pm 130.4 x Fg 1.09 x Ftf .9551 x Fpv 1.0178 = 2.063 MCF/DAY
 OIL VOLUME - BBLS/INTERVAL 36.4 ÷ TIME INTERVAL MIN. 30 x 1440 x SHRINKAGE FACTOR .932 = 1628 BBLS/DAY
 WATER VOLUME - BBLS/INTERVAL - ÷ TIME INTERVAL MIN. - x 1440 = - BBLS/DAY CHLORIDE = - PPM
 SHRINKAGE FACTOR = .932 GAS/OIL RATIO = 1289 CF/BSL % BS&W = 0 % OIL = -
 REMARKS Unable to obtain early oil meter readings due to meter dail inoperatable (small cog falling of)

#2

SEPARATOR DATA SHEET

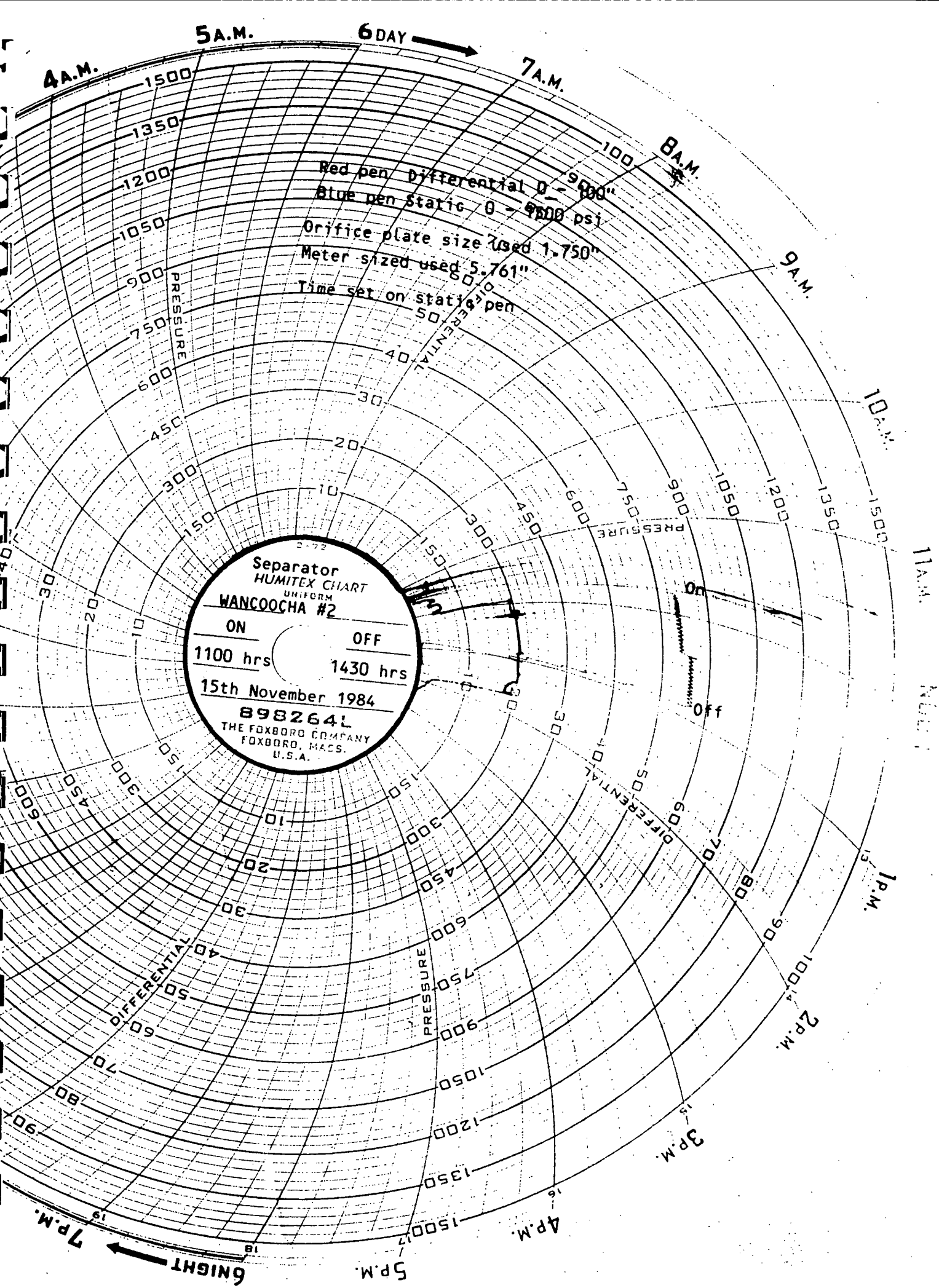
COMPANY SANTOS / DELHI FIELD WANCOOCHA WELL No. WANCOOCHA #2 COUNTRY South Australia
DATE 15/11/1984 TYPE OF TEST Drill stem test # 2 INTERVAL TESTED 5678' TO 5746' FORMATION Patchawarr
GAS GRAVITY .831 OIL GRAVITY 43.9 DEG. API STATIC BHP AT FBHP AT

[illegible]

TEST SUMMARY

METER RUN SIZE.....	5.761	ORIFICE SIZE.....	1.750	AVG. TEMP. OF.....	115	AVG. DIFF. (h _{2o}).....	56	AVG. PRESS + 15.....	315	PSIA
GAS VOLUME = COEFFICIENT.....	671.79	x V _{hw} P _m	132.8	x F _g	1.09	x F _t	.9551	x F _p v.....	1.0178	= 2.099 MCF/DAY
OIL VOLUME = BBLs/INTERVAL.....	36.4	÷ TIME INTERVAL MIN.....	30	x 1440 x SHRINKAGE FACTOR.....	.932	=	1628	BBLs/DAY		
WATER VOLUME = BBLs/INTERVAL.....		÷ TIME INTERVAL MIN.....		x 1440 =		BBLs/DAY	CHLORIDE =		PPM	
SHRINKAGE FACTOR =	.932	GAS/OIL RATIO =	1289	CF/BBL		% BS&W =	0	% OIL =		
REMARKS.....										

UNIT No. _____ OPERATOR _____



GEARHART PTY. LTD
1/138 MUSGRAVE AVE.,
WELLAND, S.A. 5007.

DRILL STEM TEST REPORT # 6

COMPANY SANTOS / DELHI FIELD WANCOOCHA WELL #. 2 STATE S.A.
DATE 20/11/1984 INTERVAL TESTED 4378' TO 4416' FORMATION NAMUR SST
LATITUDE : 28° 32' 34.9" South
LONGITUDE : 139° 59' 29.2" East
ELEVATION : 76' ASL
GL TO KB : 16'
OPEN HOLE / ~~CASED HOLE~~ CUSHION USED: Nil FT :
HOLE TOTAL DEPTH: 5970' PLUG BACK DEPTH:
FORMATION TESTED: NAMUR SST DEPTH: 4378' to 4416'
PACKER (S) SET AT : 4378' DRILL PIPE / ~~TBG SIZE~~ : 3½"
TOOL USED : Inflatable Straddle Pack SET AT : 4378'
SIZE BOTTOM CHOKE : .750" SIZE SURFACE CHOKE : .500"
INITIAL FLOW : 1759 Hrs INITIAL FLOW SHUT IN : 1859 Hrs
SHUT IN PERIOD : 1 Hour
TOTAL FLOW PERIOD : FROM 1759 hrs TO 1859 hrs
STABLE FLOW PERIOD : FROM TO
FLOWING TBG PRESSURE : 1 to 8 psig. PSI
FLOWING TBG TEMPERATURE : 92 DEG. F
A.P.I. OIL : 60 DEG F
P.P. : DEG F
OIL : Nil BOPD GAS : Nil MSCFPD
WATER : Estimate 300 BWPD GOR : CF/BBL
REMARKS : 1756 hrs Pressure tool to open up
1759 hrs Open up DST tool
1804 hrs Mud to surface slugs unloading drill pipe
1827 hrs Mud and water to surface continues flow of water , water cleaning up.
1859 hrs Shut tool in for one hour build-up.
Refer to separator data sheet for pressures

SEPARATOR DATA SHEET

COMPANY SANTOS / DELHI FIELD WANCOOCHA WELL No. #2 COUNTRY S.A.
 DATE 20/11/1984 TYPE OF TEST DST # 6 INTERVAL TESTED 4378' TO 4416' FORMATION Namur sst
 GAS GRAVITY..... OIL GRAVITY..... DEG. API STATIC BHP..... AT..... FBHP..... AT.....

TIME DATA		WELLHEAD DATA				SEPERATOR DATA									PRODUCTION DATA			
DATE AND TIME	DEAD WEIGHT TESTER	CHOKE SIZE	TUBING PRESS	CASING PRESS	WELL HEAD TEMP.	OIL TANK No. 1	OIL TANK No. 2	CHOKE	OIL METER No. 1	WATER METER No. 1	ORIFICE METER PLATE	DIFF. PRESS H2O	STATIC PRESS	SEPARATOR TEMP. OF	GAS VOLUME MCF/DAY	OIL VOLUME BBL/DAY	WATER VOLUME BBL/DAY	GAS/OIL RATIO CF/BBL
1756	Pressure tool	to open up																
1759	Open up	DST tool for test																
1801		.500	1															
1802		"	2															
1804		"	5	Mud to surface unloading drill string														
1806		"	7															
1807		"	4½															
1809		"	3															
1810 hrs		"	2															
1811		"	1															
1813		"	6" WG															
1817		"	4" WG															
1827	Water to surface																	
1828		.500	9psi															
1831		"	10															
1851		"	8															
1854		"	8															
1859	Shut in	DST tool for one hour build-up																

TEST SUMMARY

METER RUN SIZE..... ORIFICE SIZE..... AVG. TEMP. OF..... AVG. DIFF. (h2o)..... AVG. PRESS + 15..... PSIA
 GAS VOLUME = COEFFICIENT..... x Vhw Pm..... x Fg..... x Ftf..... x Fpv..... MCF/DAY
 OIL VOLUME = BBL/DAY..... ÷ TIME INTERVAL MIN..... x 1440 x SHRINKAGE FACTOR..... BBL/DAY
 WATER VOLUME = BBL/DAY..... ÷ TIME INTERVAL MIN..... x 1440 =..... BBL/DAY CHLORIDE =..... PPM
 SHRINKAGE FACTOR =..... Estimate 300 BBLs water per day..... GAS/OIL RATIO =..... CF/BBL..... % BS&W =..... % OIL =.....
 REMARKS.....

UNIT No. OPERATOR

GEARHART PTY. LTD
1/138 MUSGRAVE AVE.,
WELLAND, S.A. 5007.

DRILL STEM TEST REPORT #7

COMPANY SANTOS/ DELHI ... FIELD WANCOOCHA ... WELL # ... 2 ... STATE ... S.A. ...

DATE 23/11/1984. INTERVAL TESTED 5755' TO 5965' FORMATION Basement

LATITUDE : 28° 32' 34.9 South

LONGITUDE : 139° 59' 29.2 East

ELEVATION : 76' ASL

GL TO KB : 16'

OPEN HOLE / ~~WATER HOLE~~ CUSHION USED: Nil FT

HOLE TOTAL DEPTH: 5965' PLUG BACK DEPTH:

FORMATION TESTED: Basement DEPTH: 5755' to 5965'

PACKER (S) SET AT : 5755' DRILL PIPE / TBG SIZE : 3 1/2"

TOOL USED : Hydrospring tester SET AT : 5755'

SIZE BOTTOM CHOKE : 750" SIZE SURFACE CHOKE : 500"

INITIAL FLOW : 1317 hrs INITIAL FLOW SHUT IN : 1617 hrs

SHUT IN PERIOD : 3 hours

TOTAL FLOW PERIOD : FROM 1317 hrs TO 1617 hrs

STABLE FLOW PERIOD : FROM TO

FLOWING TBG PRESSURE : 0 PSI

FLOWING TBG TEMPERATURE : DEG.F

A.P.I. OIL : 60 DEG F

P.P. : DEG F

OIL : Nil BOPD

GAS : nil MSCFPD

WATER : nil BWPD

GOR : CF/BBL

REMARKS : Open up tool to flare pit at 1317 hrs.

Air or Gas to surface too small to measure

Tool shut in at 1617 hrs for 3 hour build-up.

End of all DST's

**The Australian
Mineral Development
Laboratories**

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide (08) 79 1662
Telex AAB2520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

am

cc DHAR. *file*

0012

13 March 1985

3/51/0 - F3341/85

Delhi Petroleum Ltd
GPO Box 2364
ADELAIDE SA 5001

Attention Mr DeGaris

REPORT: F3341/85

YOUR REFERENCE:

SAMPLE IDENTIFICATION:

MATERIAL:

DATE RECEIVED:

WORK REQUIRED:

Requisition No. 21359

GIDGEALPA No. 20, WANCOOCHA No. 2

011s

15 February 1985

Code R2.1, R2.3 and R5

Investigation & Report by: Paul Marty, Andrew Koutrouzas
Chief, Fuels Section: Dr Brian G Steveson

Brian Steveson

for Dr William G Spencer
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sj

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LIQUID HYDROCARBON ANALYSIS

WANCOCCHA NO.2
 PATCHAWARRA FM.
 0600 HRS
 21/1/85
 -

BOILING POINT RANGE (DEG.C)	CARBON NUMBER	% BY WEIGHT	MOL %
		.12	.62
-88.6	ETHANE	1.05	3.70
-42.1	PROPANE	.63	1.70
-11.7	I-BUTANE	2.10	5.60
-0.5	N-BUTANE	1.65	3.55
27.9	I-PENTANE	2.25	4.85
36.1	N-PENTANE	4.00	7.20
66.1-68.9	C-6	.03	.06
68.0	BENZENE	5.80	9.00
68.9-98.3	C-7	3.65	5.75
100.9	METHYLCYCLOHEXANE	.67	1.15
110.6	TOLUENE	5.35	7.25
98.3-125.6	C-8	1.25	1.85
136.1-144.4	ETHYLBENZ. + XYLENES	4.35	5.25
125.6-150.6	C-9	4.45	4.85
150.6-173.9	C-10	3.30	3.30
173.9-196.1	C-11	2.70	2.45
196.1-215.0	C-12	2.85	2.40
215.0-235.0	C-13	2.80	2.20
235.0-252.2	C-14	3.30	2.40
252.2-270.6	C-15	3.00	2.05
270.6-287.8	C-16	3.10	2.00
287.8-302.8	C-17	4.15	2.55
302.8-317.2	C-18	4.15	2.40
317.2-330.0	C-19	4.50	2.45
330.0-344.4	C-20	4.80	2.50
344.4-357.2	C-21	4.85	2.45
357.2-369.4	C-22	4.80	2.30
369.4-380.0	C-23	4.10	1.90
380.0-391.1	C-24	3.25	1.45
391.1-401.7	C-25	2.25	.95
401.7-412.2	C-26	1.60	.65
412.2-422.2	C-27	3.15	1.25
>422.2	C-28 + HIGHER H ¹ CARBONS		

0=LESS THAN 0.01%

THE ABOVE BOILING POINT RANGES REFER TO THE NORMAL PARAFFIN HYDROCARBON BOILING IN THAT RANGE. AROMATICS, BRANCHED HYDROCARBONS, NAPHTHENES AND OLEFINS MAY HAVE HIGHER OR LOWER CARBON NUMBERS BUT ARE GROUPED AND REPORTED ACCORDING TO THEIR BOILING POINTS.

AVERAGE MOLECULAR WEIGHT OF C-8 PLUS FRACTION(CALC.) = 201 G/MOLE

SPECIFIC GRAVITY OF C-8 PLUS FRACTION(CALC.) = 0.845 (AT 15.6 DEG.C)

PHYSICAL PROPERTIES

0014

WANDOOCHA NO.2
PATCHAWARRA FM.
0600 HRS
21/1/85
-

FLASH POINT (OPEN CUP) = 21 (DEG.C)
KINEMATIC VISCOSITY = 3.75 CENTISTOKES (AT 37.8 DEG.C)
POUR POINT = 21 (DEG.C)
B.S.&W. = 0.28 %
SPECIFIC GRAVITY (15.6 DEG.C) = 0.800
API GRAVITY (15.6 DEG.C) = 45.4

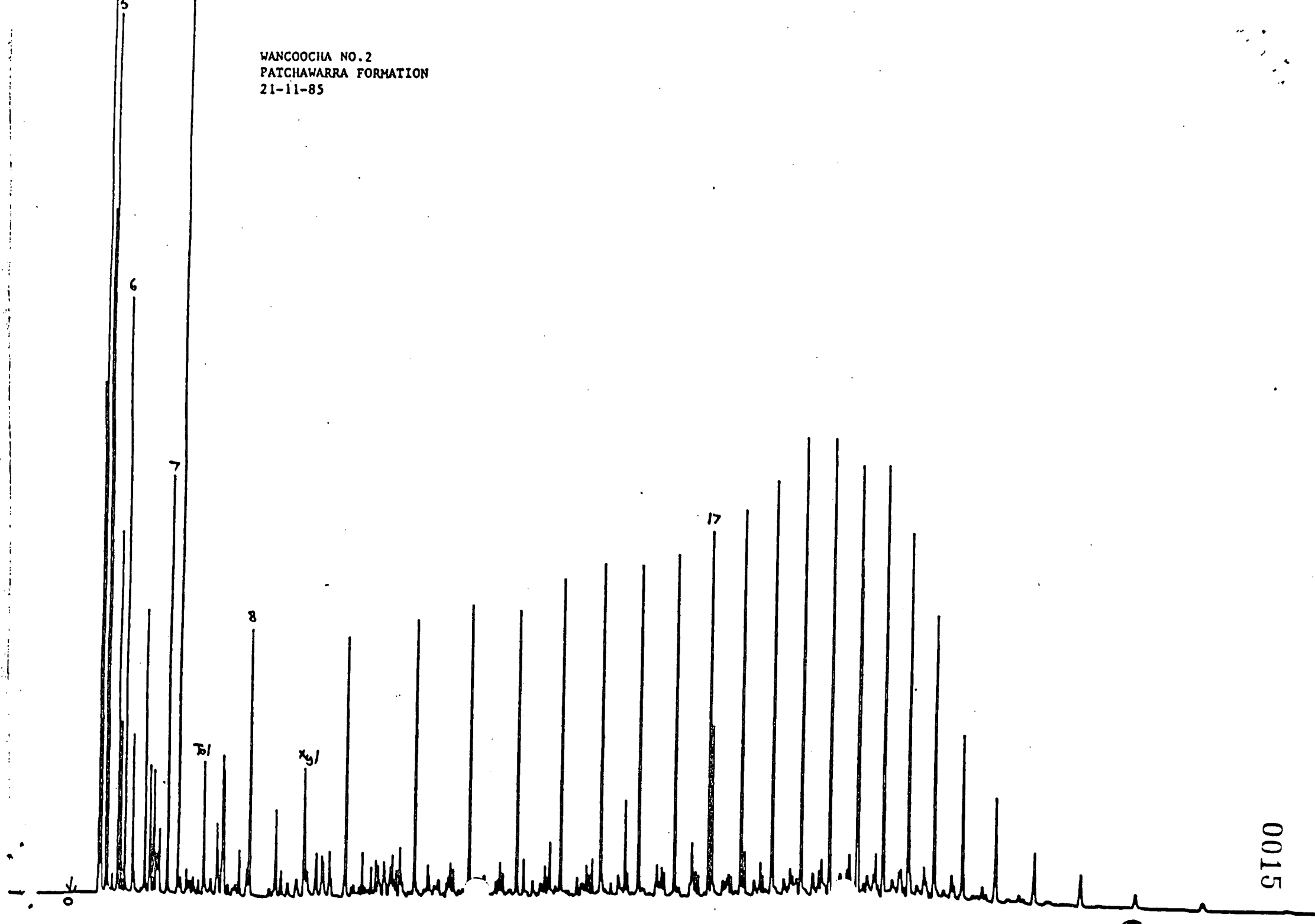
U.S.B.M. DISTILLATION

BOILING RANGE (DEG.C)	VOLUME %	SUM %	SPECIFIC GRAVITY (AT 15.6 DEG.C)	CORRELATION INDEX
RT-50	00.0	00.0	—	—
50-100	01.5	01.5	—	19.3
100-150	07.0	08.5	0.747	11.3
150-200	05.0	13.5	0.759	15.1
200-250	05.0	18.5	0.790	14.2
250-300	10.5	29.0	0.807	

INITIAL BOILING POINT = 90 DEG.C
FINAL BOILING POINT = 350 DEG.C

WEIGHT OF DISTILLATE = 41.85 G
WEIGHT OF RESIDUE = 27.32 G
LOSS = 5.5 G
RECOVERY = 92.6 %

WANCOOCIA NO.2
PATCHAWARRA FORMATION
21-11-85



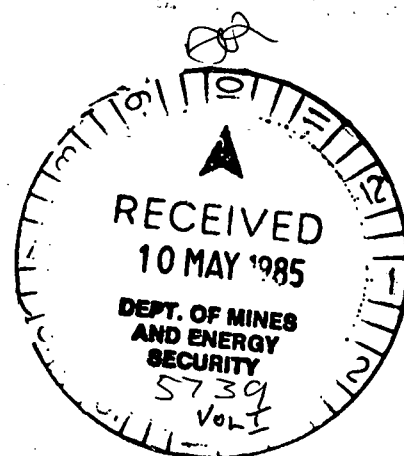
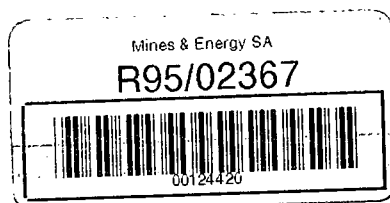
FLOPETROL JOHNSON
Schlumberger

P.V.T. STUDY REPORT

Client: DELHI PETROLEUM PTY LTD
Field : WANCOOCHA Well : WANCOOCHA 2
Zone : BIRKHEAD Samp. date: 7/2/85

Report #: 85ADL007 Date: MARCH 1985

ADELAIDE LABORATORY



FLOPETROL JOHNSTON
Schlumberger

COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

NOTICE

Curve Presentation

This report contains graphs of physical properties together with curves which are now drawn by computer program. These curves are empirical as the formulae used are not based on any theory, and are obtained using special Flopetrol computer programs. Except for saturation pressure determinations, equations are given on pages following each graph to enable easy and accurate interpolation using a calculator or a computer; generally extrapolation is not advisable as the Flopetrol software is based only on the experimental range of measurements.

Although in most cases less significant figures can be used for parameters, we advise a validity check against experimental points when using less than the eleven significant figures given.

Clearly, properties can be calculated in this fashion to high precision, but cannot be more accurate than the original experimental measurements.

Parameters are given in E-format, where, for example :
 $b = -3.76908251347E-02$ means $b = -0.037690851347$.

FLOPETROL JOHNSTON
Schlumberger

COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

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- ☐ ANNEX 3: RECOMBINATION OF SEPARATOR SAMPLES
- ☒ ANNEX 4: MOLECULAR COMPOSITION OF RESERVOIR FLUID(S)
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COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 1

SAMPLING CONDITIONSI. RESERVOIR AND WELL CHARACTERISTICS

Producing zone	:	BIRKHEAD
Static pressure	:	2300 psig @ 5111'
Bottom hole temperature	:	214 F
Tubing diameter	:	2-7/8"
Casing size	:	7"
Casing shoe	:	5969'

II. SAMPLING CONDITIONSA) SURFACE SAMPLE(S)

Date	:	-
Choke	:	-
Flowing bottom hole pressure	:	-
Well head pressure	:	-
Separator pressure	:	-
Well head temperature	:	-
Separator temperature	:	-
Gas rate (Separator)	:	-
Stock tank temperature	:	-
Compressibility factor	:	-
Gas gravity	:	-
Liquid rate (Separator)	:	-
G.L.R.	:	-
Sample(s) received	:	gas -
		liq.-
		-

B) BOTTOM HOLE SAMPLE(S)

Date	:	7/2/85
Choke	:	3/64
Sample(s) received	:	22400/103,80291/315 9209/168,20475/1

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SAMPLE(S) VALIDITY

BOTTOM HOLE SAMPLE(S)

- 1) Sample bottle No 20475/1

Bubble point pressure determination at 71 F is 128 psig

- 2) Sample bottle No 80291/315

Bubble point pressure determination at 70 F is 150 psig

- 3) Sample bottle No 22400/103

Bubble point pressure determination at 71 F is 170 psig

- 4) Sample bottle No 9209/168

Bubble point pressure determination at 68 F is 143 psig



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WELL : WANCOOCHA 2

SUMMARY AND MAIN RESULTS

The present report gives the experimental results of the P.V.T. study carried out on bottom hole sample(s) from well WANCOOCHA 2

The initial reservoir conditions are :

- P_i : 2300 psig @ 5111'
- T : 214 F

Bubble point pressure determined on sample which was selected for complete P.V.T. study is :

- P_b : 168 psig at 214 F
- c : 10.59×10^{-6} psi⁻¹ (2300- 1500 psig)

Main differential vaporization data at reservoir temperature :

	P _i	P _b
oil volume factor (bbl/Std bbl)	1.076	1.104
solution gas-oil ratio (Std cu ft/bbl)	32	32
reservoir fluid viscosity (centipoises)	0.49	0.43
reservoir fluid density (g/cm ³)	0.717	0.699
Residual oil gravity	0.762 54.3	60/60 F API

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TABLE 2

BUBBLE POINT PRESSURE DETERMINATION AT 71°F

Bottom hole sample (Cylinder 20475/1)

Pressure (psig)	Pump reading (cm3)
5000	99.75
4000	98.89
3000	97.97
2000	97.00
1000	95.95
300	95.18
Pd= 128	94.95
127	94.39
126	93.20
120	90.88
110	89.00
107	87.04

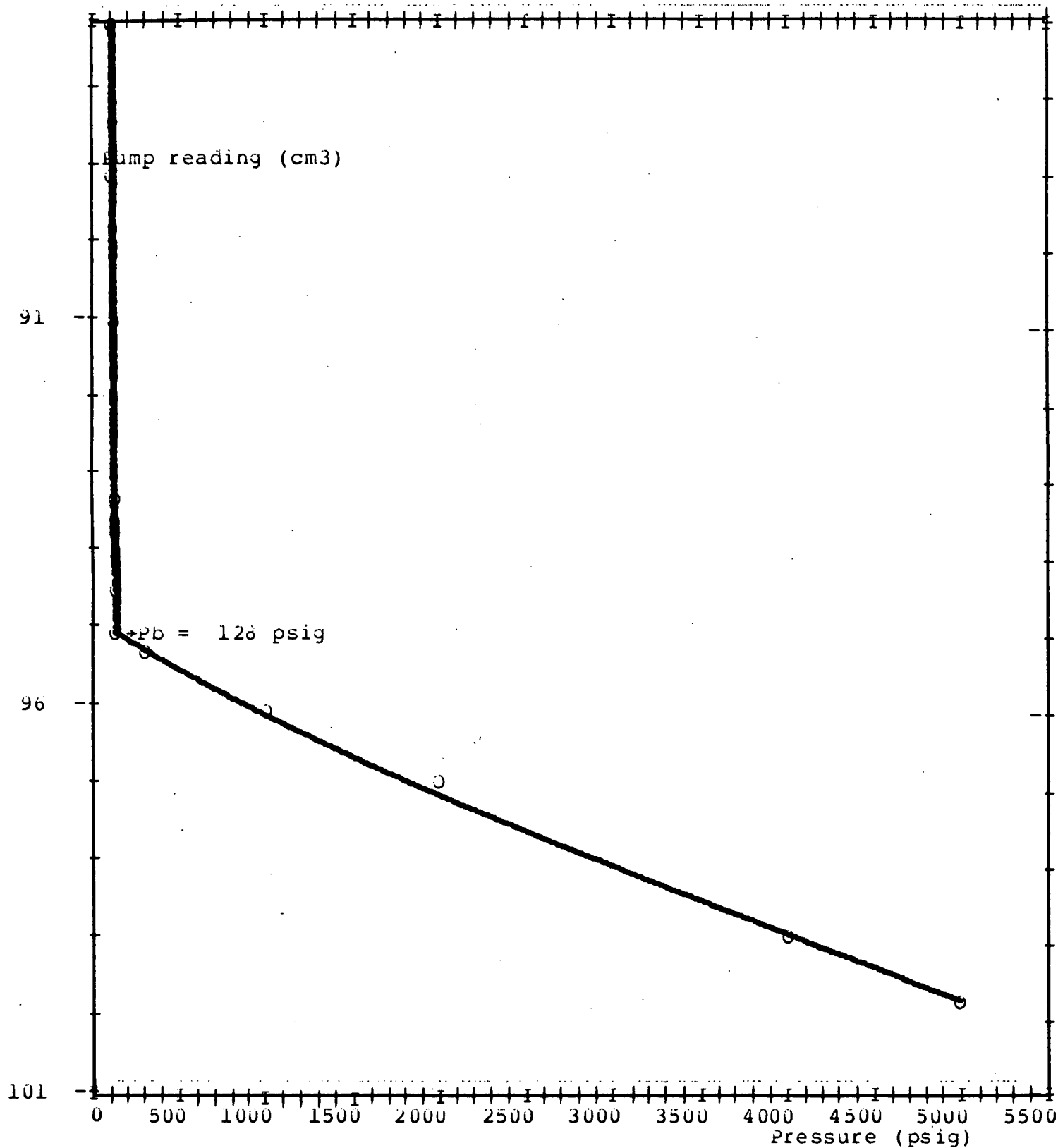
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BUBBLE POINT PRESSURE DETERMINATION AT 71 F

Bottom hole sample (cylinder 20475/1)



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TABLE 3

BUBBLE POINT PRESSURE DETERMINATION AT 70°F

Bottom hole sample (Cylinder 80291/315)

Pressure (psig)	Pump reading (cm ³)
5000	60.38
4000	59.46
3000	58.51
2000	57.50
1000	56.36
300	55.46
Pb= 150	55.23
149	55.01
145	54.44
131	53.18
123	50.93
113	47.03

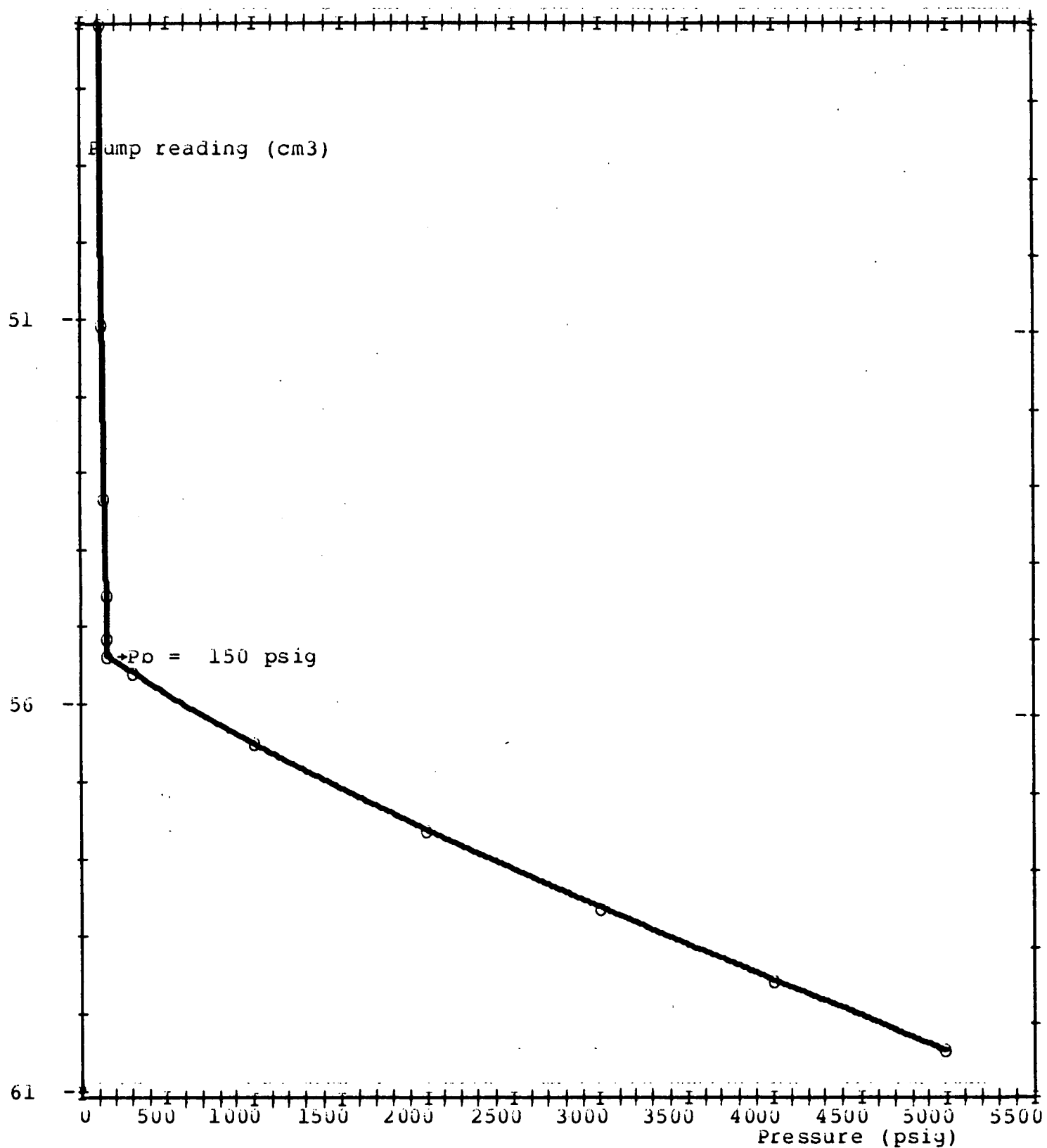
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BUBBLE POINT PRESSURE DETERMINATION AT 70 F

Bottom hole sample (cylinder 80291/315)



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TABLE 4

BUBBLE-POINT PRESSURE DETERMINATION AT 71°F

Bottom hole sample (Cylinder 22400/103)

Pressure (psig)	Pump reading (cm3)
5000	81.31
4000	80.46
3000	79.51
2000	78.53
1000	77.45
500	76.87
227	76.52
Pb= 170	76.45
169	76.25
163	74.56
158	73.00
151	71.14

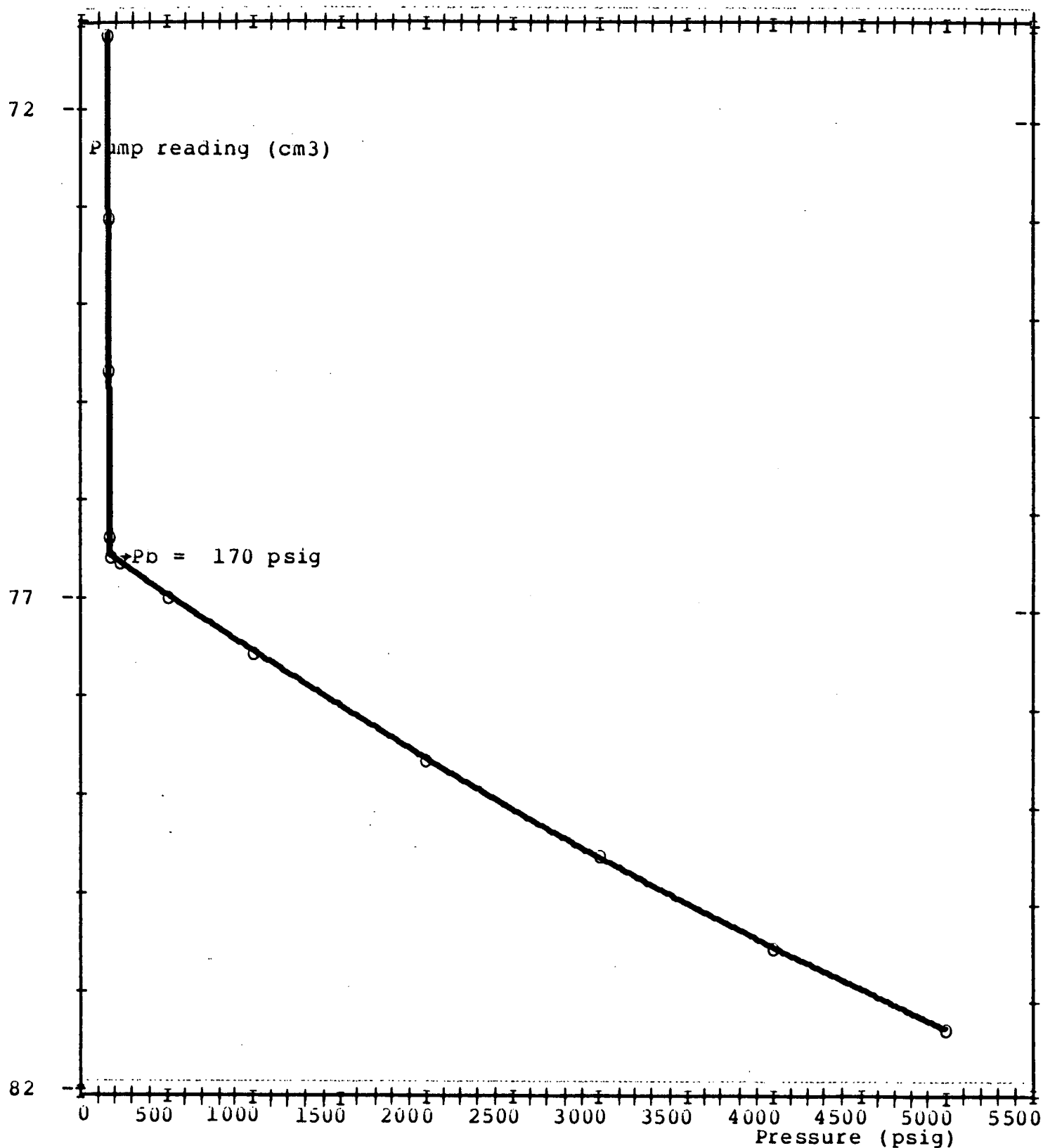
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BUBBLE POINT PRESSURE DETERMINATION AT 71 F

Bottom hole sample (cylinder 22400/103)



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TABLE 5

BUBBLE POINT PRESSURE DETERMINATION AT -68 F

Bottom hole sample (Cylinder 9209/168)

Pressure (psig)	Pump reading (cm3)
5000	63.10
4000	62.22
3000	61.31
2000	60.36
1000	59.31
500	58.77
Pb= 143	58.33
141	58.11
140	57.53
126	55.59
120	53.75
110	51.07

This sample has been used for complete PVT study

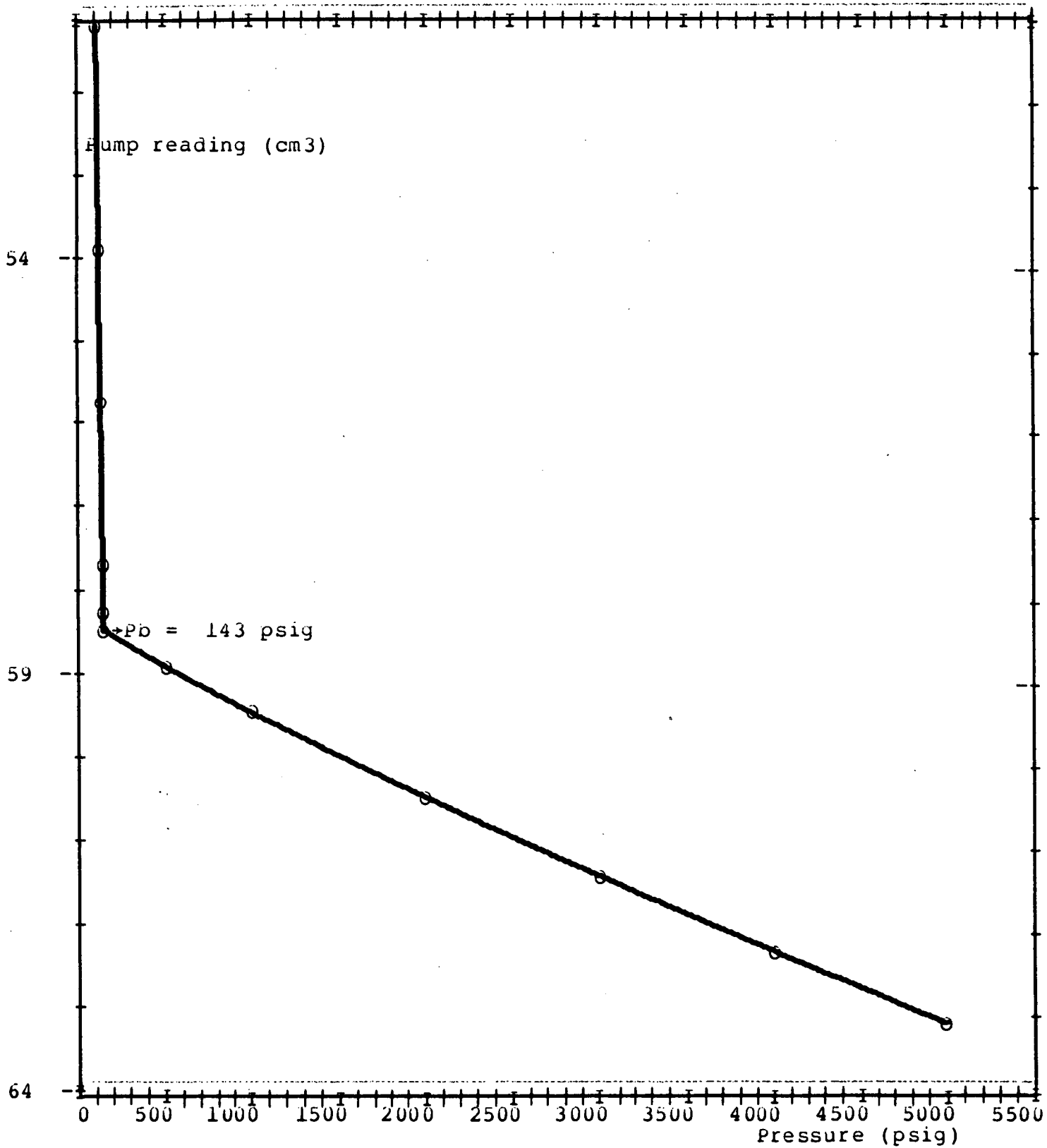
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BUBBLE-POINT PRESSURE DETERMINATION AT 68 F

Bottom hole sample (cylinder 9209/168)



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MOLECULAR COMPOSITION OF LIBERATED GASES

FROM FLASH TO STOCK TANK CONDITIONS

Bottle No.	Mole Percent			
	20475/1	80291/315	22400/103	9209/168
COMPONENTS				
Nitrogen	14.22	15.21	18.26	15.07
Carbon Dioxide	14.40	14.09	13.87	14.01
<u>Hydrocarbons</u>				
Methane	62.70	62.13	59.77	62.76
Ethane	3.74	3.69	3.62	3.61
Propane	1.91	1.88	1.84	1.79
I-Butane	0.66	0.64	0.60	1.79
N-Butane	0.60	0.57	0.56	0.57
I-Pentane	0.51	0.51	0.47	0.52
N-Pentane	0.46	0.47	0.41	0.43
Hexanes	0.69	0.68	0.51	0.54
Heptanes Plus	0.11	0.13	0.09	0.10
TOTAL	100.00	100.00	100.00	100.00
Molecular Weight	24.485	24.496	24.548	24.263
Gravity (Air=1)	0.845	0.845	0.847	0.837
Molecular Weight of Heptanes Plus	101.5	101.3	101.8	101.6

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WELL : WANCOOCHA 2

TABLE 6

MOLECULAR COMPOSITION OF STOCK TANK OIL

Components	Mole percent
Nitrogen	0.00
Carbon dioxide	0.19
<u>Hydrocarbons:</u>	
Metthane	0.26
Ethane	0.15
Propane	0.43
I - Butane	0.17
N - Butane	0.26
I - Pentane	0.37
N - Pentane	0.56
Hexanes	5.13
Heptanes	12.72
Octanes	16.95
Nonanes	14.09
Decanes	11.15
Undecanes	5.89
Dodecanes	7.20
Tridecanes	4.02
Tetradecanes	3.49
Pentadecanes	3.01
Hexadecanes	2.02
Heptadecanes	1.91
Octadecanes	1.70
Nonadecanes	0.70
Eicosanes plus	7.63
TOTAL	100.00

Molecular weight of stock tank liquid : 155

Molecular weight of Eicosanes plus in sto : 341

Gravity of Eicosanes plus in sto : 0.840 (60/60 F)

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WELL : WANCOOCHA 2

TABLE 7

MOLECULAR COMPOSITION OF RESERVOIR FLUID

Components	Mole percent
Nitrogen	0.54
Carbon dioxide	0.68
<u>Hydrocarbons:</u>	
Methane	2.49
Ethane	0.27
Propane	0.48
I - Butane	0.18
N - Butane	0.27
I - Pentane	0.37
N - Pentane	0.56
Hexanes	4.97
Heptanes	12.27
Octanes	16.35
Nonanes	13.58
Decanes	10.76
Undecanes	5.68
Dodecanes	6.94
Tridecanes	3.88
Tetradecanes	3.36
Pentadecanes	2.90
Hexadecanes	1.95
Heptadecanes	1.84
Octadecanes	1.64
Nonadecanes	0.68
Eicosanes plus	7.36
TOTAL	100.00

G⁺ = 88.69 %

Molecular weight of reservoir fluid : 150.6

Molecular weight of Eicosanes plus in reservoir fluid : 341

Gravity of Eicosanes plus in sto : 0.840 (60/60 F)

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WELL : WANCOOCHA 2

TABLE 8

BUBBLE POINT PRESSURE DETERMINATION AND CONSTANT MASS STUDY AT 214 F

Pressure (psig)	Relative volume V/VPb	Compressibility factor (psi ⁻¹)	Y curve Pb/P-1 V/VPb-1
5000	0.9498		
4500	0.9543	9.43 x 10 ⁻⁶	
4000	0.9588	9.54 x 10 ⁻⁶	
3000	0.9682	9.79 x 10 ⁻⁶	
Pi= 2300	0.9751	10.11 x 10 ⁻⁶	
1500	0.9833	10.59 x 10 ⁻⁶	
700	0.9924	11.53 x 10 ⁻⁶	
209	0.9991	13.88 x 10 ⁻⁶	
Pb= 168	1.0000	20.77 x 10 ⁻⁶	
160	1.0160		3.13
157	1.0225		3.11
150	1.0390		3.08
142	1.0603		3.04
131	1.0947		2.98
116	1.1542		2.91
93	1.2890		2.79
75	1.4594		2.70
54	1.8140		2.59

Thermal expansion factor of reservoir fluid at 5000 psig

between 70 F and 214 F : = 0.524 x 10⁻³ F⁻¹

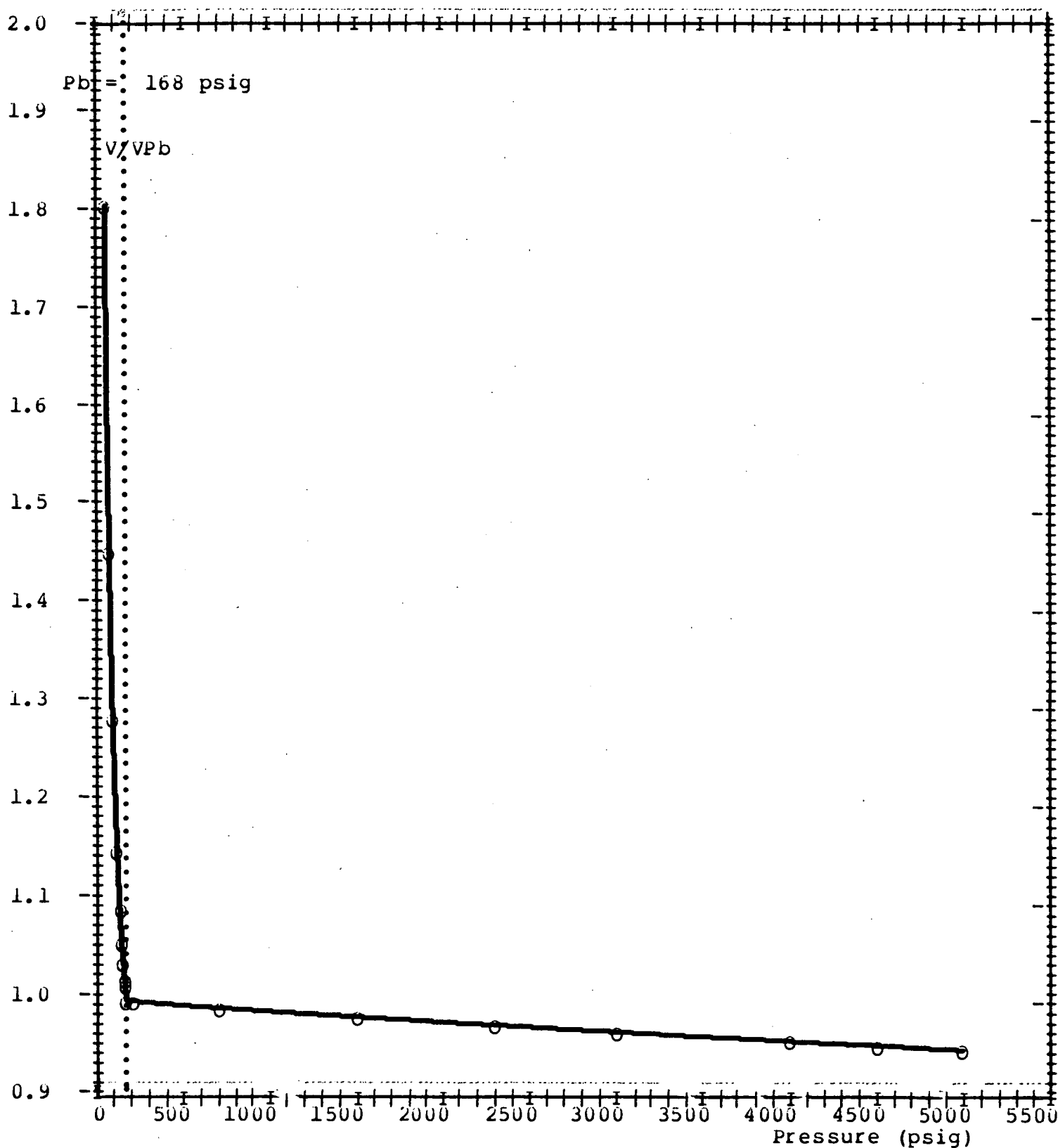
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BUBBLE POINT PRESSURE DETERMINATION AND CONSTANT MASS STUDY AT 214 F

Relative volume



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BUBBLE POINT PRESSURE DETERMINATION AND CONSTANT MASS STUDY AT 214 F

Relative Volume

1. For $P_b < P \leq 5000$

$$V_r = 1 - 10(a \cdot \log(P - P_b) + b)$$

where:

$$\begin{aligned} P_b &= 168 \text{ psig} \\ a &= 8.54958857484E-01 \\ b &= -4.44891118631E 00 \end{aligned}$$

2. For $54 \leq P < P_b$

$$V_r = 1 + (1 - x) / (x \cdot (a \cdot x + b))$$

where:

$$\begin{aligned} P_b &= 168 \text{ psig} \\ a &= 8.48268872359E-01 \\ b &= 2.32073081856E 00 \end{aligned}$$

$$x = P / P_b$$

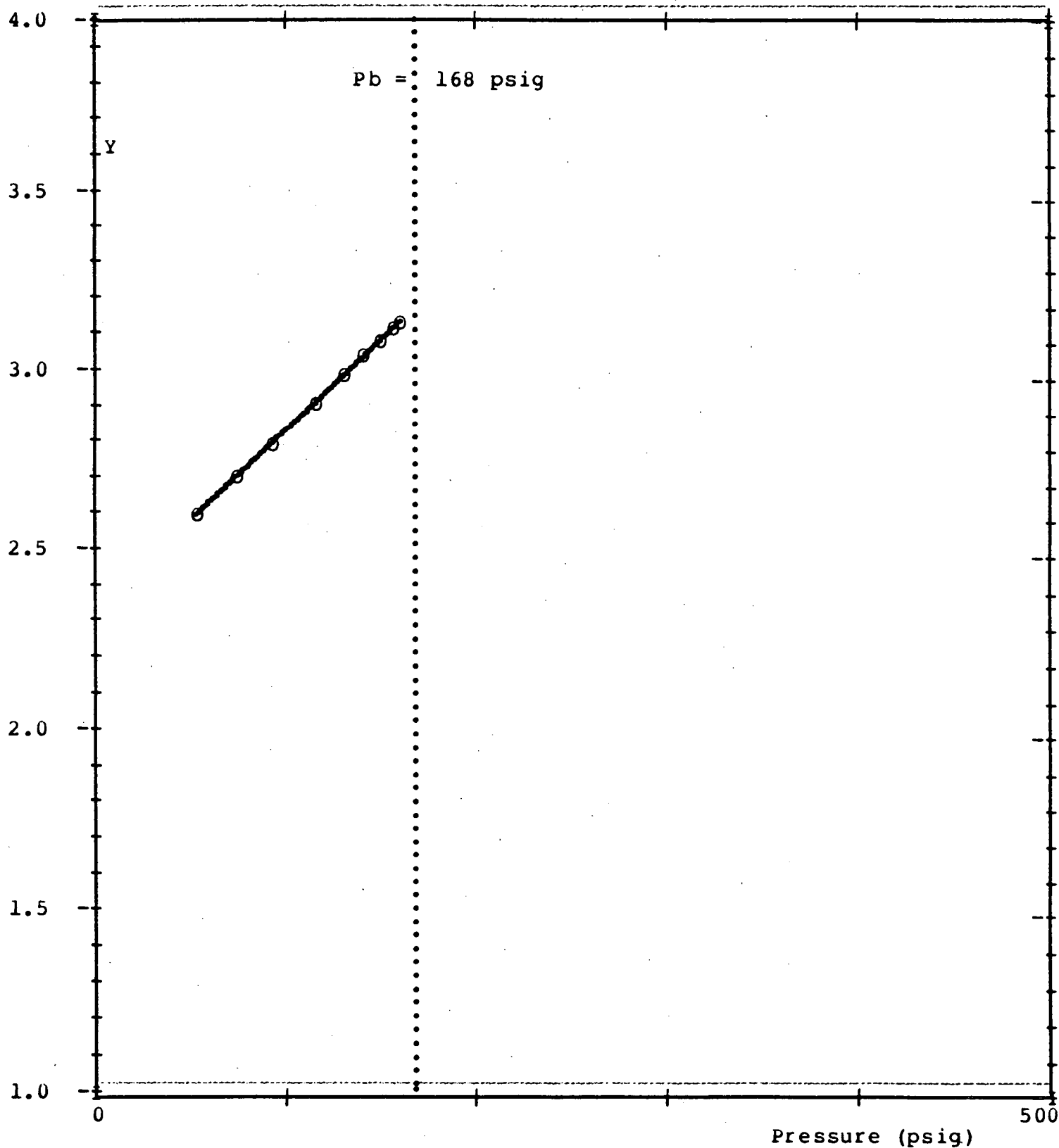
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BUBBLE POINT PRESSURE DETERMINATION AND CONSTANT MASS STUDY AT 214 °F

Y curve pressure-volume function



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BUBBLE-POINT PRESSURE DETERMINATION AND CONSTANT MASS STUDY AT 214 F

Y curve pressure-volume function

For $54 \leq P < P_b$

$$Y = a \cdot P + b$$

where:

$P_b = 168$ psig
 $a = 5.04921947833E-03$
 $b = 2.32073081856E 00$

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TABLE 9

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214-F

Pressure (psig)	Oil volume factor Bo (bbl/Std bbl)	Solution gas-oil ratio Rs (Std cu ft/Std bbl)	Gas volume factor Bg (cu ft/Std cu ft)	Reservoir oil density (g/cm3)
5000	1.050			0.736
4500	1.054			0.733
4000	1.058			0.729
3000	1.068			0.722
Pi= 2300	1.076			0.717
1500	1.085			0.711
700	1.096			0.705
209	1.103			0.700
Pb= 168	1.104	32		0.699
137	1.102	28	11.35 x 10 ⁻²	
102	1.098	22	15.06 x 10 ⁻²	
71	1.096	17	20.97 x 10 ⁻²	
33	1.092	8	39.20 x 10 ⁻²	
0	1.084	0	-----	

Residual oil gravity : 0.762 60/60 F
54.3 API

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TABLE 10

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Pressure (psig)	Gas viscosity (centipoises)	Gas gravity (Air=1)	compressibility factor Z
137	0.0115	0.921	0.904
102	0.0101	1.064	0.910
71	0.0088	1.289	0.923
33	0.0073	1.577	0.953
0	0.0055	2.125	1.000

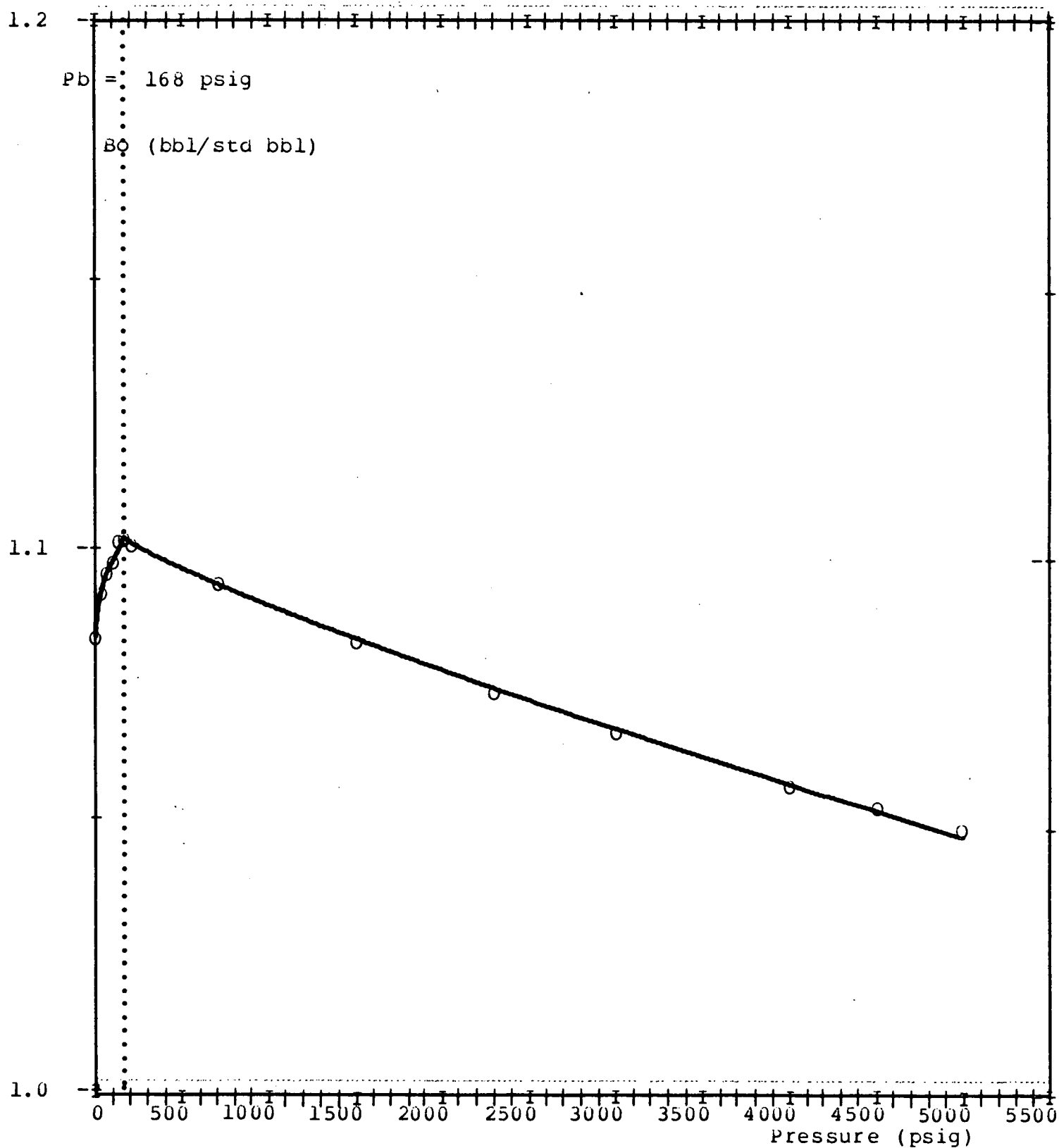
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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Oil volume factor





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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Oil volume factor

1. For $P_b < P \leq 5000$

$$B_o \text{ (bbl/Std bbl)} = a - 10(b \cdot \log(P - P_b) + c)$$

where:

$P_b = 168 \text{ psig}$
 $a = 1.10365677476E-00$
 $b = 8.54958857484E-01$
 $c = -4.40607715278E-00$

$$x = P/P_b$$

2. For $0 \leq P \leq P_b$

$$B_o \text{ (bbl/Std bbl)} = a + b \cdot x^i + c \cdot x^j + d \cdot x^k$$

where:

$P_b = 168 \text{ psig}$
 $a = 1.08365843086E-00$
 $b = -2.29519087189E-01$
 $c = 2.36708668391E-01$
 $d = 1.28087626950E-02$

$$\begin{aligned}
 x &= P/P_b \\
 i &= 1.1 \\
 j &= 1.0 \\
 k &= 3
 \end{aligned}$$

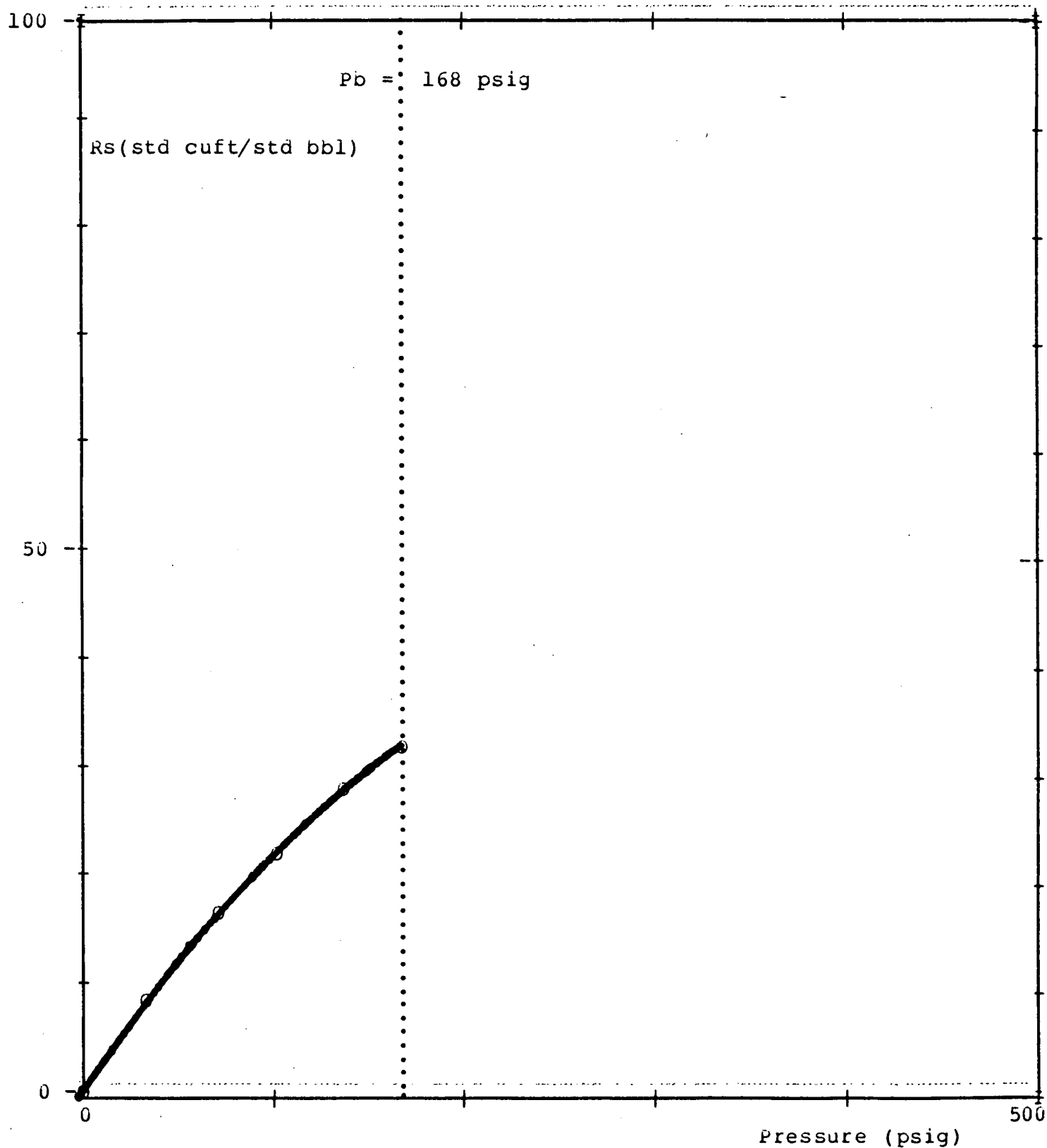
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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Solution gas oil ratio



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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Solution gas oil ratio

For $0 \leq P \leq P_b$

$$R_s \text{ (std cuft/std bbl)} = a \cdot x^i + b \cdot x^j + c \cdot x^k$$

where:

$P_b = 168 \text{ psig}$
 $a = 1.48281453217E-02$
 $b = -1.15642513120E-02$
 $c = -8.61375820882E-01$

$x = P/P_b$
 $i = 1.1$
 $j = 1.2$
 $k = 30$

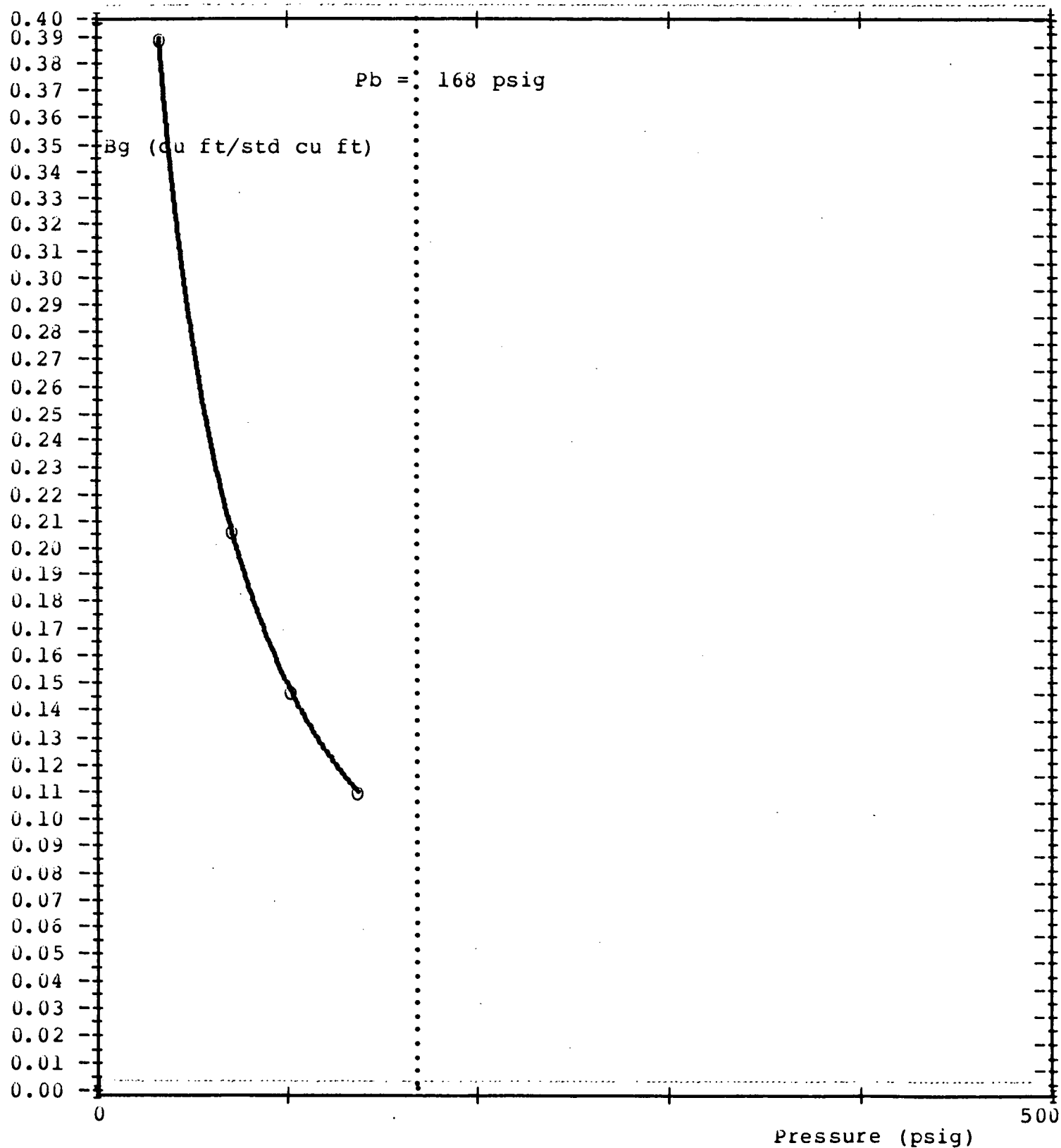
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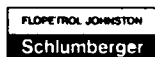
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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Gas volume factor





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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Gas volume factor

For $33 \leq P \leq 137$

$$B_g \text{ (cuft/std cuft)} = (a*x^2 + b*x + c) / (d*x + 1)$$

where:

$P_b = 168 \text{ psig}$
 $a = 5.22072087270E-02$
 $b = -1.80966899446E-01$
 $c = 1.40891549217E 00$
 $d = 1.27730585313E 01$

$$x = P/P_b$$

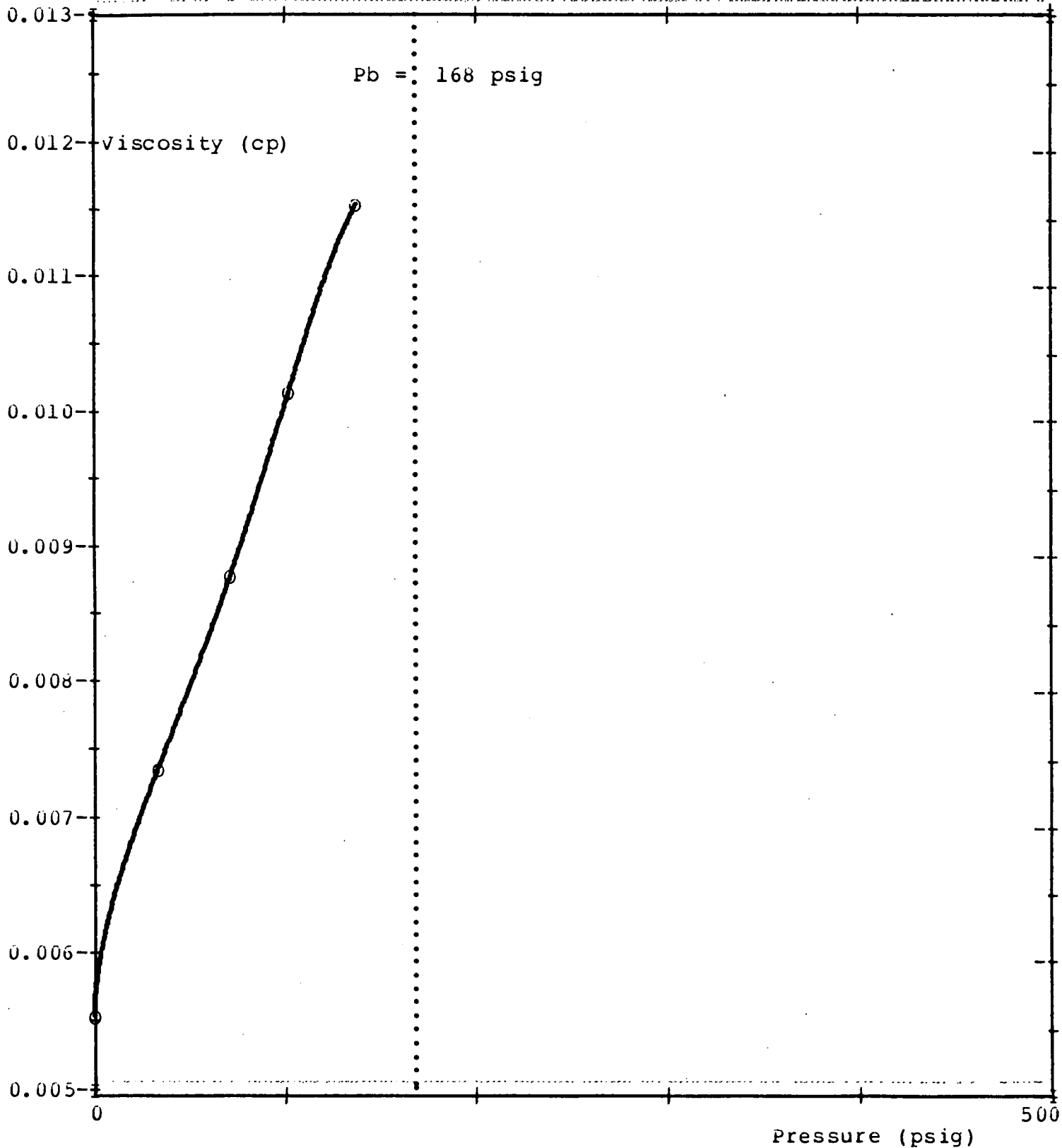
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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

liberated gas viscosity



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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Liberated gas viscosity

For $0 \leq P \leq 137$

$$\eta_g \text{ (centipoises)} = a + b \cdot x^i + c \cdot x^j + d \cdot x^k$$

where:

$P_b = 168 \text{ psig}$
 $a = 5.53026489884E-03$
 $b = 4.69432862354E-03$
 $c = 6.19786887401E-03$
 $d = -5.15455452180E-03$

$x = P/P_b$
 $i = 0.6$
 $j = 3.0$
 $k = 6$

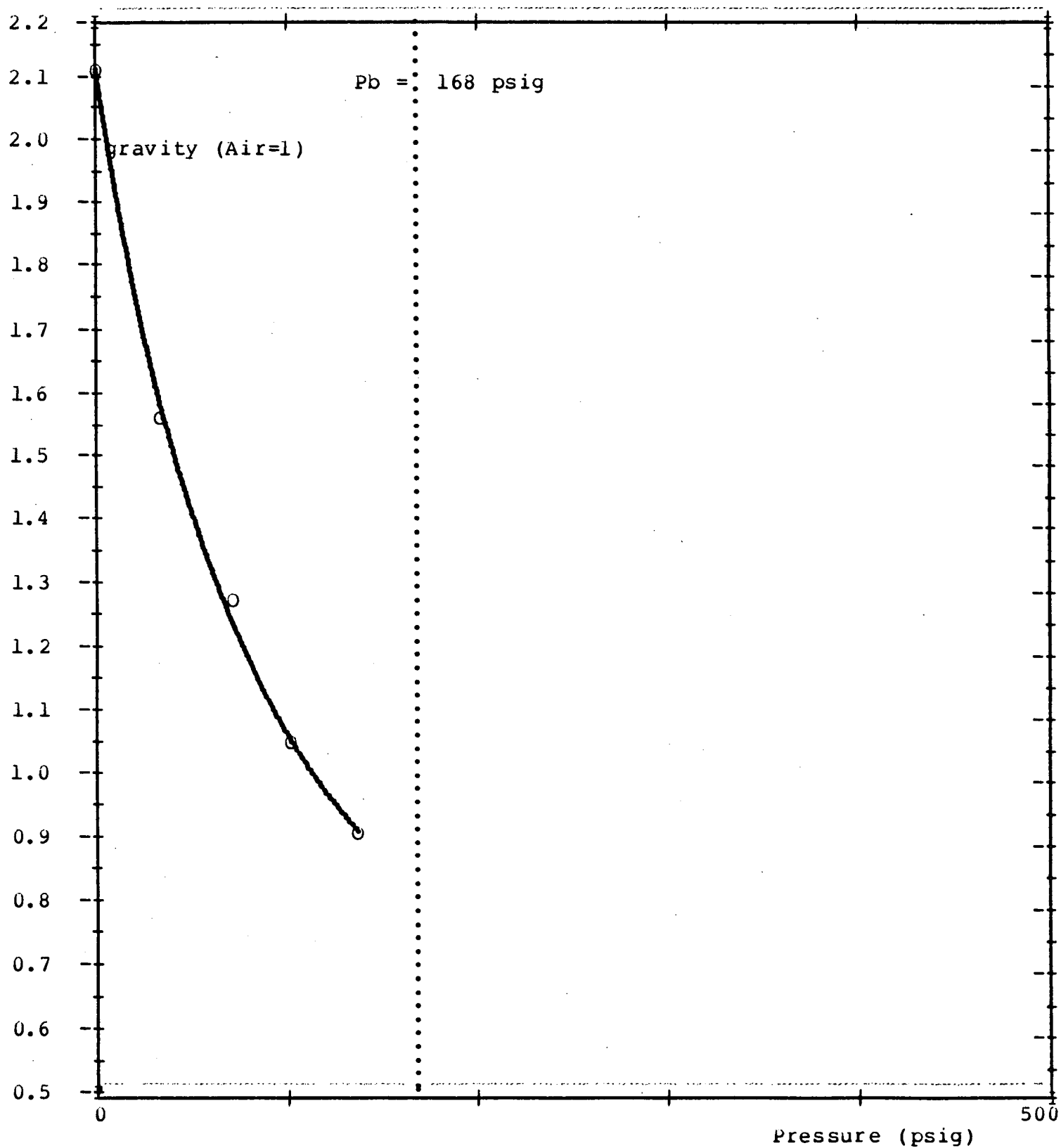
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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Liberated gas gravity



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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Liberated gas gravity

For $0 \leq P \leq 137$

$$dg \text{ (air=1)} = (a \cdot x^2 + b \cdot x + c) / (d \cdot x^2 + e \cdot x + 1)$$

where:

Pb = 168 psig
a = 3.38214147464E-01
b = 1.33898223922E-01
c = 2.12469484472E 00
d = 4.13973724030E-01
e = 1.70907473315E 00

$$x = P/Pb$$

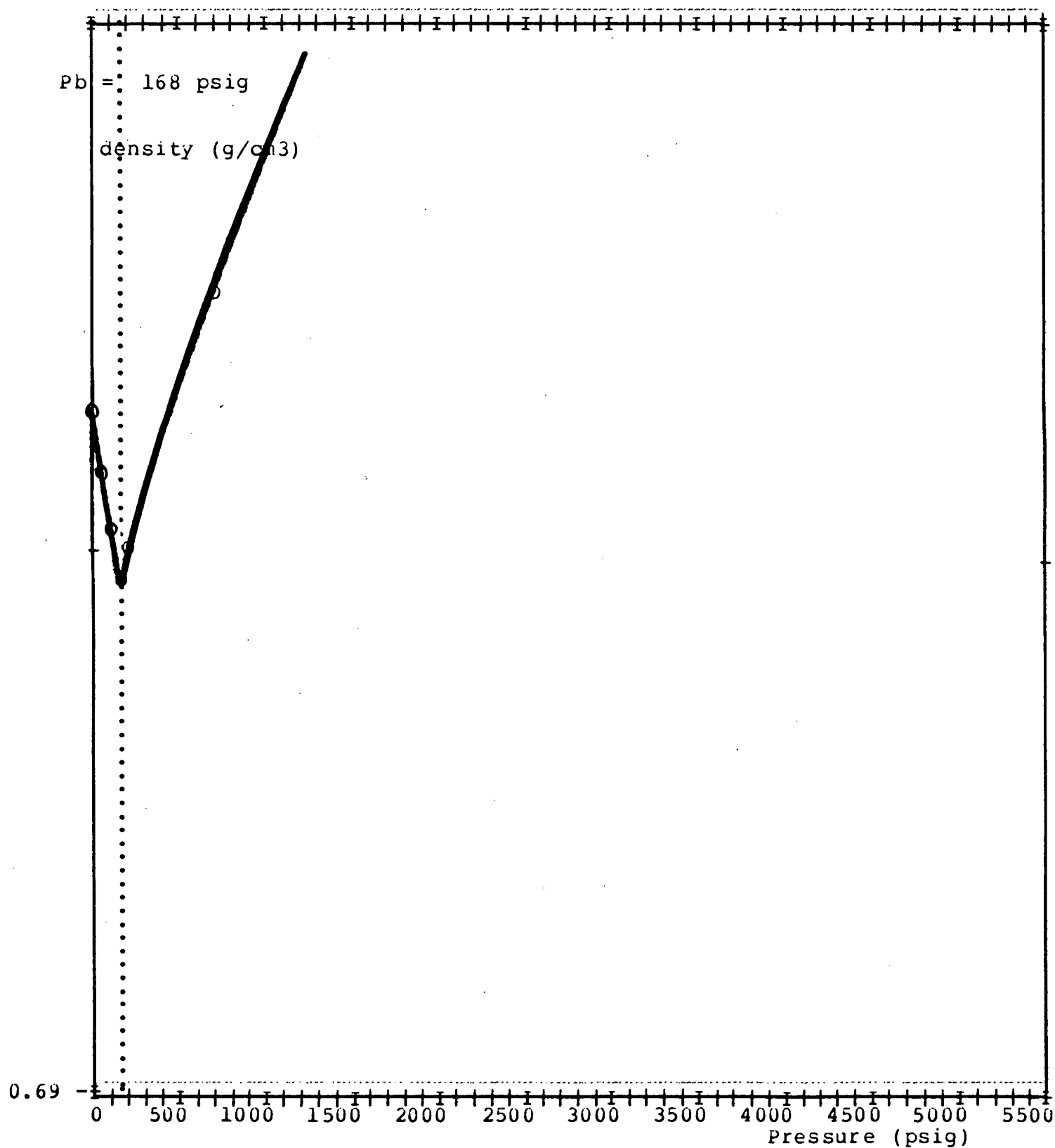
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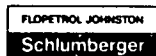
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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Reservoir oil density





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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F.

Reservoir oil density

1. For $P_b < P \leq 5000$

$$\rho_o \text{ (g/cm}^3\text{)} = 1 / (a - 10^{(b \cdot \log(P - P_b) + c)})$$

where:

$P_b = 168 \text{ psig}$
 $a = 1.42969215126E 00$
 $b = 8.54958857484E-01$
 $c = -4.29366865332E 00$

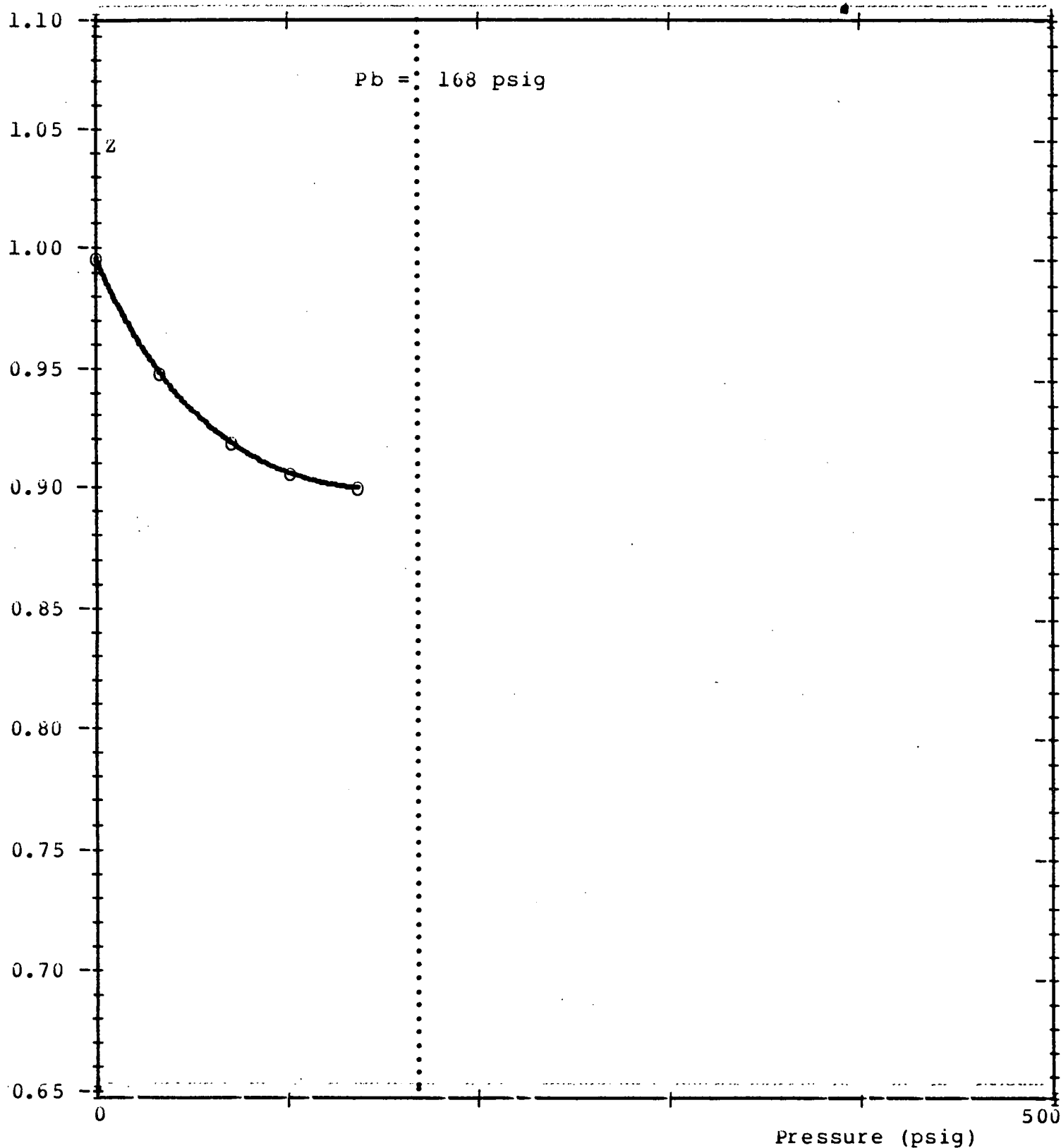
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WELL : WANCOOCHA 2

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Compressibility factor Z



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DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 214 F

Compressibility factor Z

For $0 \leq P \leq 137$

$$Z = (a \cdot x^2 + b \cdot x + c) / (d \cdot x + 1)$$

where:

Pb = 168 psig
a = 1.10285920860E-01
b = 7.59724400480E-01
c = 1.00000000000E 00
d = 1.07099730706E 00

$$x = P/Pb$$



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WELL : WANCOOCHA 2

TABLE 11

SEPARATION-TEST-OF-RESERVOIR-FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)			Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm3)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
Pres. (psig)	Temp. (F)	Sep.	Tank	Total				
50	60	13	-	-	-	0.763	1.000	-
0	69	-	6	19	1.099	-	0.979	0.762

$$B_{oi} = 1.099 \times 0.9751 = 1.07$$

(table 8).

- (1) Gas volume at standard conditions per volume of stock tank oil at 60 F
- (2) Volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F
- (3) Volume of stock tank oil at 60 F per volume of separator liquid at separator conditions

FLOPETROL JOHNSTON
Schlumberger

COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 12

SEPARATION TEST OF RESERVOIR FLUID

Molecular composition of liberated gases (mole percent)

Pressure (psig)	50	0
Temperature (F)	68	68
Nitrogen	11.61	35.68
Carbon dioxide	4.01	25.26
<u>Hydrocarbons:</u>		
Methane	5.81	17.62
Ethane	4.59	2.11
Propane	14.06	3.81
I - Butane	6.42	1.12
N - Butane	18.74	2.92
I - Pentane	10.48	2.02
N - Pentane	11.76	2.72
Hexanes	5.54	5.78
Heptanes plus	6.98	0.96
TOTAL	100.00	100.00
Molecular weight	55.968	37.973
Gravity (Air=1)	1.931	1.310
Molecular weight of heptanes plus	100.2	101.1

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WELL : WANCOOCHA 2

TABLE 13

SEPARATION-TEST-OF-RESERVOIR-FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)			Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm3)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
Pres. (psig)	Temp. (F)	Sep.	Tank	Total				
30	60	19	-	-	-	0.756	0.991	-
0	69	-	5	24	1.097	-	0.986	0.762

$$Boi = 1.097 \times 0.9751 = 1.07.$$

(table 8)

- (1) Gas volume at standard conditions per volume of stock tank oil at 60 F
- (2) Volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F
- (3) Volume of stock tank oil at 60 F per volume of separator liquid at separator conditions

COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 14

SEPARATION TEST OF RESERVOIR FLUID

Molecular composition of liberated gases (mole percent)

Pressure (psig)	30	0
Temperature (F)	68	68
Nitrogen	95.49	4.32
Carbon dioxide	1.01	14.90
<u>Hydrocarbons:</u>		
Methane	2.58	39.65
Ethane	0.27	5.48
Propane	0.23	5.72
I - Butane	0.07	3.33
N - Butane	0.13	6.96
I - Pentane	0.05	6.28
N - Pentane	0.10	7.72
Hexanes	0.07	4.58
Heptanes plus	0.00	1.06
TOTAL	100.00	100.00
Molecular weight	28.075	39.408
Gravity (Air=1)	0.969	1.360
Molecular weight of heptanes plus	0.0	101.9



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WELL : WANCOOCHA 2

TABLE 15

SEPARATION TEST OF RESERVOIR FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)			Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm ³)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
Pres. (psig)	Temp. (F)	Sep.	Tank	Total				
50	110	14	-	-	-	0.746	0.975	-
0	67	-	6	20	1.102	-	0.975	0.764

(1) Gas volume at standard conditions per volume of stock tank oil at 60 F

(2) Volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F

(3) Volume of stock tank oil at 60 F per volume of separator liquid at separator conditions

COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 16

SEPARATION-TEST-OF-RESERVOIR-FLUID

Molecular composition of liberated gases (mole percent)

Pressure (psig)	50	0
Temperature (F)	68	68
Nitrogen	19.26	51.08
Carbon dioxide	37.37	3.93
<u>Hydrocarbons:</u>		
Methane	14.25	5.74
Ethane	3.20	2.13
Propane	4.58	7.78
I - Butane	1.43	2.19
N - Butane	2.55	9.10
I - Pentane	3.80	3.42
N - Pentane	3.04	6.50
Hexanes	7.90	3.92
Heptanes plus	2.62	4.21
TOTAL	100.00	100.00
Molecular weight	43.792	42.376
Gravity (Air=1)	1.511	1.462
Molecular weight of heptanes plus	100.2	100.9

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Schlumberger

COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 17

SEPARATION TEST OF RESERVOIR FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)			Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm ³)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
		Pres. (psig)	Temp. (F)	Sep. Tank Total				
30	110	17	-	-	-	0.749	0.982	-
0	67	-	6	23	1.097	-	0.972	0.762

(1) Gas volume at standard conditions per volume of stock tank oil at 60 F

(2) Volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F

(3) Volume of stock tank oil at 60 F per volume of separator liquid at separator conditions

COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 18

SEPARATION TEST OF RESERVOIR FLUID

Molecular composition of liberated gases (mole percent)

Pressure (psig)	30	0
Temperature (F)	68	68
Nitrogen	7.97	98.19
Carbon dioxide	32.17	0.44
<u>Hydrocarbons:</u>		
Methane	35.37	0.42
Ethane	4.83	0.08
Propane	3.67	0.08
I - Butane	1.14	0.08
N - Butane	2.34	0.17
I - Pentane	2.00	0.18
N - Pentane	2.21	0.15
Hexanes	4.25	0.15
Heptanes plus	4.05	0.06
TOTAL	100.00	100.00
Molecular weight	37.917	28.399
Gravity (Air=1)	1.308	0.980
Molecular weight of heptanes plus	100.2	100.2



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 19

SEPARATION TEST OF RESERVOIR FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)			Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm ³)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
Pres. (psig)	Temp. (F)	Sep.	Tank	Total				
50	140	17	-	-	-	0.721	0.946	-
0	67	-	7	24	1.096	-	0.966	0.761

(1) Gas volume at standard conditions per volume of stock tank oil at 60 F

(2) Volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F

(3) Volume of stock tank oil at 60 F per volume of separator liquid at separator conditions



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 20

SEPARATION TEST OF RESERVOIR FLUID

Molecular composition of liberated gases (mole percent)

Pressure (psig)	50	0
Temperature (F)	68	68
Nitrogen	92.78	98.59
Carbon dioxide	1.07	0.49
<u>Hydrocarbons:</u>		
Methane	1.42	0.48
Ethane	1.35	0.07
Propane	1.42	0.05
I - Butane	0.16	0.00
N - Butane	0.58	0.02
I - Pentane	0.17	0.06
N - Pentane	0.30	0.04
Hexanes	0.22	0.10
Heptanes plus	0.03	0.10
TOTAL	100.00	100.00
Molecular weight	28.861	28.224
Gravity (Air=1)	0.996	0.974
Molecular weight of heptanes plus	100.2	100.2

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COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 21

SEPARATION TEST OF RESERVOIR FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)			Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm3)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
Pres. (psig)	Temp. (F)	Sep.	Tank	Total				
30	140	18	-	-	-	0.735	0.964	-
0	68	-	5	23	1.097	-	0.983	0.762

(1) Gas volume at standard conditions per volume of stock tank oil at 60 F

(2) Volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F

(3) Volume of stock tank oil at 60 F per volume of separator liquid at separator conditions

FLOPETROL JOHNSTON
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COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 22

SEPARATION TEST OF RESERVOIR FLUID

Molecular composition of liberated gases (mole percent)

Pressure (psig)	30	0
Temperature (F)	68	68
Nitrogen	5.24	13.39
Carbon dioxide	20.97	29.58
<u>Hydrocarbons:</u>		
Methane	53.86	25.46
Ethane	5.61	6.87
Propane	3.94	6.82
I - Butane	1.26	1.35
N - Butane	1.99	5.23
I - Pentane	1.74	2.54
N - Pentane	2.07	3.15
Hexanes	2.54	4.96
Heptanes plus	0.78	0.65
TOTAL	100.00	100.00
Molecular weight	30.370	38.783
Gravity (Air=1)	1.048	1.338
Molecular weight of heptanes plus	100.2	100.2

FLOPETROL JOHNSTON
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COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 23

SEPARATION TEST OF RESERVOIR FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)		Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm ³)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
Pres. (psig)	Temp. (F)	Sep.	Tank Total				
0	72	-	24 24	1.094	-	1.000	0.761

(1) Gas volume at standard conditions per volume of stock tank oil at 60 F

(2) Volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F

(3) Volume of stock tank oil at 60 F per volume of separator liquid at separator conditions

FLOPETROL JOHNSTON
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COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

TABLE 24

SEPARATION TEST OF RESERVOIR FLUID

Molecular composition of liberated gases (mole percent)

Pressure (psig)	0
Temperature (F)	214
Nitrogen	15.07
Carbon dioxide	14.01
<u>Hydrocarbons:</u>	
Methane	62.76
Ethane	3.61
Propane	1.79
I - Butane	0.60
N - Butane	0.57
I - Pentane	0.52
N - Pentane	0.43
Hexanes	0.54
Heptanes plus	0.10
TOTAL	100.00
Molecular weight	24.263
Gravity (Air=1)	0.837
Molecular weight of neptanes plus	101.6

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WELL : WANCOOCHA 2

TABLE 25

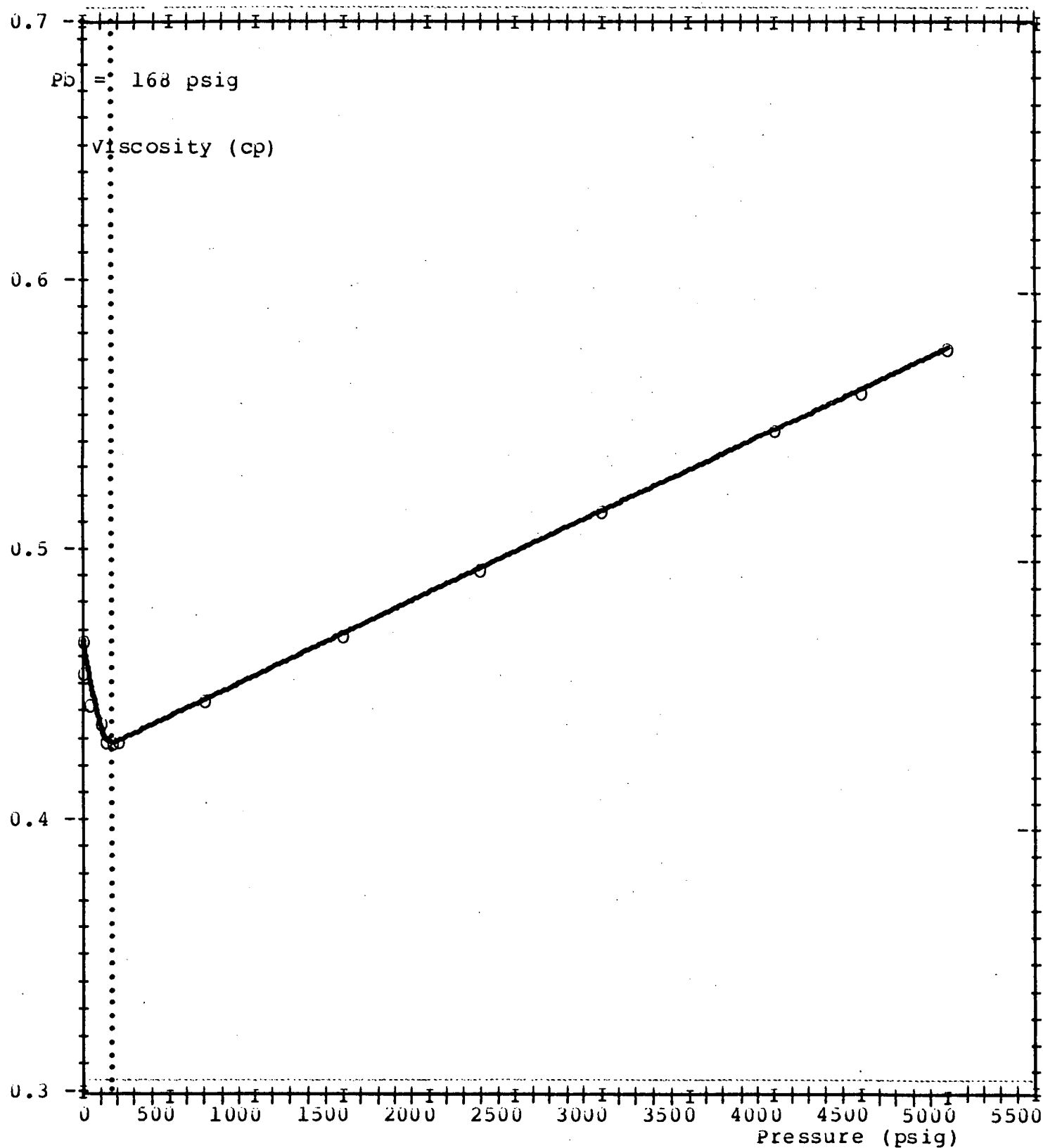
VISCOSITY OF RESERVOIR FLUID AT 214 F

Pressure (psig)	Viscosity (centipoises)
5000	0.58
4500	0.56
4000	0.54
3000	0.51
Pi= 2300	0.49
1500	0.47
700	0.44
209	0.43
Pb= 168	0.43
137	0.43
102	0.44
33	0.45
0	0.46
0	0.47

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WELL : WANCOOCHA 2

VISCOSITY OF RESERVOIR FLUID AT 214 F



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2

VISCOSITY OF RESERVOIR FLUID AT 214 F1. For $P_b \leq P \leq 5000$

$$\text{no (centipoises)} = a \cdot P + b$$

where:

$$\begin{aligned} P_b &= 168 \text{ psig} \\ a &= 3.04347826087E-05 \\ b &= 4.22695652174E-01 \end{aligned}$$

2. For $0 \leq P \leq P_b$

$$\text{no (centipoises)} = a + b \cdot x^i + c \cdot x^j + d \cdot x^k$$

where:

$$\begin{aligned} P_b &= 168 \text{ psig} \\ a &= 4.70000000000E-01 \\ b &= -1.00458289167E-01 \\ c &= 5.44308220722E-02 \\ d &= 4.02746709368E-03 \end{aligned}$$

$$\begin{aligned} x &= P/P_b \\ i &= 1.1 \\ j &= 1.5 \\ k &= 3 \end{aligned}$$

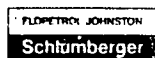
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WELL : WANCOOCHA 2

NOMENCLATURE

P	:	Pressure
V	:	Volume
T	:	Temperature
Pi	:	Initial static pressure
Pb	:	Bubble point pressure
Pd	:	Dew point pressure
$V_r = V/V_{Pb}$	:	Relative volume (oil reservoir fluid)
$V_r = V/V_{Pd}$	:	Relative volume (gas reservoir fluid)
$c = - \frac{1}{V} \frac{dV}{dP}$	:	Compressibility factor of reservoir fluid
$\alpha = \frac{1}{V} \frac{dV}{dT}$	:	Thermal expansion of reservoir fluid
$\gamma = \frac{P_{D/P-1}}{V_r-1}$	:	Dimensionless compressibility function
Bo	:	Oil formation volume factor
Rs	:	Solution gas oil ratio
Z	:	Gas compressibility factor or gas deviation factor
Bg	:	Gas formation volume factor
do	:	Reservoir oil density
Go	:	Residual oil gravity
G	:	Gas gravity (Air=1)
sto	:	Stock tank oil
GOR	:	Gas oil ratio
GLR	:	Gas liquid ratio
WOR	:	Water liquid ratio
Shrinkage factor	:	<u>Oil volume at standard conditions</u> <u>Oil volume at separator conditions</u>
$Z = \frac{PV}{nRT}$	:	n=total moles of a mixture in the gas state R=Universal gas constant (per mole)
GPM	:	Gallons per thousand standard cubic feet
Standard conditions	:	For gas volumes =60 F and 14.7 psia For oil measurements=60 F and atmospheric pressure

Gross heat content is calculated from API research project 44
 Molecular weights, densities, critical values are from CRC Handbook of
 chemistry and physics
 Gas viscosity is calculated with equations from Standing (Behavior
 of oil field hydrocarbon systems)



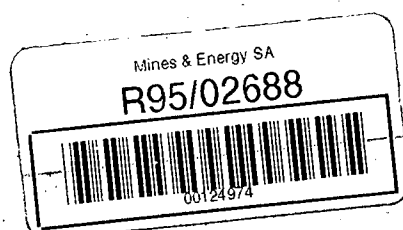
P.V.T. STUDY REPORT

Client: DELHI PETROLEUM PTY LTD
Field : WANCOOCHA 2 Well : WANCOOCHA 2 POH
Zone : PATCHAWARRA Samp. date: 13/01/85

Report #: 85ADL006 Date: MARCH 1985

ADELAIDE LABORATORY

OK



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

INDEX

- ☒ ANNEX 1: SAMPLING CONDITIONS AND SAMPLE(S) VALIDITY
- ☐ ANNEX 2: MOLECULAR COMPOSITION OF FIELD SEPARATOR GAS(ES)
- ☐ ANNEX 3: RECOMBINATION OF SEPARATOR SAMPLES
- ☒ ANNEX 4: MOLECULAR COMPOSITION OF RESERVOIR FLUID(S)
- ☒ ANNEX 5: CONSTANT MASS STUDY
- ☒ ANNEX 6: DIFFERENTIAL VAPORIZATION
- ☒ ANNEX 7: SEPARATION TEST(S)
- ☒ ANNEX 8: VISCOSITY
- ☒ ANNEX 9: ADDITIONNAL ANALYSIS
- ☐ ANNEX 10:
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COMPANY : DELHI PETROLEUM PTY LTD
WELL : WANCOOCHA 2 PCH

NOTICE

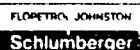
Curve Presentation

This report contains graphs of physical properties together with curves which are now drawn by computer program. These curves are empirical as the formulae used are not based on any theory, and are obtained using special Flopetrol computer programs. Except for saturation pressure determinations, equations are given on pages following each graph to enable easy and accurate interpolation using a calculator or a computer; generally extrapolation is not advisable as the Flopetrol software is based only on the experimental range of measurements.

Although in most cases less significant figures can be used for parameters, we advise a validity check against experimental points when using less than the eleven significant figures given.

Clearly, properties can be calculated in this fashion to high precision, but cannot be more accurate than the original experimental measurements.

Parameters are given in E-format, where, for example:
 $b = -3.76908251347E-02$ means $b = -0.037690851347$.



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

TABLE 1

SAMPLING CONDITIONSI. RESERVOIR-AND WELL CHARACTERISTICS

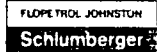
Producing zone	:	PATCHAWARRA
Static pressure	:	2563 psig at 5730' KB
Bottom hole temperature	:	223 F
Tubing diameter	:	2 7/8"
Casing size	:	7"
Casing shoe	:	5969' KB

II. SAMPLING CONDITIONSA) SURFACE SAMPLE(S)

Date	:	-
Choke	:	-
Flowing bottom hole pressure	:	-
Well head pressure	:	-
Separator pressure	:	-
Well head temperature	:	-
Separator temperature	:	-
Gas rate (Separator)	:	-
Stock tank temperature	:	-
Compressibility factor	:	-
Gas gravity	:	-
Liquid rate (Separator)	:	-
G.L.R.	:	-
Sample(s) received	:	gas - - liq.- -

B) BOTTOM-HOLE-SAMPLE(S)

Date	:	13/01/85
Choke	:	-
Sample(s) received	:	80291/187 15089/12



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

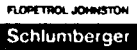
SAMPLE(S) - VALIDITYBOTTOM-HOLE SAMPLE(S)

1) Sample bottle No 80291/187

Bubble point pressure determination at 226 F is 2450 psig

2) Sample bottle No 15089/12

Bubble point pressure determination at 226 F is 2443 psig



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

SUMMARY-AND-MAIN-RESULTS

The present report gives the experimental results of the P.V.T. study carried out on bottom hole sample(s) from well WANCOOCHA 2 PCH

The initial reservoir conditions are :

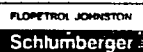
- Pi : 2563 psig at 5730' KB
- T : 223 F

Bubble point pressure determined on sample which was selected for complete P.V.T. study is :

- Pb : 2450 psig at 226 F

Main differential vaporization data at reservoir temperature :

	Pi	Pb
oil volume factor (bbl/Std bbl)	-----	1.555
solution gas-oil ratio (Std cu ft/bbl)	-----	892
reservoir fluid viscosity (centipoises)	-----	0.37
reservoir fluid density (g/cm3)	-----	0.660
Residual oil gravity	0.817	60/60 F
	41.7	API



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WELL : WANCOOCHA 2 PCH

TABLE 2

BUBBLE POINT PRESSURE-DETERMINATION-AT-226-F

Bottom hole sample (Cylinder 80291/187)

Pressure (psig)	Pump reading (cm3)
5000	258.82
4000	256.56
3500	255.22
3000	253.82
2500	252.30
Pb= 2450	252.18
2430	251.48
2398	250.45
2322	248.09
2216	244.70
2003	236.28

This sample has been used for complete PVT study

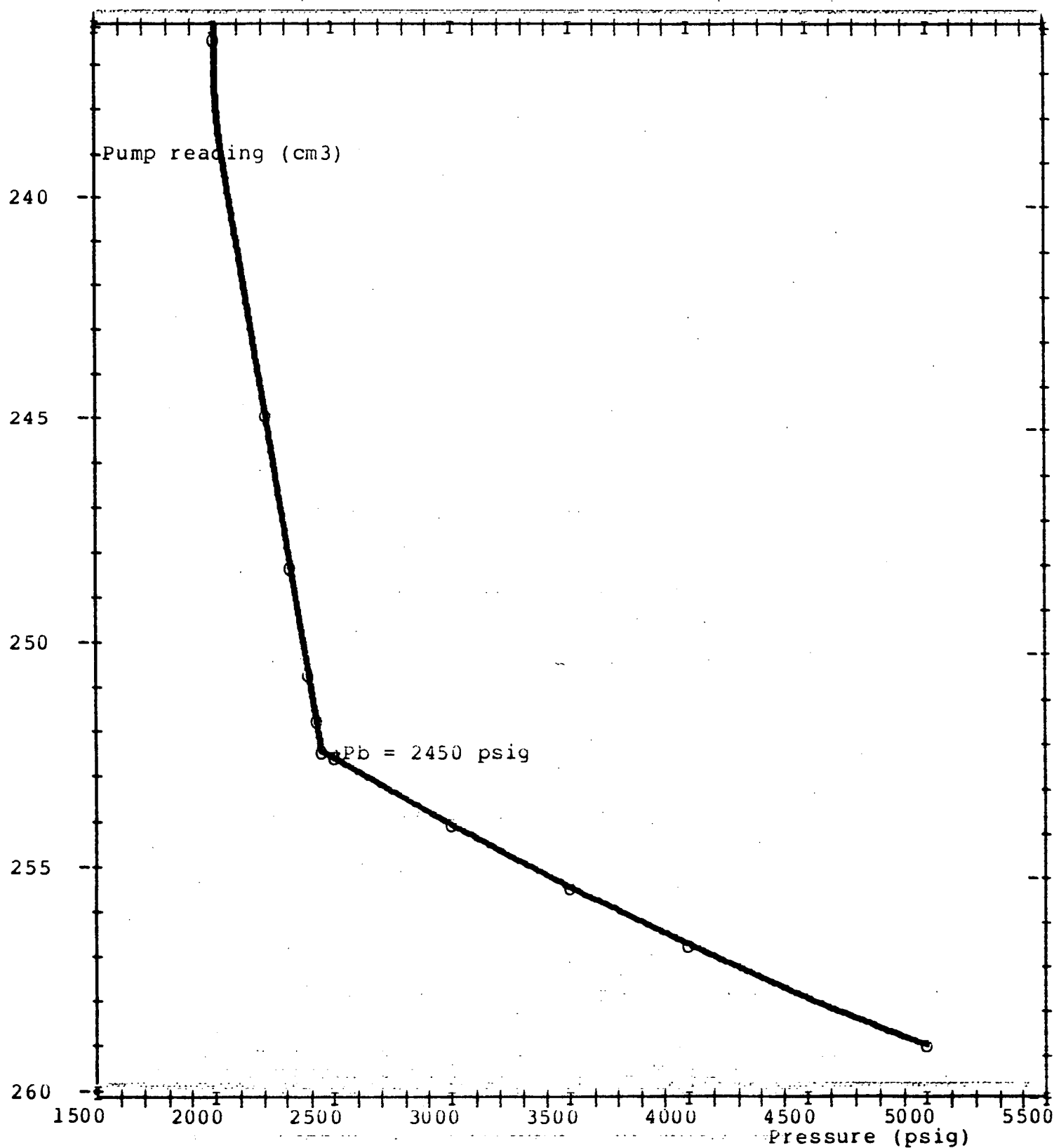
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BUBBLE POINT PRESSURE DETERMINATION AT 226 °F

Bottom hole sample (cylinder 80291/187)



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TABLE 3

BUBBLE-POINT PRESSURE DETERMINATION AT 226 F

Bottom hole sample (Cylinder 15089/12)

Pressure (psig)	Pump reading (cm3)
5000	277.47
4000	274.84
3500	273.51
3000	272.12
2500	270.58
Pb= 2443	270.38
2402	269.21
2353	267.80
2292	266.80
2202	263.10
2082	258.14

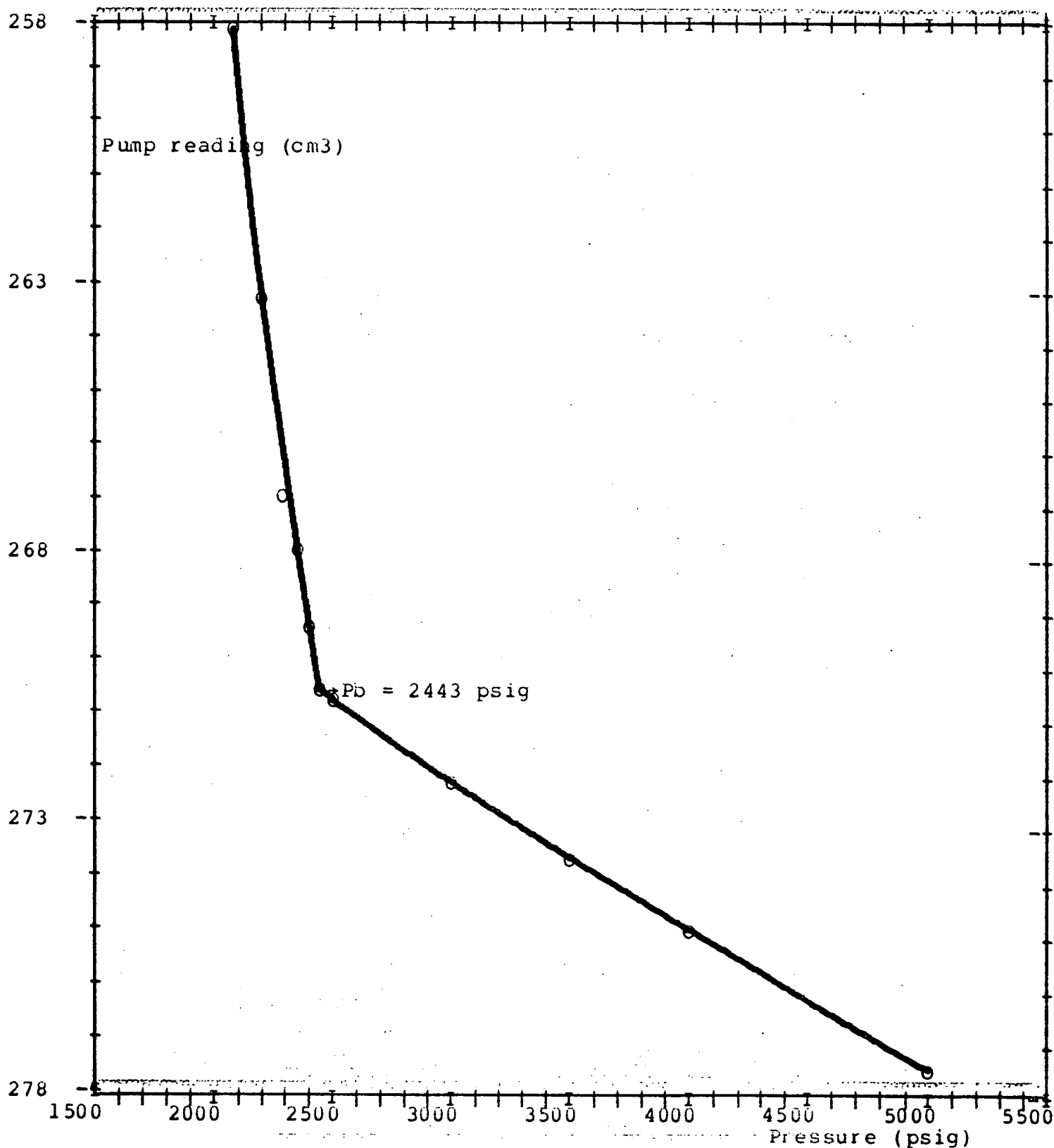
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WELL : WANCOOCHA 2 PCH

BUBBLE POINT PRESSURE DETERMINATION AT 226 F

Bottom hole sample (cylinder 15089/12)



WELL: WANCOOCHA 2

MOLECULAR COMPOSITION OF LIBERATED GASES

FROM FLASH TO STOCK TANK CONDITIONS

Bottle No.	80-291/187	Mole percent 15089/12
COMPONENTS		
Nitrogen	1.49	1.41
Carbon Dioxide	1.62	1.57
<u>Hydrocarbons</u>		
Methane	44.92	44.92
Ethane	20.26	20.11
Propane	17.19	16.95
I-Butane	3.07	3.08
N-Butane	6.63	6.76
I-Pentane	1.94	2.10
N-Pentane	2.07	2.26
Hexanes	0.67	0.69
Heptanes plus	0.14	0.15
TOTAL	100.00	100.00
Molecular Weight	31.261	31.427
Gravity (Air = 1)	1.079	1.084
Molecular Weight of Heptanes plus	102.2	102.1

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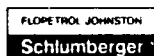
WELL : WANCOOCHA 2 PCH

TABLE 4

MOLECULAR COMPOSITION OF STOCK TANK OIL

Components	Mole percent
Nitrogen	0.00
Carbon dioxide	0.00
<u>Hydrocarbons:</u>	
Methane	0.00
Ethane	0.06
Propane	0.31
I - Butane	0.15
N - Butane	0.48
I - Pentane	0.42
N - Pentane	0.65
Hexanes	1.55
Heptanes	3.87
Octanes	11.08
Nonanes	11.20
Decanes	7.52
Undecanes	2.39
Dodecanes	3.77
Tridecanes	6.34
Tetradecanes	5.45
Pentadecanes	4.09
Hexadecanes	3.73
Heptadecanes	3.48
Octadecanes	1.41
Nonadecanes	2.21
Eicosanes plus	29.84
TOTAL	100.00

Molecular weight of stock tank liquid : 232
 Molecular weight of Eicosanes plus in sto : 402
 Gravity of Eicosanes plus in sto : 0.845 (60/60 F)



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

TABLE 5

MOLECULAR COMPOSITION OF RESERVOIR FLUID

Components	Mole percent
Nitrogen	0.99
Carbon dioxide	1.08
<u>Hydrocarbons:</u>	
Methane	29.92
Ethane	13.51
Propane	11.55
I - Butane	2.09
N - Butane	4.58
I - Pentane	1.43
N - Pentane	1.59
Hexanes	0.97
Heptanes	1.37
Octanes	3.71
Nonanes	3.74
Decanes	2.51
Undecanes	0.80
Dodecanes	1.26
Tridecanes	2.12
Tetradecanes	1.82
Pentadecanes	1.37
Hexadecanes	1.25
Heptadecanes	1.16
Octadecanes	0.47
Nonadecanes	0.74
Eicosanes plus	9.97
TOTAL	100.00

Molecular weight of reservoir fluid : 98.2

Molecular weight of Eicosanes plus in reservoir fluid : 402

Gravity of Eicosanes plus in sto : 0.845 (60/60 F)

This composition was calculated from separation at 0 psig and 226 F
 Oil P.V.T. Software Version 2.1.00 85ADL006



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

TABLE 6

*is flash expansion*BUBBLE-POINT-PRESSURE-DETERMINATION-AND-CONSTANT-MASS-STUDY-AT-226-F

Pressure (psig)	Relative volume V/VPb	Compressibility factor (psi-l)	Y curve Pb/P-1 V/VPb-1
5000	0.9598		
		14.71 x 10 ⁻⁶	
4500	0.9669		
		15.02 x 10 ⁻⁶	
4000	0.9742		
		15.48 x 10 ⁻⁶	
3500	0.9817		
		16.26 x 10 ⁻⁶	
3000	0.9897		
		17.98 x 10 ⁻⁶	
2565	0.9974		
		22.51 x 10 ⁻⁶	
Pb= 2450	1.0000		
2405	1.0072		2.61
2370	1.0130		2.60
2330	1.0200		2.58
2237	1.0377		2.53
2072	1.0746		2.45
1829	1.1461		2.32
1583	1.2489		2.20
1338	1.4000		2.08
1123	1.5999		1.97
965	1.8140		1.89

Thermal expansion factor of reservoir fluid at 5000 psig

between 70 F and 226 F : = 0.660 x 10⁻³ F⁻¹

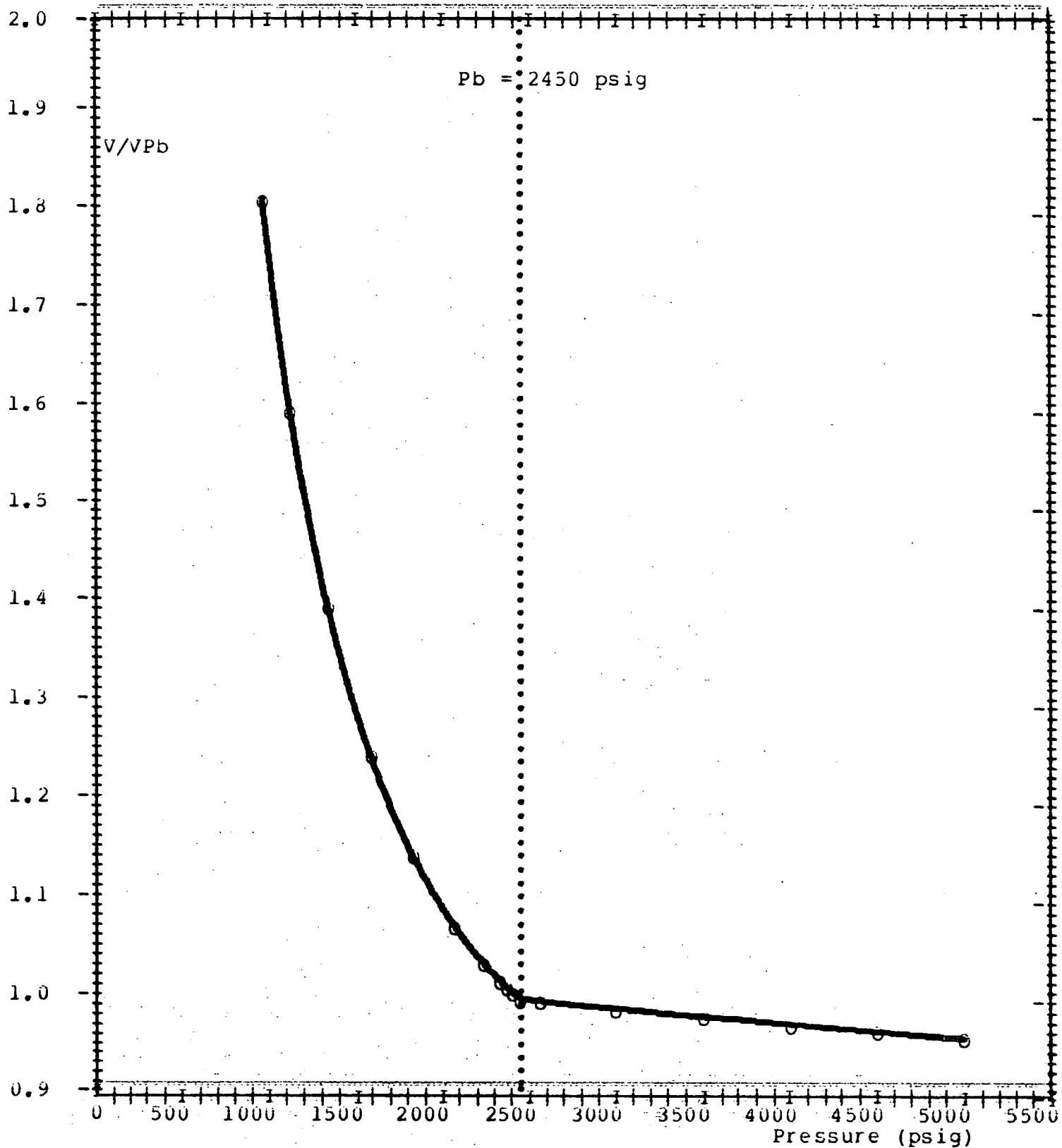
FLOPETROL JOHNSON
Schlumberger

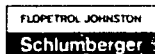
COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

BUBBLE POINT PRESSURE DETERMINATION AND CONSTANT MASS STUDY AT 226 F

Relative volume





COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

BUBBLE POINT PRESSURE DETERMINATION AND CONSTANT MASS STUDY AT 226 F

Relative Volume

1. For $P_b < P \leq 5000$

$$V_r = 1 - 10^{(a \cdot \log(P - P_b) + b)}$$

where:

$$\begin{aligned} P_b &= 2450 \text{ psig} \\ a &= 8.85642822063E-01 \\ b &= -4.41317402945E 00 \end{aligned}$$

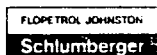
2. For $965 \leq P < P_b$

$$V_r = 1 + (1 - x) / (x \cdot (a \cdot x + b))$$

where:

$$\begin{aligned} P_b &= 2450 \text{ psig} \\ a &= 1.22872815752E 00 \\ b &= 1.40645444612E 00 \end{aligned}$$

$$x = P / P_b$$

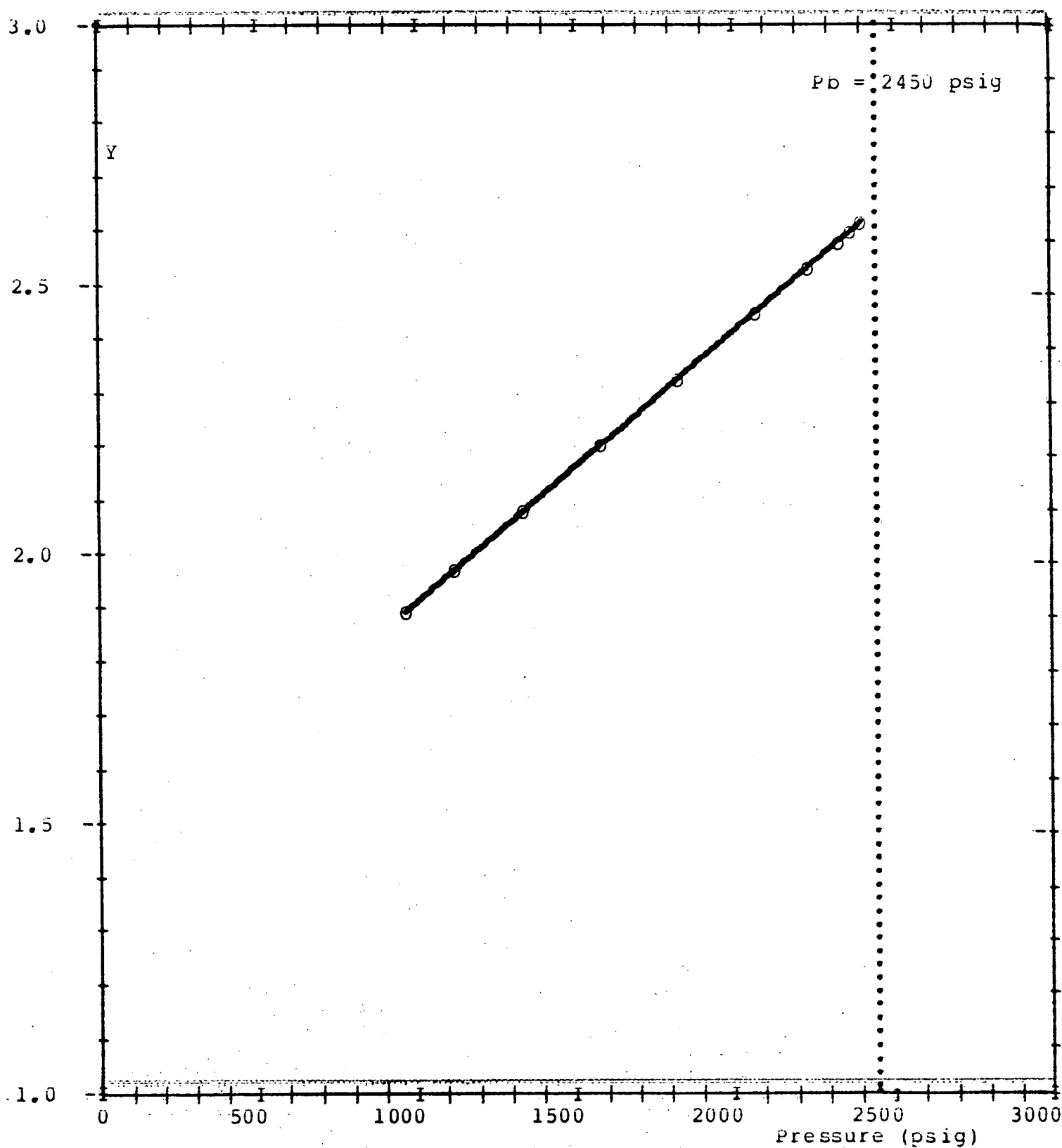


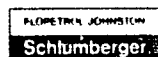
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BUBBLE POINT PRESSURE DETERMINATION AND CONSTANT MASS STUDY AT 226 F

Y curve pressure-volume function





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BUBBLE POINT PRESSURE DETERMINATION AND CONSTANT MASS STUDY AT 226 F

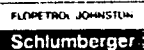
Y curve pressure-volume function

For $965 \leq P < P_b$

$$Y = a \cdot P + b$$

where:

$P_b = 2450$ psig
 $a = 5.01521696945E-04$
 $b = 1.40645444612E 00$



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WELL : WANCOOCHA 2 PCH

TABLE 7

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

Pressure (psig)	Oil volume factor Bo (bbl/Std bbl)	Solution gas-oil ratio Rs (Std cu ft/Std bbl)	Gas volume factor Bg (cu ft/Std cu ft)	Reservoir oil density (g/cm ³)
5000	1.493			0.688
4500	1.504			0.683
4000	1.514			0.678
3500	1.526			0.673
3000	1.539			0.667
2565	1.551			0.662
Pb= 2450	1.555	892		0.660
2055	1.472	746	0.80 x 10 ⁻²	0.680
1637	1.398	612	1.00 x 10 ⁻²	0.699
1254	1.341	501	1.31 x 10 ⁻²	0.713
844	1.279	382	1.94 x 10 ⁻²	0.729
444	1.210	257	3.93 x 10 ⁻²	0.748
1	1.013	0	-----	0.806

Residual oil gravity : 0.817 60/60 F
41.7 API



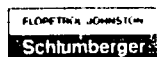
COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCÓOCHA 2 PCH

TABLE 8

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 °F.

Pressure (psig)	Gas viscosity (centipoises)	Gas gravity (Air=1)	compressibility factor Z
2055	0.0218	0.826	0.851
1637	0.0187	0.834	0.853
1254	0.0159	0.851	0.862
844	0.0131	0.904	0.884
444	0.0100	1.017	0.930
0	0.0053	1.559	1.000

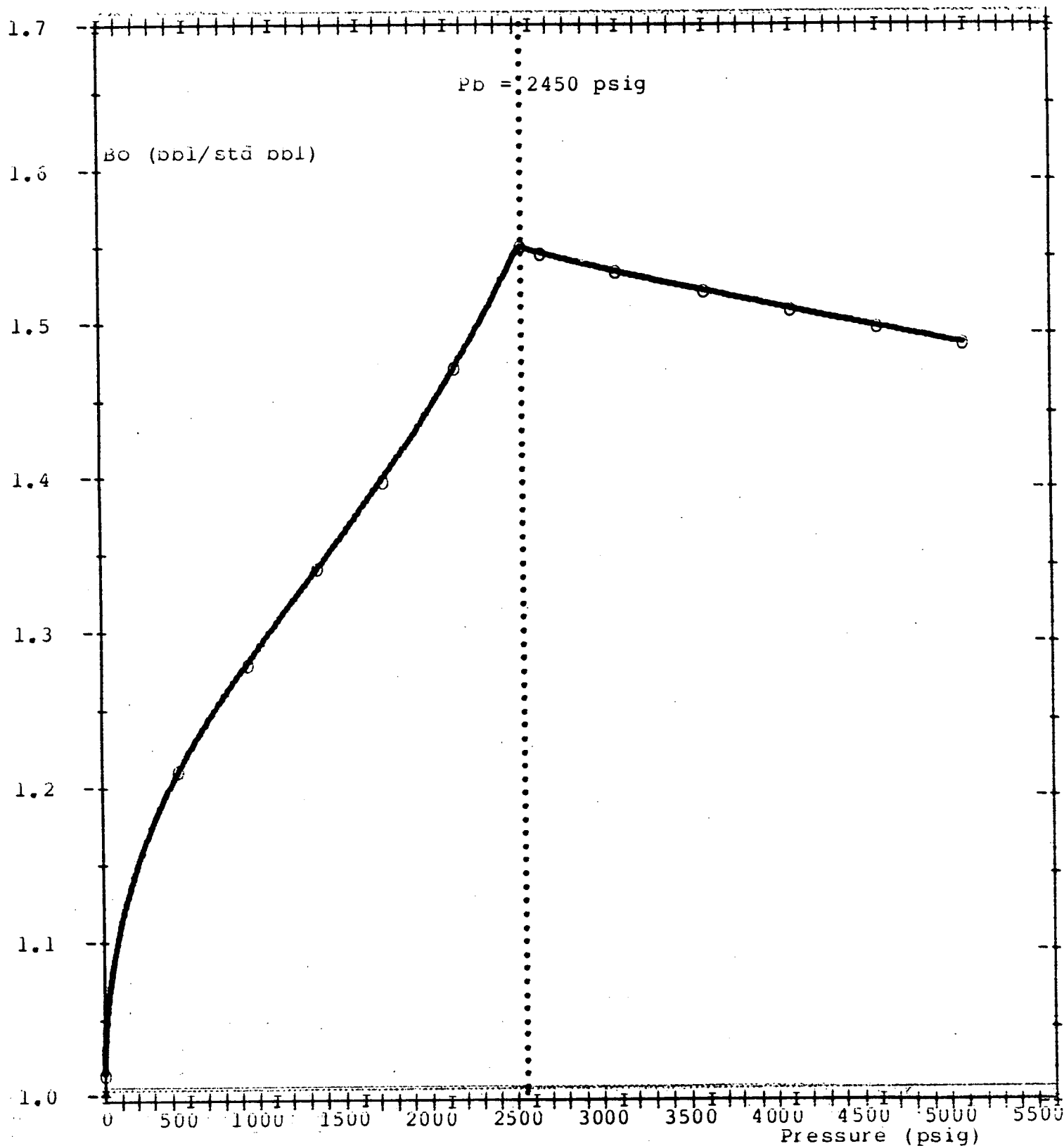


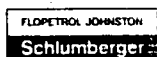
COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

Oil volume factor





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WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F.

Oil volume factor

1. For $P_b < P \leq 5000$

$$B_o \text{ (bbl/Std bbl)} = a - 10(d \cdot \log(P - P_b) + c)$$

where:

$P_b = 2450 \text{ psig}$
 $a = 1.55534320091E-00$
 $d = 8.85642822053E-01$
 $c = -4.22134779440E-00$

 $x = P/P_b$ 2. For $0 \leq P \leq P_b$

$$B_o \text{ (bbl/Std bbl)} = a + b \cdot x^i + c \cdot x^j + d \cdot x^k$$

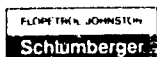
where:

$P_b = 2450 \text{ psig}$
 $a = 9.99617524750E-01$
 $b = 4.56987468898E-01$
 $c = -4.58083896596E-02$
 $d = 1.44546596919E-01$

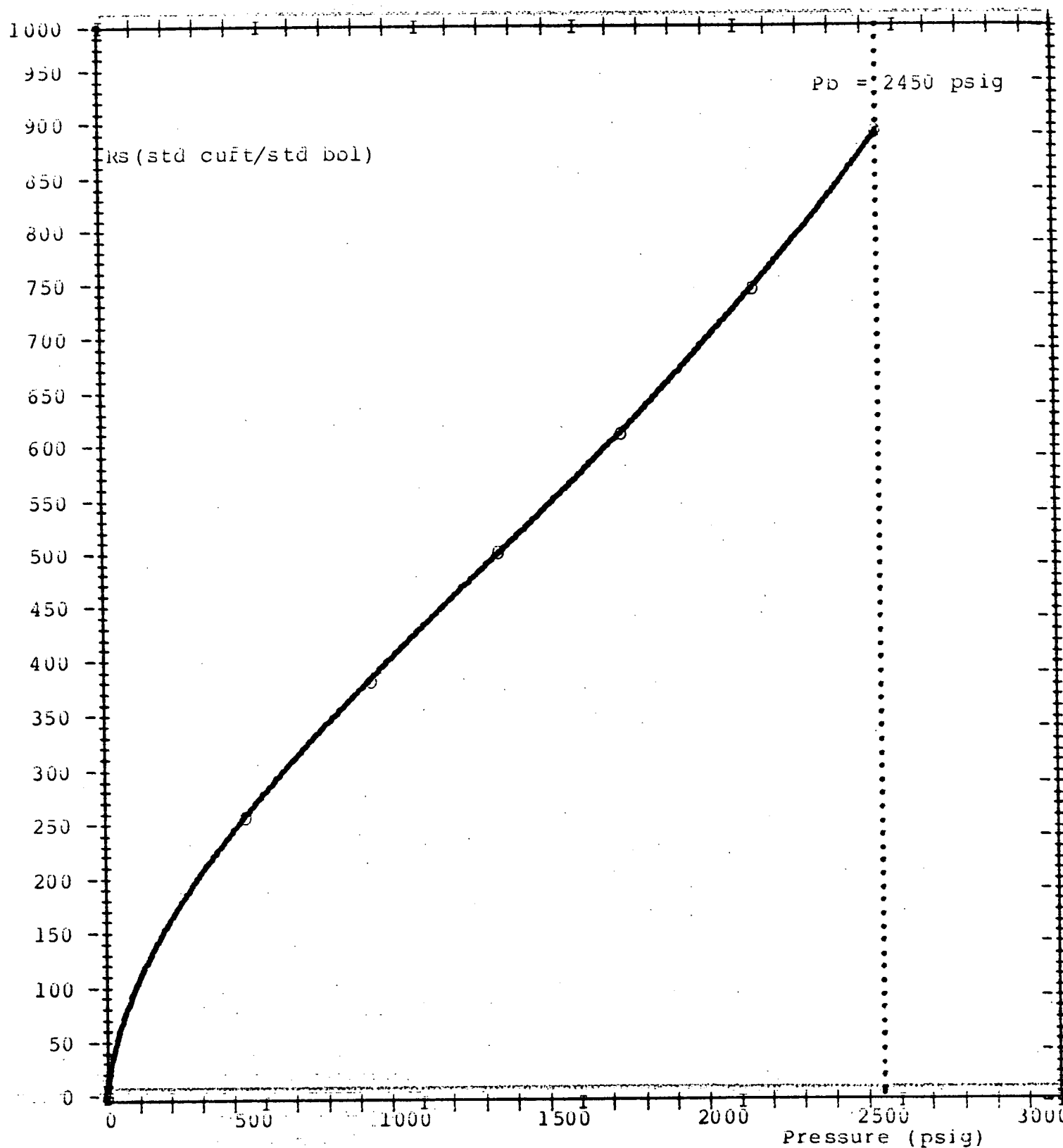
$x = P/P_b$
 $i = 0.4$
 $j = 1.5$
 $k = 3$

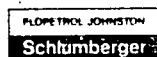
COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL-VAPORIZATION-OF-RESERVOIR-FLUID-AT-226°F

Solution gas oil ratio





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WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

Solution gas oil ratio

For $0 \leq P \leq P_b$

$$R_s \text{ (std cuft/std bbl)} = a \cdot x^i + b \cdot x^j + c \cdot x^k$$

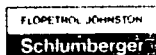
where:

$P_b = 2450 \text{ psig}$
 $a = 7.58794596128E \ 02$
 $b = -5.16536245143E \ 01$
 $c = 1.92002493737E \ 02$

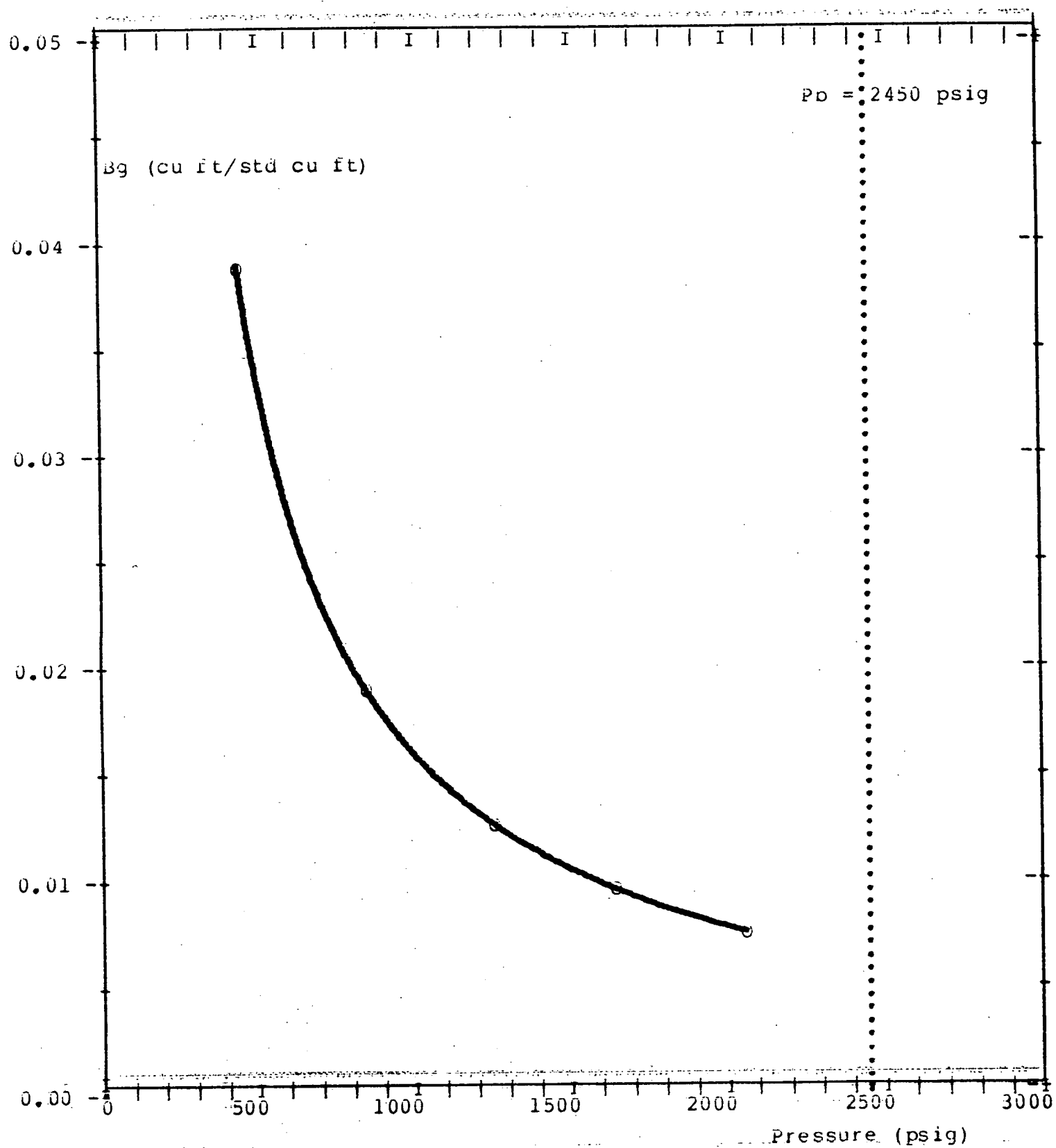
$x = P/P_b$
 $i = 0.6$
 $j = 1.0$
 $k = 3$

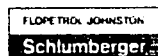
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WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

Gas volume factor





COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

Gas volume factor

For 444 <= P <= 2055

$$Bg \text{ (cuft/std cuft)} = (a*x^2+b*x+c)/(d*x+1)$$

where:

Pb = 2450 psig
a = 3.84536826745E-02
b = -6.93029560911E-02
c = -1.38230174148E-01
d = -2.64954348991E 01

$$x = P/Pb$$

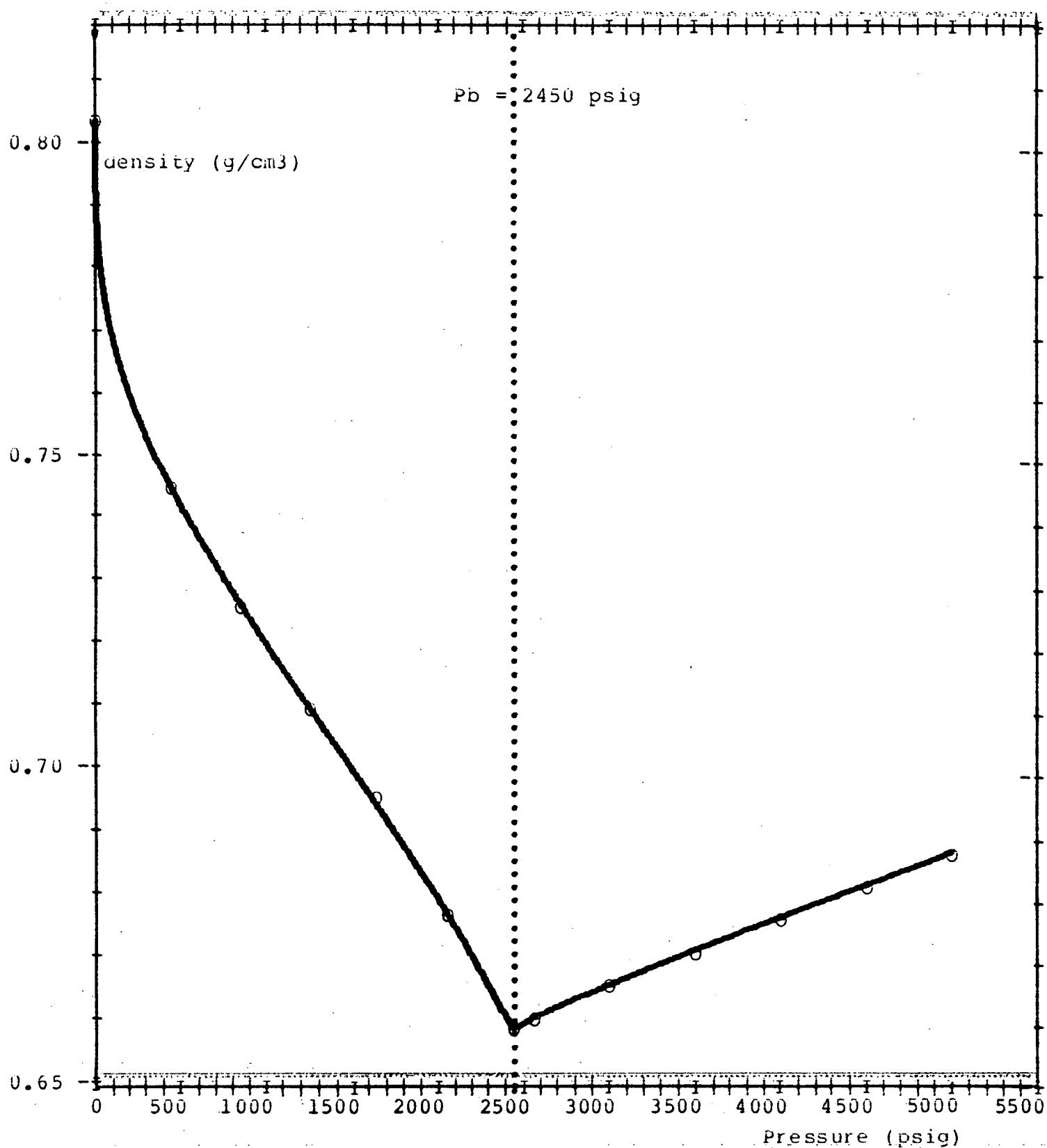
FLOPETROL JOHNSTON
Schlumberger

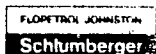
COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F.

Reservoir oil density





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WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

Reservoir oil density

1. For $P_b < P \leq 5000$

$$\rho_o \text{ (g/cm}^3\text{)} = 1 / (a - 10(b \cdot \log(P - P_b) + c))$$

where:

$P_b = 2450 \text{ psig}$
 $a = 1.51463237511E-00$
 $b = 8.85642822063E-01$
 $c = -4.23286679386E-00$

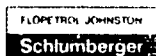
2. For $0 \leq P \leq P_b$

$$\rho_o \text{ (g/cm}^3\text{)} = a + b \cdot x^i + c \cdot x^j + d \cdot x^k$$

where:

$P_b = 2450 \text{ psig}$
 $a = 8.06331240000E-01$
 $b = -1.18107071866E-01$
 $c = -7.23828706905E-02$
 $d = -9.76481425563E-03$

$x = P/P_b$
 $i = 0.1$
 $j = 1.0$
 $k = 5$

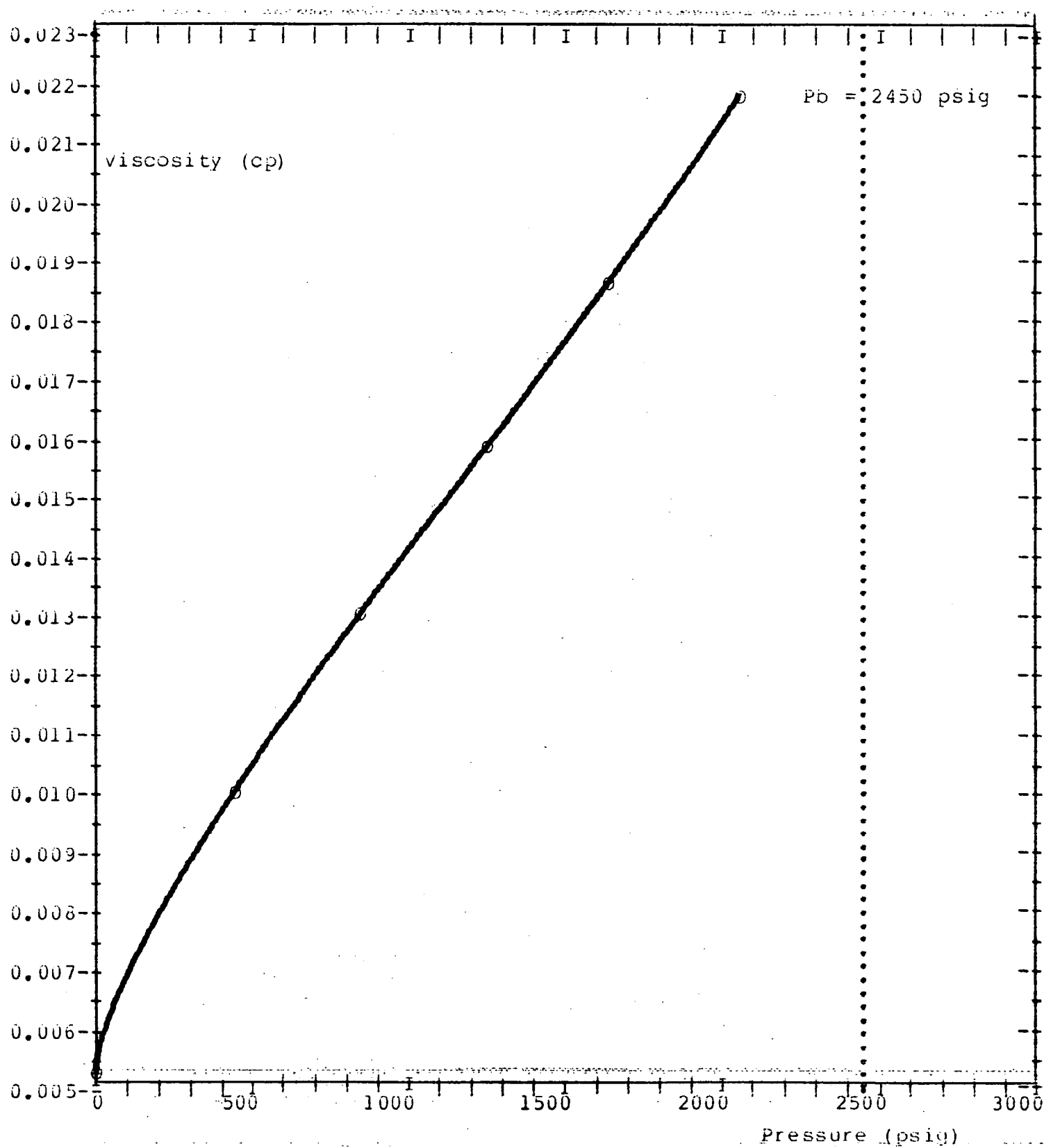


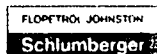
COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

liberated gas viscosity





COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

Liberated gas viscosity

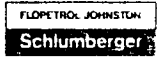
For $0 \leq P \leq 2055$

$$\eta_g \text{ (centipoises)} = a + b \cdot x^i + c \cdot x^j + d \cdot x^k$$

where:

$P_b = 2450 \text{ psig}$
 $a = 5.32592569944E-03$
 $b = 8.29938108405E-03$
 $c = 9.61379867029E-03$
 $d = 1.96878992346E-03$

$x = P/P_b$
 $i = 0.6$
 $j = 1.0$
 $k = 4$

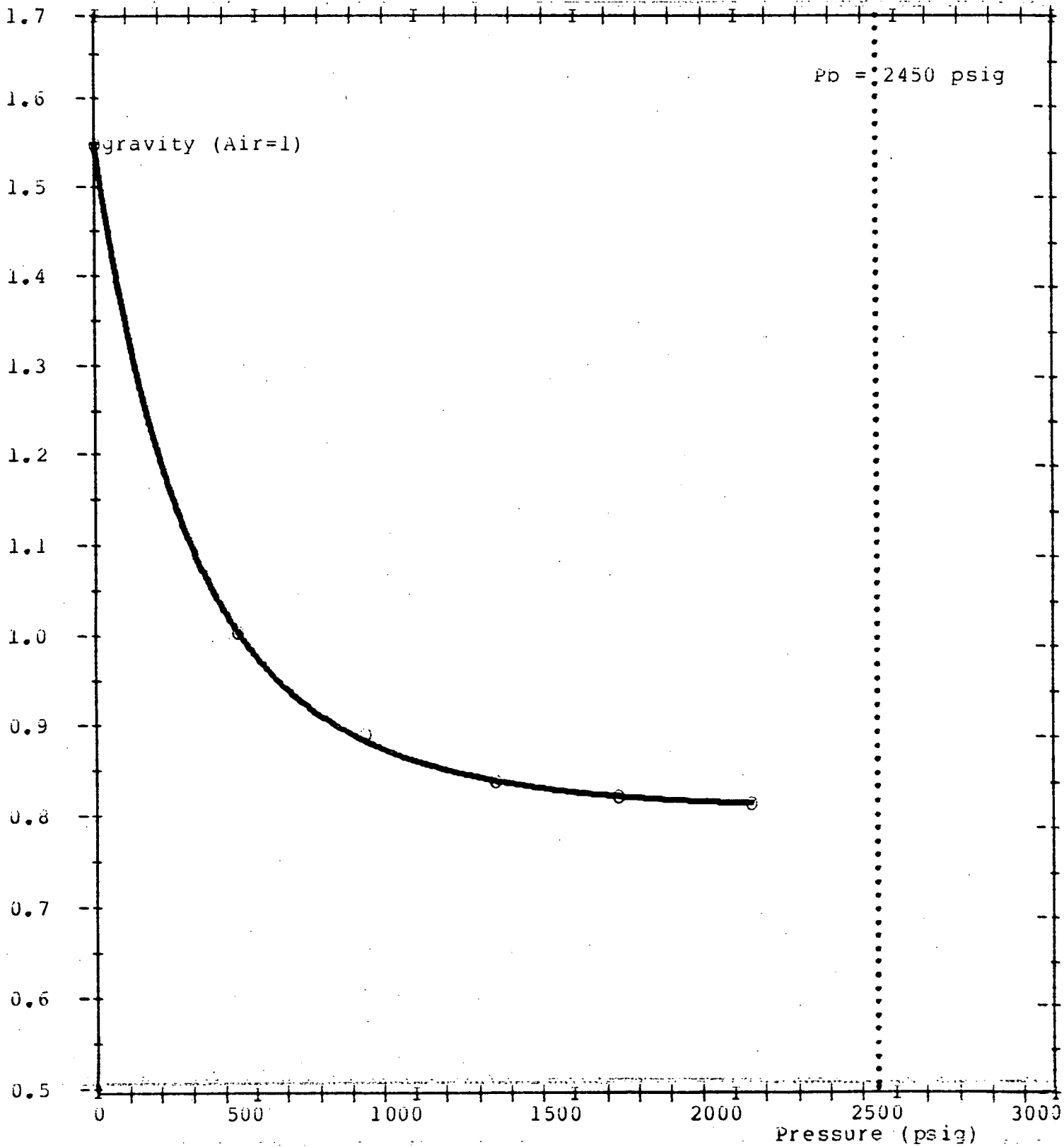


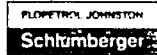
COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL-VAPORIZATION-OF-RESERVOIR-FLUID-AT-226-F-

Liberated gas gravity





COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

Liberated gas gravity

For $0 \leq P \leq 2055$

$$d_g (\text{air}=1) = (a \cdot x^2 + b \cdot x + c) / (d \cdot x^2 + e \cdot x + 1)$$

where:

$P_b = 2450 \text{ psig}$
 $a = 1.61208310940E 01$
 $b = 4.33608666943E 00$
 $c = 1.55926094893E 00$
 $d = 1.91589268540E 01$
 $e = 6.60231904839E 00$

$$x = P/P_b$$

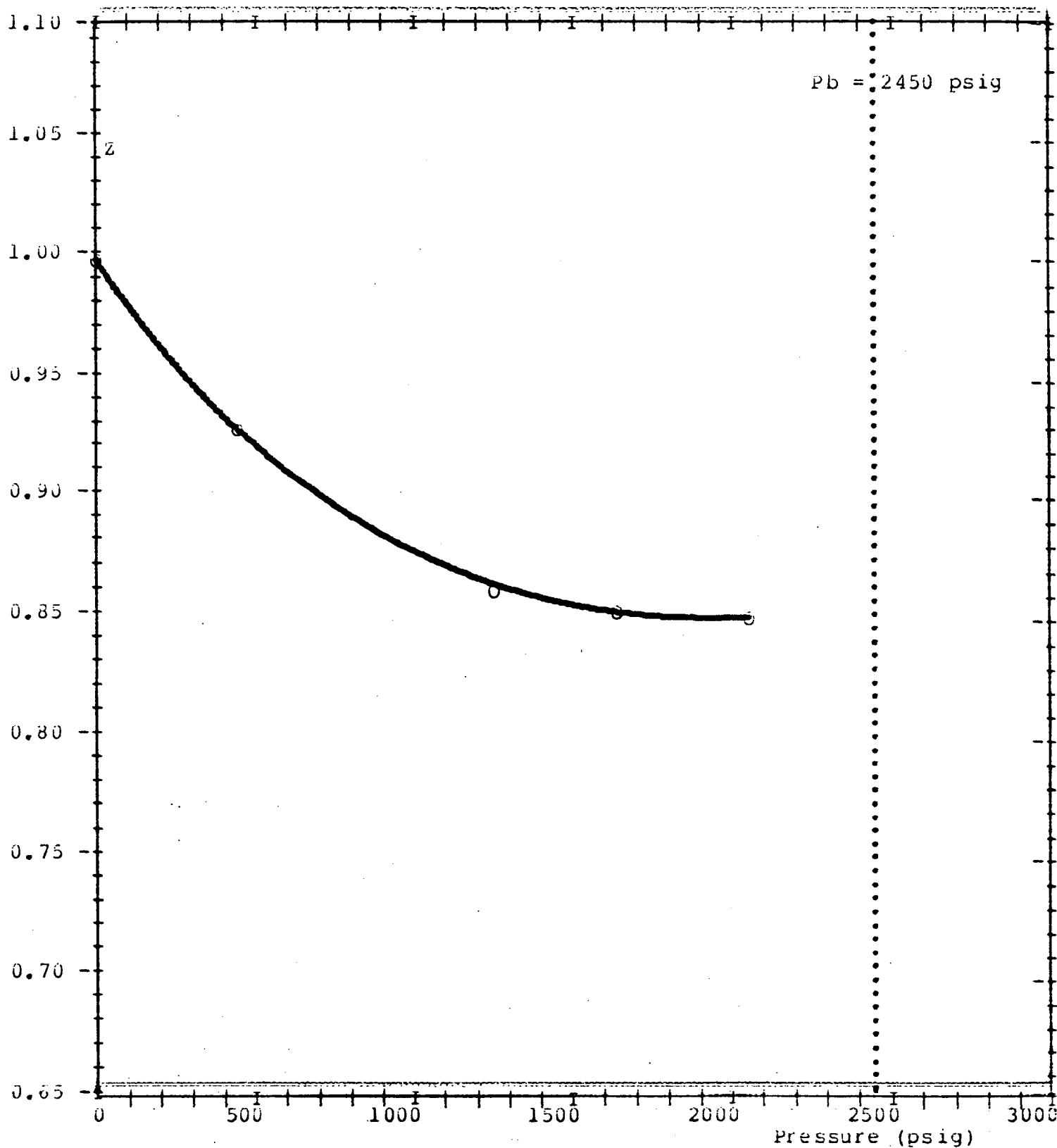
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Schlumberger

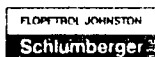
COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 °F

Compressibility factor Z





COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID AT 226 F

Compressibility factor Z

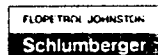
For $0 \leq P \leq 2055$

$$Z = (a*x^2 + b*x + c) / (d*x + 1)$$

where:

Pb = 2450 psig
a = 2.40253010740E-01
b = 1.76605692280E-01
c = 1.00000000000E 00
d = 6.53204174177E-01

$$x = P/Pb$$



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCN

TABLE 9

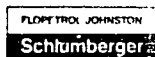
SEPARATION TEST OF RESERVOIR FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)			Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm ³)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
Pres. (psig)	Temp. (F)	Sep.	Tank	Total				
1500	122	139	-	-	-	0.759	0.812	-
150	122	492	-	-	-	0.806	0.966	-
0	67	-	91	722	1.450	-	0.969	0.806

(1) Gas volume at standard conditions per volume of stock tank oil at 60 F

(2) Volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F

(3) volume of stock tank oil at 60 F per volume of separator liquid at separator conditions



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

TABLE 10

SEPARATION TEST-OF-RESERVOIR FLUID

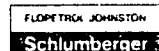
Molecular composition of liberated gases (mole percent)

Pressure (psig)	1500	150	0
Temperature (F)	122	122	67
Nitrogen	4.55	1.39	0.36
Carbon dioxide	1.72	1.94	1.06

Hydrocarbons:

Methane	72.66	51.87	14.29
Ethane	12.98	23.16	26.46
Propane	5.64	14.67	35.14
I - Butane	0.66	1.88	6.07
N - Butane	1.14	3.40	11.52
I - Pentane	0.24	0.69	2.37
N - Pentane	0.24	0.69	2.17
Hexanes	0.13	0.22	0.49
Heptanes plus	0.04	0.09	0.07

TOTAL	100.00	100.00	100.00
Molecular weight	21.623	27.344	40.306
Gravity (Air=1)	0.746	0.944	1.391
Molecular weight of neptanes plus	100.2	101.8	102.2



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

TABLE 11

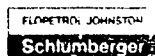
SEPARATION TEST OF RESERVOIR FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)			Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm3)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
Pres. (psig)	Temp. (F)	Sep.	Tank	Total				
1000	104	344	-	-	-	0.696	0.758	-
150	104	337	-	-	-	0.808	0.952	-
0	69	-	130	811	1.475	-	0.978	0.809

$$B_{o_i} = 1.475 \times 0.9974 =$$

(table 6)

- (1) Gas volume at standard conditions per volume of stock tank oil at 60 F
- (2) volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F
- (3) volume of stock tank oil at 60 F per volume of separator liquid at separator conditions



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

TABLE 12

SEPARATION TEST OF RESERVOIR FLUID

Molecular composition of liberated gases (mole percent)

Pressure (psig)	1000	150	0
Temperature (F)	104	104	69
Nitrogen	3.89	1.05	0.01
Carbon dioxide	1.79	2.08	0.98
<u>Hydrocarbons:</u>			
Methane	72.84	49.71	11.59
Ethane	13.73	26.00	27.78
Propane	5.57	15.27	36.81
I - Butane	0.60	1.75	6.25
N - Butane	1.04	2.96	11.61
I - Pentane	0.22	0.53	2.37
N - Pentane	0.23	0.49	2.10
Hexanes	0.08	0.12	0.43
Heptanes plus	0.01	0.04	0.07
TOTAL	100.00	100.00	100.00
Molecular weight	21.505	27.355	40.927
Gravity (Air=1)	0.742	0.944	1.412
Molecular weight of heptanes plus	102.2	103.7	102.2

FLOPETROL JOHNSTON
Schlumberger

COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

TABLE 13

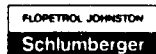
SEPARATION TEST OF RESERVOIR FLUID

Separator		Gas-oil ratio (1) (Std cu ft/std bbl)		Oil volume factor (2) (bbl/Std bbl)	Sep. liq. density (g/cm ³)	Shrinkage factor (3) (Std bbl/bbl)	sto gravity (60/60 F)
Pres. (psig)	Temp. (F)	Sep. Tank	Total				
0	226	-	934 934	1.567	-	1.000	0.815

(1) Gas volume at standard conditions per volume of stock tank oil at 60 F

(2) Volume of reservoir fluid at saturation pressure per volume of stock tank oil at 60 F

(3) Volume of stock tank oil at 60 F per volume of separator liquid at separator conditions



COMPANY : DELHI PETROLEUM PTY LTD

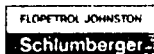
WELL : WANCOOCHA 2 PCH

TABLE 14

SEPARATION TEST OF RESERVOIR FLUID

Molecular composition of liberated gases (mole percent)

Pressure (psig)	0
Temperature (F)	226
Nitrogen	1.49
Carbon dioxide	1.62
<u>Hydrocarbons:</u>	
Methane	44.92
Ethane	20.26
Propane	17.19
I - Butane	3.07
N - Butane	6.63
I - Pentane	1.94
N - Pentane	2.07
Hexanes	0.67
Heptanes plus	0.14
TOTAL	100.00
Molecular weight	31.261
Gravity (Air=1)	1.079
Molecular weight of heptanes plus	102.2



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOSCHA 2 PCH

TABLE 15

VISCOSITY OF RESERVOIR FLUID AT 226 F

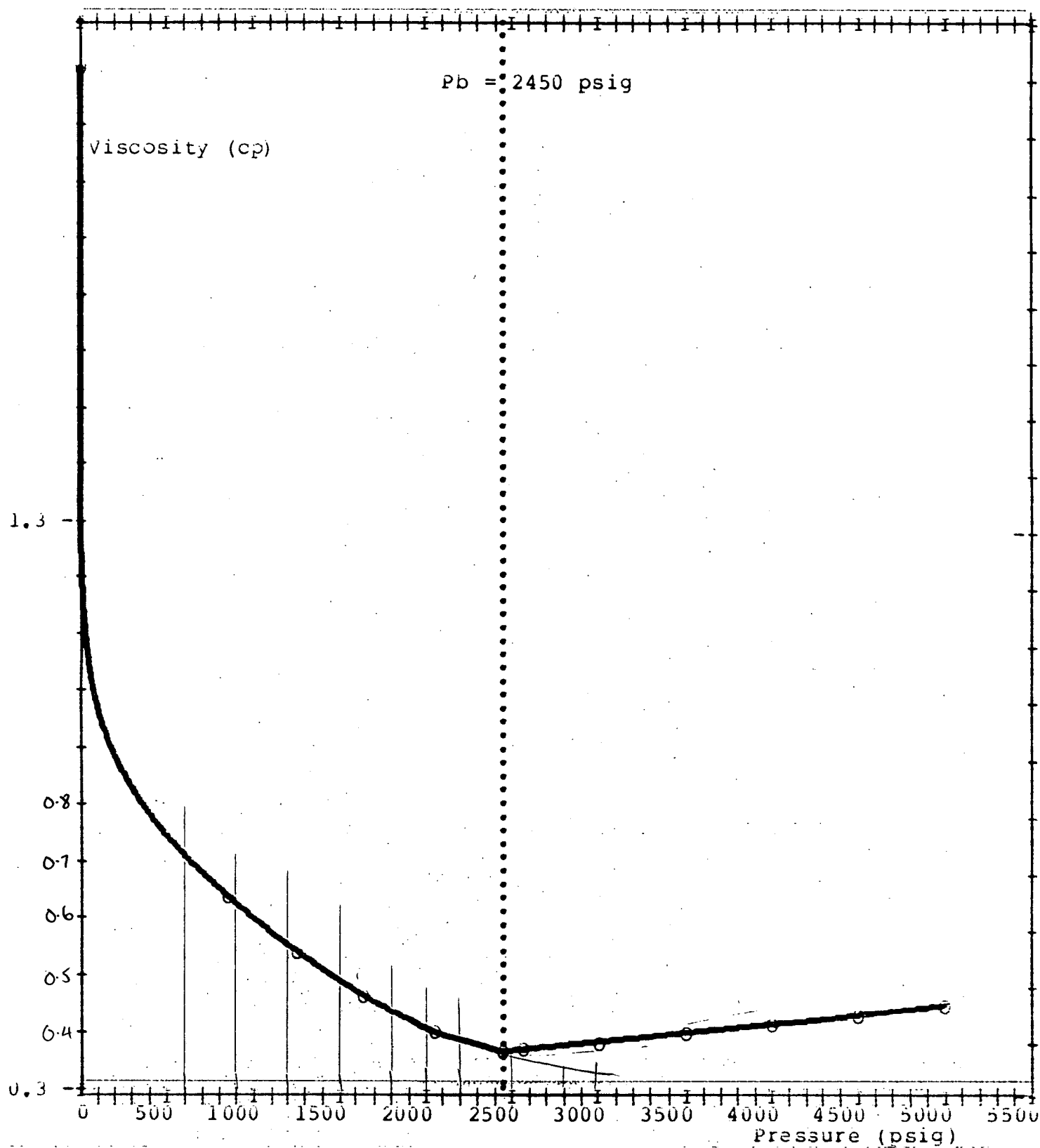
Pressure (psig)	Viscosity (centipoises)
5000	0.45
4500	0.43
4000	0.41
3500	0.40
3000	0.38
2565	0.37
Pb= 2450	0.37
2055	0.42
1637	0.48
1254	0.56
844	0.66
444	0.84
0	2.12

FLOPETROL JOHNSON
Schlumberger

COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

VISCOSITY OF RESERVOIR FLUID AT 226 F





COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

VISCOSITY OF RESERVOIR FLUID AT 226 F1. For $P_b \leq P \leq 5000$

$$\text{no (centipoises)} = a \cdot P + b$$

where:

$$\begin{aligned} P_b &= 2450 \text{ psig} \\ a &= 3.07317073171\text{E-}05 \\ b &= 2.89707317073\text{E-}01 \end{aligned}$$

2. For $0 \leq P \leq P_b$

$$\text{no (centipoises)} = a + b \cdot x^i + c \cdot x^j + d \cdot x^k$$

where:

$$\begin{aligned} P_b &= 2450 \text{ psig} \\ a &= 2.12000000000\text{E } 00 \\ b &= -1.55073802683\text{E } 00 \\ c &= -3.57514912602\text{E-}01 \\ d &= 1.53252939432\text{E-}01 \end{aligned}$$

$$\begin{aligned} x &= P/P_b \\ i &= 0.1 \\ j &= 1.5 \\ k &= 3 \end{aligned}$$

FLOPETROL JOHNSTON
Schlumberger

COMPANY: DELHI PETROLEUM PTY LTD

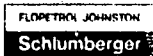
WELL : WANCOOCHA 2

SODIUM CHLORIDE DETERMINATION

Water recovered from Sample Bottle No. 22400/89

Salinity as Sodium Chloride (Mohr Method):

43360 ppm



COMPANY : DELHI PETROLEUM PTY LTD

WELL : WANCOOCHA 2 PCH

NOMENCLATURE

P	:	Pressure
V	:	Volume
T	:	Temperature
Pi	:	Initial static pressure
Pb	:	Bubble point pressure
Pd	:	Dew point pressure
$V_r = V/V_{Pd}$	:	Relative volume (oil reservoir fluid)
$V_r = V/V_{Pd}$	:	Relative volume (gas reservoir fluid)
$c = - \frac{1}{V} \frac{dV}{dP}$	:	Compressibility factor of reservoir fluid
$\alpha = \frac{1}{V} \frac{dV}{dT}$	:	Thermal expansion of reservoir fluid
$\gamma = \frac{P_b/P - 1}{V_r - 1}$	:	Dimensionless compressibility function
Bo	:	Oil formation volume factor
Rs	:	Solution gas oil ratio
Z	:	Gas compressibility factor or gas deviation factor
Bg	:	Gas formation volume factor
do	:	Reservoir oil density
Go	:	Residual oil gravity
G	:	Gas gravity (Air=1)
sto	:	Stock tank oil
GOR	:	Gas oil ratio
GLR	:	Gas liquid ratio
WOR	:	Water liquid ratio
Shrinkage factor	:	$\frac{\text{Oil volume at standard conditions}}{\text{Oil volume at separator conditions}}$
$Z = \frac{nPV}{nRT}$	:	n=Total moles of a mixture in the gas state R=Universal gas constant (per mole)
GPM	:	Gallons per thousand standard cubic feet
Standard conditions	:	For gas volumes = 60 F and 14.7 psia For oil measurements = 60 F and atmospheric pressure

Gross heat content is calculated from API research project 44.
Molecular weights, densities, critical values are from CRC Handbook of chemistry and physics
Gas viscosity is calculated with equations from Standing (Behavior of oil field hydrocarbon systems)

ENVELOPE 5739

TENEMENT: PELs 5 and 6, Murta Block; Eromanga and Cooper Basins

TENEMENT HOLDER: Delhi Petroleum Pty Ltd (operator), Santos Ltd, Vamgas Ltd, South Australian Oil and Gas Corp. Pty Ltd and Hartogen Energy Ltd

CONTENTS OF VOLUME ONE

REPORTS:	Gearhart Australia Pty Ltd, 1984. Wancoocha 2 separator DST [fluid flow measurement at surface] reports for open hole DSTs 2, 3, 6 and 7 (well production testing contractor's report for Delhi, 15/11/84).	MESA NO. 5739 R 1 Pgs 3-11
	Marty, P. and Koutrouzas, A., 1985. Results of laboratory analysis of an oil sample collected from the Patchawarra Formation reservoir on 21/1/85 (Amdel Ltd report no. F3341/85 for Delhi Petroleum, 13/3/85).	5739 R 2 Pgs 12-15
	Flopetrol-Johnston/Schlumberger, 1985. Report on a PVT study of reservoir fluid bottomhole samples taken from the Patchawarra Formation oil and gas reservoir on 13/1/85 (Adelaide Laboratory report no. 85ADL006, March 1985).	5739 R 3 Pgs 16-71
	Flopetrol-Johnston/Schlumberger, 1985. Report on a PVT study of reservoir fluid bottomhole samples taken from the Birkhead Formation oil reservoir on 7/2/85 (Adelaide Laboratory report no. 85ADL007, March 1985).	5739 R 4 Pgs 72-116

CONTENTS OF VOLUME TWO

REPORT:	Provias, D., 1985. Field operator's reservoir engineering interpretation report on the clean-up flow test and reservoir pressure buildup survey, plus results of the preliminary extended production test, of the Birkhead oil reservoir perforated interval 5102-5120 feet depth KB, conducted during February-May 1985 (16/5/85).	5739 R 5 Pgs 117-149
APPENDIX 1:	Method of calculating theoretical buildup curve for a steady-state reservoir.	Pgs 150-154
ATTACH 1:	Flow/buildup test raw data (Expertest Pty Ltd).	Pgs 155-177
ATTACH 2:	Extended production test raw data (Expertest Pty Ltd).	Pgs 178-228
REPORT:	Provias, D., 1985. Field operator's reservoir engineering interpretation report on the clean-up flow test and reservoir pressure buildup survey of the Patchawarra oil and gas reservoir perforated interval 5720-5739 feet depth KB, conducted over the period 15-30/1/85 (16/5/85).	5739 R 6 Pgs 229-259
ATTACH 1:	Flow/buildup test raw data (Expertest Pty Ltd).	Pgs 260-307

CONTENTS OF VOLUME THREE

REPORT:	Gearhart Australia Pty Ltd, 1985. Field maintenance contractor's results of the flowing bottomhole pressure and 26 hour reservoir pressure buildup surveys of the Birkhead producing zone, conducted over the period 20-22/6/85.	5739 R 7 Pgs 308-339
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FLOW & BUILDUP REPORT
AND
PRELIMINARY EXTENDED PRODUCTION

TEST RESULTS

BIRKHEAD - WANCOOCHA #2



Reported by: D. Provias
Date: May 16, 1985



INTRODUCTION

Wancoocha #2 was drilled to test the possibility of hydrocarbon accumulations in the post Permian section of the Wancoocha Dome. Commercial hydrocarbon accumulations were found in the Birkhead, Hutton and Patchawarra sands. Wancoocha #2 was completed as a Birkhead/Patchawarra oil producer.

This report evaluates data obtained from a flow/buildup test conducted February 2 to 6, 1985 in the Birkhead Formation. Reference is made to the initial results obtained from the extended flow test which commenced on February 9, 1985.

CONCLUSIONS AND RECOMMENDATIONS

1. A permeability of 717 md was calculated using conventional Horner analysis. This value is considered more representative than the DST value of 956 md.
2. An apparent skin of -3.1 was calculated indicating the zone is not damaged.
3. An average productivity index of 24.0 bbl/psi was calculated based on the drawdown portion of the flow/buildup test.
4. The reservoir pressure stabilized during the buildup to a value comparable with previously recorded pressures. The initial reservoir pressure is taken as 2506 psia at the midpoint of perforations, 5111' KB.
5. A constant pressure boundary was identified enclosing a 110 acre drainage area indicating pressure maintenance by natural water influx.
6. An initial offtake rate of 515 BFPD has been assigned for the extended production test to evaluate the level of pressure maintenance.
7. Extended production test data received to date indicates that some pressure maintenance is occurring and it is recommended to continue the test at this same rate of 515 BFPD to obtain additional data.
8. It is recommended to conduct further buildup testing in this well after the Birkhead pool has produced 10% of the original reserves.

WELL HISTORY

Wancoocha #2 was the first well to access Birkhead reserves in the Wancoocha field. Current mapping indicates the Birkhead pool area to be 498 acres and the estimated Oil-In-Place is 4.89 MMSTB. In addition to Birkhead reserves, the well also discovered commercial hydrocarbon reserves in the Patchawarra and the Hutton sands.

Wancoocha #2 was completed as a dual Birkhead/Patchawarra oil producer. A chronological well history is included as table 1. DST and log analysis results for the Birkhead zone are summarized in table 2 and 3. The DST and completion intervals are shown in figure 1. Bottomhole sampling has been conducted and the PVT data used in this report is summarized as table 4.

PRODUCTION HISTORY

Wancoocha #2 was perforated over the entire Birkhead sand from 5720' to 5739' KB and flowed at rates of 6720 BOPD for .75 hours after perforation.

The well was flowed to cleanup through the annulus at an average rate of 550 BOPD for 28 hours. Cleanup flow rates are plotted in figure 2.

The flow/buildup test was conducted from 2/2/85 to 6/2/85. The zone was produced for 72 hours through the tubing at an average rate of 542 BOPD and subsequently shut-in for a 20 hour buildup. Flow rates with corresponding bottomhole pressures are plotted in figure 3.

The zone was conditioned for bottomhole sampling over a 28 hour period at an average rate of 72 BOPD and is currently on extended production test as of 10/2/85.

All production data as mentioned above is summarized in table 5.

DISCUSSION

Tandem Amerada gauges were hung at a depth of 5155' KB. Expertest raw data for the flow period and bottomhole pressures recorded over the test are included as attachment #1. The raw data appears to be of good quality and the test was analysed using conventional Horner techniques.

A log-log plot of buildup data is included as figure 4. Wellbore storage effects are assumed to be negligible based on this plot.

The bottomhole pressures stabilized 4 hours into the buildup and remained constant at 2300.5 psig thereafter. This pressure is taken as the stabilized reservoir pressure.

A single slope was drawn through the transient data prior to the time of pressure stabilization. The Horner plot with semi-log straight line of slope 5.2 psi/cycle is shown in figure 5.

The actual producing time of the flow period was used to calculate Horner time. Horner data is presented in table 7.

FLOW TEST RESULTS - PRODUCTIVITY INDEX

The flow test results plotted with corresponding bottomhole pressures are shown in figure 3.

A productivity index was calculated using average data over the flow period as follows:

$$\begin{aligned} \text{PI} &= \frac{\text{ave. flow rate}}{\text{reservoir pressure} - \text{ave. flowing pressure}} \\ &= \frac{542}{2300.5 - 2277.9} \\ &= 24.0 \text{ BBL/psi} \end{aligned}$$

This excellent productivity index of 24 bbl/psi is comparable although lower than the value of 32.7 obtained from the DST analysis. Differences may be due to different testing intervals and accuracy of flow rates recorded during the DST.

RESERVOIR PROPERTIES

Based on the semi-log straight line of slope 5.2 psi/cycle and the reservoir/fluid data summarized in tables 3 and 4, the following properties have been calculated.

Flow Capacity: $kh = 9326$ md-ft
Permeability: $k = 717$ md
Skin: $S = -3.1$
Theoretical PI: $PI = 23.7$ BPD/psi

All calculations are presented in table 8.

The permeability calculated over the buildup period is comparable with DST calculated values. The DST results, as summarized in table 2, have been corrected using the most recent PVT data. Permeabilities have been presented using slope values for both straight line portions observed from analysis of the DST. Buildup results are in better agreement with the permeability generated from the second straight line portion of the DST analysis.

The theoretical PI calculated using the buildup kh value is in excellent agreement with the actual value of 24.0 BPD/psi observed over the flow portion of this test.

Based on these comparisons the buildup derived reservoir properties are assumed representative of the reservoir.

RESERVOIR PRESSURE

As previously mentioned the bottomhole pressure during the buildup portion of this test stabilized after 4 hours to 2300.5 psig at 5155' KB. This value was confirmed by a static gradient measurement. All pressure data including the DST and RFT pressures have been corrected to a common datum, the mid point of perforations, and are recorded as absolute values in table 4.

The DST pressure appears anomalously high and has been disregarded. All other pressures are in good agreement and the initial reservoir pressure is taken at 2306 psia at 5111' KB.

RESERVOIR DRIVE MECHANISM

The Horner plot for this buildup test does not represent an infinite acting reservoir but defines the presence of boundary conditions at some distance from the wellbore.

The possibility of a no-flow boundary i.e: bounded reservoir was considered but discarded based on the following:

1. Extended production test results indicate only a slight decline in flowing tubing pressures. The pressure decline assuming depletion drive for the current OOIP estimate would be far greater.
2. Estimated reservoir size, assuming psuedo steady state conditions exist 4 hours into the buildup, is less than half the current volumetric mapping.
3. Some margin of increasing pressure would be expected in the late time portion of the buildup given pseudo steady state conditions but pressures remain absolutely constant.

Birkhead extended production test results as of April 30, 1985 are plotted on figure 7. Expertest raw data received to date for the extended production test is included as attachment #2.

A theoretical pressure buildup versus Horner time for a constant pressure boundary is plotted with the actual data in figure 6.

A trial and error method was used to establish the drainage area that best fit existing buildup data and a good match was found with 110 acres.

RESERVOIR DRIVE MECHANISM (Continued)

The method used to generate the buildup curve for a steady state reservoir is outlined in Appendix I. The following dimensionless pressure functions described transient and steady state conditions:

Early Transient where $t_{DA} \leq .05$

$$P_D(t_{DA}) = 1/2 \ln \frac{4At_{DA}}{\gamma r_w^2}$$

Steady State where $t_{DA} \geq .25$

$$P_D = 1/2 \ln \frac{16 A}{\gamma C_A r_w^2}$$

The presence of a constant pressure boundary is indicative of pressure maintenance occurring within the reservoir, in this case supplied by natural water influx.

PRODUCTION FORECAST

The Birkhead reservoir evaluated at Wancoocha #2 has an excellent PI and a low bubble point therefore substantial initial offtake rates can exist while still maintaining the reservoir at undersaturated conditions.

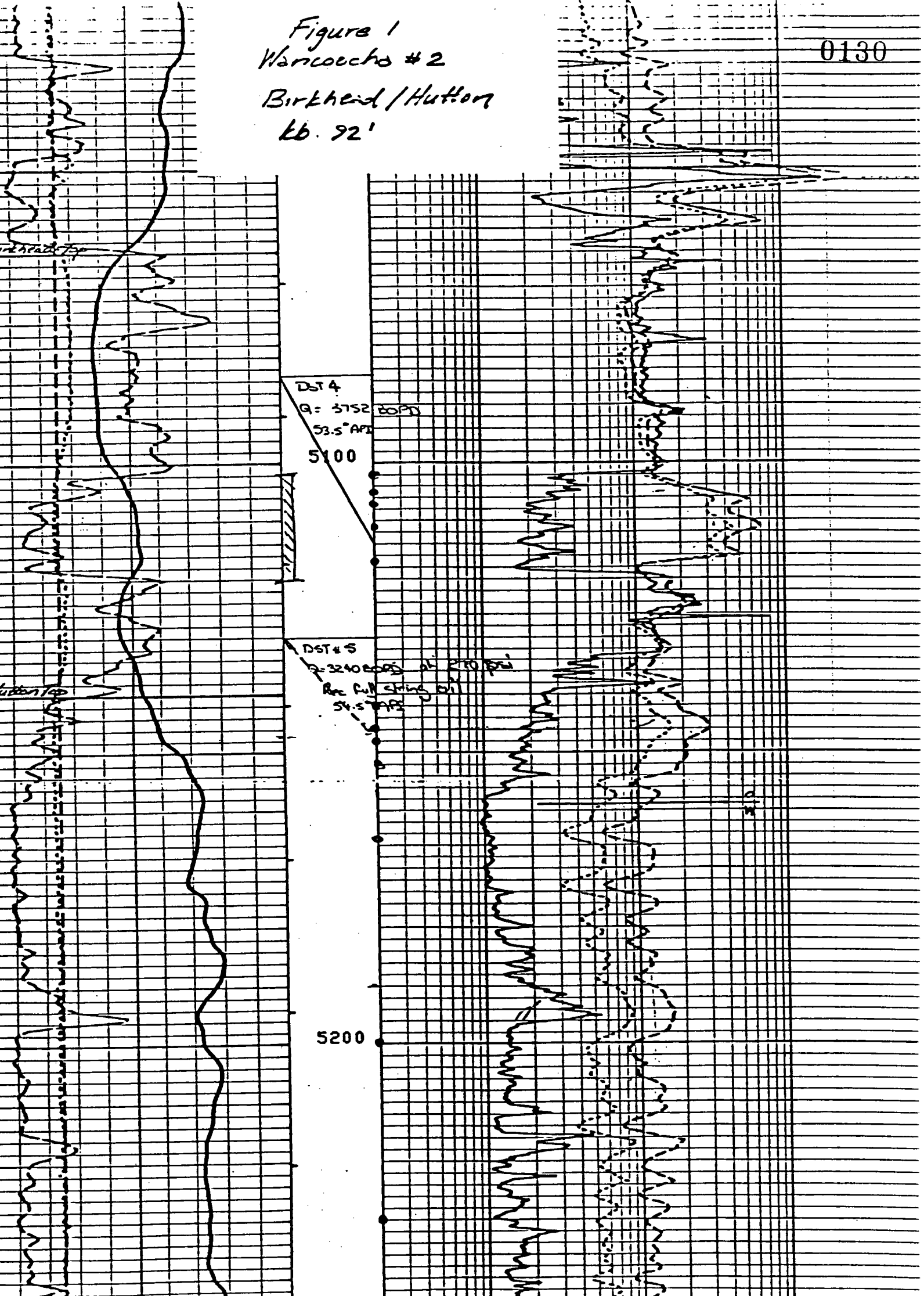
The reservoir has been characterised as having natural water influx and an initial offtake rate of 515 BFPD has been assigned for the extended production test to evaluate the level of pressure maintenance.

A production forecast based on this well accessing a third of the current original Oil-In-Place estimate and allowing a 25% recovery factor is shown in table 9. Water breakthrough is assumed to occur after 8 months and a 5% downtime has been incorporated into the forecast.

FIGURES

Figure 1
Warcocho #2
Birkhead/Hutton
Lb. 92'

0130



Birkhead Formation Wampanoag #2
Clean up Flow 30/1/85 to 3/1/85
14:00 18:00

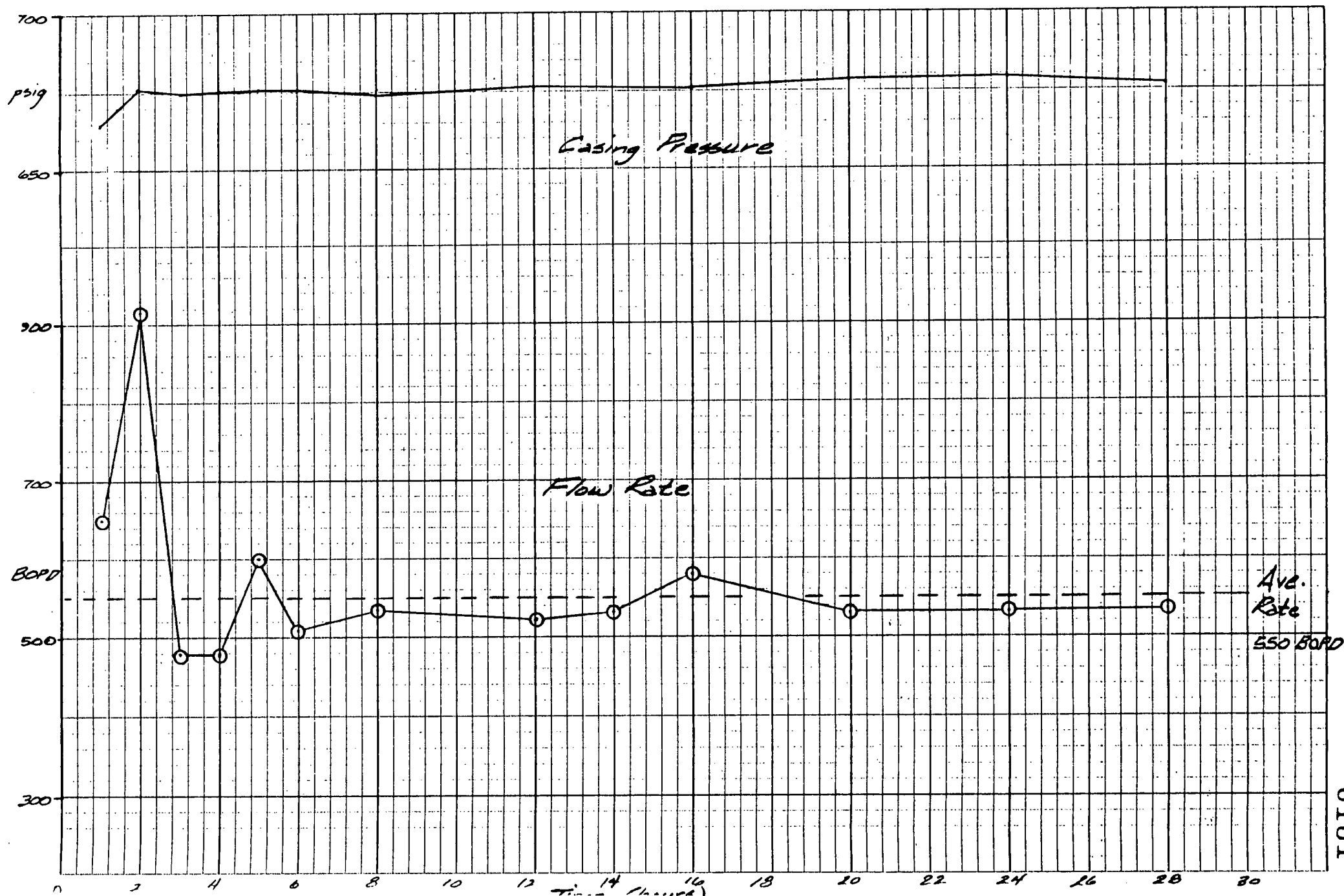
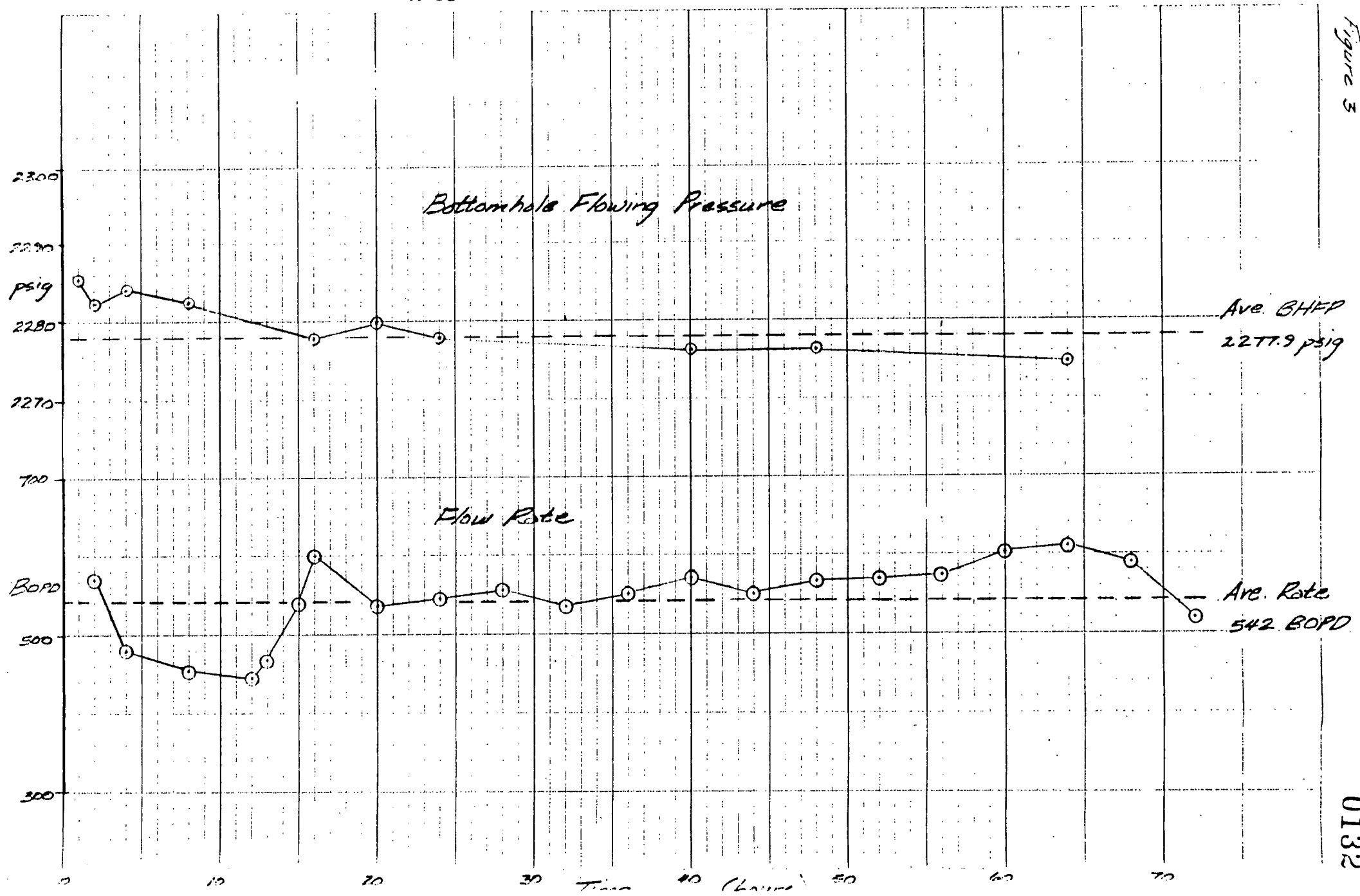


Figure 2

0131

Birkhead Formation Warrcoochia #2
 Buildup Flow Period 2/2/85 to 5/2/85
 9:00 17:00

Bottom Element @ 5155' KB



Bottom Element @ 5155 'LB.

1.

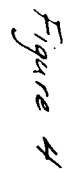
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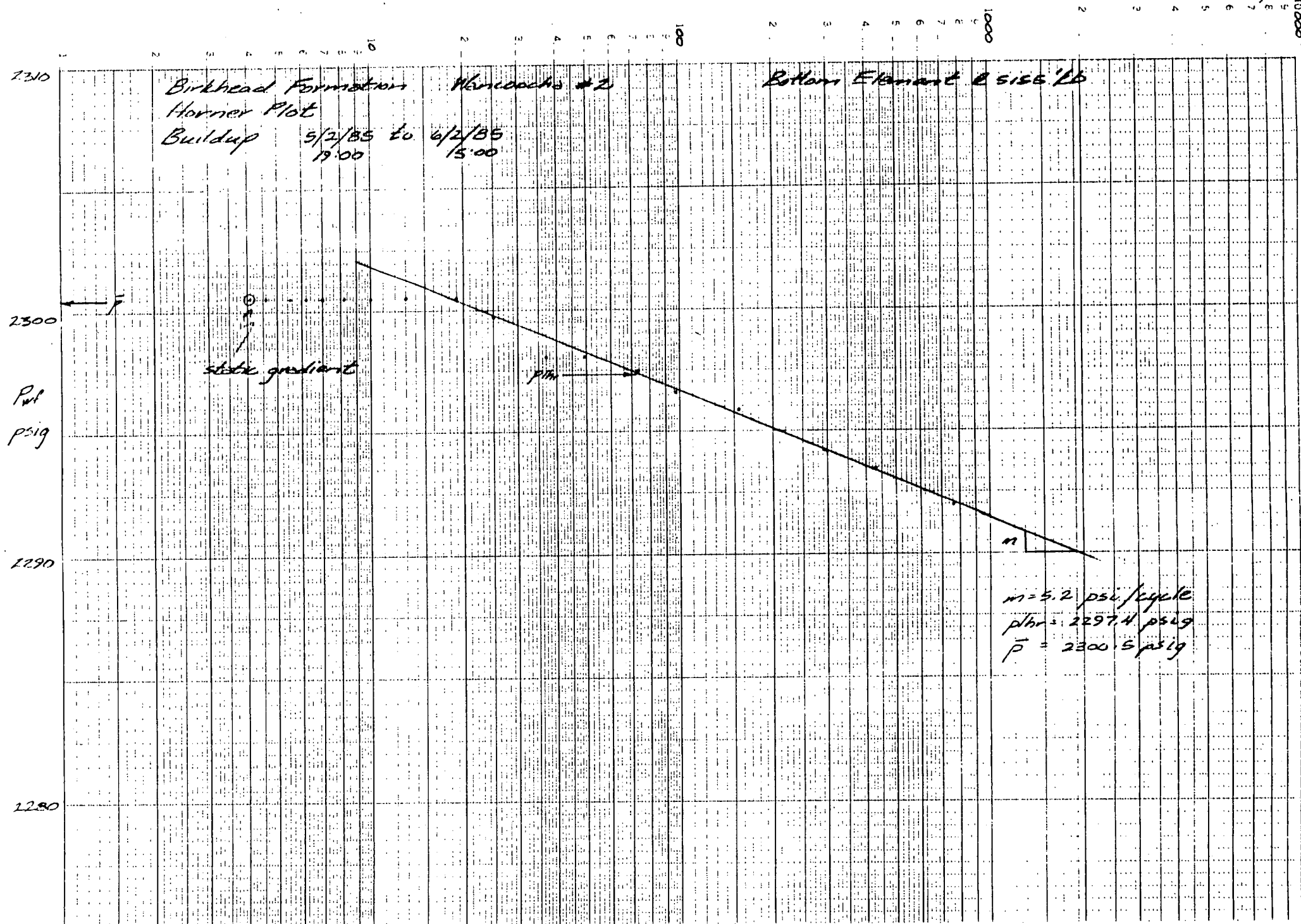


Figure 6

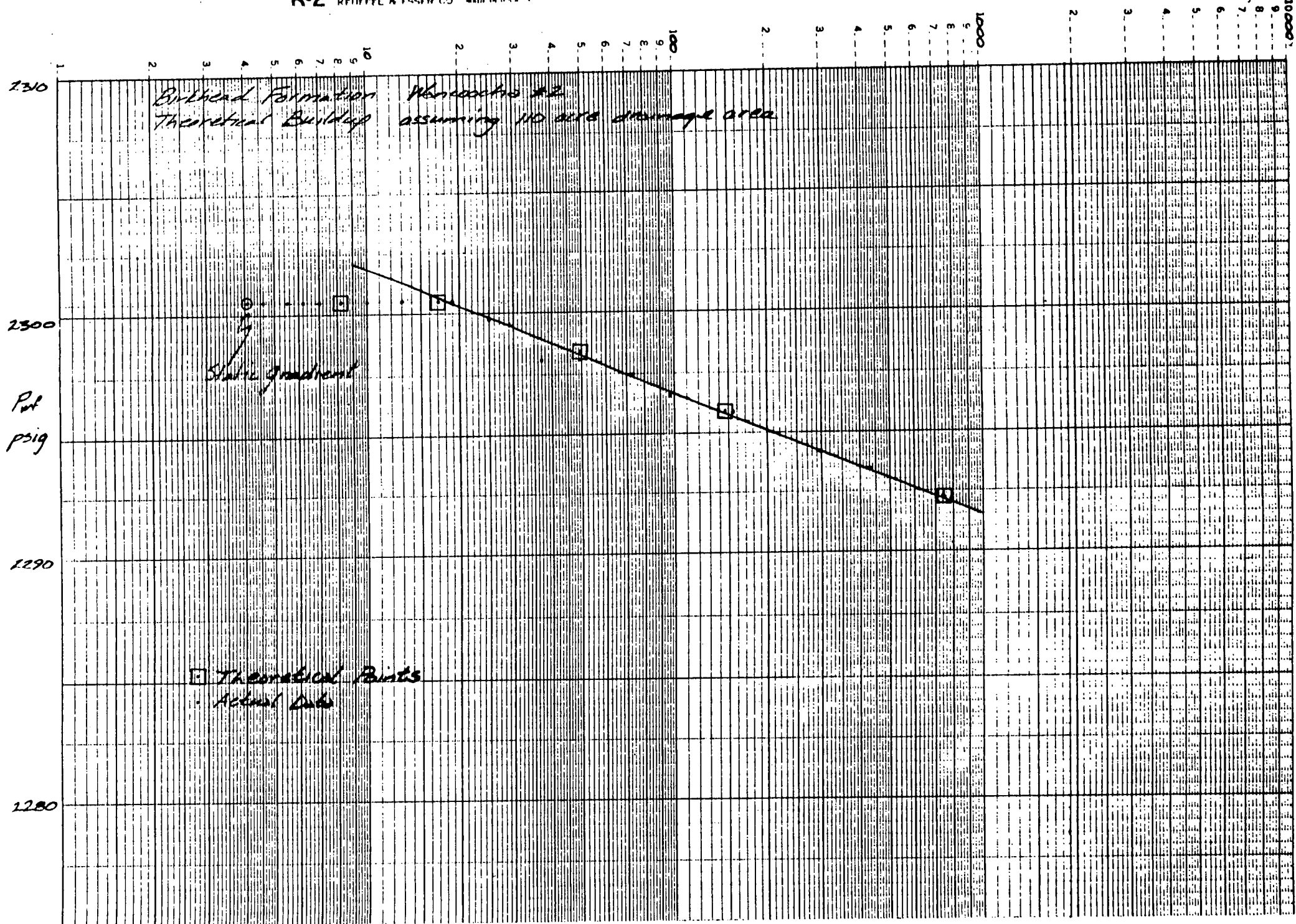
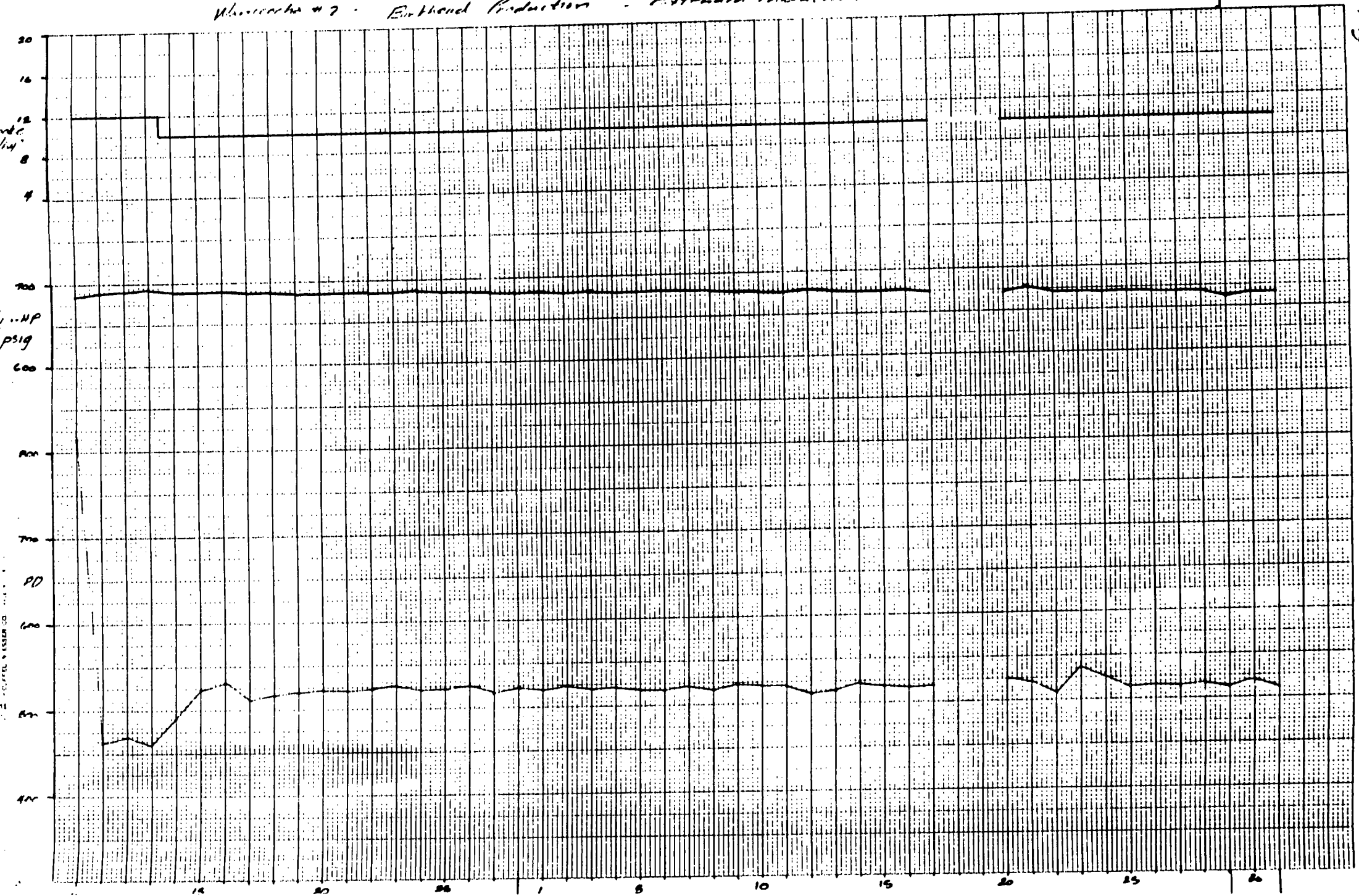
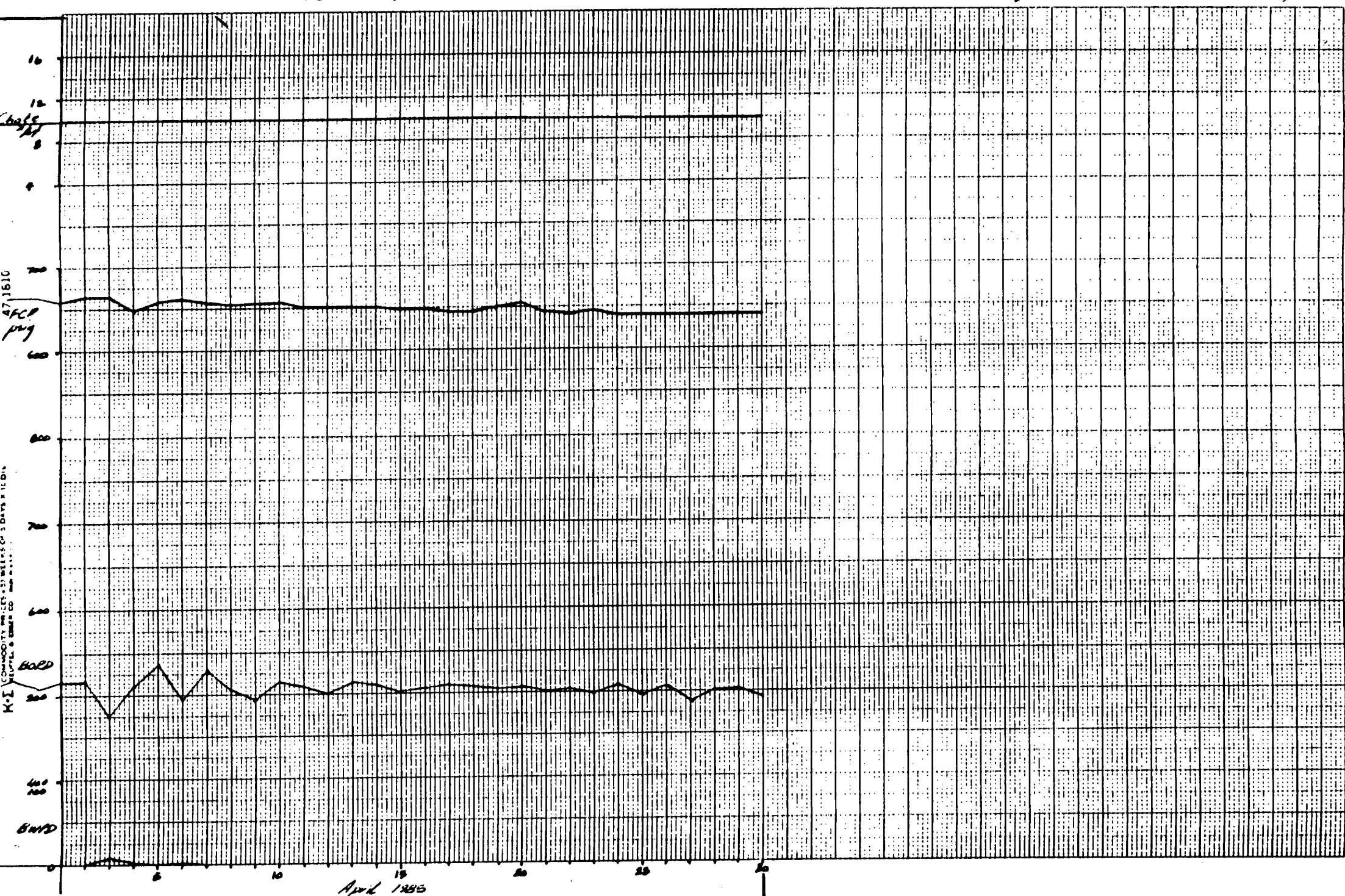


Figure 7
 Wellbore # 7 - Birthed Production - Extended Production Test





TABLES:

TABLE 1

CHRONOLOGICAL WELL HISTORY
WANCOOCHA #2

6/11/84	Spud well.
10/11/84	DST #1 in the Murta from 4260' to 4331' KB Recovered 90' OCM and 10' oil.
14/11/84	DST #2 in the Patchawarra from 5591' to 5684' KB Flowed GTS at RTSTM. DST #3 in the Patchawarra from 5678' to 5746' KB Flowed 1747 BOPD with 2.2 MMCF/D gas.
17/11/84	Ran logs.
18/11/84	DST #4 in the Birkhead from 5085' to 5124' KB. Flowed 3752 BOPD.
19/11/84	DST #5 in the Hutton from 5130' to 5146' KB Flowed 3240 BOPD.
20/11/84	DST #6 in the Namur from 4378' to 4416' KB.
21/11/84	Ran RFT with shots from 5101' to 5731' KB. Samples recovered at 5703' and 5731' KB in the Patchawarra and at 5117' KB in the Birkhead.
23/11/84	DST #7 at basement from 5750' to 5970' KB Recovered 718' of SGCMW and SGCWM.
7/1/85	Perforate the Patchawarra from 5720' to 5739' KB Perforate the Birkhead from 5102' to 5120' KB.

TABLE 1 (contd)

8/1/85	Flow the Birkhead through the annulus on cleanup for 45 minutes on 1/2" choke at 6720 BOPD.
8/1/85	Flow the Patchawarra through the tubing for 1 hour on 16/64" choke at 750 BOPD plus an unmeasured volume of gas.
12/1/85	Run static gradient in the Patchawarra.
12-13/1/85	Flow the Patchawarra on 8/64" choke to condition for bottomhole sampling. Cumulative production of 70 bbls over 12 hrs.
13/1/85	Ran a static gradient in the Patchawarra.
13-14/1/85	Take tandem bottomhole samples at 5720' KB. Field bubble points of 1920 psi, 1840 psi and 1865 psi.
15-24/1/85	Flow Patchawarra through tubing for 219 hours and monitor bottom hole flowing pressure. Cumulative oil production of 2462 bbls. GOR increasing from 704 to a final rate of 1119 SCF/STB.
22-24/1/85	Collect separator samples during flow test on 22/1/85 and 24/1/85.
24-30/1/85	Patchawarra shut in for buildup.
30-31/1/85	Flow Birkhead through the annulus for cleanup. Cumulative production of 642 bbls of oil over 28 hours.
2-5/2/85	Flow the Birkhead through tubing and monitor bottomhole flowing pressure with a cumulative production of 1627 bbls over 72 hours.

TABLE 1 (contd)

5-6/2/85	Shut in Birkhead for buildup.
6/2/85	Run static gradient in Birkhead.
6-7/2/85	Flow Birkhead well to condition for bottomhole sampling. Cumulative production of 83 bbls over 28 hours. Run flowing gradient and catch 4 samples at 5132' KB. Field bubble points of 210, 172, 152 and 165 psig.
10/2/85-Present	Flow Patchawarra (tubing) and Birkhead (annulus) on extended production test.

Table 2

Birkhead - Wancoocha #2

DST Summary

DST #4

Test Date: 18-11-84

Interval: 5085' - 5114' KB

Recovery: Flowed 3752 BOPD

Comments: Two slopes were identified on the Horner plot possibly indicating lateral changes in reservoir quality.

Results: m = 27 psi/cycle
kh = 12434 md/ft
k = 956 md

Note: 1) DST results presented here have been recalculated using PVT data included in this report.

2) Reservoir properties calculated using the second slope on the Horner plot are as follows: m = 39 psi/cycle
kh = 8608 md/ft
k = 662 md

Table 3
Birkhead - Wancoocha #2
Log Analysis Summary

Interval	5105' - 5117' KB
Pay	13'
Average Porosity	21.1%
Average Sw	35.5%
Average Vsh	22.5%

Table 4
Birkhead - Wancoocha #2
PVT Fluid Properties

Oil Gravity:	54.3 ⁰ API
Bubble Point:	168 psig at 214 ⁰ F
Oil Compressibility:	10.324 x 10 ⁻⁶ psi ⁻¹
Oil Volume Factor:	1.123 bbl/STB
Oil Viscosity:	.49 cp
Solution Gas-Oil Ratio:	32 scf/STB

Table 5
Birkhead - Wancoocha #2
Production History

	TIME	BBL	Ave. Rate
Cleanup Flow 8/1/85	.75	210	6720
Cleanup Flow thru annulus 30/1/85 - 31/1/85 14:00 18:00	28	642	550
Production Test thru tubing 2/2/85 - 5/2/85 19:00 19:00	72	1627	542
Conditioning for BHS thru tubing 6/2/85 - 7/2/85 20:00 24:00	28	83.5	72
Extended Production Test 9/2/85 - current			

Table 6

Birkhead - Wancoocha #2

Pressure History

- 1) DST #1 18/11/84
 $p^* = 2347 \text{ psia @ } 5119' \text{ KB}$
Corrected to mpp using .31 gradient gives:
 $p^* = 2345 \text{ psia @ } 5111' \text{ KB}$
- 2) RFT survey 21/11/84
 $P = 2305 \text{ psia @ } 5111' \text{ KB}$
- 3) Buildup 6/2/85
 $p^* = 2315 \text{ psia @ } 5155' \text{ KB}$
Corrected to mpp using static gradient gives:
 $p^* = 2306 \text{ psia @ } 5111' \text{ KB}$
- 4) Static gradient 6/2/85
Bottom element: $p = 2315 \text{ psia @ } 5155' \text{ KB}$
 $= 2306 \text{ psia @ } 5111' \text{ KB}$
Top element: $p = 2292.2 \text{ psia @ } 5155' \text{ KB}$
 $= 2303 \text{ psia @ } 5111' \text{ KB}$

Table 7
Birkhead - Wancoocha #2
Buildup Horner Data

19:00 5/2/85 - 15:13 6/2/85

Δt (hrs)	$\frac{t + \Delta t}{\Delta t}$	P (psig)	ΔP (psi)
0	-	2281.8	-
.0833	865	2291.9	10.1
.1667	433	2293.4	11.6
.25	289	2294.2	12.4
.5	145	2295.8	13.8
.75	97.0	2296.6	14.8
1	73.0	2297.4	15.6
1.5	49.0	2298.1	16.3
2	37.0	2298.1	16.3
3	25.0	2299.7	17.9
4	19.0	2300.5	18.7
6	13.0	2300.5	18.7
8	10.0	2300.5	18.7
10	8.20	2300.5	18.7
12	7.00	2300.5	18.8
14	6.14	2300.5	18.7
16	5.50	2300.5	18.7
18	5.00	2300.5	18.7
20	4.60	2300.5	18.7
Static	23.43	2300.5	
Gradient			

Where $t_p = 72$

- Assumptions:
- 1) Well has built up to original pressure after cleanup flow.
 - 2) A constant rate of 542 BOPD, the average actual rate, was maintained over the flow period.

Table 8
Birkhead - Wancoocha #2
Buildup Calculations

Flow Capacity: $kh = \frac{162.6quB}{m}$

$$= \frac{162.6 (542)(1.123)(.49)}{5.2}$$

$$= 9326 \text{ md.ft}$$

Permeability: $k = \frac{kh}{h}$

$$= \frac{9326}{13}$$

$$= 717 \text{ md}$$

Apparent Skin: $S' = 1.151 \left[\frac{P_{1hr} - P_{wf}}{m} - \log \frac{k}{\theta u c_t r_w^2} + 3.228 \right]$

$$= 1.151 \left[\frac{(2297.4 - 2277.9)}{5.2} - \log \frac{717}{.211(.49)(11.358 \times 10^{-6})(.354^2)} + 3.228 \right]$$

$$= -3.1$$

Total Compressibility: $c_t = S_o c_o + S_w c_w + c_f$

$$= .645(10.324 \times 10^{-6}) + .355(3.18 \times 10^{-6})$$

$$+ 3.57 \times 10^{-6}$$

$$= 11.358 \times 10^{-6} \text{ psi}^{-1}$$

where $c_w = 3.18 \times 10^{-6}$ assumed

$c_t = 3.57 \times 10^{-6}$ assumed

Theoretical Productivity
Index:

$$P.I. = \frac{7.08 \times 10^{-3} kh}{\mu B(\ln r_e/r_w + S)}$$

$$= \frac{7.08 \times 10^{-3} (9326)}{.49(1.123)(\ln \frac{1235}{.354} - 3.1)}$$

$$= 23.7 \text{ bbl/psi}$$

where: $r_e = 1235'$ based on drainage area of
110 acres

BLOCK NOMINATION SCHEDULE-OIL PRODUCTION

BLOCK_NAME MURTA FIELD_NAME WANCOOCHA #2 RESERVOIR BIRKHEAD
 OIL IN PLACE(MMSTB) 1.63 REC.FAC. 0.25 Q INITIAL(BOPD) 515.0 Q ABAN(BOPD) 25.00

TIME	YEAR	RATE BOPD	PERIOD PRODUCTION STB	CUM PRODUCTION STB	WATER PRODUCTION BOPD	WATER CUT DEC. FRAC.
FEB	1985	489.3	11253.	11253.	0.0	
MAR	1985	489.3	15167.	26420.	0.0	
APR	1985	489.3	14678.	41098.	0.0	
MAY	1985	489.3	15167.	56265.	0.0	
JUN	1985	489.3	14678.	70943.	0.0	
JUL	1985	489.3	15167.	86110.	0.0	
AUG	1985	489.3	15167.	101277.	0.0	
SEP	1985	489.3	14678.	115955.	0.0	
OCT	1985	465.6	14432.	130387.	23.7	0.05
NOV	1985	443.0	13290.	143678.	46.2	0.09
DEC	1985	421.6	13068.	156746.	67.7	0.14
JAN	1986	401.1	12436.	169182.	88.1	0.18
FEB	1986	381.7	10688.	179870.	107.5	0.22
MAR	1986	363.2	11260.	191130.	126.0	0.26
APR	1986	345.6	10369.	201500.	143.6	0.29
MAY	1986	328.9	10196.	211696.	160.3	0.33
JUN	1986	313.0	9389.	221086.	176.3	0.36
JUL	1986	297.8	9233.	230318.	191.4	0.39
AUG	1986	283.4	8786.	239104.	205.8	0.42
SEP	1986	269.7	8090.	247194.	219.6	0.45
OCT	1986	256.6	7955.	255149.	232.6	0.48
NOV	1986	244.2	7326.	262475.	245.1	0.50
DEC	1986	232.4	7203.	269679.	256.9	0.53
1ST QT	1987	210.4	18937.	288616.	278.8	0.57
2ND QT	1987	181.3	16498.	305114.	307.9	0.63
3RD QT	1987	156.2	14372.	319486.	333.0	0.68
4TH QT	1987	134.6	12384.	331870.	354.6	0.72
	1988	93.0	33953.	365822.	396.2	0.81
	1989	51.3	18715.	384537.	438.0	0.90
	1990	28.3	10316.	394853.	461.0	0.94

NOTE: FEBRUARY 1985 FORECAST REPRESENTS ACTUAL PRODUCTION

APPENDIX I

Appendix I

Method of calculating theoretical pressure buildup curve for Wancoocha #2 - Birkhead using the Dimensionless Buildup function:

$$P_{DBU} = P_D(r_w, t + \Delta t) - P_D(r_w, \Delta t)$$

This equation is based on theory of superposition with injection at an image well.

- 1) Determine flow regime at the actual flow time where $t = 72$ hours.

If $t_{DA} \leq .05$ early transient conditions apply

If $t_{DA} \geq .25$ steady state conditions apply

$$\begin{aligned} t_{DA} &= \frac{0.000264 \text{ kt}}{\phi \mu C_t A} \\ &= \frac{0.000264(717)(72)}{.211(.49)(11.358 \times 10^{-6})(110)(43560)} \\ &= 2.42 \end{aligned}$$

where drainage area is assumed to be 110 acres

Since $t_{DA} \geq .25$, steady state conditions apply

- 2) Calculate dimensionless pressure term $P_D(r_w, t + \Delta t)$

Since dimensionless pressure is a constant once steady state has been reached and since steady state conditions have been satisfied at time $t=72$, all $P_D(r_w, t + \Delta t)$ values will be equal.

$$\begin{aligned} P_D(r_w, t + \Delta t) &= P_D = \frac{1}{2} \ln \frac{16A}{\gamma C_A r_w^2} \quad \text{for steady state conditions} \\ &= \frac{1}{2} \ln \frac{16(110)(43560)}{1.781(31.62).354^2} \\ &= 8.1005 \end{aligned}$$

where C_A = shape coefficient of a circle

$$= 31.62$$

Appendix I

(Continued)

- 3) Calculate the time to steady state conditions during buildup i.e. time to steady state for an image injector.

Steady state conditions begin at $t_{DA} = .25$ therefore the Δt , i.e. injection time for an image well, to reach steady state conditions can be determined.

$$\begin{aligned}\Delta t &= \frac{t_{DA} \phi u c_t A}{.000264 k} \\ &= \frac{.25(.211)(.49)(11.358 \times 10^{-6})(110)(43560)}{.000264 (717)} \\ &= 7.4315\end{aligned}$$

At all $\Delta t \geq 7.4315$, $P_D(r_w, \Delta t) = P_D(r_w, t + \Delta t)$

$$\therefore P_{DBU} = 0$$

- 4) Calculate the time to the end of early transient conditions during buildup

End of early transient occurs at $t_{DA} = .05$ therefore the Δt required can be calculated.

$$\begin{aligned}\Delta t &= \frac{t_{DA} \phi u c_t A}{.000264 k} \\ &= \frac{.05(.211)(.49)(11.358 \times 10^{-6})(110)(43560)}{.000264 (717)} \\ &= 1.486\end{aligned}$$

For all $\Delta t \leq 1.486$ the transient dimensionless pressure function applies.

- 5) Calculate $P_D(r_w, \Delta t)$ at $\Delta t = 1.486, .5, .1$ where early transient conditions exist

$$\begin{aligned}\text{For } \Delta t = 1.486, t_{DA} &= .05 \\ P_D(r_w, \Delta t) &= \frac{1}{2} \ln \frac{4 A t_{DA}}{\gamma r_w^2} \\ &= \frac{1}{2} \ln \frac{4(110)(43560)(0.5)}{1.781 (.354)^2} \\ &= 7.6363\end{aligned}$$

Appendix I

(Continued)

$$\text{For } \Delta t = .5$$

$$\begin{aligned} t_{DA} &= \frac{.000264 \text{ kt}}{\phi u C_t A} \\ &= \frac{.000264 (717)(.5)}{.211(.49)(11.358 \times 10^{-6})(110)(43650)} \\ &= .0168 \end{aligned}$$

$$\begin{aligned} P_D(r_w, \Delta t) &= \frac{1}{2} \ln \frac{4A t_{DA}}{r_w^2} \\ &= \frac{1}{2} \ln \frac{4 (110)(43560)(.0168)}{1.781 (.354)^2} \\ &= 7.0910 \end{aligned}$$

$$\text{For } \Delta t = .1$$

$$\begin{aligned} t_{DA} &= \frac{.000264 \text{ kt}}{\phi u C_t A} \\ &= \frac{.000264 (717).1}{.211(.49)(11.358 \times 10^{-6})(43560)(110)} \\ &= .0034 \end{aligned}$$

$$\begin{aligned} P_D(r_w, \Delta t) &= \frac{1}{2} \ln \frac{4 (110)(43560)(.0034)}{1.781 (.354)^2} \\ &= 6.2922 \end{aligned}$$

Appendix I

(Continued)

6) Calculate buildup pressure

$$\text{Where } (p_i - p_{wf}) = P_{DBU} \frac{(141.3)(q)(u)(B)}{kh}$$

and $p_i = 2300.5$ psig (stabilized pressure from buildup)

$$p_{wf} = 2300.5 - \frac{P_{DBU}(141.3)(542)(.49)(1.123)}{9326}$$

Δt	$t + \Delta t$	$P_D(r_w, \Delta t)$ (2)	$P_D(r_w, t + \Delta t)$ (1)	P_{DBU} (1)-(2)	$\frac{t + \Delta t}{\Delta t}$	p_{wf}
.1	72.1	6.2922	8.1005	1.8083	721	2292.3
.5	72.5	7.0910	8.1005	1.0095	145	2295.9
1.486	73.49	7.6363	8.1005	.4642	49.5	2298.4
7.4315	79.4	8.1005	8.1005	0	10.7	2300.5
10	82.0	8.1005	8.1005	0	8.2	2300.5

p_{wf} vs $\frac{t + \Delta t}{\Delta t}$ is plotted on figure 6

Rep(7/7)

Attachment #1

Cleanup Production and Flow and Buildup Test

Expertest Raw Data

WANCOOCHA #2
BIRKHEAD
SINGLE POINT PRODUCTION
TEST
30.1.85/8.2.85



CLIENT DELHI PETROLEUM

WELL WANOOCHA #2 BIRKHEAD



DATE 30.1.85 PAGE No 1

OPERATOR S. MAYER

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBLs/D	G.O.R. SCF/BBL	REMARKS
						H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
13:35	686	1163				PRESSURE TEST FLOW LINES													
14:00						BEGIN CLEAN UP ON BIRKHEAD FORMATION													
14:00	685	1164				OPEN ANNULUS ON 6/64 ADJUSTABLE CHOKE													
14:05	680	1165	90			OPEN CHOKE TO 8/64													
14:10	680	1166	91			OPEN CHOKE TO 12/64													
14:15	668	1172	93	12/64		FLOW RATE INCREASING													
14:30	666	1178	93			OPEN CHOKE TO 14/64													
14:45	644	1190	95			CUT CHOKE TO 12/64													
15:00	664	1189	97	12/64	0.1 SEDIMENT	FLOW RECORDER IN SERVICE WITH .250" ORIFICE PLATE													
15:30	667	1191	97	12/64		69	1	109	.250										
15:35						CUT CHOKE TO 9/64													
16:00	676	1190	97	9/64	TRACE SEDIMENT	61	0	109	.250	0									
17:00	675	1190	99	9/64		81	0	111	.250	0									
18:00	676	1191	97	9/64	TRACE SEDIMENT	90	0	109	.250	0									
18:03						OPEN CHOKE TO 10/64													
19:00	676	1195	97	10/64		93	0	106	.250	0									
20:00	676	1196	97	10/64	"	92	0	104	.250	0									
22:00	674	1198	97	10/64	.1 SEDIMENT	88	0	97	.250	0									

CLIENT DEER PETROLEUM

WELL WANCOCOA #2 BIRKHEAD



DATE 31.1.85 PAGE No 2

OPERATOR S. MAYER

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBLs/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
31.1.85						CLEAN UP BIRKHEAD FORMATION													
02:00	676	1204	99	10/64	0	83	0	86	.250	0									
06:00	676	1204	99	10/64	0	82	0	82	.250	0									
10:00	678	1209	100	10/64	*	82	0	82	.250	0	*BSW - 0.3% H ₂ O, TRACE SEDIMENT, & TRACE WAX								
14:00	679	1211	102	10/64	TRACE WAX	85	0	86	.250	0									
18:00	677	1210	102	10/64	0	84	0	88	.250	0									
						END OF CLEAN UP - SHUT IN WELL													
18:05	689	1209																	
18:10	690	1207																	
18:15	690	1207																	
18:30	692	1204																	
18:45	693	1203																	
19:00	692	1200																	
20:00	693	1199																	
21:00	692	1196																	
22:00	692	1195																	
1.2.85																			
02:00	691	1191																	
06:00	690	1187																	

0158

DATE TIME		ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION					WATER PRODUCTION					REMARKS		
			METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE		CUM. PROD.	SALINITY PPM
			BEGIN CLEAN UP ON HIRKHEAD FORMATION												
14:00	0		13.5						0						TARE DIP
15:00	1		29.5	27.12	650.9	27.12	53.0		0						
16:00	2		52.0	38.14	915.3	65.26	53.6		0						
17:00	3		63.75	19.92	478.0	85.18			0						
18:00	4		75.5	19.92	478.0	105.08	53.9		0						
19:00	5		90.25	25.00	600.0	130.08			0						
20:00	6		102.75	21.19	508.5	151.27	53.8		0						
22:00	8		129.0	44.49	533.9	195.76	54.0		0						
31.1.85															
02:00	12		180.5	87.29	523.8	283.05	53.9		0						
04:00	14		206.75	44.49	533.9	327.54		CHANGE TANKS							
04:00	14		8						0						TARE DIP
06:00	16		36.5	48.31	579.7	375.85	54.0		0						
10:00	20		88.5	88.14	528.8	463.99	54.1		0						
14:00	24		141	88.99	533.9	552.98	53.7		0						
18:00	28		193.75	89.41	536.5	642.39	53.9		0	NO WATER PRODUCTION DURING TEST					
			END OF CLEAN UP - SHUT IN WELL												

WIRELINE REPORT

CLIENT DELHI PETROLEUM WELL WANCOOCHA #2

DATE 1.2.85

PROGRAMME PRODUCTION TEST

PURPOSE OF WORK ISOLATE PATCHAWARRA FORMATION

REPORT OF WORK PERFORMED RIG UP PRESSURE TEST LUB AND BOP'S.

WITH MAIN BODY OF PX PLUG AND SET AT 5630 FT KB.

WITH PRONG FOR PX PLUG AND SET IN MAIN BODY AT 5630 FT KB.

LEED TUBING PRESSURE FROM 1155 PSI TO OPSI. OBSERVE FOR 1 HOUR (23PSI BUILD UP). INFLOW TEST

.K. AS PER PRONG.

WITH 'B' SHIFTING TOOL AND OPENED XD SSD AT 5132 FT KB TUBING PRESS 25 PSI TO 958 PSI.

RIG DOWN - RETURN TO BASE

Operator's Signature

WORK PERFORMED BY RICHARD BUCKLAND OF EXPERTEST PTY LTD

WELL DATA:

Tubing Size 2-7/8 FWHP SIWHP 958 PSI

Subsurface S.V./Landing Nipple @ S.S.D. @ 5132 KB

'K' Nipple @ 5630 KB 'N'/'XN' Nipple @ 5640 KB Other @

Min. I.D. 2.205 @ N NIPPLE Packer @ 560 KB

Perforated Interval: 5102 - 5120, 5720 - 5739

CLIENT DELHI PETROLEUM																DATE 1.2.85 PAGE No 1				
WELL WANCOOCHA #2 BIRKHEAD						OPERATOR S. MAYER														
DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS	
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =									
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D					
10:00	691	1185				RIG IN WIRELINE UNIT TO ISOLATE BIRKHEAD FORMATION														
13:00						RUN IN HOLE AND SET PX PLUG AT 5630 FT KB														
16:00						BLEED DOWN TUBING TO 0 PSI, AND OBSERVE FOR 1 HOUR (23 PSI BUILD UP)														
19:10						RUN IN HOLE WITH "B" SHIFTING TOOL - OPEN XD SLIDING SLEEVE AT 5132 FT KB														
19:55						TUBING PRESSURE INCREASE FROM 25 PSI 958 PSI														
22:00	688	970																		
2.2.85																				
07:00	689	972																		
13:00	690	970																		
16:50						PRESSURE UP LUBRICATOR, WITH TWO 3000 PSI PRESSURE RECORDERS														
16:55		968																		
17:00		969																		
17:05		968																		
17:10		968																		
17:15		969																		
17:20	689	969				RUN IN HOLE														
17:44						RECORDERS ON BOTTOM, HUNG AT 5155 FT KB														

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CLIENT DELHI PETROLEUM

WELL WANOOOCHA #2 BIRKHEAD



DATE 2.2.85 PAGE No 2

OPERATOR S. MAYER

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
						PRODUCTION TEST - BIRKHEAD FORMATION													
19:00	688	970				OPEN WELL TO FLOW TUBING THROUGH 6/64" CHOKE TO TANK													
19:05	680	885	86			OPEN CHOKE TO 8/64													
19:10	675	783	86			OPEN CHOKE TO 10/64 ADJUSTABLE													
19:12						OIL TO SURFACE													
19:15	677	735	86	10/64															
19:30	680	710	90	10/64	TRACE WAX														
19:45	678	680	90	10/64															
20:00	676	675	91	10/64	0														
21:00	675	673	95	10/64	0														
23:00	680	678	97	10/64	0														
3.2.85																			
03:00	678	673	99	10/64	0														
07:00	679	673	100	10/64	0	ROCK CHOKE													
10:00	679	672	104			OPEN CHOKE TO 11/64													
11:00	679	671	108	11/64	0														
15:00	679	673	108	11/64	0	ROCK CHOKE													
19:00	680	674	108	11/64	TRACE WAX	ROCK CHOKE													

CLIENT DELHI PETROLEUM																DATE 3.2.85 PAGE No 3			
WELL WANOOCCHA #2 BIRKHEAD						OPERATOR S. MAYER													
DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
23:00	680	676	106	11/64	0	ROCK CHOKE EVERY 4 HOURS													
4.2.85																			
03:00	680	676	108	11/64	TRACE H ₂ O														
07:00	680	677	108	11/64	0														
11:00	680	676	108	11/64	0														
15:00	682	679	109	11/64	0														
19:00	681	677	111	11/64	0														
23:00	679	675	109	11/64	0														
5.2.85																			
03:00	680	677	111	11/64	0														
07:00	680	679	109	11/64	0														
11:00	680	677	113	11/64	0														
13:00						PULL OFF BOTTOM WITH PRESSURE RECORDERS													
15:00	683	680	115	11/64	0														
18:40						AMERADAS ON BOTTOM TO RECORD PRESSURE BUILD UPS													
19:00	685	682	113	11/64	0														
						SHUT IN WELL													

CLIENT DELHI PETROLEUM.....

WELL WANCOOCHA #2..... BIRKHEAD...



DATE 5.2.85..... PAGE No 4.....

OPERATOR S. MAYER.....

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBLs/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
						BUILD UP SURVEY - BIRKHEAD FORMATION													
19:00	685	682				SHUT WELL IN													
19:05	695	695																	
19:10	695	697																	
19:15	695	696																	
19:20	695	697																	
19:25	695	697																	
19:30	695	697																	
19:35	695	697																	
19:40	695	696																	
19:45	694	696																	
19:50	694	696																	
19:55	694	694																	
20:00	694	696																	
20:15	694	696																	
20:30	694	697																	
20:45	694	694																	
21:00	694	695																	

0164

CLIENT DELHI PETROLEUM.....

WELL WANCOOCHA #2 BIRKHEAD.....

BOTTOM HOLE SAMPLING



TELEPHONE (08) 364 0486 TELEX AAB7163

DATE 6.2.85..... PAGE No 6.....

OPERATOR S. MAYER.....

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
						H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
16:30						BEGIN STATIC GRADIENT SURVEY													
						CONDITIONING FLOW													
20:00	692	692				OPEN WELL ON 4/64" CHOKE TO TANK													
20:05	688	689	91	4/64															
20:10	687	688	91	4/64															
20:15	688	688	91	4/64															
20:30	688	688	91	4/64															
21:00	689	689	91	4/64															
21:05						CUT CHOKE TO 3/64													
22:00	689	689	90	3/64															
7.2.85																			
02:00	688	689	86	3/64															
06:00	690	690	86	3/64															
07:00						BEGIN FLOWING GRADIENT SURVEY													
10:00	689	690	91	3/64															
13:05						OIL SAMPLED AT 5132' KB													
14:00	689	692	97	3/64															
18:00	690	690	95	3/64															

WELL WANCOOCHA #2 BIRKHEAD.....

TELEPHONE 00 204 0400 TELEX AA07103

DATE 7.2.85.....PAGE No 7.....

OPERATOR S. MAYER

BOTTOM HOLE SAMPLING

EXPERTEST LTD.
WIRELINE & WELL TESTING SERVICE

120 RICHMOND ROAD MARLBOROUGH MA 01923

POSTAL ADDRESS: PO BOX 394 COMANDILLA 803

[illegible]

CLIENT DELHI PETROLEUM

TANK:— CAPACITY 377 BBL

SCALE 1.695 BBL/INCH



WELL WANOOCHIA #2

DATE 2.2.85 PAGE No 1

OPERATOR S. MAYER

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBL	FLOWRATE BBL/DAY	CUM. PROD. BBL	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
			PRODUCTION TEST			BIRKHEAD FORMATION								
19:00	0		5.0	START TEST					0					
20:00	1		11.5	11.02	264.4	11.02	53.8							
21:00	2		25.5	23.73	569.5	34.75	54.8							
23:00	4		49.0	39.83	478.0	74.58	54.8							
3.2.85														
03:00	8		93.75	75.85	455.1	150.43	54.9							
07:00	12		137.5	74.15	444.9	224.58	54.8							
08:00	13		149.0	19.49	467.8	244.07			0					CHANGE TANKS
08:00	13		5.5	-	-	TARE DIP			0					
10:00	15		32.0	44.92	539.0	288.99	54.9							OPEN CHOKE TO 11/64
11:00	16		46.75	25.00	600.00	313.99	55.2							
15:00	20		99.5	89.41	536.5	403.40	55.6							
19:00	24		153.0	90.68	544.1	494.08	55.5							
23:00	28		207.5	92.37	554.3	586.45	55.5		0					
23:00	28		5.5	-	-	TARE DIP			0					
4.2.85														
03:00	32		58.25	89.41	536.5	675.86	55.5							
07:00	36		112.5	91.95	551.7	767.81	55.6							

CLIENT... DELHI PETROLEUM

TANK:- CAPACITY... 377 BBL'S

SCALE... 1.695 BBL'S/INCH



WELL WANOOCCHA #2 BIRKHEAD

DATE .4.2.85.....PAGE No .2.....

OPERATOR... S. MAYER

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG M ³	TANK DIP INCHES	TANK PROD. BBL'S	FLOWRATE BBL'S/DAY	CUM. PROD. BBL'S	OIL CONDENSATE GRAVITY °AP180F°	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
11:00	40		168.5	94.92	569.5	862.73	55.7							
15:00	44		222.5	91.53	549.2	954.26	56.2							
15:35	44.5		231.5	15.26		969.52		SWITCH TANKS						
15:35	44.5		207.25	TARE DIP										
17:23	46.5	1109.474	232.0	41.95		1011.47		TANKS FULL - DIRECT FLOW TO PIT, MEASURING WITH FLOOD METER						
19:00	48	1114.640		37.33	567.2	1048.80	56.4							FLOOD CORRECTION FACTOR 1
19:53	49							OIL TANKER ARRIVED - SWITCH FLOW TO TANK DURING LOADING						
20:52	50	1120.650	5.5	43.43		1092.23		TANKER LOADED - MEASURE FLOW BY TANK DIP						
23:00	52		36.0	51.70	570.8	1143.93	55.2							
5.2.85														
03:00	56		92.5	95.76	574.6	1239.69	56.2							
07:00	60		151.75	100.43	602.6	1340.12	55.9							
11:00	64		212.0	102.12	612.7	1442.24	56.4	SWITCH TANKS						
11:00	64		5.25	TARE DIP										
15:00	68		65.5	98.73	592.4	1540.97	56.4							
17:00	70		90.0	41.53										
01:00	70		5.0	TARE DIP		1582.50								
19:00	72		31.5	44.92	518.6	1627.42	57.5							
			SHUT IN WELL - END OF TEST											

CLIENT... DELHI. PETROLEUM.....

TANK:— CAPACITY .. 377 BELS

SCALE .. 1.695. BBLs/INCH

BOTTOM HOLE SAMPLING



WELL . WANCOOCHA . #2 . BIRKHEAD FORMATION

DATE ..6.2.85.....PAGE No ..3....

OPERATOR S, MAYER.....

[illegible]

E3

0170



CLIENT DELHI PETROLEUM

STATIC GRADIENT SURVEY

DATE 6.2.85

WELL MANCOOCHA #2 BIRKHEAD

OPERATOR S. MAYER

BOMB No. 1 DATA						BOMB No. 2 DATA				DWT IN 690 PSI DWT OUT 690 PSI	
ELEMENT No. <u>28515</u>		ELEMENT RANGE <u>3000 PSI</u>				ELEMENT No. <u>57413</u>		ELEMENT RANGE <u>3000 PSI</u>			
RECORDER No. <u>13027 x 15 TLS</u>		CLOCK DATA <u>2297 x 3 HR</u>				RECORDER No. <u>61127 x 15 TLS</u>		CLOCK DATA <u>2431 x 3 HR</u>			
ENGAGE STYLUS <u>16:27</u>		DISENGAGE <u>19:25</u>				ENGAGE STYLUS <u>16:27</u>		DISENGAGE <u>19:25</u>			
PRESSURE LUBRICATOR <u>16:39 HRS</u>						BLEED LUBRICATOR <u>19:19 HRS</u>					
DATE	TIME	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	REMARKS	
<u>6.2.85</u>	<u>16:49</u>	<u>LUB</u>	<u>.4305</u>	<u>666.8</u>	<u>-</u>	<u>LUB</u>	<u>.441</u>	<u>683.5</u>	<u>-</u>	<u>10 MIN STOP</u>	
	<u>16:53</u>	<u>1000</u>	<u>.638</u>	<u>987.7</u>	<u>.320</u>	<u>1000</u>	<u>.645</u>	<u>1000.0</u>	<u>.317</u>	<u>5 " "</u>	
	<u>17:02</u>	<u>2000</u>	<u>.8455</u>	<u>1308.9</u>	<u>.321</u>	<u>2000</u>	<u>.8515</u>	<u>1320.3</u>	<u>.320</u>	<u>5</u>	
	<u>17:11</u>	<u>3000</u>	<u>1.049</u>	<u>1624.4</u>	<u>.316</u>	<u>3000</u>	<u>1.054</u>	<u>1634.8</u>	<u>.315</u>	<u>5</u>	
	<u>17:20</u>	<u>4000</u>	<u>1.249</u>	<u>1935.0</u>	<u>.311</u>	<u>4000</u>	<u>1.2545</u>	<u>1946.7</u>	<u>.312</u>	<u>5</u>	
	<u>17:28</u>	<u>4750</u>	<u>1.397</u>	<u>2165.3</u>	<u>.307</u>	<u>4750</u>	<u>1.4035</u>	<u>2178.8</u>	<u>.309</u>	<u>5</u>	
	<u>17:34</u>	<u>5000</u>	<u>1.447</u>	<u>2243.2</u>	<u>.312</u>	<u>5000</u>	<u>1.4525</u>	<u>2255.2</u>	<u>.306</u>	<u>5</u>	
	<u>17:40</u>	<u>5111</u>	<u>1.469</u>	<u>2277.5</u>	<u>.309</u>	<u>5111</u>	<u>1.7755</u>	<u>2291.1</u>	<u>.323</u>	<u>15</u>	
	<u>17:55</u>	<u>5125</u>	<u>1.471</u>	<u>2280.6</u>	<u>.221</u>	<u>5125</u>	<u>1.4775</u>	<u>2294.2</u>	<u>.221</u>	<u>30</u>	
	<u>18:26</u>	<u>5155</u>	<u>1.476</u>	<u>2288.4</u>	<u>.260</u>	<u>5155</u>	<u>1.4815</u>	<u>2300.5</u>	<u>.210</u>	<u>15</u>	
	<u>19:08</u>	<u>LUB</u>	<u>.431</u>	<u>667.6</u>	<u>-</u>	<u>LUB</u>	<u>.441</u>	<u>683.5</u>	<u>-</u>	<u>10</u>	
						CALIBRATION DATE <u>2.2.85 @ 225°F</u>					

GENERAL REMARKS: STATIC GRADIENT MEHT 214°F



CLIENT DELHI PETROLEUM

FLOWING GRADIENT SURVEY

WELL MANCOOCHA #2 BIRCHHEAD

OPERATOR S. MAYER

DATE 7.2.85

BOMB No. 1 DATA						BOMB No. 2 DATA				DWT IN	
ELEMENT No. 28515		ELEMENT RANGE 0-3000 PSI				ELEMENT No. 57413		ELEMENT RANGE 0-3000 PSI		690 PSI	
RECORDER No. 13027 x 15 T.S.		CLOCK DATA 2297 x 3 HR				RECORDER No. 61127 x 15 T.S.		CLOCK DATA 2431 x 3 HR		DWT OUT	
ENGAGE SYLUS 06:52		DISENGAGE 09:55				ENGAGE SYLUS 06:52		DISENGAGE 09:55		690 PSI	
PRESSURE LUBRICATOR 07:00						BLEED LUBRICATOR 09:49					
DATE	TIME	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	REMARKS	
7.2.85	07:10	LUB	.449	695.4	-	LUB	.438	678.8	-	10 MIN STOP	
	07:15	1000	.656	1015.5	.320	1000	.644	998.4	.320	5	
	07:24	2000	.8625	1335.2	.320	2000	.850	1318.0	.320	5	
	07:33	3000	1.061	1643.0	.308	3000	1.053	1633.2	.315	5	
	07:42	4000	1.2655	1960.7	.318	4000	1.2535	1945.1	.312	5	
	07:50	4750	1.4135	2191.0	.307	4750	1.402	2176.5	.309	5	
	07:57	4900	1.4425	2236.2	.301	4900	1.432	2223.3	.312	5	
	08:03	5000	1.463	2268.1	.319	5000	1.4515	2253.6	.303	5	
	08:09	5050	1.472	2282.2	.282	5050	1.462	2270.0	.328	5	
	08:15	5111	1.484	2300.9	.307	5111	1.474	2288.8	.308	15	
	08:30	5125	1.487	2305.5	.329	5125	1.477	2293.4	.329	30	
	09:01	5155	1.493	2314.9	.313	5155	1.482	2301.2	.260	15	
	09:39	LUB	.4485	694.6	-	LUB	.445	689.7	-	10	
			CALIBRATION	2.2.85 @ 225°F							

GENERAL REMARKS:

FLOWING GRADIENT PRECEDING BOTTOM HOLE SAMPLING MEHT 214°F

CLIENT DELHI PETROLEUM WELL WANCOOCHA #2 BIRKHEAD

OPERATOR S. MAYER DATE 2.2.85 - 5.2.85

SURVEY SINGLE POINT PRODUCTION TEST

TOP BOMB 62039 x 3000 PSI REC. No. 61374 x 15 TLS CLOCK DATA E14541 x 72 HR

MID BOMB _____ REC. No. _____ CLOCK DATA _____

BTM BOMB 57431 x 3000 PSI REC. No. 61127 x 15 TLS CLOCK DATA E14540 x 72 HR

ENG. SYLUS 16:38 2.2.85 DISENGAGE SYLUS 14:10 5.2.85

DWT IN 969 PSI DWTOUT 680 PSI MBHT 214°F

Date	Time	Cum. Time	Depth FT KB	Top		Mid		Bot		Remarks
				Def.	PSI	Def.	PSI	Def.	PSI	
2.2.85	16:50		LUB	.600	962.1			.618	958.1	PRESS LUB
	17:20							↓		RTH
	17:44		5155	1.435	2300.5			1.482	2301.2	ON BOTTOM
	18:59			1.432	2302.1			1.482	2301.2	
	19:00	0.0						↓		FLOW WELL
	19:01			1.424	2289.2			1.475	2290.3	
	19:02			1.427	2294.1			1.476	2291.9	
	19:03			1.427	2294.1			1.476		
	19:04			1.427				1.476	↓	
	19:05			1.426	2292.5			1.475	2290.3	
	19:10			1.422	2286.0			1.471	2284.1	
	19:15	0.25		1.425	2290.8			1.474	2288.0	
	19:20			1.425	↓			1.475	2290.3	
	19:25			1.425				1.475	↓	
	19:30	0.5		1.425	↓			1.475	↓	
	19:45	0.75		1.424	2289.2			1.474	2288.8	
	20:00	1.0		1.422	2286.0			1.472	2285.6	
	21:00	2.0		1.421	2289.4			1.470	2282.5	
	22:00	3.0		1.420	2282.0			1.470	↓	
	23:00	4.0		1.421	2284.4			1.471	2284.1	
3.2.85	03:00	8.0		1.421	↓			1.470	2282.5	
	07:00	12.0		1.420	2282.8			1.470	↓	
	11:00	16.0		1.418	2279.6			1.467	2277.8	
	15:00	20.0		1.418	↓			1.468	2279.7	
	19:00	24.0		1.417	2277.9			1.467	2277.8	
4.2.85	23:00	28.0		1.417	↓			1.467	↓	
	03:00	32.0		1.417				1.467		
	07:00	36.0		1.417				1.467	↓	
	11:00	40.0		1.417	↓			1.466	2276.3	
	15:00	44.0	↓	1.417				1.466		

Date	Time	Cum. Time	Depth	Top		Mid		Bot		Remarks
				Def.	PSI	Def.	PSI	Def.	PSI	
4.2.85	19:00	48.0	5755	1.416	2276.3			1.466	2276.3	
	23:00	52.0	↓	1.416	↓			1.466	↓	
5.2.85	03:00	56.0	↓	1.416	↓			1.466	↓	
	07:00	60.0	↓	1.416	↓			1.466	↓	
	11:00	64.0	↓	1.415	2274.7			1.465	2274.7	
	13:00	66.0	↓	1.415	↓			1.465	↓	P.O.H.
	13:27		LUB	.423	677.8			.436	675.7	
			ELEMENTS RE-RUN WITH EXTRA ELEMENTS FOR BUILD UP							

CLIENT DELHI PETROLEUM WELL WANCOOCHA #2 BIRKHEAD

OPERATOR S. MAYER DATE 5.2.85

SURVEY PRESSURE BUILD UP - BIRKHEAD FORMATION

TOP BOMB 62039 x 3000 PSI REC. No. 61374 x 15 TLS CLOCK DATA 2297 x 3 HR

MID BOMB 28515 x 3000 PSI REC. No. 13027 x 15 TLS CLOCK DATA 08567 x 24 HR

BTM BOMB 57413 x 3000 PSI REC. No. 61127 x 15 TLS CLOCK DATA 3038 x 24 HR

ENG. SYLUS 18:00 HR 5.2.85 DISENGAGE SYLUS 16:02 6.2.85

DWT IN 682 PSI DWTOUT 692 PSI MBHT 214°F

Date	Time	Cum. Time HRS	Depth FT KB	Top Def. PSI	Mid Def. PSI	Bot Def. PSI	Remarks
5.2.85	18:25		LUB	.416 666.5	.440 681.5	.434 672.6	RUN IN HOLE
	18:40		5155	1.414 2273.1	1.477 2290.0	1.469 2281.0	ON BOTTOM
	19:00	24 HRS 0.0		1.415 2274.7	1.477 2290.0	1.4695 2281.8	SHUT IN WELL
	19:01			1.420 2282.8			
	19:02			1.4205 2283.6			
	19:03			1.421 2284.4			
	19:04			1.421 2284.4			
	19:05			1.4215 2285.2	1.4835 2300.1	1.476 2291.9	
	19:10			1.4225 2286.8	1.4845 2301.8	1.477 2293.4	
	19:15	0.25		1.423 2287.6	1.485 2302.4	1.4775 2294.2	
	19:30	0.5		1.424 2289.2	1.486 2304.0	1.4785 2295.8	
	19:45	0.75		1.425 2290.8	1.4865 2304.8	1.479 2296.6	
	20:00	1.0		1.4255 2291.6	1.487 2305.5	1.4795 2297.4	
	20:30	1.5		1.426 2292.5	1.4875 2306.3	1.480 2298.1	
	21:00	2			1.4875 2306.3	1.480 2298.1	
	22:00	3			1.4885 2307.9	1.481 2299.7	
	23:00	4			1.4885 2307.9	1.4815 2300.5	
6.2.85	01:00	6			1.489 2308.7	1.4815 2300.5	
	03:00	8			1.4895 2309.5	1.4815 2300.5	
	05:00	10			1.490 2310.2	1.4815 2300.5	
	07:00	12			1.4905 2311.0	1.4815 2300.5	
	09:00	14			1.491 2311.8	1.4815 2300.5	
	11:00	16			1.491 2311.8	1.4815 2300.5	
	13:00	18			1.491 2311.8	1.4815 2300.5	
	15:00	20			1.4915 2312.6	1.4815 2300.5	OFF BOTTOM
	15:52		LUB		.448 693.8	.443 686.6	BLEED LUBE
				END OF TEST			
				ELEMENT CALIBRATION 2.2.85 @ 225°F			

WIRELINE REPORT

CLIENT DELHI PETROLEUM WELL WANOOCHA #2

DATE 8.2.85

PROGRAMME CLOSE SSD AND PULL PX PLUG

PURPOSE OF WORK ZONE CHANGE

REPORT OF WORK PERFORMED RIG UP

RUN 2-7/8" B. SHIFTING TOOL AND OPEN SSD @ 5120' W/L RUN THROUGH 6 TIMES AND ALL INDICATIONS ARE THAT SLEEVE IS FULLY CLOSED. BLEED TUBING TO ZERO AND OBSERVE FOR ONE HOUR.

RUN 2" S.B. PULLING TOOL AND LATCH P PRONG @ 5612' W/L. PULL PRONG FROM PLUG. PRESSURE TOOL AND LATCH X PLUG @ 5611' W/L. PULL PLUG FROM HOLE.

RIG DOWN.

NB. ALL DEPTHS ARE WIRELINE MEASUREMENTS FROM TUBING HANGER.

Operator's Signature

WORKED PERFORMED BY C. MORRELL OF EXPERTEST PTY LTD

WELL DATA:

Tubing Size 2-7/8" FWHP SIWHP 780 PSI

Subsurface S.V./Landing Nipple @ SS.D. @ 5132

'X' Nipple @ 5630 'N'/'XN' Nipple @ 5640 Other @

Min. I.D. 2.205 @ 5640 Packer @ 5601

Perforated Interval: BIRKHEAD 5102 - 5120 PATCHAWARRA 5720 - 5739

Attachment #2

Extended Production Testing

Expertest Raw Data

1) 9/2/85 - 16/3/85

2) 20/3/85 - 10/4/85

WANCOOCHA #2
BIRKHEAD
EXTENDED TESTING
9.2.85/16.3.85



☐

Wireline Report

☒

Wellhead Data

☒

Production Data

☐

B.H.P. Flow / Buildup Data

☐

Production Rate Calculations

☐

Flowing/Static Gradient

☐

Bottom Hole Sampling

CLIENT DELHI PETROLEUM PTY. LTD.

WELL WANOOCHA #2



TELEPHONE (08) 354 0488 TELEX AAB7183

DATE 9/02/85 PAGE No 1

OPERATOR S. MAYER

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
						EXTENDED FLOW					BIRKHEAD FORMATION								
18:30	687	779				PRESSURE TEST FLOW LINES													
19:00	687	778				OPEN WELL - FLOWING ANNULUS THROUGH 10/64" ADJUSTABLE CHOKE TO TANK													
20:00	681	727	88	10/64															
21:00	681	799	88	10/64	0														
21:05						OPEN CHOKE TO 11/64"													
23:00	684	923	90	11/64	0														
23:15						OPEN CHOKE TO 12/64"													
10/02/85																			
03:00	686	951	93	12/64	0														
03:30						OPEN CHOKE TO 13/64"													
07:00	685	976	97	13/64	0														
07:15						CUT BACK CHOKE TO 12/64"													
11:00	688	998	109	12/64	0														
15:00	688	1012	111	↓	↓														
19:00	690	1029	109																
23:00	688	1021	108	↓	↓														

01

0181

EXTENDED FLOW BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY. LTD.

WELL WANCOOCHA #2



DATE 11/02/85 PAGE No 2

OPERATOR S. MAYER

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
03:00	689	1035	106	12/64	0														
07:00	690	1041	106																
11:00	692	1036	115																
15:00	691	1019	115																
19:00	690	1035	111																
19:30		ROCK CHOKE																	
23:00	688	1043	109			ROCK CHOKE													
12/02/85																			
03:00	689	1066	109			ROCK CHOKE													
07:00	691	1081	111																
11:00	692	1067	117			ROCK CHOKE													
15:00	694	1093	117			ROCK CHOKE													
19:00	694	1102	115			ROCK CHOKE													
23:00	692	1103	113			ROCK CHOKE													
13/02/85																			
03:00	693	1102	113																
07:00	693	1110	115			ROCK CHOKE													
11:00	694	1104	122	↓	↓			SHUT IN WELL TO CHANGE CHOKE.											
11:05				OPEN WELL ON 12/64" FIXED CHOKE.															

013

OPEN WELL ON 12/64" FIXED CHOKE.

SHUT IN WELL TO CHANGE CHOKE.

0182

EXTENDED FLOW BIRKHEAD FORMATION

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANCOOCHA #2



DATE 13/02/85 PAGE No 3

OPERATOR S. MAYER

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBLs/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H2O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H2O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
15:00	689	1128	129	12/64	0														
15:35		SHUT IN WELL TO CHANGE CHOKE																	
15:40		OPEN WELL ON 10/64" FIXED CHOKE																	
19:00	692	1109	118	10/64	0														
23:00	690	1101	117																
14/02/85																			
03:00	689	1096	113																
07:00	689	1092	111																
11:00	690	1091	118																
15:00	689	1091	126																
19:00	690	1089	118																
15/02/85																			
07:00	689	1073	113																
11:00	689	1065	126																
15:00	690	1062	126																
19:00	690	1089	118																
23:00	690	1058	115																
16/02/85																			
07:00	690	1055	115	↓	↓													0	

EXTENDED FLOW BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.						 TELEPHONE (08) 354 0488 TELEX AAR7183 128 RICHMOND ROAD MARLESTON SA 6033 POSTAL ADDRESS: PO BOX 354 CONNARDILLA 5033										DATE 16/02/85 PAGE No 4			
WELL WANOOCHA #2						OPERATOR S. MAYER													
DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
11:00	690	1044	120	10/64	0														
15:00	688	1037	124																
19:00	688	1034	117																
23:00	688	1039	115																
17/02/85																			
07:00	688	1034	113																
11:00	688	1035	118																
15:00	688	1043	122																
19:00	688	1036	118																
23:00	688	1037	117																
18/02/85																			
07:00	688	1045	113																
11:00	688	1043	118																
15:00	688	1047	122																
19:00	688	1042	118																
23:00	688	1043	111																
19/02/85																			
07:00	686	1036	109																
11:00	688	1044	125	↓	↓														

EXTENDED FLOW - BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANCOOCHA #2



DATE 19/02/85 PAGE No 5

OPERATOR I. KURASTAK

DATE TIME		WELLHEAD				H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
						H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
		CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS				
19/02/85																			
15:00	688	1051	127	10/64	0														
19:00	688	1043	114.8																
23:00	686	1049	111																
20/02/85																			
07:00	686	1040	111																
11:00	686	1042	127																
15:00	686	1037	131																
19:00	688	1044	116																
23:00	684	1041	113																
21/02/85																			
07:00	686	1037	113																
11:00	688	1051	124																
15:00	687	1052	129																
18:00	688	1037	117																
23:00	685	1031	115																
22/02/85																			
07:00	686	1031	113																
11:00	686	1036	125	↓	↓														

01

EXTENDED FLOW : BIRKHEAD FORMATION

CLIENT DELHI PETROLEUM PTY LTD

WELL WANCOCCHA #2



DATE 22/02/85 PAGE No 6

OPERATOR I. KJRASIAK

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBLs/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
22/02/85																			
15:00	688	1053	126	10/64	0														
19:00	682	1044	117																
23:00	687	1047	115																
23/02/85																			
07:00	685	1045	111																
11:00	685	1054	122																
15:00	686	1039	131																
19:00	684	1045	117																
23:00	685	1051	113																
24/02/85																			
07:00	687	1047	113																
11:00	685	1049	120																
15:00	684	1055	122																
19:00	683	1049	115																
23:00	683	1051	115																
25/02/85																			
07:00	685	1039	115																
11:00	685	1050	122	↓	↓														

EXTENDED FLOW : BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANCOOCHA #2



DATE 25/02/85 PAGE No 7

OPERATOR I. KURASIAK

WELLHEAD						H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
DATE TIME	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
25/02/85																			
15:00	684	1038	129	10/64	0														
19:00	685	1049	120																
23:00	685	1041	120																
26/02/85																			
07:00	685	1050	117																
11:00	683	1049	120																
15:00	685	1045	122																
19:00	682	1052	117																
23:00	682	1059	115																
27/02/85																			
07:00	684	1054	113																
11:00	683	1053	126																
15:00	684	1054	120																
19:00	685	1067	118																
23:00	682	1057	117																
28/02/85																			
07:00	687	1047	117																
11:00	683	1046	118																

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EXTENDED FLOW : BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANCOCOA #2



TELEPHONE (08) 354 0488 TELEX AA87183

DATE 28/02/85 PAGE No 8

OPERATOR I. KURASTAK

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHÖKE SIZE INS	B.S.W. %	P1 PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	P1 PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
28/02/85																			
15:00	685	1063	122	10/64	0														
19:00	682	1051	117																
23:00	683	1057	118																
2/03/85																			
07:00	682	1046	115																
11:00	684	1051	124																
15:00	684	1057	126																
19:00	683	1065	122																
23:00	682	1054	118																
2/03/85																			
07:00	682	1061	117																
11:00	684	1061	124																
15:00	683	1052	122																
19:00	679	1052	118																
23:00	682	1065	118																
3/03/85	AS OF 0200 HR 3/03/85 OUR CLOCKS WERE ADJUSTED 1 (ONE) HOUR "BACK" (I.E. 0200 - 0100) IN ACCORDANCE WITH CHANGING FROM DAYLIGHT SAVING TIME TO CENTRAL STANDARD TIME. 2/03/85 0700 HR UNTIL 3/03/85 0600 HR = 24 HOURS.																		
06:00	682	1052	115	10/64	0														
10:00	684	1049	122	"	"														

EXTENDED FLOW : BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANCOOCHA #2



DATE 3/03/85 PAGE No 9

OPERATOR I. KURASIAK

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
3/03/85																			
14:00	683	1041	122	10/64	0														
18:00	681	1051	120																
22:00	681	1054	118																
4/03/85																			
06:00	681	1055	117																
10:00	679	1053	124																
14:00	682	1057	122																
18:00	681	1063	115																
22:00	682	1046	118																
5/03/85																			
06:00	681	1066	115																
10:00	682	1060	120																
14:00	680	1069	117																
18:00	679	1049	117																
22:00	680	1054	118																
6/03/85																			
06:00	682	1045	115																
10:00	685	1057	120	↓	↓														

EXTENDED FLOW : BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANOOCHA #2



DATE 6/03/85 PAGE No 10

OPERATOR I. KURASIAK

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
6/03/85																			
14:00	681	1054	120	10/64	0														
18:00	680	1059	118																
22:00	681	1059	118																
7/03/85																			
06:00	682	1062	117																
10:00	678	1062	122																
14:00	679	1063	122																
18:00	677	1063	120																
22:00	679	1049	119																
8/03/85																			
06:00	680	1071	117																
10:00	682	1065	126																
14:00	682	1059	122																
18:00	678	1059	120																
22:00	678	1055	118																
9/03/85																			
06:00	678	1058	113																
10:00	678	1069	124																

EXTENDED FLOW : BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY. LTD.

WELL WANOOOCHA #2



DATE 9/03/85 PAGE No 11

OPERATOR I. KURASIAK

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
9/03/85																			
14:00	677	1060	124	10/64	0														
18:00	678	1062	121																
22:00	679	1049	118																
10/03/85																			
06:00	678	1058	118																
10:00	678	1058	122																
14:00	678	1061	126																
18:00	675	1059	120																
22:00	678	1067	118																
11/03/85																			
06:00	677	1066	117																
10:00	678	1065	124																
14:00	675	1050	124																
18:00	672	1069	122																
22:00	681	1057	118																
12/03/85																			
06:00	679	1056	119																
10:00	678	1067	118	✓	✓													0	

EXTENDED FLOW : BIRKHEAD

CLIENT DELHI PETROLEUM PTY LTD.																DATE 12/03/85 PAGE No 12			
WELL WANCOOCHA #2																OPERATOR DAVID KAY			
DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
12/03/85																			
14:00	679	1069	123	10/64	0														
18:00	678	1063	120																
22:00	678	1070	120																
13/03/85																			
06:00	677	1057	118																
10:00	680	1048	120																
14:00	678	1069	127																
18:00	678	1067	122																
22:00	677	1071	120																
14/03/85																			
06:00	676	1057	116																
10:00	678	1070	123																
14:00	679	1050	127																
18:00	676	1075	122																
22:00	675	1049	118																
15/03/85																			
06:00	676	1068	117																
10:00	678	1053	125	↓	↓														

EXTENDED FLOW : BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANCOOCHA #2.



DATE 15/03/85 PAGE No 13

OPERATOR DAVID KAY

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
						H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
15/03/85																			
14:00	679	1055	129	10/64	0														
18:00	676	1051	116																
22:00	676	1062	111																
16/03/85																			
06:00	677	1073	118																
10:00	679	1059	124																
14:00	674	1054	126																
18:00	674	1059	122																
18:00						SHUT WELL IN DUE TO RAIN.													
19/03/85																			
18:00						FLOW WELL TO STOCK TANK.													
22:00	675	833	100																
20/03/85																			
06:00	671	913	104																
10:00	677	938	107																
14:00	676	964	117																
18:00	674	980	105																

EXTENDED FLOW - BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD

TANK:— CAPACITY 377 BBLs
SCALE 1.695 BBLs/INCH

WELL WANOOCHA #2

DATE 9/2/85 PAGE No 1

OPERATOR S. MAYER

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
19:00	0		5.0	-	-	0								BEGIN TEST
20:00	1		12.75	13.14	315.3	13.14								
21:00	2		19.25	11.02	264.4	34.16	53.7							
23:00	4		32.5	22.46	269.5	67.62	53.6							
	FEB 10, 1985													
03:00	8		73.5	69.50	416.9	137.12	54.0							
07:00	12		153.75	136.02	816.1	273.14	53.9							
10:00	15		188.25	58.48		331.62	CHANGE TANKS.							
10:00	15	TARE	6.0											
11:00	16		19.25	22.46	485.6	354.08	55.4							
15:00	20		65.5	78.39	470.4	432.37	54.8							
19:00	24		114.0	82.21	493.2	514.68	54.9							
23:00	28		158.25	75.00	450.0	589.68	53.9							
	FEB 11, 1985													
03:00	32		206.5	81.78	490.7	671.46	54.8	CHANGE TANKS.						
03:00	32	TARE	16.25											
07:00	36		54.5	64.83	389.0	736.29	54.1							
09:00	38		76.75	37.75		774.04		CHANGE TANKS.						
09:00	38	TARE	6.0											
11:00	40		28.0	37.29	450.2	811.33	55.3							

EXTENDED FLOW - BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD

TANK:— CAPACITY 377. BBLs

SCALE 1.695. BBLs/INCH



TELEPHONE (08) 354 0488 TELEX AAB7183

WELL WANOOCHA #2

DATE 11/2/85 PAGE No 2

OPERATOR S. MAYER.

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
15:00	44		70.5	72.04	432.2	883.37	55.6							
19:00	48		111.75	69.92	419.5	953.29	55.5							
21:17			140.0	47.88		1001.17								
21:17		TARE	4.5											
23:00	52		27.25	38.56	518.6	1039.73	55.2							
	FEB 12, 1985													
03:00	56		77.25	84.75	508.5	1124.48	55.2							
07:00	60		125.0	80.94	485.6	1205.42	55.5							
11:00	64		171.75	79.24	475.4	1284.66	55.6							
15:00	68		227.5	94.50	566.9	1379.66	55.4							
15:00	68	TARE	35.75											
19:00	72		83.0	80.09	480.5	1459.75	55.0							
23:00	76		122.5	66.95	401.7	1526.70	55.9							
	FEB 13, 1985													
03:00	80		166.0	73.73	442.4	1600.43	55.0							
07:00	84		205.0	66.11	396.6	1666.54	55.1							
08:45			220.5	26.27		1692.81								
08:45		TARE	6.5											
11:00	88		35.75	49.58	455.1	1728.56	56.2							
15:00	92		104.25	116.11	696.6	1844.67	56.4							

EXTENDED FLOW - BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD

TANK:- CAPACITY 377 BELLS
SCALE 1.695 BELLS/INCH

WELL WANCOCCHA #2

DATE 13/2/85 PAGE No 3

OPERATOR S. MAYER

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
19:00	96		159.25	93.23	559.4	1937.90	55.4					0		
23:00	100		208.5	83.48	500.9	2021.38	55.4	CHANGE	TANKS.					
23:00	100	TARE	35.5											
	FEB. 14, 1985													
03:00	104		74.25	65.68	394.1	2087.06	56.0							
07:00	108		125.0	86.02	516.1	2173.08	55.8							
10:10			166.5	70.34		2243.42		CHANGE	TANKS.					
10:10		TARE	4.5											
11:00	112		16.5	16.95	523.7	2260.37	56.5							
15:00	116		69.25	89.41	536.5	2349.78	55.6							
19:00	120		124.0	92.80	556.8	2442.58	55.5							
	FEB. 15, 1985													
00:30	125.5		191.0	113.57		2556.15		CHANGE	TANKS.					
00:30	125.5	TARE	5.5											
07:00	132		88.25	140.26	507.7	2696.41	55.1							
11:00	136		142.75	92.37	554.3	2788.78	56.3							
12:00	137		153.0	17.37		2806.15		CHANGE	TANKS.					
12:00	137	TARE	58.5											
15:00	140		101.0	72.04	536.4	2878.19	56.3							
19:00	144		155.0	91.53	549.2	2969.72	56.0							

EXTENDED FLOW BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.

TANK:— CAPACITY 377. BLS.
SCALE 1.695. BLS/INCH.

WELL WANCOOCHA #2

DATE 15/2/85 PAGE No 4

OPERATORS. MAYER

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BLS	FLOWRATE BLS/DAY	CUM. PROD. BLS.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
23:00	148		205.75	86.02	516.1	3055.74	55.9	CHANGE TANKS.				0		
23:00	148	TARE	17.75											
	FEB: 16, 1985													
07:00	156		119.0	171.62	514.9	3227.36	56.0							
09:20			147.25	47.88		3275.24		CHANGE TANKS.						
09:20		TARE	5.0											
11:00	160		26.75	36.87	508.5	3312.11	55.9							
15:00	164		78.25	87.29	523.8	3399.40	56.0							
19:00	168		129.5	86.87	521.2	3486.27	55.8							
23:00	172		182.25	89.41	536.5	3575.68	55.6	CHANGE TANKS.						
23:00	172	TARE	80.5											
	FEB. 17, 1985													
07:00	180		176.25	162.30	486.9	3737.98	55.4							
11:00	184		229.0	89.41	536.5	3827.39	55.7							
11:00	184	TARE	50.0					CHANGE TANKS.						
15:00	188		101.5	87.29	523.8	3914.68	56.0							
16:40			124.0	38.14		3952.82		CHANGE TANKS.						
16:40		TARE	6.0											
19:00	192		33.25	46.19	506.0	3999.01	55.5							
23:00	196		85.25	88.14	528.8	4087.15	55.1							

EXTENDED FLOW BIRKHEAD FORMATION

CLIENT DELHI PETROLEUM PTY LTD.

TANK:— CAPACITY 377 BBLs.
SCALE 1.695 BBLs/INCH

WELL WANCOCCHA #2

DATE 18/2/85.....PAGE No 5.....

OPERATOR S. MAYER

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs.	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
07:00	204		184.5	168.23	504.7	4255.38	55.0					0		
10:40			231.0	78.82		4334.20		CHANGE TANKS.						
10:40		TARE	80.0											
11:00	208		84.75	8.05	521.2	4342.25	56.3							
15:00	212		136.25	87.29	523.8	4429.54	55.1							
15:45			144.25	13.56		4443.10		CHANGE TANKS.						
15:45		TARE	5.0											
19:00	216		46.5	70.34	503.4	4513.44	55.4							
23:00	220		98.25	87.72	526.3	4601.16	54.3							
	FEB. 19, 1985													
07:00	228		201	174.16	522.48	4775.32	55.1					0		
07:00	228	TARE	101.25					CHANGE TANKS.						
09:35			133.75	55.08		4830.4		CHANGE TANKS.						
09:35		TARE	6.5											
11:00	232		24	29.66	508.45	4860.06	55.3					0		
15:00	236		74.5	85.59	513.58	4945.65	55.1					0		
19:00	240		125.25	86.02	516.12	5031.67	56.1					0		
23:00	244		176.5	86.86	521.21	5118.51	57.5	CHANGE TANKS				0		
23:00		TARE	4.5											

CLIENT DELHI PETROLEUM PTY LTD.

TANK:— CAPACITY . . 377 BBL'S
SCALE . . 1.695 BBL'S/INCH

WELL WANCOCOA #2

DATE 20/2/85 PAGE No 6

OPERATOR I. KURASIAK

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION					REMARKS	
		METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.		SALINITY PPM
			INCHES	BBL'S	BBL'S/DAY	BBL'S.			INCHES	BBL'S.	BBL'S/DAY	BBL'S.		
			4.5	OPENING DIP		5118.51			0.0			0.0		
	FEB. 20, 1985													
07:00	252		109.5	177.97	533.92	5296.48	54.8		0.0			0.0		
11:00	256		159.25	84.32	505.95	5380.8	56.9		0.0			0.0		
15:00	260		211	87.71	526.29	5468.51	56.5		0.0			0.0	CHANGE TANKS.	
15:00			176.5	OPENING DIP					0.0	OPENING DIP				
19:00	264		227.5	86.44	518.67	5554.95	56.6		0.0			0.0	CHANGE TANKS.	
19:00			4.5	OPENING DIP					0.0	OPENING DIP				
23:00	268		57.25	89.41	536.46	5644.36	57.0		0.0			0.0		
	FEB. 21, 1985													
07:00	276		159.5	173.31	519.94	5817.67	56.2		0.0			0.0		
11:00	280		210.5	86.44	518.67	5904.11	56.5		0.0			0.0		
11:00			159.5	OPENING DIP					0.0	OPENING DIP			CHANGE TANKS.	
15:00	284		210	85.59	513.58	5989.7	57.8		0.0			0.0	CHANGE TANKS.	
15:00			4.5	OPENING DIP					0.0	OPENING DIP				
19:00	288		58.75	91.95	551.72	6081.65	57.1		0.0			0.0		
23:00	292		109.5	86.02	516.12	6167.67	57.5		0.0			0.0		
	FEB. 22, 1985													
0700	300		211.25	172.46	517.39	6339.85	57.3		0.0			0.0		

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EXTENDED FLOW - BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.

TANK: - CAPACITY 377

SCALE 1.695 BBL/S/INCH



WELL WANCOCCHA #2

DATE 22/2/85 PAGE No 7

OPERATOR I. KURASIAK

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBL/S.	FLOWRATE BBL/S/DAY	CUM. PROD. BBL/S.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES	TANK PROD. BBL/S.	FLOWRATE BBL/S/DAY	CUM. PROD. BBL/S.	SALINITY PPM	
		OPENING DIP	3.5			6339.85			0.0			0.0		CHANGED TANKS.
	FEB. 22, 1985													
11:00	304		56.75	90.25	541.55	6430.1	58.0		0.0			0.0		
15:00	308		108	86.86	521.21	6516.96	58.0		0.0			0.0		
19:00	312		160	88.14	528.85	6605.1	57.5		0.0			0.0		
23:00	316		210	84.75	508.5	6689.85	57.5		0.0			0.0		
23:00			5	OPENING DIP					0.0			0.0		CHANGED TANKS.
	FEB. 23, 1985													
07:00	324		109.5	177.12	531.38	6866.97	56.6		0.0			0.0		
11:00	328		158.5	83.05	498.33	6950.02	57.5		0.0			0.0		
11:00		OPENING DIP	3.25						0.0			0.0		CHANGED TANKS.
15:00	332		61	97.88	587.31	7047.9	58.5		0.0			0.0		
19:00	336		108.75	80.93	485.61	7128.83	57.4		0.0			0.0		
23:00	340		158.5	84.32	505.95	7213.15	57.5		0.0			0.0		CHANGED TANKS.
	FEB. 24, 1985													
		OPENING DIP	5.						0.0					
07:00	348		107.5	173.73	521.19	7386.88	55.1		0.0			0.0		CHANGED TANKS.
07:00			158.5	OPENING DIP										
11:00	352		208.75	85.17	511.04	7472.05	55.6		0.0			0.0		CHANGED TANKS.

CLIENT DELHI PETROLEUM PTY LTD.

TANK: — CAPACITY 377 BBLs.
SCALE 1.695 BBLs/INCH

WELL WANOOOCHA #2

DATE 24/2/85 PAGE No 8

OPERATOR IRENEUSZ KURASIAK

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES	TANK PROD. BBLs.	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
11:00	352		107.5			7472.05			0.0			0.0		OPENING DIP.
24/2/85														
15:00	356		161.75	91.95	551.72	7564.00	54.8		0.0			0.0		
17:00			184.75	38.98										CHANGED TANKS.
17:00			3.75						0.0			0.0		OPENING DIP.
19:00			32.	47.88										
19:00	360			86.86	521.18	7650.86	56.6		0.0			0.0		
23:00	364		85.75	91.10	541.63	7741.96	55.7		0.0			0.0		
25/2/85														
07:00	372		183.5	165.68	497.05	7907.62	54.4		0.0			0.0		
09:00			208.25	41.95										CHANGED TANKS.
09:00			120.25						0.0					OPENING DIP.
11:00			146.75	44.94										
11:00	376			86.86	521.18	7994.48	56.2		0.0			0.0		
12:00			159.5	21.61										CHANGED TANKS.
12:00			3						0.0					OPENING DIP.
15:00	380		45.5	72.03										
15:00	380			93.64	561.84	8088.12	55.9		0.0			0.0		
19:00	384		96.5	86.44	518.67	8174.56	55.6		0.0			0.0		
23:00	388		146.5	84.75	508.5	8259.31	54.6		0.0			0.0		CHANGED TANKS.

EXTENDED FLOW - BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.

TANK:— CAPACITY 377 BBLs.

SCALE 1.695 BBLs/INCH.



WELL WANOOOCHA #2

DATE 26/02/85 PAGE No9

OPERATOR I. KURASIAK.

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs.	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES.	TANK PROD. BBLs.	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
26/02/85														
07:00			4.75			8259.31			0			0		
07:00	396		107.	173.31	519.94	8432.62	55.9		0			0		
11:00	400		156	83.05	498.33	8515.67	56.6		0			0		CHANGED TANKS.
11:00			2.75						0					OPENING DIP.
15:00	404		57	91.95	551.72	8607.62	55.4		0			0		
19:00	408		107.5	85.59	513.58	8693.21	54.4		0			0		
23:00	412		157	83.90	503.41	8777.11	54.3		0			0		CHANGED TANKS.
			30.75	OPENING	DIP.				0			0		
27/02/85														
07:00	420		132.75	172.23	518.67	8950	54.1		0			0		
11:00	424		184.5	87.71	526.29	9037.71	54.7		0			0		
11:00			32						0			0		OPENING DIP.
15:00	428		85	89.83	539.01	9127.54	54.7		0			0		
19:00	432		135.75	86.02	516.12	9213.56	54.4		0			0		
23:00	436		184.25	82.20	493.24	9295.76	54.5		0			0		CHANGED TANKS.
23:00			44	OPENING	DIP.									OPENING DIP.
28/02/85														
07:00	444		148	176.28	528.84	9472.04	54.4		0			0		

EXTENDED FLOW - BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD. TANK:— CAPACITY . 377. BBLs. SCALE . 1.695. BBLs/INCH.		WELL WANCOOCHA #2 DATE 28/02/85 PAGE No 10 OPERATOR I. KURASTAK
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DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES.	TANK PROD. BBLs.	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
28/02/85														
07:00	444		148			9472.04	54.3		0			0		
10:00			186	64.41										CHANGED TANKS.
10:00			5.25						0			0		OPENING DIP.
11:00	448		19	23.30										
11:00	448			87.71	526.29	9559.75	54.4		0			0		
15:00	452		70.5	87.29	523.75	9647.04	54.5		0			0		
19:00	456		121.75	86.86	521.21	9733.9	54.6		0			0		
23:00	460		172	85.17	511.04	9819.07	54.9		0			0		CHANGED TANKS.
23:00	460		97.25						0			0		OPENING DIP.
1/03/85														
07:00	468		198.75	171.73	515.21	9990.80	54.6		0			0		CHANGED TANKS.
07:00			96.75						0					OPENING DIP.
10:00			135	64.83										CHANGED TANKS.
10:00			2						0					OPENING DIP.
11:00	472		17.5	26.27					0					
11:00	472			91.10	546.61	10081.90	54.7		0			0		
15:00	476		68.25	86.02	516.12	10167.92	54.5		0			0		
19:00	480		120.5	88.56	531.38	10256.48	54.4		0			0		
23:00	484		170	83.9	503.41	10340.38	54.3		0			0		

CLIENT ... DELHI PETROLEUM PTY LTD. TANK:— CAPACITY ... 337 BBLs. SCALE 1.695 BBLs/INCH.		WELL WANCOOCHA #2 DATE 2/03/85 PAGE No 11 OPERATOR I. KURASIAK
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DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY "AP160F"	METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
			63.25			10340.38			0			0		OPENING DIP.
2/03/85														
07:00	492		166	174.16	522.48	10514.54	55.6		0			0		
10:00			203.5	63.56					0			0		CHANGED TANKS.
10:00			3											OPENING DIP.
11:00	496		17.75	25.00										
11:00	496			88.56	531.36	10603.1	54.6		0			0		
15:00	500		69	86.86	521.21	10689.96	53.8		0			0		
19:00	504		119.5	85.59	513.58	10775.55	54.5		0			0		
23:00	508		170	85.59	513.58	10861.14	54.4		0			0		CHANGED TANKS.
23:00			100.75	AS OF 0200 HRS 03/03/85 OUR CLOCKS WERE ADJUSTED 1 (ONE) HOUR 'BACK' (I.E. 0200 - 0100) IN ACCORDANCE WITH CHANGING FROM DAYLIGHT SAVING TIME TO CENTRAL STANDARD TIME.										OPENING DIP.
3/03/85				2/03/85 0700 HRS.	UNTIL 3/03/85 0600 HRS = 24 HOURS.									
06:00	516		202.75	172.89	518.67	11034.03	54.7		0			0		CHANGED TANKS.
06:00			170						0					OPENING DIP.
10:00	520		218.75	82.63	495.78	11116.66	54.5		0			0		CHANGED TANKS.
10:00			7						0					OPENING DIP.
14:00	524		60.5	90.52	543.13	11207.18	54.1		0			0		
18:00	528		112	87.29	523.75	11294.44	54.0		0			0		
22:00	532		162	84.75	508.5	11379.19	55.0		0			0		CHANGED TANKS.

EXTENDED FLOW - BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY. LTD.

TANK:— CAPACITY 377 BBLs.
SCALE 1.695 BBLs/INCH

WELL WANCOCCHA #2

DATE 4/03/85.....PAGE No 12.....

OPERATOR I. KURASIAK.....

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
			8			11379.19			0			0		OPENING DIP.
4/03/85														
06:00	540		112	176.28	528.84	11555.47	54.7		0			0		
10:00	544		161	83.05	498.33	11638.52	54.2		0			0		CHANGED TANKS.
10:00			5						0					OPENING DIP
14:00	548		58.5	90.68	544.09	11729.20	54.6		0			0		
18:00	552		107.75	83.47	500.87	11812.67	54.1		0			0		
22:00	556		158	85.17	511.04	11897.84	54.8		0			0		CHANGED TANKS.
22:00			46											OPENING DIP.
5/03/85														
06:00	564		149.5	175.43	526.29	12073.27	54.5		0			0		
10:00	568		199	83.90	503.41	12157.17	54.5		0			0		CHANGED TANKS.
10:00			80						0					OPENING DIP.
14:00	572		131	86.44	518.67	12243.61	54.4		0			0		
18:00	576		182	86.44	518.67	12330.05	54.1		0			0		CHANGED TANKS.
18:00			3						0					OPENING DIP.
22:00	580		56.5	90.68	544.09	12420.73	54.7		0			0		
6/03/85														
06:00	588		156.5	169.5	508.5	12590.23	54.3		0			0		
10:00	592		207.	85.59	513.58	12675.82	54.5		0			0		CHANGED TANKS.

EXTENDED FLOW - BIRKHEAD FORMATION

CLIENT ELHI PETROLEUM PTY LTD.

TANK:— CAPACITY 377 BELS.
SCALE 1.695 BELS/INCH.

WELL WANCOOCHA #2

DATE 6/03/85. PAGE No 13

OPERATOR I. KURASIAK

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BELS	FLOWRATE BELS/DAY	CUM. PROD. BELS.	OIL CONDENSATE GRAVITY "AP160F"	METER READG	TANK DIP INCHES	TANK PROD. BELS	FLOWRATE BELS/DAY	CUM. PROD. BELS.	SALINITY PPM	
			4.75			12675.82			0			0		OPENING DIP.
6/03/85														
14:00	596		57.5	89.41	536.46	12765.23	54.7		0			0		
18:00	600		108.25	86.02	516.12	12851.25	54.4		0			0		
22:00	604		158	84.32	505.95	12935.57	54.4		0			0		CHANGED TANKS.
22:00			37						0			0		OPENING DIP.
7/03/85														
06:00	612		141.5	177.12	531.38	13112.69	54.7		0			0		
10:00	616		191	83.90	503.41	13196.59	54.3		0			0		
10:10			192.5	2.54					0			0		CHANGED TANKS.
10:10			4.75						0					OPENING DIP.
14:00	620		54.75	84.75										
14:00	620			87.29	523.74	13283.88	54.5		0			0		
15:05			68.25	22.88					0					CHANGED TANKS.
15:05			2.75						0					OPENING DIP.
18:00	624		43.5	69.07										
18:00	624			91.95	551.70	13375.83	54.1		0			0		
22:00	628		94.5	86.44	518.67	13462.27	54.7		0			0		
8/03/85														

CLIENT DELHI PETROLEUM PTY LTD.

TANK: - CAPACITY 377. BBLs.

SCALE 1.695 BBLs/INCH.



WELL WANCOOCHA #2

DATE 8/03/85 PAGE No 14

OPERATOR I. KURASTAK.

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES	TANK PROD. BBLs.	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
			94.5			13462.27			0			0		
8/03/85														
06:00	636		193	166.95	500.87	13629.22	54.9		0			0		CHANGED TANKS.
06:00			4.75						0					OPENING DIP.
10:00	640		58	90.25	541.55	13719.47	54.4		0			0		
14:00	644		108.25	85.17	511.04	13804.64	54.1		0			0		
18:00	648		159	86.02	516.12	13890.66	54.8		0			0		
18:40			168	15.25					0					CHANGED TANKS.
18:40			2.75											OPENING DIP.
22:00			47.5	75.85										
22:00	652			91.10	546.60	13981.76	54.1		0			0		
9/03/ 85														
06:00	660		147.75	169.92	509.77	14151.68	54.6		0			0		
10:00	664		198.5	86.02	516.12	14237.70	54.2		0			0		CHANGED TANKS.
10:00			117.5						0					OPENING DIP.
14:00	668		169.25	87.71	526.29	14325.41	54.7		0			0		
18:00	672		220.5	86.86	521.21	14412.27	54.2		0			0		CHANGED TANKS.
18:00			2.75						0					OPENING DIP.
22:00	676		56	90.25	541.55	14502.52	54.6		0			0		

EXTENDED FLOW - BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY. LTD.....

TANK:— CAPACITY 377 BBLs.
SCALE 1.695 BBLs/INCH.....

WELL WANCOOCHA #2.....

DATE 10/03/85..... PAGE No 15.....

OPERATOR I. KURASIAK.....

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES	TANK PROD. BBLs.	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY FPM	
			56			14502.52			0			0		
10/03/85														
06:00	684		156.5	170.34	511.04	14672.86	54.5		0			0		
10:00	688		206.75	85.17	511.04	14758.03	54.3		0			0		CHANGED TANKS.
10:00			4.75						0			0		OPENING DIP.
14:00	692		57.25	88.98	533.92	14847.01	54.4		0			0		
18:00	696		109	87.71	526.29	14934.72	54.0		0			0		
21:15			149.5	68.64										CHANGED TANKS.
21:15			2.75											OPENING DIP.
22:00	700		14.75	20.34										
22:00	700			88.98	533.88	15023.7	54.8		0			0		
11/03/85														
06:00	708		115.5	170.77	512.31	15194.47	54.8		0			0		
09:28			159.25	74.15										CHANGED TANKS.
09:28			4.75											OPENING DIP.
10:00	712		13.25	14.40										
10:00	712			88.55	531.34	15283.02	54.6		0			0		
14:00	716		64	86.02	516.12	15369.04	54.7		0			0		
18:00	720		117.25	90.25	541.55	15459.29	54.9		0					
22:00	724		165	80.93	485.61	15540.22	54.4		0			0		

CLIENT DELHI PETROLEUM PTY LTD.

TANK:— CAPACITY . 377. BBLs.

SCALE . 1.695 BBLs/INCH.



138 RICHMOND ROAD MARLBOROUGH SA 5033

POSTAL ADDRESS: PO BOX 354 CONNARDILLA 5033

WELL WANOOOCHA #2

DATE 11/03/85 PAGE No 16

OPERATOR DAVID KAY.

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
11/03/85														
22:00	TARE DIP		9.5						0					CHANGE TANK.
12/03/85														
06:00	732		107	165.26	495.78	15705.4	54.9		0					
10:00	736		156	83.05	498.3	15788.5	55		0					
14:00	740		207.5	87.29	523.7	15875.8	54.6		0					
14:00	TARE DIP		12						0					CHANGE TANK.
18:00	744		61	83.04	498.3	15958.4	55.5		0					
22:00	748		115	91.53	549.18	16049.9	55.1		0					
13/03/85														
06:00	756		215.5	170.34	511	16220.2	54.9		0					
06:00	TARE DIP		2.75											CHANGE TANK.
10:00	760		56.25	90.68	544.0	16310.8	54.7		0					
14:00	764		113	96.19	577.1	16406.9	54.4		0					
18:00	768		162	83.05	498.3	16489.9	54		0					
22:00	772		208.5	78.8	472.9	16568.7	55.2		0					
22:00	TARE DIP		62											CHANGE TANK.
14/03/85														
06:00	780		165.25	175.0	525	16743.7	56.1		0					
10:00	784		215	84.32	505.9	16828.7	56		0					
CHANGE TANKS.														

EXTENDED FLOW BIRKHEAD.

CLIENT. DELHI PETROLEUM PTY LTD.

TANK:— CAPACITY 377 BBLS

SCALE 1,695 BBLS = 1"



WELL WANCOCCHA #2

DATE 14/03/85 PAGE No 16

OPERATOR DAVID KAY.

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLS	FLOWRATE BBLS/DAY	CUM. PROD. BBLS	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES	TANK PROD. BBLS	FLOWRATE BBLS/DAY	CUM. PROD. BBLS.	SALINITY PPM	
14/03/85														
10:00			3						0					CHANGE TANKS.
14:00	788		55	88.14	528.8	16916.1	55.7							
18:00	792		108	89.83	539	17005.9	55.3							
22:00	796		156.5	82.20	493.2	17088.1	55.5							
22:00			4.5											CHANGE TANKS.
15/03/85														
06:00	804		108	175.43	526.2	17263.5	56.1							
10:00	808		157.25	83.47	500.8	17346.9	54.6							
14:00	812		209	87.71	526.2	17434.6	54.6							
16:00			2.75											CHANGE TANKS.
18:00	816		56	90.25	541.5	17524.8	54.4							
22:00	820		108	88.14	528.8	17612.9	55							
16/03/85														
06:00	828		207	167.8	503.4	17780.7	55.5							
06:00	TARE DIP		56											CHANGE TANKS.
10:00	832		106.5	85.59	513.5	17866.2	55.8							
14:00	836		157	85.59	513.5	17951.7	5.6							
18:00	840		209	88.14	528.8	18039.8	54.9							
18:00														SHUT WELL IN.

WANCOOCHA #2
BIRKHEAD
EXTENDED FLOW
20.3.85/10.4.85



☐

Wireline Report

☒

Wellhead Data

☒

Production Data

☐

B.H.P. Flow / Buildup Data

☐

Production Rate Calculations

☐

Flowing/Static Gradient

☐

Bottom Hole Sampling

EXTENDED FLOW : BIRKHEAD FORMATION.

CLIENT DELHI PETROLEUM PTY LTD.						 136 RICHMOND ROAD MARLBOROUGH SA 5033 TELEPHONE (08) 354 0488 TELEX AAB7183 POSTAL ADDRESS: PO BOX 354 CONNARDILLA 5033										DATE 20/03/85		PAGE No 14	
WELL WANCOCCHA #2						OPERATOR DAVID KAY													
DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
20/03/85																			
22:00	676	985	108	10/64	0														
21/03/85																			
06:00	677	996	106																
10:00	678	1018	116																
14:00	675	1006	120																
18:00	672	997	115																
22:00	673	1021	109																
22/03/85																			
06:00	671	1036	110																
10:00	670	1026	119																
14:00	669	1023	127																
18:00	672	1018	118																
22:00	674	1033	113																
23/03/85																			
06:00	672	1035	114																
10:00	673	1036	124																
14:00	674	1049	125	↓	↓														

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANCOOCHA #2



DATE 23/3/85 PAGE No 15

OPERATOR D. KAY

DATE TIME		WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
							H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
		CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
23/3/85																				
18:00		669	1029	122	10/64	0														
22:00		669	1024	116																
24/3/85																				
06:00		670	1049	114																
10:00		671	1041	123																
14:00		670	1052	126																
18:00		669	1047	121																
22:00		671	1041	120																
25/3/85																				
06:00		671	1052	112																
10:00		670	1049	116																
14:00		669	1054	122																
18:00		669	1044	122																
22:00		670	1059	117																
26/3/85																				
06:00		670	1037	116																
10:00		669	1051	122																
14:00		669	1051	124																

02

CLIENT DELHI PETROLEUM PTY. LTD.

WELL WANCOOCHA #2 (BIRKHEAD)



DATE 26.3.85 PAGE No 16

OPERATOR M. SAUNDERS

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
26/3/85																			
18:00	669	1036	122	10/64	0														
22:00	669	1038	121																
27/3/85																			
06:00	669	1041	121																
10:00	676	1046	122																
14:00	668	1053	123																
18:00	666	1069	123																
22:00	667	1056	122																
28/3/85																			
06:00	669	1033	115																
10:00	667	1050	124																
14:00	665	1044	124																
18:00	663	1037	120																
22:00	667	1049	122																
29/3/85																			
06:00	663	1049	120																
10:00	665	1061	125																
14:00	665	1060	122																

WELL WANCOOCHA #2 (BIRKHEAD)



DATE 29/3/85 PAGE No 17

OPERATOR M. SAUNDERS

[illegible]

0216

PRODUCTION DATA

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANCOOCHA #2 (BIRKHEAD)



DATE 30/3/85 PAGE No 18

OPERATOR M. SAUNDERS

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBLs/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
30/3/85																			
06:00	667	1064	120	10/64	0														
10:00	665	1060	124																
14:00	666	1055	125																
18:00	666	1049	122																
22:00	667	1054	124																
31/3/85																			
06:00	667	1061	123																
10:00	668	1065	127																
14:00	667	1048	120																
18:00	667	1072	120																
22:00	666	1066	124																
1/4/85																			
06:00	668	1068	120																
10:00	666	1061	122																
14:00	663	1054	120																
18:00	665	1066	120																
22:00	665	1065	123																

02

CLIENT DELHI PETROLEUM PTY LTD.

WELL WANCOOCHA #2 (BIRKHEAD)



DATE 2/3/85 PAGE No 19

OPERATOR M. SAUNDERS.

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
2/4/85																			
06:00	667	1063	116	10/64	0														
12:30	666	1058	122			SHUT IN WELL TO SERVICE FLOWLINE.													
18:00	663	1060	120																
22:00	665	1065	118																
3/4/85																			
06:00	665	1061	118																
14:00	661	1060	124																
22:00	653	1058	120																
4/4/85																			
06:00	649	1051	119																
18:00	659	1055	122																
5/4/85																			
06:00	659	1048	119																
18:00	662	1039	120																
6/4/85																			
06:00	662	1067	120																
18:00	660		122	↓	↓														

CLIENT DELHI PETROLEUM.....

WELL WANCOOCHA #2 (BIRKHEAD).....



DATE 7/4/85..... PAGE No 20.....

OPERATOR M SAUNDERS.....

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
7 APRIL 1985																			
06:00	657	1021	120	10/64	0														
18:00	657	1019	123																
8 APRIL 1985																			
06:00	655	1031	119																
18:00	659	1015	123																
9 APRIL 1985																			
06:00	656	1013	118																
18:00	652	1040	117																
10 APRIL 1985																			
06:00	657	1022	120																
18:00	653	1035	124																
11 APRIL 1985																			
06:00	652	1041	119																
18:00	651	1046	123																
12 APRIL 1985																			
06:00	652	1046	119																
18:00	652	1028	125																

CLIENT DELHI PETROLEUM PTY. LTD.

TANK: — CAPACITY 377. BBLs.

SCALE 1.695 BBLs = 1"

EXTENDED FLOW BIRKHEAD.



138 RICHMOND ROAD MARLBOROUGH SA 5033

TELEPHONE (08) 364 0468 TELEX AA87183

POSTAL ADDRESS: PO BOX 364 GOMANDILLA 5033

WELL WANCOCCHA #2

DATE 19/03/85 PAGE No 17...

OPERATOR DAVID KAY

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs TOTAL	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INCHES	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
19/03/85														
18:00	TARE DIP		3						0					FLOW WELL TO STOCK TANK.
22:00	844		57	91.53	549.1	18131.3	55.6							
20/03/85														
06:00	852		158.5	172	516.1	18303.3	55.5							
10:00	856		207	82.2	493.2	18385.5	55.1							
10:00	TARE DIP		5											CHANGE TANK
14:00	860		58	89.8	539	18475.3	54.7							
18:00	864		111	89.8	539	18565.1	55.3							
22:00	868		159.5	82.2	493.2	18647.3	55							CHANGE TANK.
22:00	TARE DIP		2.5											
21/03/85														
06:00	876		108	178.8	536.46	18826.1	55.4							
10:00	880		157	83.05	498.3	18909.1	55.7							
14:00	884		211.25	91.95	551.7	19001.0								
14:00	TARE DIP		4.5											ONLY 3 HRS. 15 MINS. OF FLOW DURING 1400 & 1800 HR PERIOD CHANGE TANK. DUE TO LOADING TANKER.
18:00	888		49	75.42	557	19076.4	54.8							
22:00	892		100	86.44	518.6	19162.8	54.7							
22/03/85														
06:00	900		202	172.89	518.6	19335.6	54.4							

CLIENT DELHI PETROLEUM PTY. LTD.

TANK:— CAPACITY 377 BBLs
SCALE 1.695 BBLs = 1"



WELL MANCOOCHA #2
DATE 22/3/85 PAGE No 18
OPERATOR .. DAVID. KAY.

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
22/3/85														
06:0	TARE DIP		55"						0					CHANGE TANK
10:00	904		58.5	89.83	539	19425.4	55.9							
14:00	908		117	99.15	594.9	19524.5	55.5							
14:00	TARE DIP		5.5											CHANGE TANKS
18:00	912		57.25	87.71	526.29	19612.2	56							
22:00	916		107	84.32	505.9	19696.5	54.9							
23/3/85														
06:00	924		210.5	175.43	526.2	19871.9	54.7							
06:00			5											CHANGE TANKS
10:00	928		58	89.83	539	19961.7	54.4							
14:00	932		111	89.83	539	20051.5	54.1							
18:00	936		163.5	88.98	533.9	20140.4	54.6							
22:00	940-		213	83.90	503.4	20224.3	55.9							
22:00	TARE DIP		5.25											CHANGE TANKS
24/3/85														
06:00	948		107	172.46	517.39	20396.7	56.1							
10:00	952		158	86.44	518.6	20483.1	55.2							
14:00	956		208.5	85.59	513.5	20568.6	55							

CLIENT DELHI PETROLEUM PTY LTD.

TANK:— CAPACITY 377 BBLs.

SCALE 1.695 BBLs = 1"

(BIRKHEAD)



TELEPHONE (08) 364 0488 TELEX AA87183

WELL WANCOCCHA #2

DATE 24/3/85 PAGE No 19...

OPERATOR DAVID KAY

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INS.	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
24/3/85														
14:00	TARE DIP		3							0				CHANGE TANKS
18:00	960		57	89.1	534.6	20657.7	54.4							
22:00	964		106.5	83.90	503.41	20741.6	54.1							
25/3/85														
06:00	972		206.25	169.07	507.22	20910.6	55							
06:00	TARE DIP		125											CHANGE TANK
10:00	976		181	93.22	559.3	21003.8	54.8							
10:00	TARE DIP		20											CHANGE TANK
14:00	980		73	89.83	539	21093.6	54.4							
18:00	984		122.75	82.08	492.52	21175.6	54.6							
22:00	988		173	85.17	511.04	21260.8	55.6							
26/3/85														
02:00	992	TARE	58											CHANGE TANK TO #38
			220.25											
06:00	996		108	164.84	494.5	21425.6	55.4							
10:00	1000		158	84.75	508.5	21510.3	55.3							
14:00	1004		209.75	87.71	526.3	21598.0	55.2							CHANGE TO TANK #39
18:00	1008		74.5	85.6	513.6	21683.6	54.5							(TARE 2')
22:00	1012		126.5	88.14	528.84	21771.7	54.8							

CLIENT DELHI PETROLEUM PTY LTD.

TANK: — CAPACITY 377 BBLs

SCALE 1" = 1,695 BBLs

(BIRKHEAD)



WELL WANCOOCHA #2

DATE 27/3/85 PAGE No 20

OPERATOR M. SAUNDERS

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP	TANK PROD. BBLs.	FLOWRATE	CUM. PROD.	SALINITY PPM	
27/3/85			126.5			21771.7								
06:00	1020		225.75	168.23	504.68	21939.9	54.5			0				
		TARE DIP	101.5	CHANGE TO TANK #38										
09:00	1024	COMMENCE TRANSFER	FROM TANK #39											
10:00			149.5	81.36	488.16	22021.3	54.8							
		TARE DIP	37	CHANGE TO TANK #39 - COMMENCE TRANSFER FROM #38 - TARE DIP 50.5"										
14:00	1028		89.75	89.41	536.46	22110.7	53.9							
15:00		COMMENCE TRANSFER	FROM #38 - TARE DIP 4.5"											
16:00	1030		113	38.36	460.35	22149.0	54.6							CHANGE TO TANK #38 - TRANSFER #39
	#39	TARE DIP	39.75				NOTE :	217 BBLs TRANSFERRED TO ATCOO RIG FOR CIRCULATION.						
18:00	1032		31.5	45.76	549.2	22194								
22:00	1036		86	92.37	554.26	22286.4	54.8							
28/3/85														
06:00	1044		186.75	170.77	512.37	22457	55.4							CHANGE TO TANK #39 - TARE 40.75"
10:00	1048		86	80.08	480.53	22537								
14:00	1052		138.75	89.41	536.46	22626.41								
18:00	1056		188.75	84.75	508.5	22711.16								
19:00	1058		226											CHANGE TO TANK #38 - TARE 34"
22:00	1060		47.75	86.44	518.67	22797.6								

TANK:— CAPACITY 377 BELS
SCALE 1" = 1.695 BELS



WELL WANCOOCHA #2
DATE 29/3/85 PAGE No 21
OPERATOR M. SAUNDERS

(BIRKHEAD)

[illegible]

CLIENT DELHI PETROLEUM PTY LTD.

TANK:— CAPACITY 377. BBLs.
SCALE 1" = 1.695. BBLs.



WELL WANCOOCHA #2
DATE 30/3/85. PAGE No 22
OPERATOR M. SAUNDERS.

(BIRKHEAD)

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	OIL CONDENSATE GRAVITY °AP160F°	METER READG	TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs.	SALINITY PPM	
31/3/85														
06:00	1116		205.5	168.22	504.8	23999.8	54.7		0			0		
08:00	1118		230	CHANGE TO	TANK #39		-		TARE	80.5"				
08:50			92.5	CHANGE TO	TANK #38		-		TARE	24"				
10:00	1120		38.25	86.68	520.0	24086.6	54.1							
14:00	1124		89.5	86.86	521.2	24713.5	54.2							
18:00	1128		139.75	85.17	511.0	24258.6	55.6							
22:00	1132		191	86.86	520.0	24345.5	56.4							
		TARE	10	CHANGE TO	TANK #39									
1/4/85														
06:00	1140		111.25	171.62	514.85	24517.1	55.4							
10:00	1144		163.5	88.56	531.38	24605.6	54.2		↓			↓		

0225

CLIENT DELHI PETROLEUM PTY LTD.

TANK: — CAPACITY . . . 377 BBLs

SCALE . . 1" = 1.695 BBLs

(BIRKHEAD)



WELL WANCOCCHIA #2

DATE 2/4/85 PAGE No . . 23

OPERATOR . M. SAUNDERS

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	OIL CONDENSATE GRAVITY "AP160F"	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
			INS	BBLs	BBLs/DAY	BBLs			INS	BBLs	BBLs/DAY	BBLs.		
1/4/85			163.5			24605.6			0			0		
10:00	1144	TARE	2	CHANGE TO #38										
14:00	1148		36.5	90.68	544.01	24696.3	54.4							
18:00	1152		88.5	88.14	528.84	24784.4	54.9							
22:00	1156		139.25	86.02	516.12	24870.4	54.1							
2/4/85														
06:00	1164		236.5	164.83	494.5	25035.3	51							
		TARE	76	CHANGE TO TANK #39										
10:00	1168		127	86.4	518.67	25122	54.4		↓			↓		
		TARE	2	CHANGE TO TANK #38										
12:30	1170.5	SHUT IN WELL TO SERVICE FLOWLINE.												
13:30	1171.5	OPEN WELL												
18:00	1176		75.5	124.6	427.1	25246	55		3.5					
22:00	1180		130.5	93.21	559.3	25339.3	54.7		3.5	5.9				
3/4/85														
05:00	1187		226	CHANGE TO TANK #39 - TARE			17.5"							
06:00	1188		26.25	172.46	517.4	25511.7	54.3		2.5	4.23	8.4			
14:00	1196		103	174.58	523.7	25686.3	54.9		0.5	0.847	2.54	8.8		
22:00	1204		202.5	168.65	505.9	25855	54.2		0.25	0.423	1.27	9.2		

02

CLIENT DELHI PETROLEUM PTY LTD.....

TANK: — CAPACITY 377 BBLs

SCALE 1" = 1.695 BBLs

(BIRKHEAD)



WELL WANCOOCHA #2

DATE 4/4/85 PAGE No 24

OPERATOR M. SAUNDERS

DATE TIME		ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION					WATER PRODUCTION					REMARKS	
			METER READG	TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/DAY	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY *AP160F*	METER READG	TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/DAY		CUM. PROD. BBLs
4/4/85							25855							
06:00		1212		98.5	166.95	500.8	26021.9	53.8		0.5	0.847	2.54	10	
		CHANGE TO TANK #39	- TARE	26.75"										
09:00			CHANGE TO TANK #38	- TARE	4.5"									
18:00		1224		128.75	280.8	561.6	26302.7	54.5		0	0	0	10	
5/4/85								CHANGE TO TANK NO #39	- TARE 12.5"	- #38	-	206.5		
06:00		1236		86	256.4	512.74	26559.1	54.6	↓	↓	↓	10		
10:30			CHANGE TO TANK #38	- TARE	20" (4 1/4" H ² O)	- #39	- 140.25" (2" H ² O)		↓	↓	↓			
18:00		1248		114	251.28	502.56	26810.4	55.2	↓	↓	↓			
19:30				132.25					4.75	CHANGE TO TANK #39	41" (2" H ² O)			
6/4/85														
06:00		1260		167	243.66	487.31	27054	55.6		0.5	0.84	1.69	11.7	
12:00		1266		232	CHANGE TO TANK #38	- TARE	20.5 / 4.5 H ² O							
18:00		1272		117.75	275.0	550.0	27329	55.8		0	0	0	11.7	
7/4/85									↓	↓	↓			
00:00		1276		192.75	CHANGE TO TANK #39	- TARE	32.5" / 2" H ² O		↓	↓	↓			
06:00		1284		108	255.1	510.2	27584	55.6	↓	↓	↓	11.7		

02

0227

DELHI PETROLEUM

TANK: — CAPACITY 377. BBLs
SCALE 1" = 1.695 BBLs



WELL WANCOOCHA #2
DATE 7/4/85 PAGE No 25
OPERATOR DAVID KAY

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP "	TANK PROD.	FLOWRATE	CUM. PROD.	OIL CONDENSATE GRAVITY "AP160F"	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
	7 APRIL 1985													
00:00	1276		192.75	CHANGE TO TANK		#39 TARE	32.5"/2"H20							
06:00	1284		108	255.1	510.2	27584	55.6		0	0	0	11.7		
14:30			214.5	CHANGE TO TANK		#38 TARE	36.5"/4.25"H20							
18:00	1296		80.5	255.1	510.2	27839.1	54.7							
	8 APRIL 1985													
01:00			170	CHANGE TANK TO		#39 TARE	76.25/2"H20							
06:00	1308		135.25	251.7	503.4	28090.8	55.4							
14:00			229.5	CHANGE TANK		#38 TARE	187"/4"H20							
15:30			205	CHANGE BACK TO		TANK #39 TARE	24"/2"H20							
18:00	1320		57.5	247.04	498.08	28337.8	54.7							
	9 APRIL 1985													
06:00	1332		203	246.6	493.2	28584.4	55.5							
06:00				CHANGE TO TANK		#38 TARE	108"/4"H20							
15:30			228	CHANGE TO TANK		#39 TARE	203"/2"H20							
17:00			222	CHANGE TO TANK		#38 TARE	87.5"/4"H20							
18:00	1344		100	256.7	513.5	28841.1	55.0							
20:30			131.5	CHANGE TANKS		#39 TARE	46"/2"H20							
	10 APRIL 1985													
06:00	1356		167	258.48	516.97	29099.5	55.4							

FLOW BUILDUP TEST
15/1/85 to 30/1/85
WANCOOCHA #2 - PATCHAWARRA

PREPARED BY: D. PROVIAS

DATE: MAY 16 1985



INTRODUCTION

Wancoocha #2 was drilled to test the possibility of hydrocarbon accumulations in the Post Permian section of the Wancoocha Dome. Commercial hydrocarbon accumulations were found in the Birkhead, Hutton and Patchawarra sands. The well was completed as a Birkhead/Patchawarra oil producer.

This report evaluates data obtained over a flow / buildup test period from 15-30/1/85 in the Patchawarra formation. Expertest flow rates and pressure data recorded over the test is included as Attachment #1.

CONCLUSIONS AND RECOMMENDATIONS

1. The poor to fair quality of data obtained over the buildup is probably due to mechanical problems. Tubing, casing and bottom hole pressures all declined after 4 hours and data scatter was observed prior to this time.
2. A permeability of 72 md was calculated using conventional Horner analysis. This value is somewhat pessimistic when compared to the DST value of 125 md.
3. An average productivity index of 1.3 BPD/psi drawdown was calculated based on the average bottomhole flowing pressure and flowrate prior to buildup. The theoretical PI of 1.0 is comparable to the average P.I. observed.
4. A mechanical skin of 27 was calculated. Gas effects at or near the wellbore could be contributing to the high skin.
5. An initial offtake rate of 125 BFPD is recommended to maintain bottomhole flowing pressures above the bubble point of 2465 psia.
6. It is recommended that the well remain on extended production testing until GOR trends have been established. An evaluation of extended production results will be forthcoming in the status report for late 1985.

WELL HISTORY

A chronological well history for Wancoocha #2 is included as Table #1. The well was perforated in both the Birkhead and Patchawarra sands based on open hole DST recoveries and log analysis. Excellent flow rates of 6720 BOPD for the Birkhead and 750 BOPD for the Patchawarra were obtained after perforation.

The Patchawarra DST and completion intervals are shown on the log in Figure #1. Well data and DST results are summarised in Tables #2 and #3 respectively.

As indicated by Figure #1, the top of the Patchawarra sand was not perforated. RFT and DST recoveries indicated that the reservoir may be at saturated conditions. The base of the sand was perforated to reduce and/or eliminate any possible free gas production.

PATCHAWARRA PRODUCTION HISTORY

The Patchawarra production history is summarised in Table #4. The well was flowed for 1 hour at 1747 BOPD after perforation and then conditioned for bottom hole sampling.

This was followed by a 219 hour flow period prior to shut in for buildup where a cumulative of 2462 bbl of oil was produced at an average rate of 270 BOPD.

DISCUSSION

Flow Test Results

A comparison of the flow rates prior to buildup versus tubing pressure and GOR is shown in Figure #2. Flow rates were effectively constant over the last seven days prior to shut in for buildup. Tubing pressures and GOR were gradually increasing over this period.

Solution gas concentrations in the pressure sink around the wellbore will eventually increase to a moveable saturation and the observed increase in GOR may be reflecting increases in the drawdown area. The data obtained through an extended production test is necessary to establish a definite GOR trend before inferences are made to the existence of a gas cap.

Buildup Evaluation

Triple Amerada gauges were hung at a depth of 5695' KB. The buildup pressure data for all three recorders are plotted in Figure #4.

All three recorders show an erratic response half an hour into the buildup. The bottom recorder appears to be the most reliable with pressures increasing for 4 hours after initial shut-in. Pressures decline thereafter. The tubing and casing pressures are also plotted on Figure #4 and show a similar trend with pressure declining after $\Delta t = 4.5$ hours.

The Patchawarra reservoir is close to being saturated based on PVT results. The effect of gas going back into solution could cause fluctuating tubing pressure and possibly affect bottomhole pressures but should not cause casing pressures to decline.

Decline was noted in all three cases suggesting a mechanical problem. Because of the questions associated with the later time data pressures recorded after $\Delta t = 4$ hours have not been used in analysis.

The end of wellbore storage dominated pressure data was defined by type curve comparison. The log-log plot for the bottom recorder data is shown in Figure #5. The estimate of the end of wellbore storage is $\Delta t = .4$ hours.

The MDH and Horner plots for the Patchawarra buildup are included as Figures #6 and #7 respectively. Horner data is shown in Table 7.

The actual producing time, $t_p = 219$ hours was used to calculate Horner time. The average rate of 270 BOPD over the actual producing period is assumed to have acted as a constant rate.

Alternatively an effective producing time could have been used to calculate Horner time. As mentioned, flow rates remained fairly constant at 283 BOPD over the last seven hours of the flow period. Any prior rate fluctuations will probably not effect the transient and a t_{eff} of 209 hours at the constant rate of 283 BOPD results in the actual cumulative production obtained. The changes in p^* and calculated K are minimal using this alternative method and are not presented in this report.

A best fit straight line was drawn through the transient portion of the buildup data after a Δt of .4 hours and a slope of 8 psi/cycle was observed.

Reservoir Properties

The reservoir properties calculated by conventional Horner analysis are as follows:

Flow Capacity	3174 md.ft
Permeability	72 md
Apparent Skin	32
Mechanical Skin	27

Calculations are presented in Table #8.

The permeability calculated over the buildup is somewhat pessimistic when compared with the DST value of 125 md.

Some question exists as to the accuracy of the Horner straight line given the quality of the buildup data. In addition, if buildup trends were better defined, a deviation from the Horner straight line may have been observed indicating a transition to psuedo steady state conditions.

The end of the Horner semi-log straight line, given the buildup permeability calculated of 72 md and the current volumetric drainage area of 99 acres, was estimated as occuring at a Δt of 1.3 hours. (Calculations are shown in Table 6).

The best fit straight line on the Horner graph considered points after this time. A new straight line, based only on points after the end of wellbore storage and before a Δt of 1.3 hours would have a slope greater than 8 psi/cycle. The permeability calculated using the new slope would be less than 72 md indicating an even larger discrepancy between the DST and buildup results.

Type curve analysis of the early storage dominated pressure data indicated permeability to be in the range of 65 md, again much lower than the DST value but comparable with the buildup generated value.

* The variation between the buildup and DST results may in fact be a difference in flow capacity rather than permeability.
 Rh.

The DST covered the entire Patchawarra sand whereas the zone was only perforated at the base.

Considering that changes in vertical permeability may exist, the effective thickness for flow capacity can be reduced to a minimum value of the perforated interval. Permeability in this case would then increase to 167 md.

The apparent skin of 32 has been reduced by 5, the pseudo skin resulting from partial penetration effects. The high resultant mechanical skin may be a result of gas effects at or in the vicinity of the wellbore.

Reservoir Pressure

Because bottom hole pressure is constant over the last portion of the test the static reservoir pressure is assumed to be this final value, 2550.3 psig @ 5695' KB. This pressure and additional pressure data obtained prior to the buildup is shown in Table #5. All pressures have been corrected to the midpoint of Patchawarra perforations at 5730' KB using a .28 psi/ft gradient.

The buildup pressure is slightly lower than previously measured pressures but the pressure difference is within the accuracy of the Amerada gauges. It appears unlikely that these results are indicating pressure depletion due to volumetric reservoir conditions. The two static gradient pressures obtained after perforation and after bottomhole sampling are considered to be the most representative. The initial Patchawarra reservoir pressure is taken as 2565 psig at the midpoint of perforations, 5730' KB based on these gradients.

Productivity Index

The bottomhole pressures over the flow period prior to buildup with corresponding flow rates are plotted in Figure #3.

A productivity index of 1.3 has been calculated using average data from 18:00 on 21/1/85 to 17:00 on 24/1/85. Bottom hole pressures prior to this time were recorded at a reference depth 100 feet lower than the buildup recorder depth of 5695' KB.

The observed productivity index is higher but comparable, given the quality of buildup data, to the theoretical PI of 1.0 calculated using the k_h derived from the buildup analysis. Productivity index calculations are included in Table #9.

Production Forecast

not sure how
this is done.

An initial offtake rate of approximately 125 BOPD was chosen to maintain bottomhole flowing pressures above the bubble point and have sufficient rate to lift any water production.

A drawdown of approximately 40 psi is calculated based on the observed P.I. of 1.3. Bottomhole flowing pressure at the bottom recorder reference depth of 5695' KB is estimated at 2475 psig which is slightly higher than the bubble point of 2450 psig obtained from bottomhole sample analysis.

A production forecast based on OOIP of 1.66 MMSTB and a recovery factor of 30% is shown in Table 10.

↓
volumetric.

FIGURES

Figure 1
 Wancocha #2
 Patchawarra
 to 89'

5600
 DST# 2
 GTS
 RTSTM

DST# 3
 $Q_{90} = 2.2 \text{ m mCAD}$
 $Q_{91} = 174 \text{ BOFO}$
 Rec 130' 2
 5700

100 f³

HV

0 f³

Petchemarra - Ummcoacho #2
 Flow Rate vs GOR and Tubing Pressure
 Buildup Flow Period 15/1/85 - 24/1/85

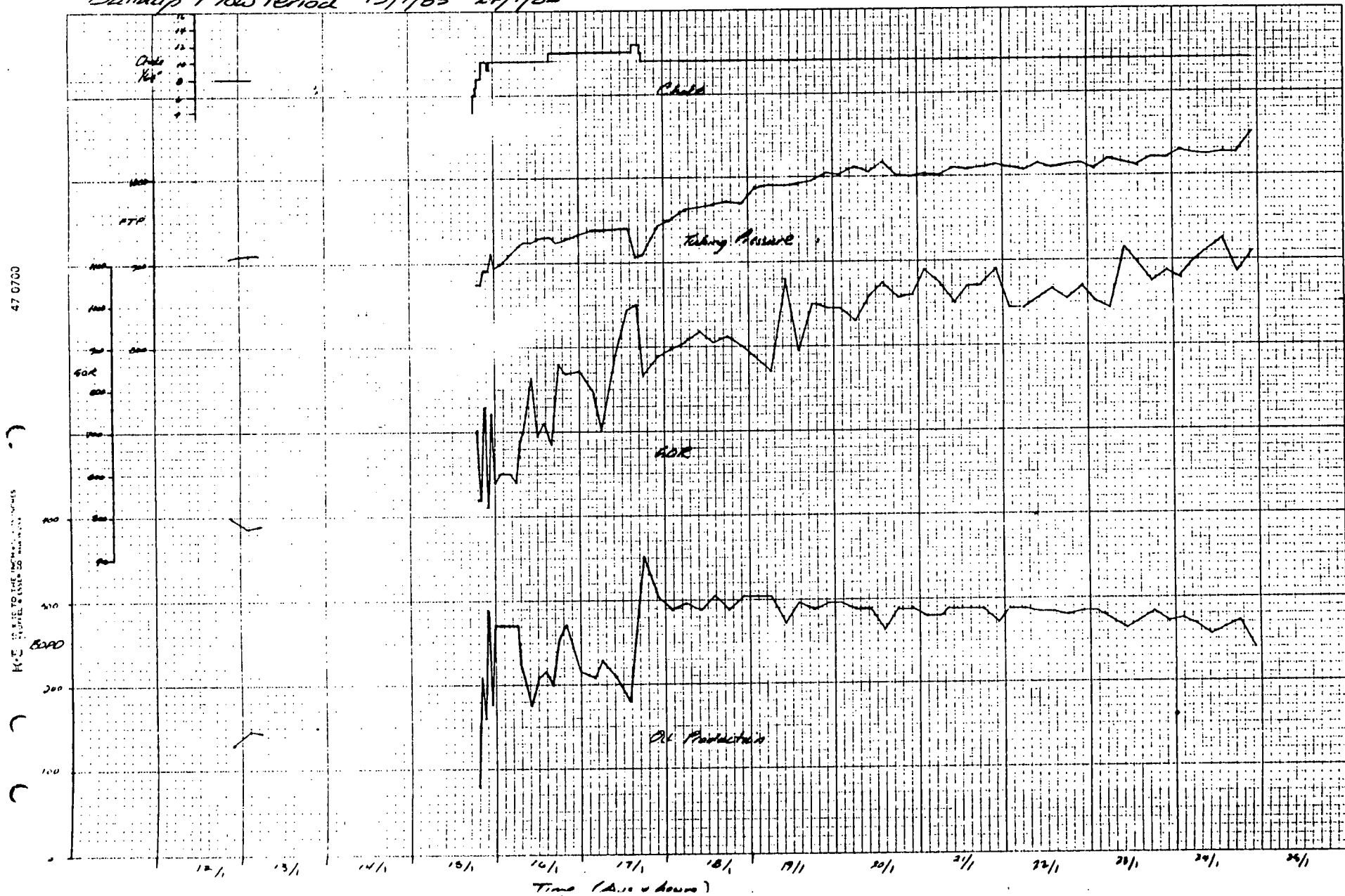


Figure 2

Patchawarra Warracoota #2
 Flow Rate vs. Bottomhole Flowing Pressure
 Flow/Buildup Test 15 to 30/1/85



Figure 3

Δt (hrs)

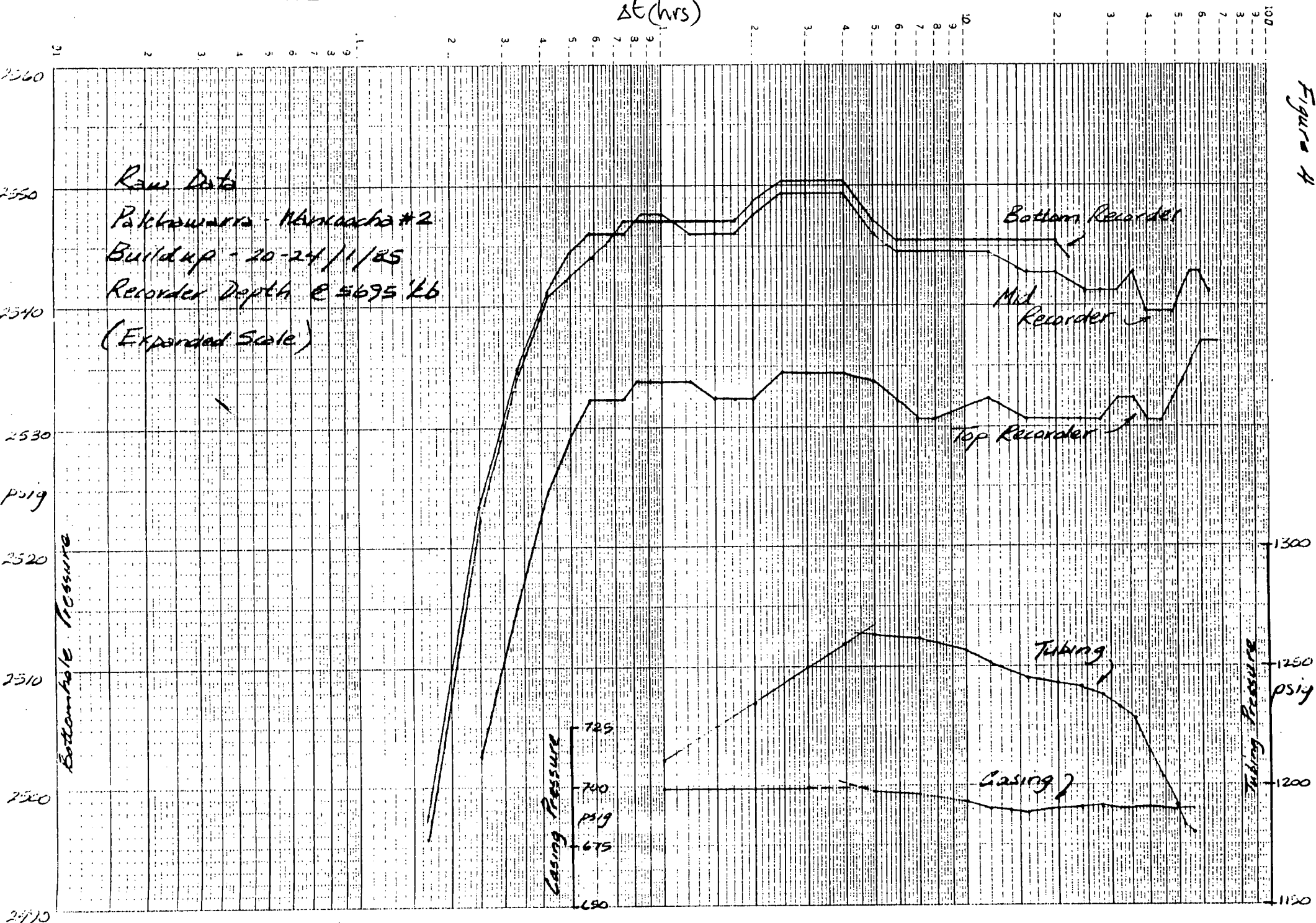


Figure 4

Bethlehem Hancock #2

Type Curve

Buildup 24/1/85 to 30/1/85

Bottom Element @ 5605' kb

Δt (hours)

10

2

3

4

5

6

7

8

9

100

2

3

4

5

6

7

8

9

1

01

2 3 4 5 6 7 8 9

1 2 3 4 5 6 7 8 9

2 3 4 5 6 7 8 9

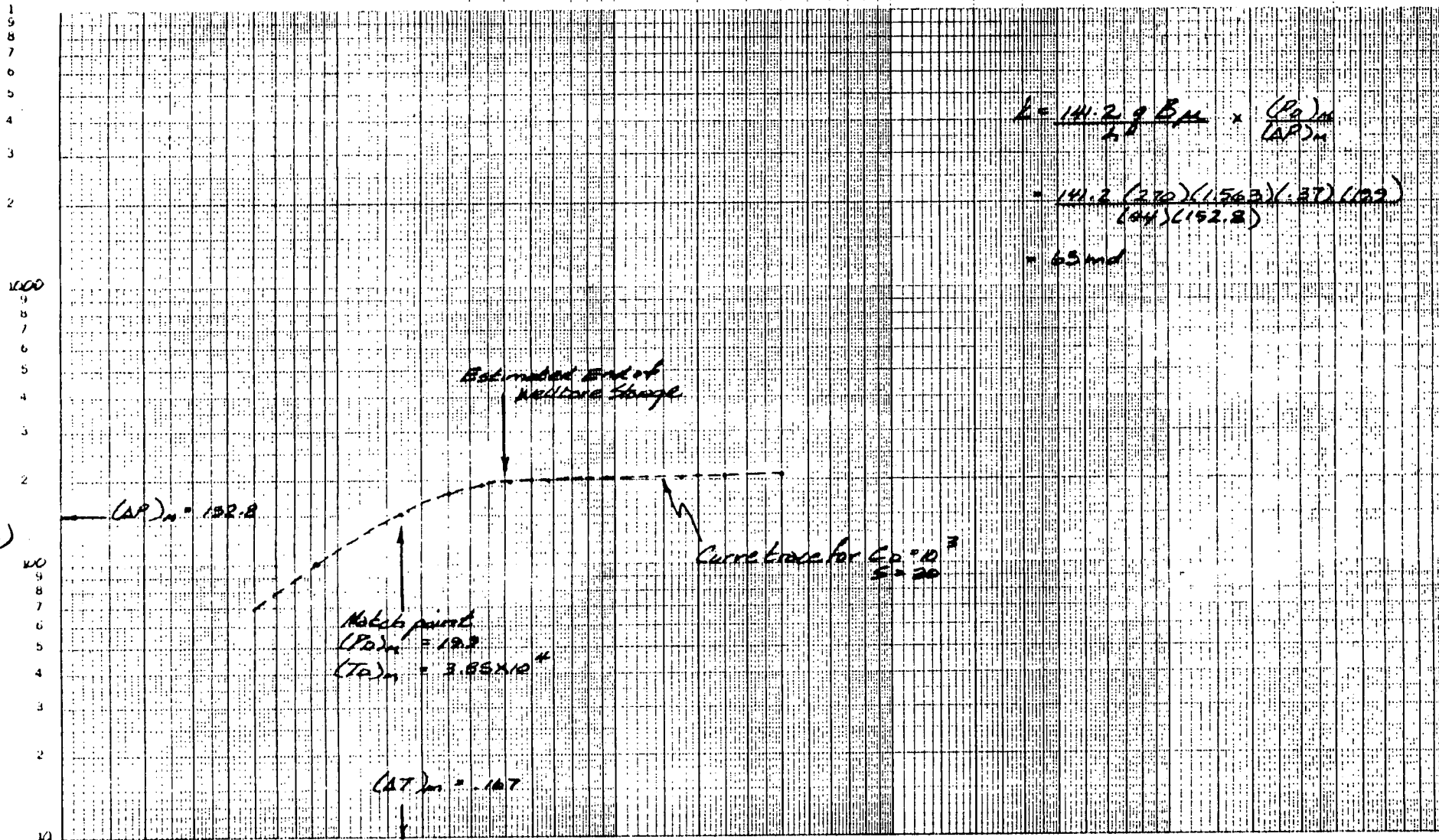


Figure 5

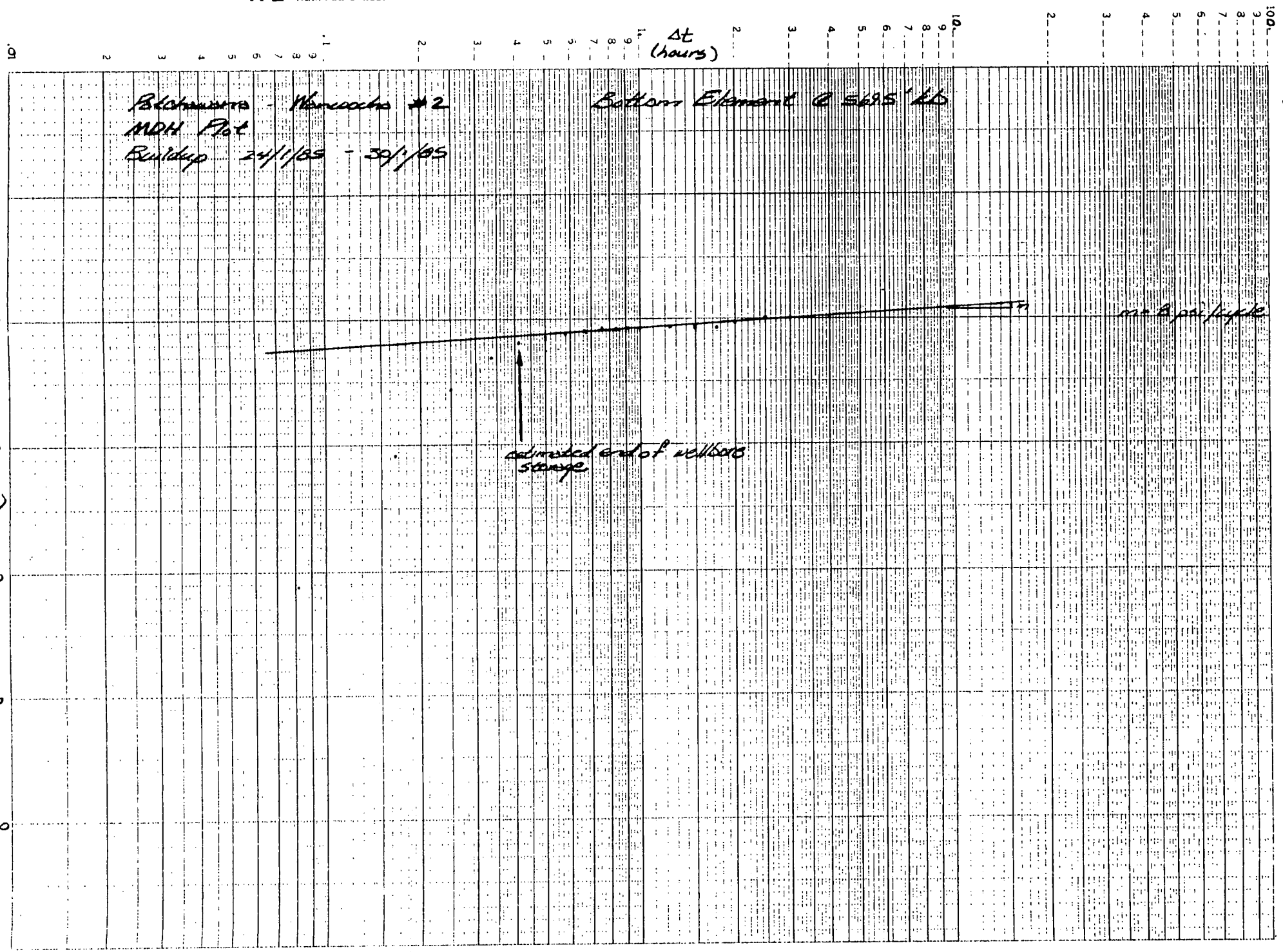


Figure 6



TABLES

TABLE 1

CHRONOLOGICAL WELL HISTORY
WANCOOCHA #2

6/11/84	Spud well.
10/11/84	DST #1 in the Murta from 4260' to 4331' KB Recovered 90' OCM and 10' oil.
14/11/84	DST #2 in the Patchawarra from 5591' to 5684' KB Flowed GTS at RTSTM. DST #3 in the Patchawarra from 5678' to 5746' KB Flowed 1747 BOPD with 2.2 MMCF/D gas.
17/11/84	Ran logs.
18/11/84	DST #4 in the Birkhead from 5085' to 5124' KB. Flowed 3752 BOPD.
19/11/84	DST #5 in the Hutton from 5130' to 5146' KB Flowed 3240 BOPD.
20/11/84	DST #6 in the Namur from 4378' to 4416' KB.
21/11/84	Ran RFT with shots from 5101' to 5731' KB. Samples recovered at 5703' and 5731' KB in the Patchawarra and at 5117' KB in the Birkhead.
23/11/84	DST #7 at basement from 5750' to 5970' KB Recovered 718' of SGCMW and SGCWM.
7/1/85	Perforate the Patchawarra from 5720' to 5739' KB Perforate the Birkhead from 5102' to 5120' KB.

TABLE 1 (contd)

8/1/85	Flow the Birkhead through the annulus on cleanup for 45 minutes on 1/2" choke at 6720 BOPD.
8/1/85	Flow the Patchawarra through the tubing for 1 hour on 16/64" choke at 750 BOPD plus an unmeasured volume of gas.
12/1/85	Run static gradient in the Patchawarra.
12-13/1/85	Flow the Patchawarra on 8/64" choke to condition for bottomhole sampling. Cumulative production of 70 bbls over 12 hrs.
13/1/85	Ran a static gradient in the Patchawarra.
13-14/1/85	Take tandem bottomhole samples at 5720' KB. Field bubble points of 1920 psi, 1840 psi and 1865 psi.
15-24/1/85	Flow Patchawarra through tubing for 219 hours and monitor bottom hole flowing pressure. Cumulative oil production of 2462 bbls. GOR increasing from 704 to a final rate of 1119 SCF/STB.
22-24/1/85	Collect separator samples during flow test on 22/1/85 and 24/1/85.
24-30/1/85	Patchawarra shut in for buildup.
30-31/1/85	Flow Birkhead through the annulus for cleanup. Cumulative production of 642 bbls of oil over 28 hours.
2-5/2/85	Flow the Birkhead through tubing and monitor bottomhole flowing pressure with a cumulative production of 1627 bbls over 72 hours.

TABLE 1 (contd)

5-6/2/85	Shut in Birkhead for buildup.
6/2/85	Run static gradient in Birkhead.
6-7/2/85	Flow Birkhead well to condition for bottomhole sampling. Cumulative production of 83 bbls over 28 hours. Run flowing gradient and catch 4 samples at 5132' KB. Field bubble points of 210, 172, 152 and 165 psig.
10/2/85-Present	Flow Patchawarra (tubing) and Birkhead (annulus) on extended production test.

TABLE 2
WELL DATA - WANCOOCHA #2

ELEVATIONS: KB 92'
PBSD 5923' KB
TD 5965' KB

CASING SIZE: 7" J55 23 lbs/ft LT&C casing

TUBING SIZE: 2-7/8" J55 6.5 lbs/ft

PERFORATIONS: PATCHAWARRA 5720' to 5739' KB
BIRKHEAD 5102' to 5120' KB

LOG ANALYSIS SUMMARY - PATCHAWARRA

DEPTH: 5692'-5736' KB
NET PAY: 44'
AVERAGE POROSITY: 19.7%
AVERAGE S_w : 26.3%

PVT FLUID PROPERTIES - PATCHAWARRA

OIL GRAVITY: 41.7 °API
BUBBLE POINT: 2450 PSI
GOR: 892 SCF/STB
Boi: 1.563 RB/STB
u: .37 CP
ct: $18.357 \times 10^{-6} \text{ psi}^{-1}$ where $c_o = 18.776 \times 10^{-6} \text{ psi}^{-1}$
 $c_w = 3.23 \times 10^{-6} \text{ psi}^{-1} *$
 $c_f = 3.67 \times 10^{-6} \text{ psi}^{-1} *$

* assumed parameters

TABLE 3

DST SUMMARY
WANCOOCHA #2 - PATCHAWARRA

Test Interval:	5678' to 5746' KB
Recovery:	1747 BOPD with 2.2 MMCF/D gas
Record Depth:	5745' KB
p* =	2583 psia
kh =	5500 md-ft
k =	125 md
S =	9.6
PI =	4.2 bbls/d/psi

NOTE: Reservoir properties have been re-calculated using PVT data presented in this report.

TABLE 4
PRODUCTION HISTORY
PATCHAWARRA - WANCOOCHA #2

	TIME HR	TOTAL OIL BBL	AVE. RATE BOPD	AVE. GOR SCF/STB
DST #1				
15/11/84	1.9	138	1747	N/A
Cleanup Flow				
8/1/85	1	31.25	750	N/A
18:00-19:00				
Conditioning Flow				
12/1/85 - 13/1/85	12	70	140	480
17:30 5:30				
Production Test				
15/1/85 24/1/85	219	2462	270	967
18:00 21:00				

TABLE 5
PRESSURE HISTORY
PATCHAWARRA - WANCOOCHA #2

1) DST #2 14/11/84

Bottom Recorder: p^* = 2568 psig at 5743' KB
or 2564 psig at 5730' KB

2) RFT Survey

p = 2571.0 psig at 5731' KB
or 2570.7 psig at 5730' KB

3) Static Gradient 11/1/85

Average p = 2563.8 psig at 5730' KB

4) Static Gradient 13/1/85

Average p = 2567.1 psig at 5730' KB

5) Buildup 24 - 30/1/85

Bottom Recorder: p^* = 2550.5 psig at 5695' KB
or 2560.1 psig at 5730' KB

TABLE 6
SEMI-LOG STRAIGHT LINE CALCULATIONS

End of Horner Semilog straight line:

$$\Delta t = \frac{\phi u c_t A}{.0002637 k} \times (\Delta t_{DA})_{esl}$$

$(\Delta t_{DA})_{esl}$ is a function of tp_{DA}

$$\begin{aligned} tp_{DA} &= \frac{.0002637 k tp}{\phi u c_t A} \\ &= \frac{.0002637 (72.1) (219)}{.197 (.37)(18.357 \times 10^{-6})(99)(43560)} \end{aligned}$$

$$= .7216 \quad \text{where } k = 72.1 \text{ md from BU analysis}$$

$(\Delta t_{DA})_{esl}$ for a well in the centre of a square

$$= 4.25 \times 10^{-3}$$

$$\Delta t = \frac{.197(.37)(18.357 \times 10^{-6})(99)(43560)}{.0002637 (72.1)} 4.25 \times 10^{-3}$$

$\Delta t = 1.29$ hours to end of Horner semi-log straight line

Calculations are based on correlations presented by Kumar and Ramey as referenced in the SPE monograph, Advances in Well Testing.

TABLE 7
 HORNER BUILDUP DATA 24 - 30/1/85
 PATCHAWARRA - WANCOOCHA #2

BOTTOM RECORDER:

Δt (hours)	$\frac{t + \Delta t}{\Delta t}$	Pressure (psig)
0	-	2342.9
.0833	2630	2444.2
.1667	1315	2495.7
.25	877	2522.2
.333	659	2534.7
.4167	527	2540.9
.5	439	2542.5
.5833	476	2544.0
.6667	329	2545.6
.8333	264	2547.1
.9167	240	2547.1
1	220	2547.1
1.25	176	2547.1
1.5	147	2547.1
1.75	126	2547.1
2	111	2547.1
2.5	89	2548.7
3	74	2550.3
4	56	2550.3
5	45	2550.3

where $t = 219$ hours

TABLE 8

BUILDUP CALCULATIONS

Flow Capacity: $kh = \frac{162.6q Bu}{m}$

$$= \frac{162.6 (270)(1.563)(.37)}{8}$$

$$= 3174 \text{ md.ft}$$

Permeability: $k = \frac{kh}{h}$

$$= \frac{3174}{44}$$

$$= 72.1 \text{ md}$$

Apparent Skin: $S' = 1.151 \left[\frac{P_{1hr} - P_{wf}}{m} - \log \frac{k}{\phi U_c r_w^2} + 3.22 \right]$

$$= 1.51 \left[\frac{2546.5 - 2335.6}{8} - \log \frac{72.1}{.197 (.37)(18.357 \times 10^{-6})(.354)^2} + 3.228 \right]$$

$$= 31.6$$

TABLE 8 (contd)

PARTIAL PENETRATION EFFECTS:

$$\begin{aligned}
 \text{Penetration Ratio:} &= \frac{\text{perforation interval}}{h} \\
 &= \frac{19}{44} \\
 &= .43
 \end{aligned}$$

$$\begin{aligned}
 h/rw \text{ Ratio:} &= \frac{44}{.354} \\
 &= 124
 \end{aligned}$$

$$\text{Psuedo Skin Factor: } S_p = 4.5$$

$$\text{Mechanical Skin Factor: } S' - S_p$$

$$= 31.6 - 4.5$$

$$= 27.1$$

Based on correlations presented in SPE monograph, Pressure Buildup Analysis.

DAP:hks

Rep(7/1.4)

TABLE 9
PRODUCTIVITY INDEX CALCULATIONS

$$\text{Actual P.I.} = \frac{q_{\text{ave}}}{p - p_{\text{wf}}}$$

$$= \frac{277.2}{2550.3 - 2335.6}$$

$$= 1.3$$

$$\text{Theoretical P.I.} = \frac{7.08 \times 10^{-3} kh}{u B [\ln r_e / r_w - .75 + S]}$$

$$= \frac{7.08 \times 10^{-3} (3174)}{(.37) (1.563) [\ln(1170/.354) - .75 + 31.6]}$$

$$= 1.0$$

where $r_e = 1170'$

assuming 99 acre drainage area
based on current volumetric mapping.

BLOCK NOMINATION SCHEDULE-OIL PRODUCTION

BLOCK_NAME MURTA FIELD_NAME WANCOOCHA #2 RESERVOIR PATCHAWARRA
 OIL IN PLACE(MMSTB) 1.66 REC.FAC. 0.30 Q INITIAL(BOPD) 125.0 Q ABAN(BOPD) 5.00

TIME	YEAR	RATE BOPD	PERIOD PRODUCTION STB	CUM STB	PRODUCTION STB	WATER PRODUCTION BOPD	WATER CUT DEC. FRAC.
FEB	1985	117.9	3302.	3302.	3302.	0.8	0.01
MAR	1985	117.1	3630.	6932.	6932.	1.6	0.01
APR	1985	116.3	3489.	10421.	10421.	2.5	0.02
MAY	1985	115.5	3580.	14001.	14001.	3.3	0.03
JUN	1985	114.7	3440.	17441.	17441.	4.1	0.03
JUL	1985	113.9	3530.	20972.	20972.	4.9	0.04
AUG	1985	113.1	3506.	24478.	24478.	5.7	0.05
SEP	1985	112.3	3369.	27847.	27847.	6.4	0.05
OCT	1985	111.5	3457.	31305.	31305.	7.2	0.06
NOV	1985	110.8	3323.	34627.	34627.	8.0	0.07
DEC	1985	110.0	3410.	38037.	38037.	8.8	0.07
JAN	1986	109.2	3386.	41423.	41423.	9.5	0.08
FEB	1986	108.5	3037.	44460.	44460.	10.3	0.09
MAR	1986	107.7	3339.	47799.	47799.	11.0	0.09
APR	1986	107.0	3209.	51007.	51007.	11.8	0.10
MAY	1986	106.2	3293.	54300.	54300.	12.5	0.11
JUN	1986	105.5	3164.	57465.	57465.	13.3	0.11
JUL	1986	104.7	3247.	60712.	60712.	14.0	0.12
AUG	1986	104.0	3225.	63936.	63936.	14.7	0.12
SEP	1986	103.3	3099.	67035.	67035.	15.5	0.13
OCT	1986	102.6	3180.	70215.	70215.	16.2	0.14
NOV	1986	101.9	3056.	73271.	73271.	16.9	0.14
DEC	1986	101.2	3136.	76407.	76407.	17.6	0.15
1ST QT	1987	99.8	8978.	85386.	85386.	19.0	0.16
2ND QT	1987	97.7	8890.	94276.	94276.	21.1	0.18
3RD QT	1987	95.7	8802.	103078.	103078.	23.1	0.19
4TH QT	1987	93.7	8620.	111698.	111698.	25.1	0.21
	1988	88.9	32458.	144155.	144155.	29.8	0.25
	1989	81.8	29854.	174008.	174008.	37.0	0.31
	1990	75.2	27458.	201466.	201466.	43.5	0.37
	1991	69.2	25255.	226720.	226720.	49.6	0.42
	1992	63.6	23228.	249948.	249948.	55.1	0.46
	1993	58.5	21364.	271312.	271312.	60.2	0.51
	1994	53.8	19650.	290962.	290962.	64.9	0.55
	1995	49.5	18073.	309035.	309035.	69.2	0.58
	1996	45.5	16623.	325658.	325658.	73.2	0.62
	1997	41.9	15289.	340947.	340947.	76.9	0.65
	1998	38.5	14062.	355009.	355009.	80.2	0.68
	1999	35.4	12934.	367943.	367943.	83.3	0.70
	2000	32.6	11896.	379839.	379839.	86.2	0.73

ATTACHMENT NO. 1

WANCOOCHA #2
PATACHAWARRA
SINGLE RATE FLOW & BUILD UP
15.1.85/30.1.85



CLIENT <u>DELHI PETROLEUM</u> WELL <u>WANCOOCHA #2</u>						 136 RICHMOND ROAD MARLETON SA 5033 TELEPHONE 080 354 0488 TELEX AAB7183										DATE <u>15.1.85</u> PAGE No <u>1</u> OPERATOR <u>J. HOFF</u>			
DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
15.1.85						SINGLE RATE FLOW PATCHANARRA FORMATION													
						GAS RATE CALCULATION AS FOLLOWS					$Q = C \times \sqrt{P_f \times H_w}$ $C = F_u \times F_b \times F_g \times F_{Tf} \times F_{pv} \times \frac{1}{\epsilon}$								
						WHERE					$Q = \text{Flow Rate In mmcf/D}$ $C = \text{Orifice Flow Constant}$								
						BASE CONDITIONS					$P_f = \text{Pressure @ Meter Run In PSIA}$ $H_w = \text{Differential Pressure In Inches of H}_2\text{O}$								
						ATMOSPHERIC PRESSURE = 14.7 PSI													
						BASE TEMP = 60°F					$F_u = \text{Time Factor (24 HR)}$ $F_b = \text{Basic Orifice Factor}$								
						SPECIFIC GRAVITY = .800					$F_g = \text{Specific Gravity Factor}$ $F_{Tf} = \text{Flowing Temperature Factor}$								
											$F_{pv} = \text{Super Compressability Factor}$ $\frac{1}{\epsilon} = \text{Expansion Factor}$								
14:00	682	986																	
14:45	684	986				RIG TANDEM RECORDER AND PRESSURE LUB													
15:15	681	990				SWAB VALVE SHUT HAVE TO REFLEX AMERADAS													
15:20	681	958				PRESSURE LUB TO FLEX BOMBS													

CLIENT <u>DELHI PETROLEUM</u> WELL <u>WANCOOCHA #2</u>	 TELEPHONE (08) 354 0488 TELEX AAB7183 138 RICHMOND ROAD MARLBOROUGH SA 5033 POSTAL ADDRESS: PO BOX 354 CONRADHILL SA 5033	DATE <u>15.1.85</u> PAGE No <u>2</u> OPERATOR <u>J. HOFF</u>
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DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H2O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H2O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
15.1.85						SINGLE RATE FLOW PATCHAWARRA FORMATION													
15:25	681	977	DEPRESSURE LUB																
15:30	681	973	PRESSURE LUB																
15:35	681	971	DEPRESSURE LUB																
15:40	681	960	PRESSURE LUB 1HR LUB STOP																
15:45	681	965																	
15:50	681	968																	
15:55	681	970																	
16:00	681	972																	
16:05	681	973																	
16:10	681	974	RUN IN HOLE																
16:35	681	973	AMERADAS ON BOTTOM 5795' KB																
17:58	680	972	OPEN WING VALVE PRESSURE UP TO CHOKE																
18:00	680	887	OPEN WELL ON 4/64 CHOKE																
18:05	680	846	102																
18:10	680	808	100																
18:15	680	828	99	CHOKE PLUGGING OFF INCREASE TO 6/64															
18:20	680	841	97	ROCKING CHOKE KEEPS PLUGGING OFF															
18:25	680	847	95	ROCK CHOKE															

CLIENT <u>DELHI PETROLEUM</u>	 TELEPHONE (08) 354 0486 TELEX AAB7183 EXPERTEST PTY LTD WIRELINE & WELL TESTING SERVICE 138 RICHMOND ROAD MARLBOROUGH SA 5033 POSTAL ADDRESS: PO BOX 354 CONANULLA 5033	DATE <u>15.1.85</u> PAGE No <u>3</u>
WELL <u>WANCOOCHA #2</u>		OPERATOR <u>J. HOFF</u>

DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
15.1.85						SINGLE RATE FLOW PATCHANARRA FORMATION													
18:30	681	858	95	6/64		130	18	113	.375	ROCK CHOKE OIL GETTING									
18:45	681	863	93	6/64		130	20	113	.375										
19:00	681	875	91	6/64		130	40	113	.375	INCREASE CHOKE TO 7/64					56333	80	704		
19:15	682	872		7/64		130	50	111	.375										
19:30	681	876	89	7/64		133	60	109	.375	INCREASE CHOKE TO 8/64					70001	160	437		
19:45	681	885		8/64		135	156	107	.375										
20:00	681	901	88			135	148	104	.375	SWITCH TO 8/64 FIXED CHOKE					111722	208	537		
20:10	682	904																	
20:15	682	906				135	68	104	.375										
20:30						SWITCH TO 10/64 ADJUSTABLE CHOKE													
20:45	683	880				135	168	100	.375	BACK PRESSURE VALVE LOST SUPPLY READJUST									
21:00	685	893	86			133	174	97	.375						121165	160.08	757		
21:30	686	887	86			135	72	93	CHANGE PLATE TO .500"										
22:00	688	892	88			142	80	91	.500	47.5 API @ 60°F					151001	288	524		
22:30	687	898	86			144	70	90	.500										
22:35		DECREASE CHOKE TO 9/64																	
22:45		DECREASE BACK PRESSURE ON SEPARATOR																	
23:00	688	910	86			125	68	88	.500						131460	176	746		

CLIENT DELHI PETROLEUM						 138 RICHMOND ROAD MARLBOROUGH SA 9023 TELEPHONE (03) 354 0488 TELEX AAB7183										DATE 15.1.85 PAGE No 4								
WELL WANOOCHA #2						OPERATOR J. HOFF																		
DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS					
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =													
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D									
15.1.85						SINGLE RATE FLOW PATCHAWARRA FORMATION																		
23:05	INCREASE CHOKE 10/64					ROCKING CHOKE OIL VERY GASIFIED																		
24:00	686	895	88	10/64	100 OIL	127	96	86	.500							157976	272	580						
16.1.85																								
01:00	688	908	88			127	80	82	.500							144927	224	646						
01:10	ROCK CHOKE ABOUT EVERY 15 MIN																							
02:00	690	898	88	10/64	100 OIL	130	102	81	.500							165785	272	609						
03:00	690	905	88	10/64		130	102	79	.500							165937	256	648						
04:00	691	908	88	10/64		130	100	79	.500							164301	272	604						
04:15	STOP ROCKING CHOKE TO SEE IF WELL WILL LEVEL OUT																							
05:00	691	912	88	10/64		130	96	77	.500							161278	240	671						
06:00	692	917	88	10/64		131	90	75	.500							156886	272	576						
07:00	693	920	90	10/64		131	84	75	.500	CUMM GAS FLARED 13 HRS 76680 mscf						151566	224	676						
08:00	692	925	95	10/64		136	85	77	.500							146581	208	704						
09:00	692	923	96	10/64		132	89	87	.500							146375	256	571						
10:00	691	925	95	10/64		118	90	95	.500	API 45.3 @ 60°F						146546	176	832						
12:00	691	928	99	10/64		116	89	104	.500							143464	208	689						
12:05	ROCK CHOKE SOME OBSTRUCTION																							
12:07	690	920																						

CLIENT DELHI PETROLEUM																	DATE 16.1.85 PAGE No 5				
WELL WANCOOCHA #2						OPERATOR J. HOFF															
DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS		
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =										
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D						
12:10	690	913		10/64																	
13:00	692	923	100	10/64		118	114	107	.500												
14:00	691	930	100	10/64	100 OIL	113	110	111	.500	156320						156320	216	723			
16:00	690	930	100	10/64		111	83	113	.500	134307	DECREASE BACK PRESSURE						134307	200.1	671		
16:10						CHANGE ORIFICE PLATE TO .750"															
16:15						INCREASE CHOKE TO 11/64															
16:25	690	905				ROCK CHOKE															
16:30	690	900																			
17:00	690	914	102	11/64		43	96	106	.750												
18:00	690	925	104	11/64	100 OIL	43	92	106	.750	219857						219857	256.13	858.8	API 43.4		
20:00	690	927	102	11/64		50	65	102	.750	194266						194266	232.11	836			
22:00	690	930	97	11/64		49	60	93	.750	188026						188026	232.11	810			
24:00	692	933	93	11/64	100	54	52	87	.750	182689						182689	216.10	845	API 45.4		
17.1.85																					
02:00	693	937	91	11/64	100 OIL	59	41	84	.750	168575						168575	216.10	780			
04:00	693	938	91	11/64		59	39	82	.750	164716						164716	208.10	791			
06:00	693	938	89	11/64	100 OIL	61	36	79	.750	160819						160819	228.11	705	OIL SAMPLE TAKEN API 4		
CUMM GAS FLARED 237,745 mscf						CUMM OIL PROD 333.833 BBL															
SEPARATOR PRESSURES TAKEN WITH VAETRIX GAUGE																					

CLIENT DELHI PETROLEUM						 138 RICHMOND ROAD MARLBOROUGH SA 5033 TELEPHONE (08) 354 0488 TELEX AAB7183										DATE 17.1.85 PAGE No 6			
WELL WANOOCCHA #2						OPERATOR J. HOFF													
DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D				
17.1.85						SINGLE RATE TEST PATCHAWARRA FORMATION													
08:00	693	940	88	11/64	100 OIL	62	37	75	.750	164727	FIRED UP HEATER					164727	192.09	857	
10:00	693	940	89	11/64	100 OIL	59	50	97	.750	183456						183456	208.10	882	
11:35						LOST BACK PRESSURE ON SEP NOTE: ENOUGH SUPPLY TO DUMP FLUID FLOODED SEPARATOR													
12:00	693	939	89	11/64		68	49	116	.750	189424						189424			
14:00	690	941	95	11/64	100 OIL	59	48	107	.750	178439						178439	180.09	991	API 44.2 @ 60°F
15:15	692	949	95			INCREASE CHOKE 12/64													
15:23	692	915				SWITCH @ MANIFOLD TO 12/64 FLX BEAN													
15:25	693	908																	
15:30	693	906																	
16:00	692	907	97	12/64	100 OIL	60	102	104	.750	264203						264203	264.13	1000	
16:30	693	926	99	12/64		62	103	102	.750										
17:00	693	909	99			62	90	100	.750	251827						251827	272.13	925	
17:30	693	905	99			SWITCH FLOW THROUGH CHOKE ON HEATER @ 11/64													
17:42						ROCK CHOKE													
18:00	694	909	100	11/64	100 OIL	62	120	99	.750	292049						292049	352.17	829	API 44.1 @ 60°F
						CUT CHOKE TO 10/64 SHIPPED 374.8 BBLs TANK #1 113.4 TANK #2 TOTAL OF 488.2 BBLs SHIPPED													
19:00	693	933	100	10/64		62	94	111	.750							254803	304.15	838	
						METER RUN PRESSURES TAKEN WITH VAETRIX GAUGE													

0267

CLIENT DELHI PETROLEUM

WELL WANOOCHA #2



DATE 17.1.85 PAGE No 7

OPERATOR J. HOFF

DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS	
						H.P. METER RUN I.D. =2.067					L.P. METER RUN I.D. =									
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D					
17.1.85						SINGLE RATE TEST PATCHAWARRA FORMATION														
20:00	694	945	97	10/64	100 OIL	63	97	109	.750	260976						260976	272.13	959		
22:00	696	943	95	"	"	70	92	106	.750	265935						265935	304.15	874	API 43.6	
						SMALL AMOUNT H ₂ O IN SEPARATOR SAMPLE SALINITY 23100 PPM TOOK BS & W READING EVERY 10 MIN FOR 1 HOUR ALL 100 OIL														
24:00	696	947	93	"	"	77	79	106	.750	256694						256694	272.13	943		
18.1.85																				
02:00	696	948	93	"	"	92	68	102	.750	257527						257527	288.14	893	API 44.1 @ 68°F	
04:00	696	955	93	"	"	108	54	102	.750	246366	DECREASE BACK PRESSURE					246366	288.14	855		
						BACK PRESSURE VALVE MALFUNCTIONING														
06:00	697	962	91	"	"	59	107	100	.750	269717						269717	296.14	910	API 44.4 @ 60°F SAMPLE	
						CUMM GAS 473537 mscf					CUMM OIL 589.961 BBL									
08:00	697	963	95	"		54	125	104	.750	280671						280671	288.14	974		
						USE MANUAL BACK PRESSURE VALVE TO CLEAN OUT LINES ON FISHER BP CONTROLLER														
10:00	695	963	97	"	"	71	94	111	.750	269204						269204	288.14	934	API 44.3 @ 60°F	
12:00	697	967	99	"		70	94	115	.750	268858						268858	288.14	933		
14:00	695	968	100	"	"	71	100	118	.750	276057						276057	304.15	908	API 43.8 @ 60°F	
16:00	696	964	102	"		71	98	118	.750	273283						273283	280.14	976		
18:00	697	972	104	"	"	72	92	116	.750	266848						266848	288.14	926	API 43.1 @ 60°F	
						METER RUN PRESSURE TAKEN WITH VAETRIX GAUGE														

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CLIENT DELHI PETROLEUM

WELL WANCOOCHA #2



TELEPHONE (08) 354 0486 TELEX AAB7183

DATE 18.1.85 PAGE No 8

OPERATOR J. HOFF

DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS				
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =												
						PI PSI	HW INS. H2O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H2O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D								
15.1.85						SINGLE RATE FLOW PATCHAWARRA FORMATION																	
20:00	697	976	100	10/64		75	90	113	.750	268990						268990	288.14	933					
22:00	698	969	97	"	100 OIL	83	85	111	.750	273347						273347	304.14	899	API 44.4 @ 60°F				
24:00	697	980	97	"		91	76	109	.750	269213						269213	280.14	961					
19.1.85																							
02:00	697	987	95	"	"	97	70	107	.750	265904						265904	304.15	874	API 44.6 @ 60°F				
04:00	697	989	95	"		105	64	107	.750	262994						262994	296.14	888					
06:00	699	991	95	"	"	114	59	106	.750	262457						262457	304.15	862					
						DECREASE SEPARATOR PRESSURE CUMM GAS FLARED 748351 mscf CUMM OIL PRODUCED 882.774 BBL																	
08:00	699	992	95	"		56	124	106	.750	278823						278823	280.14	995					
10:00	698	990	99	"	"	39	172	111	.750	288810						288810	272.13	1061					
						INCREASE SEPARATOR PRESSURE																	
12:00	697	990	102	"		49	140	116	.750	283074						283074	296.14	956					
14:00	698	992	104	"	"	51	144	113	.750	292553						292553	296.14	988	API 43.7 @ 60°F				
16:00	696	999	104	"		53	144	118	.750	295674						295674	288.14	1026					
						SHIPPED 376.85 BBL OIL TANK #1 AND 118.05 BBL OIL TANK #2 TOTAL 494.9 BBL																	
18:00	696	996	107	"	"	49	144	115	.750	288243						288243	288.14	1000	44.2 API @ 60°F				
20:00	698	998	102	"		53	144	117	.750	296173						296173	272.13	1028					
						METER RUN PRESSURES TAKEN WITH VAETRIX GAUGE																	

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CLIENT DELHI PETROLEUM						138 RICHMOND ROAD MARLBOROUGH SA 5033 TELEPHONE (08) 354 0488 TELEX AA87183 PORTAL ADDRESS: PO BOX 354 CONNARDILLA 5033										DATE 19.1.85 PAGE No 9				
WELL WANOOCHA #2						OPERATOR J. HOFF														
DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS	
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =2.067					L.P. METER RUN I.D. =									
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D					
19.1.85						SINGLE RATE FLOW PATCHAWARRA FORMATION														
22:00	699	1005	99	10/64	100 OIL	57	134	116	.750	293816						293816	296.14	992	API 44.3 @ 60°F	
24:00	699	1005	98	"		58	128	114	.750	290614						290614	280.14	1037		
20.1.85																				
02:00	700	1002	98	"	"	64	118	102	.750	292889						292889	296.14	989	API 45.2 @ 60°F	
04:00	700	1010	96	"		70	110	109	.750	291905						291905	288.14	1013		
06:00	700	1012	97	"	"	120	64	118	.750	276800						276800	288.14	960	API 44.5 @ 60°F	
						CUMM GAS FLARED 1032465 mscf. CUMM OIL 1169.584 BBLs														
06:00						BACK PRESSURE CONTROLLER HAVING VERY WEAK MOMENT														
08:00	700	1012	99	"		66	112	107	.750	287476						287476	288.14	998		
10:00	699	1007	102	"	"	49	148	109	.750	293508						293508	288.14	1018	API 44.5 @ 60°F	
						PULL BOMB OUT OF HOLE														
10:30	699	1012				BOMES IN LUB														
11:00	699	1002				DEPRESSURE LUB TOP AMERADA CLOCK STOPPED														
12:00	700	1018	104	"		45	156	122	.750	289.040						289040	280.14	1031		
						SERVICE ORIFICE METER CHECK LINES FOR FLUID														
14:00	697	1018	104	"	"	44	148	126	.750	277762						277762	264.13	1051	API 44.1 @ 60°F	
						METER RUN PRESSURES TAKEN WITH VAETRIX GUAGE														

CLIENT <u>DELHI PETROLEUM</u>	 TELEPHONE (08) 354 0486 TELEX AA87183 138 RICHMOND ROAD MARLBOROUGH SA 5033 POSTAL ADDRESS: PO BOX 354 COMANDILLA 5033	DATE <u>20.1.85</u> PAGE No <u>10</u>
WELL <u>WANOOCHA #2</u>		OPERATOR <u>J. HOFF</u>

DATE TIME	WELLHEAD					H.P. SEPARATOR SEP #38					L.P. SEPARATOR					TOTAL GAS RATE MSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
						H.P. METER RUN I.D. =2.067					L.P. METER RUN I.D. =								
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
0.1.85						SINGLE RATE FLOW PATCHAWARRA FORMATION													
5:00						RELOAD AMERADAS													
5:10	696	1016				PRESSURE LUB													
5:35	696	1043				ROCK CHOKE SOME OBSTRUCTION FROM PRESSURING LUB													
5:40	696	1023				RUN IN HOLE													
5:00	696	1025	106	10/64		44	140	118	.750	271827						271827	264.13	1029	
						AMERADAS ON BOTTOM													
5:12	696	1026				ROCK CHOKE FOR OBSTRUCTION													
5:25						ROCK CHOKE FOR OBSTRUCTION													
5:30	696	1016	1			CHOKE CLEAR													
8:00	696	1002	109	10/64	100 OIL	45	156	107	.750	292863						292863	288.14	1016	API 44.5 @ 60°F
0:00	698	1015	104	"		49	146	104	.750	293090						293090	288.14	1017	
2:00	700	1000	100	"	"	53	142	114	.750	294460						294460	288.14	1022	API 44.7 @ 60°F
4:00	699	1015	100	"		55	132	111	.750	289178						289178	288.14	1004	
1.1.85						SWITCHED TO TANK #2 TANK VALVE PARTLY OPEN SEP COULD NOT DUMP FAST ENOUGH SMALL AMOUNT CARRY OVER													
2:00	700	1003	100	"	"	59	136	107	.750	296873						296873	280.14	1081	API 45 @ 60°F
4:00	700	1008	100	"		61	116	100	.750	284769						284769	296.14	962	
5:00	700	1002	98	"	"	76	105	107	.750	294385						294385	280.14	1051	API 45.1 @ 60°F
CUMM GAS FLARED 1321234 mmscf/D CUMM OIL PROD 1452.392 BELS METER RUN PRESSURES TAKEN WITH VARIETIX																			

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CLIENT DELHI PETROLEUM						 EXPERT TEST WIRELINE & WELL TESTING SERVICE 138 RICHMOND ROAD MARLBOROUGH SA 5033 PORTAL ADDRESS: PO BOX 354 CONNARDHILL SA 5033										DATE 21.1.85 PAGE No 11			
WELL WANCOOCHA #2						OPERATOR J. HOFF													
DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =2.067					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
21.1.85						SINGLE RATE FLOW PATCHAWARRA FORMATION													
08:00	699	1015	102	10/64		53	140	111	.750	293148						293148	296.14	989	
10:00	700	1010	104	10/64	100 OIL	55	134	120	.750	288729						288729	288.14	1002	API 44.3 @ 60°F
12:00	697	1005	107	10/64		55	148	122	.750	302893						302893	288.14	1051	
14:00	697	1008	109	10/64	100 OIL	53	148	115	.750	300365						300365	288.14	1042	API 44.6 @ 60°F
16:00	697	1011	109	10/64		55	144	111	.750	302959						302959	296.14	1023	
						TOOK HP GAS SAMPLE CYLINDER VACUUM SERIAL #5035													
16:30	697	1011	109	10/64		55	144	109	.750	302959						302959	288.14		
						TOOK HP OIL SAMPLE MERCURY DISPLACEMENT SERIAL #1116/371													
18:00	699	1011	111	10/64	100 OIL	56	140	105	.750	301714						301714	288.14	1047	API 44.1 @ 60°F
						(PULLED BOMB UP HOLE 100' TO 5695' KB) CHANGED ORIFICE PLATE TO .875													
20:00	699	1015	107	10/64		58	64	109	.875	281975	DID CHECK ON ORIFICE					281975	288.14	979	
20:00	699	1015	107	10/64		58	120	109	.750	281818	SIZE FLOW RATES CHANGE BACK FROM .750 @ .875					281818	288.14		
22:00	700	1013	104	10/64	100 OIL	62	68	123	.875	294303						294303	272.13	1081	API 44.4 @ 60°F
24:00	700	1013	102	10/64		68	62	111	.875	295405						295405	288.14	1025	
22.1.85																			
02:00	700	1011	102	10/64	100 OIL	68	57	104	.875	284628						284628	288.14	988	API 45.2 @ 60°F
04:00	700	1010	102	10/64		66	56	104	.875	278698						278698	288.14	967	
06:00	699	1008	102	10/64	100 OIL	64	60	105	.875	284575	CUM GAS 1,613,683 MSCF			CUM OIL 1740.536 BBL		284575	288.14	988	API 44.6 @ 60°F

METER RUN PRESSURES TAKEN WITH VAC TRIX GAUGE

0272

CLIENT DELHI PETROLEUM						 TELEPHONE (08) 354 0488 TELEX AAB7183 EXPERT TEST PTY LTD WIRELINE & WELL TESTING SERVICE 138 RICHMOND ROAD MARLBOROUGH SA 5033 POSTAL ADDRESS: PO BOX 354 COWANDILLA 5033										DATE 22.1.85 PAGE No 12			
WELL WANOOCHA #2						OPERATOR J. HOFF													
DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
22.1.85						SINGLE RATE FLOW PATCHAWARRA FORMATION													
08:00	699	1011	102	10/64		65	60	109	.875	285641						285641	288.14	991	
10:00	700	1013	104	10/64	100 OIL	59	66	111	.875	287502						287502	280.14	1026	API 44.3 @ 60°F
12:00	698	1012	105	10/64		57	70	116	.875	290973						290973	280.14	1039	
14:00	697	1010	104	10/64	100 OIL	58	70	113	.875	293760						293760	288.14	1020	API 44.2 @ 60°F
16:00	698	1013	105	10/64		57	72	113	.875	295881						295881	272.13	1087	
18:00	698	1013	105	10/64	100 OIL	59	72	114	.875	299710	SWITCH FROM TANK #1 to #2					299710	288.14	1040	API 43.3 @ 60°F
20:00	698	1011	104	10/64		60	67	109	.875	292434						292434	280.14	1044	
22:00	700	1015	102	10/64	100 OIL	64	65	107	.875	295670						295670	288.14	1026	API 44.8 @ 60°F
24:00	700	1018	100	10/64		70	60	107	.875	294750						294750	280.14	1052	
23.1.85																			
02:00	700	1018	100	10/64	100 OIL	84	48	104	.875	285452						285452	288.14	938	API 44.7 @ 60°F
04:00	700	1020	100	10/64		61	64	104	.875	288801						288801	280.14	1030	
06:00	698	1020	98	10/64	100 OIL	95	40	113	.875	272610	OIL SAMPLE TAKEN #8					272610	272.13	1001	API 44.6 @ 60°F
						24 HR GAS FLARED 290.265 mscf					24 HR OIL PRODUCED 282.141								
						CUMM 1,903948 mscf					CUMM 2022.677 BLS								
N.B.	FROM 2400 HRS TO 0600 HRS BACK PRESSURE VALVE MALFUNCTIONING @ 0600 READJUSTED LOWERED BP																		
08:00	697	1019	98	10/64		47	80	113	.875	289215						289215	264.13	1095	
09:00	CHANGE OVER TO MANUAL AG VALVE TO CLEAN AND ADJUST FISHER CONTROLLER METER RUN PRESSURES TAKEN WITH VAETRIX GAUGE																		

CLIENT <u>DELHI PETROLEUM</u>						 138 RICHMOND ROAD MARLBOROUGH SA 5033 TELEPHONE (08) 354 0486 TELEX AAB7183 POSTAL ADDRESS: PO BOX 354 CONNARDILLA 5033										DATE <u>23.1.85</u> PAGE No <u>13</u>								
WELL <u>WANCOOCHA #2</u>						OPERATOR <u>J. HOFF</u>																		
DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS					
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =													
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D									
23.1.85						SINGLE RATE FLOW PATCHAWARRA FORMATION																		
10:00	697	1016	100	10/64	100 OIL	59	72	118	.875	298374						298374	264.13	1129	API 44.8 @ 60°F					
11:00						CHANGE BACK TO FISHER BP CONTROLLER																		
11:30						SWITCH FROM TANK #2 TO #1 SHIPPED 370.852 BBLs TANK #1 & 92.713 BBLs TANK #2 TOTAL 463.565 BBLs OIL																		
12:00	699	1021	104	10/64		60	68	113	.875	293473						293473	272.13	1078						
14:00	698	1012	107	10/64	100 OIL	58	72	113	.875	298223						298223	272.13	1096	API 44.5 @ 60°F					
						CHANGE TO MANUAL AG BP CONTROL																		
16:00	699	1020	106	10/64		57	74	109	.875	301032						301032	288.14	1045						
18:00	698	1021	109	10/64	100 OIL	57	72	104	.875	298537						298537	280.14	1066	API 43.4 @ 60°F					
20:00	696	1023	104	10/64		54	72	111	.875	285541						285541	280.14	1019						
22:00	697	1020	102	10/64	100 OIL	55	72	109	.875	292780						292780	264.13	1109	API 44.5 @ 60°F					
24:00	698	1027	100	10/64		55	71	106	.875	291487						291487	280.14	1041						
24.1.85																								
02:00	698	1029	100	10/64	100 OIL	56	71	109	.875	292522						292522	280.14	1044	API 44.9 @ 60°F					
04:00	698	1023	98	10/64		56	72	115	.875	293033						293033	256.12	1144						
06:00	697	1022	98	10/64	100 OIL	56	73	116	.875	294783	SAMPLE TAKEN #9						294783	280.14	1052	API 43.9 @ 60°F				
						24 HR GAS FLARED 294.083 mscf 24 HR OIL 272.803																		
						CUMM 2198031 mmscf CUMM 2295.48 BBLs																		
						METER RUN PRESSURES TAKEN WITH VAETRIX GAUGE																		

CLIENT DELHI PETROLEUM

WELL WANOOCHA #2



DATE 24.1.85 PAGE No 14

OPERATOR J. HOFF

DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS	
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. = 2.067					L.P. METER RUN I.D. =									
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D					
24.1.85						SINGLE RATE FLOW PATCHAWARRA FORMATION														
08:00	697	1023	100	10/64		54	74	118	.875	294201						294201	248.12	1185		
10:00	695	1024	102	10/64	100 OIL	55	76	125	.875	296358						296358	256.12	1157	API 43.9 @ 60°F	
12:00	698	1025	104	10/64		57	76	120	.875	301866						301866	272.13	1109		
14:00	700	1027	106	10/64	100 OIL	58	74	113	.875	301737						301737	264.14	1142	API 43.9 @ 60°F	
						TOOK H.P. GAS SAMPLE CYLINDER PURGED SERIAL #A13772														
14:30	698	1026	107	10/64		58	74	113	.875	301737						301737	272.13	1108		
						TOOK HP OIL SAMPLE DISPLACED 500 cc MERCURY FROM 628cc SERIAL #1116/362														
16:00	698	1028	107	10/64		58	72	109	.875	298991						298991	304.15	983		
17:00	696	1016				PULL BOMBS OUT OF HOLE														
17:30	696	1027				BOMBS IN LUB														
18:00	696	1026	111	10/64	100 OIL	54	72	104	.875	291672	DEPRESS LUB					291672	272.13	1071	API 44.0 @ 60°F	
19:00						RIG UP TRIPLE AMERADAS WITH 2 @ 72 HR 1 @ 24 HR CLOCKS														
19:10	696	1035				PRESS LUB														
19:40	696	1043				RUN IN HOLE														
20:00	696	1046	106	10/64		52	69	106	.875	281684	BOMB ON BOTTOM					281684	280.14	977		
21:00	698	1050	102	10/64	100 OIL	50	65	106	.875	268754						268754	240.12	1119	API 44.6 @ 60°F	
						SHUT IN WELL FOR BUILD UPS 15 HR GAS FLARED 183407 mscf/D 15 HR OIL PROD 166.75 BBL														
						METER RUN PRESSURES TAKEN WITH VAETRIX GAUGE										CUMM 2381438 mscf		CUMM 2462.23 BBL		

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CLIENT DELHI PETROLEUM

WELL WANCOOCHA #2 PATCHAWARRA



TELEPHONE (08) 304 0480 TELEX AAB7183

EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE

138 RICHMOND ROAD MARLBOROUGH SA 5033 POSTAL ADDRESS: PO BOX 304 CONANDILLA SA 5033

DATE 24.1.85 PAGE No 15

OPERATOR J. HOFF

DATE TIME	WELLHEAD					H.P. SEPARATOR # 38					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
						H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	P1 PSI	HW INS. H2O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	P1 PSI	HW INS. H2O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
	JANUARY 24TH	1985	SINGLE RATE FLOW			PATCHAWARRA FORMATION													
21:00	698	1050	SHUT IN FOR BUILD UP																
21:05		1110																	
21:10		1155																	
21:15		1178																	
21:20		1186																	
21:25		1192																	
21:30	698	1196																	
21:35		1198																	
21:40		1202																	
21:45		1204																	
21:50		1206																	
21:55		1209																	
22:00	698	1211																	
22:05		1213																	
22:10		1215																	
22:15		1217																	
22:20		1219																	
22:25		1221																	

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CLIENT DELHI PETROLEUM

WELL WANCOOCHA #2. PATCHAWARRA



TELEPHONE (08) 364 0486 TELEX AAB7183

EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE

138 RICHMOND ROAD MARLBOROUGH SA 5033 POSTAL ADDRESS: PO BOX 354 COMANDILLA 5033

DATE 24/1/85 PAGE No 16

OPERATOR J. HOFF

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBLs/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
	JANUARY 24TH 1985					SHUT IN ON BUILD UP PATCHAWARRA FORMATION													
22:30	698	1223																	
22:35		1226																	
22:40		1228																	
22:45		1229																	
22:50		1231																	
22:55		1233																	
23:00	697	1234																	
23:15		1240																	
23:30		1244																	
23:45		1246																	
24:00	697	1250																	
	JANUARY 25TH 1985																		
00:15		1253																	
00:30		1255																	
00:45		1257																	
01:00	696	1259																	
02:00	696	1263																	
03:00	696	1263																	

02

0277

CLIENT DELHI PETROLEUM

WELL WANCOOCHA #2 PATCHAWARRA



TELEPHONE (06) 354 0486 TELEX AAB7183

EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE

138 RICHMOND ROAD MARLESTON SA 5033 POSTAL ADDRESS: PO BOX 354 COMANDILLA 5033

DATE 25/1/85 PAGE No 17

OPERATOR J. HOFF

DATE TIME	WELLHEAD					H.P. SEPARATOR					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
	JANUARY 25TH 1985					SHUT IN ON BUILD UP PATCHAWARRA FORMATION													
04:00	696	1262																	
05:00	695	1260																	
06:00	694	1258																	
07:00	693	1257																	
08:00	692	1244																	
09:00	690	1252																	
13:00	688	1245																	
17:00	690	1243																	
21:00	691	1242	24 HRS SHUT IN																
	JANUARY 26TH 1985																		
01:00	691	1238																	
05:00	690	1233																	
09:00	690	1228																	
13:00	691	1214																	
17:00	690	1203																	
21:00	690	1192	48 HRS SHUT IN																

02

0278

CLIENT DELHI PETROLEUM

WELL WANCOOCHA #2 PATCHAWARRA

TELEPHONE (08) 354 0486 TELEFAX 087183
138 RICHMOND ROAD MARLBOROUGH SA 5033 POSTAL ADDRESS: PO BOX 354 COMANDILLA 5033

DATE 27/1/85 PAGE No 18

OPERATOR J. HOFF

DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBLs/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
						PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D	PI PSI	HW INS. H ₂ O	TEMP °F	ORIFICE SIZE INS	FLOW RATE MMSCF/D				
	JANUARY	27TH	1985			SHUT	IN ON	BUILD	UPS	PATCHAWARRA FORMATION									
01:00	690	1183																	
05:00	690	1180																	
09:00	689	1179																	
11:00	689	1178				PULL	UP ON	LINE TO	MAKE	TIME REFERENCE MARK									
13:00	689	1177				PULL	BOMBS	OUT OF	HOLE										
13:30	689	1176				IN LUB	WITH	BOMBS											
14:00	690	1176				DEPRESSURE	LUB												
						RELOAD	AMERADAS	REPAIR	LEAKS ON	GUIBERSON SWEDGE UNION & BOP's									
16:00	690	1176				PRESS	LUB												
16:05		1168																	
16:10		1169																	
16:15		1170																	
16:20		1171																	
16:25		1171																	
16:30	688	1171				R.I.H.													
17:00		1172				BOMBS	ON	BOTTOM											
21:00	689	1170				72 HRS	SHUT	IN	TIME										

02

0279

CLIENT DELHI PETROLEUM																DATE 28 JANUARY/85 PAGE No 19			
WELL WANCOOCHA # 2 PATCHAWARRA																OPERATOR J. HOFF			
DATE TIME	WELLHEAD					H.P. SEPARATOR #38					L.P. SEPARATOR					TOTAL GAS RATE MMSCF/D	TOTAL LIQUID RATE BBL/D	G.O.R. SCF/BBL	REMARKS
	CASING PSI	TUBING PSI	TEMP °F	CHOKE SIZE INS	B.S.W. %	H.P. METER RUN I.D. =					L.P. METER RUN I.D. =								
	JANUARY 28TH	1985				SHUT IN ON BUILD UP PATCHAWARRA FORMATION													
01:00	689	1170																	
05:00	687	1168																	
09:00	687	1169																	
13:00	687	1169																	
17:00	687	1169																	
21:00	688	1168																	
	JANUARY 29TH	1985																	
01:00	686	1166																	
05:00	686	1165																	
09:00	687	1166																	
13:00	687	1167																	
17:00	686	1167																	
21:00	686	1166																	
	JANUARY 30TH	1985																	
01:00	686	1164																	
05:00	686	1164																	
09:00	686	1165																	
11:00	686	1166				PULL OFF BOTTOM - END PATCHAWARRA TEST PROGRAMME													

0280

DATE		ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION					WATER PRODUCTION					REMARKS	
TIME	METER READG		TANK DIP CM	TANK PROD. BBLs	FLOWRATE BBLs/D	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY "AP160F"	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.		SALINITY PPM
JANUARY 15TH 1985			SINGLE	RATE FLOW		PATCHAWARRA FORMATION								
OPEN UP WELL 18:00 HRS														
18:00			110	OPENING	DIP									
19:00	1		115	3.335	80.04	3.335								
19:30	1.5		120	3.335	160.08	6.67								
20:00	2		128	5.336	256.128	12.006								
21:00	3		138	6.67	160.88	18.676								
22:00	4		156	12.006	288.14	30.682	47.5							
23:00	5		167	7.337	176.08	38.019								
24:00	6		184	11.339	272.13	49.358								
JANUARY 16TH 1985														
01:00	7		198	9.338	224.11	58.696								
02:00	8		215	11.339	272.13	70.035								
03:00	9		231	10.672	256.12	80.707								
04:00	10		248	11.339	272.13	92.046								
05:00	11		263	10.005	240.12	102.051								
06:00	12		280	11.339	272.13	113.390	46.1							
07:00	13		294	9.338	224.11	122.728		OIL SAMPLE TAKEN CONTAINER # 1						
08:00	14		307	8.671	208.10	131.399								
										0-BBLs OF WATER PRODUCED				

CLIENT... DELHI. PETROLEUM.....

TANK:- CAPACITY... 377. BBLs.....

SCALE... 667. BBLs/CM.....



WELL WANCOOCHA #. 2.....

DATE 16.1.85..... PAGE No 2.....

OPERATOR ... J. HOFF.....

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP CM	TANK PROD. BBLs	FLOWRATE BBLs/D	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY *AP180F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
JANUARY 16TH 1985				SINGLE RATE	FLOW			PATCHAWARRA FORMATION						
09:00	15		323	10.672	256.12	142.071								
10:00	16		334	7.337	176.08	149.408								
12:00	18		360	17.342	208.10	166.75								
14:00	20		387	18.009	216.10	184.759	43.4							
16:00	22		412	16.675	200.1	201.434								
18:00	24		444	21.344	256.12	222.778								
20:00	26		473	19.343	232.11	242.121								
22:00	28		502	19.343	232.11	261.464								
24:00	30		529	18.009	216.10	279.473	45.4							
JANUARY 17TH 1985														
02:00	32		556	18.009	216.10	297.482								
04:00	34		582	17.342	208.10	314.824								
CHANGE TO TANK NO.2			11.5	TARE	DIP									
06:00	36		40	19.009	228.11	333.833	46.8	OIL SAMPLE TAKEN CONTAINER # 2						
08:00	38		64	16.008	192.09	349.841								
10:00	40		90	17.342	208.10	367.183	44.2							
14:00	44		135	30.015	180.09	397.198	↓	DUMP FAILED TO OPEN FLOODED SEPARATOR						
16:00	46		168	22.011	264.132	419.209								
17:00	47		185	11.339	272.13	430.548				0. BBLs - WATER PRODUCED				

0282

CLIENT .. DELHI. PETROLEUM TANK:— CAPACITY ... 377. BBLs SCALE 667 BBLs/CM		WELL .. WANCOOCHA # 2 DATE 17.1.85 PAGE No 3 OPERATOR ... J. HOFF
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DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP CM	TANK PROD. BBLs	FLOWRATE BBLs/D	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY "AP160F"	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
JANUARY 17TH 1985				SINGLE RATE FLOW				PATCHAWARRA FORMATION						
CHANGE TO TANK 1			20	TARE DIP										
18:00	48		42	14.674	352.17	445.222		SHIPPED	374.8	BBLs TANK # 1	113.4	BBLs TANK # 2	OIL	
19:00	49		61	12.673	304.15	457.895		TOTAL SHIPPED	488.2	BBLs OIL				
20:00	50		78	11.339	272.13	469.234								
22:00	52		116	25.346	304.15	494.580	43.6	WATER SAMPLE TAKEN.	NOT PRODUCING ANY H2O					
24:00	54		150	22.678	272.13	517.258								
JANUARY 18TH 1985														
02:00	56		186	24.012	288.14	541.27	44.1							
04:00	58		222	24.012	288.14	565.282								
06:00	60		259	24.679	296.14	589.961	44.4	OIL SAMPLE TAKEN	CONTAINER # 3					
08:00	62		295	24.012	288.14	613.973								
10:00	64		331	24.012	288.14	637.985	44.3							
12:00	66		367	24.012	288.14	661.997								
14:00	68		405	25.346	304.15	687.343	43.8							
16:00	70		440	23.345	280.14	710.688								
18:00	72		476	24.012	288.14	734.7	43.1							
20:00	74		512	24.012	288.14	758.712								
22:00	76		550	25.346	304.1	784.058	44.4							
24:00	78		585	23.345	280.14	807.403								

0285

DATE TIME		ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION					WATER PRODUCTION					REMARKS	
			METER READG	TANK DIP CM	TANK PROD. BBLs	FLOWRATE BBLs/D	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY "AP160F"	METER READG	TANK DIP	TANK PROD.	FLOWRATE		CUM. PROD.
JANUARY 19TH 1985					SINGLE RATE FLOW				PATCHAWARRA FORMATION					
CHANGE TO TANK # 2				15	TARE DIP									
02:00	80		53	25.346	304.15	832.749	44.6							
04:00	82		90	24.679	296.14	857.428								
06:00	84		128	25.346	304.15	882.774		OIL SAMPLE TAKEN CONTAINER #						
08:00	86		163	23.345	280.14	906.119								
10:00	88		197	22.678	272.13	928.797								
12:00	90		234	24.679	296.14	953.476								
14:00	92		271	24.679	296.14	978.155	43.7							
16:00	94		307	24.012	288.14	1002.167								
16:30			315	5.336	256.128	1007.503								
16.30	CHANGE TO TANK 1		20	TARE DIP				SHIPPED 376.85 BBLs OIL TANK # 1 & 118.05 BBLs TANK # 2						
18:00	96		48	18.676	298.816	1026.179	44.2	TOTAL SHIPPED 494.9 BBLs						
20:00	98		82	22.678	272.13	1048.857								
22:00	100		119	24.679	296.14	1073.536	44.3							
24:00	102		154	23.345	280.14	1096.881								
JANUARY 20TH 1985														
02:00	104		191	24.679	296.14	1121.56	45.2							
04:00	106		227	24.012	288.14	1145.572								
06:00	108		263	24.012	288.14	1169.584	44.5	OIL SAMPLE TAKEN CONTAINER #5						

0284

CLIENT.. DELHI PETROLEUM.....

TANK:- CAPACITY..377.BBLS.....

SCALE..667.BBLS/CM.....



TELEPHONE (08) 354 0488 TELEX AA87183

EXPERTEST PTY LTD

WIRELINE & WELL TESTING SERVICE

138 WEST BEACH ROAD MARLBOROUGH SA 5033 POSTAL ADDRESS PO BOX 304 COWANDILLA 5023

WELL WANCOOCHA # 2.....

DATE ..20.1.85.....PAGE No 5.....

OPERATORJ..HOFF.....

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP CM	TANK PROD. BBLS	FLOWRATE BBLS/D	CUM. PROD. BBLS	OIL CONDENSATE GRAVITY "AP180F"	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
JANUARY 20TH 1985				SINGLE RATE FLOW				PATCHAWARRA FORMATION						
08:00	110		299	24.012	288.14	1193.596								
10:00	112		335	24.012	288.14	1217.608								
12:00	114		370	23.345	280.14	1240.953								
14:00	116		403	22.011	264.13	1262.964	44.2							
16:00	118		436	22.011	264.13	1284.975								
18:00	120		472	24.012	288.14	1308.987	44.5							
20:00	122		508	24.012	288.14	1332.999								
22:00	124		544	24.012	288.14	1357.011								
24:00	126		580	24.012	288.14	1381.023								
JANUARY 21ST 1985														
02:00	CHANGE TO TANK #2 138			TARE DIP										
02:00	128		173	23.345	280.14	1404.368	45.0							
04:00	130		210	24.679	296.14	1429.047								
06:00	132		245	23.345	280.14	1452.392	45.1			OIL SAMPLE TAKEN				
08:00	134		282	24.679	296.14	1477.071								
10:00	136		318	24.012	288.14	1501.083	44.3							
12:00	138		354	24.012	288.14	1525.095								
14:00	140		390	24.012	288.14	1549.10	44.6							
16:00	142		427	24.679	296.14	1573.786								

0285

DATE		ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION					WATER PRODUCTION						REMARKS
TIME	METER READG		TANK DIP CM	TANK PROD. BBLs	FLOWRATE BBLs/D	CUM. PROD. BBLs	OIL CONDENSATE GRAVITY "AP160F"	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
JANUARY 21ST 1985					SINGLE RATE FLOW			PATCHAWARRA FORMATION						
16:30			435	5.336	256.12	1579.122								
16:30	CHANGE TO TANK 1		124	TARE DIP		FROM TANK 2 - 435 CM								
18:00	144		152	18.676	298.81	1597.798	44.1							
20:00	146		188	24.012	288.14	1621.810								
22:00	148		222	22.678	272.13	1644.488	44.4							
24:00	150		258	24.012	288.14	1668.50								
JANUARY 22ND 1985														
02:00	152		294	24.012	288.14	1692.512	45.2							
04:00	154		330	24.012	288.14	1716.524								
06:00	156		366	24.012	288.14	1740.536	44.6	OIL SAMPLE TAKEN # 7						
08:00	158		402	24.012	288.14	1764.548								
10:00	160		437	23.345	280.14	1787.893	44.3							
12:00	162		472	23.345	280.14	1811.238								
14:00	164		508	24.012	288.14	1835.25	44.2							
16:00	166		542	22.678	272.13	1857.928								
18:00	168		578	24.012	288.14	1881.94	43.3							
18:00	TARE DIP		209	CHANGE TO TANK 2										
20:00	170		244	23.345	280.14	1905.285								
22:00	172		280	24.012	288.14	1929.297	44.8							

0286

CLIENT. DELHI PETROLEUM.....	 TELEPHONE (08) 354 0466 TELEX AA87183	WELL WANGOOCHA # 2..... DATE 22.1.85..... PAGE No 7..... OPERATOR J. HOFF.....
TANK:— CAPACITY ... 377. BBLS..... SCALE667 BBLS/CM.....		

DATE TIME	ELAPSED TIME HOURS	OIL/CONDENSATE PRODUCTION						WATER PRODUCTION						REMARKS
		METER READG	TANK DIP CM	TANK PROD. BBLS	FLOWRATE BBLS/D	CUM. PROD. BBLS	OIL CONDENSATE GRAVITY *AP180F*	METER READG	TANK DIP	TANK PROD.	FLOWRATE	CUM. PROD.	SALINITY PPM	
JANUARY	22ND 1985			SINGLE	RATE FLOW		PATCHAWARRA	FORMATION						
24:00	174		315	23.345	280.14	1952.642								
JANUARY	23RD 1985													
02:00	176		351	24.012	288.14	1976.654	44.7							
04:00	178		386	23.345	280.14	1999.999								
06:00	180		420	22.678	272.13	2022.677	44.6	OIL SAMPLE TAKEN CONTAINER # 8						
08:00	182		453	22.011	264.13	2044.688								
10:00	184		486	22.011	264.13	2066.699	44.8							
11:30	185.30		510											
11:30	TARE DIP		24 TO TANK #	1 FROM TANK #	2	510								
12:00	186		34	22.678	272.13	2089.37								
14:00	188		68	22.678	272.13	2112.055								
16:00	190		104	24.012	288.14	2136.067								
18:00	192		139	23.345	280.14	2159.412	43.4							
20:00	194		174	23.345	280.14	2182.757								
22:00	196		207	22.011	264.13	2204.768	44.5							
24:00	198		241	22.678	280.14	2227.446								
JANUARY	24TH 1985													
02:00	200		276	23.345	280.14	2250.791	44.9							
04:00	202		308	21.344	256.12	2272.135								

0287

CLIENT .DELUI .PETROLEUM.....

WELL .WANCOCOA.#.2.....



Date .15.1.85

Page No. .1

Operator .J. HOFF.

Orifice Fitting Type .DANIELS SENIOR
Gas Flow Recorder Type .BARTON
Date of Last Calibration .22.12.84

Orifice Fitting Size .2.067"
Pressure Range .0-500 .PSI
Differential Range .0-200" .H2O

Gas Specific Gravity .800
Perforated Interval .5630' .- .5640'
Formation Tested .PATCHAWARRA

Base Conditions = 14.73psi @60°F
☒ Flange Taps ☐ Pipe Taps

TIME DATA		Choke Size 64ths Inch	METER RUN DATA				$\sqrt{P_f \times H_w}$	$C' = F_u \times F_b \times F_g \times F_{tf} \times F_{pv} \times Y_2$							Flow Rate $Q = C' \times \sqrt{P_f \times H_w}$	
Date Time	Elapsed Time Hours		(Pfl) Press P.S.I.A.	Diff (Hw) Inches Water	Temp. °F	Plate Size Inches		Fu	Fb	Fg	Ftf	Fpv	Y2	C'		
JANUARY 15 TH 1985			SINGLE RATE FLOW PATCHWARRA FORMATION.													
			OPEN	UP WELL	18:00	HOURS.										
19:00	1	6/64	145	40	113	.375	76.157	24	28.427	1.1180	.9526	1.016	1.0020	739.700	56,333	
19:30	1.5	7/64	148	60	109	.375	94.233	↑	28.427	↑	.9560	1.016	1.0027	742.859	70,001	
20:00	2	8/64	150	148	104	.375	148.996	↑	28.427	↑	.9602	1.017	1.0067	749.836	111,722	
21:00	3	8/64	148	174	97	.375	160.474	↑	28.427	↑	.9662	1.017	1.0074	755.047	121,165	
22:00	4	10/64	157	80	90	.500	112.071	↑	50.521	↑	.9723	1.019	1.0032	1347.370	151,001	
23:00	5	9/64	140	68	88	.500	97.570	↑	↑	↑	.9741	1.017	1.0033	1347.349	131,460	
24:00	6	10/64	142	96	86	.500	116.756	↓	↓	↓	.9759	1.018	1.0047	1353.052	157,976	
JANUARY 16 TH 1985																
01:00	7	10/64	142	80	82	.500	106.583	↑	↑	↑	.9795	1.020	1.0040	1359.963	144,927	
02:00	8	10/64	145	102	80	.500	121.614	↑	↑	↑	.9813	1.020	1.0047	1363.211	165,785	
03:00	9	10/64	145	102	79	.500	121.614	↑	↑	↑	.9822	1.020	1.0047	1364.462	165,937	
04:00	10	10/64	145	100	79	.500	120.415	↑	↑	↑	.9822	1.020	1.0047	1364.462	164,301	
05:00	11	10/64	145	96	77	.500	117.983	↑	↑	↑	.9840	1.020	1.0047	1366.962	161,278	
06:00	12	10/64	146	90	75	.500	114.629	↑	↑	↑	.9859	1.020	1.0040	1368.647	156,886	
07:00	13	10/64	146	84	75	.500	110.742	↑	↑	↑	.9859	1.020	1.0040	1368.647	151,566	
08:00	14	10/64	136	85	77	.500	107.517	↓	↓	↓	.9840	1.018	1.0040	1363.331	146,581	
09:00	15	10/64	132	89	87	.500	108.388	24	50.521	1.1180	.9750	1.017	1.0047	1350.476	146,375	

CLIENT DELHI. PETROLEUM.....

WELL WANCOCCHA..# 2.....



Date 16.1.85..... Page No. 2.....

Operator J. HOFF.....

 Orifice Fitting Type DANIELS SENIOR
 Gas Flow Recorder Type BARTON
 Date of Last Calibration 22.12.84

 Orifice Fitting Size 2.867"
 Pressure Range 0-500 PSI
 Differential Range 0-200" H2O

 Gas Specific Gravity 800
 Perforated Interval 5620-5640
 Formation Tested PATCHAWARRA

 Base Conditions = 14.73psi @ 60°F
☒ Flange Taps ☐ Pipe Taps

TIME DATA		Choke Size 64ths Inch	METER RUN DATA					C' = Fu x Fb x Fg x Ftf x Fpv x Y2							Flow Rate Q = C' x √PI x Hw
Date Time	Elapsed Time Hours		(PI) Press P.S.I.A.	Diff (Hw) Inches Water	Temp. °F	Plate Size Inches	√PI x Hw	Fu	Fb	Fg	Ftf	Fpv	Y2	C'	
JANUARY 16 TH	1985		SINGLE RATE FLOW					PATCHAWARRA FORMATION							
10:00	16	10/64	133	90	95	.500	109.407	24	50.521	1.1180	.9680	1.016	1.0047	1339.462	146,546
12:00	18		131	89	104	↑	107.976	↑	↑	↑	.9602	1.016	1.0047	1328.668	143,464
14:00	20		128	110	111	↑	118.659	↑	↑	↑	.9543	1.013	1.0053	1317.391	156,320
16:00	22		126	83	113	↓	102.264	↑	↑	↑	.9526	1.013	1.0040	1313.3445	134,307
16:15		11/64				.750			↓						
18:00	24		58	92	105	↑	73.047		115.14		.9594	1.003	1.0104	3009.8049	219,857
20:00	26		64	65	102	↑	64.498		↑		.9619	1.007	1.0065	3011.9823	194,266
22:00	28		64	60	93	↑	61.967		↑		.9697	1.007	1.0058	3034.2945	188,026
24:00	30		69	52	87	↑	59.899	↓	↓	↓	.9750	1.008	1.0045	3049.9613	182,689
JANUARY 17 TH	1985														
02:00	32		74	41	84	↑	55.081	↑	↑	↑	.9777	1.010	1.0032	3060.5099	168,575
04:00	34		74	39	82	↑	53.721		↑		.9795	1.010	1.0032	3066.1442	164,716
06:00	36		76	36	79	↑	52.306		↑		.9822	1.010	1.0032	3074.596	160,819
08:00	38		77	37	75	↑	53.376		↑		.9859	1.010	1.0032	3086.1782	164,727
10:00	40		74	50	96	↑	60.827		↑		.9671	1.009	1.0045	3016.0406	183,456
12:00	42		83	49	116	↑	63.773		↑		.9501	1.008	1.0039	2970.2947	189,424
14:00	44	11/64	74	48	107	↑	59.598		↑		.9577	1.008	1.0039	2994.0546	178,439
15:23		12/64	BEAN CHOKE.			↓		↓	↓	↓					
16:00	46	12/64	75	102	104	.750	87.464	24	115.14	1.1180	.9602	1.009	1.0092	3020.7122	264,203

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CLIENT DELHI PETROLEUM

WELL WANCOOCHA # 2



Date 17.1.85 Page No. 3

Operator J. HOFF

Orifice Fitting Type DANIELS SENIOR
Gas Flow Recorder Type BARTON
Date of Last Calibration 22.12.84

Orifice Fitting Size 2.067
Pressure Range 0-500 PSI
Differential Range 0-200 in. H₂O

Gas Specific Gravity 0.800
Perforated Interval 5630' - 5640'
Formation Tested PATCHAWARRA

Base Conditions = 14.73psi @ 60°F
☒ Flange Taps ☐ Pipe Taps

TIME DATA		Choke Size 64ths Inch	METER RUN DATA				$\sqrt{P_f \times H_w}$	$C' = F_u \times F_b \times F_g \times F_{tf} \times F_{pv} \times Y_2$							Flow Rate $Q = C' \times \sqrt{P_f \times H_w}$	
Date Time	Elapsed Time Hours		(P _f) Press P.S.I.A.	Diff (H _w) Inches Water	Temp. °F	Plate Size Inches		F _u	F _b	F _g	F _{tf}	F _{pv}	Y ₂	C'		
JANUARY	17 TH	1985	SINGLE	RATE FLOW	PATCHAWARRA FORMATION.											
17:00	47	12/64	77	90	100	.750	83.246	24	115.14	1.1180	.9636	1.009	1.0071	3025.1004	251,827	
18:00	48	10/64	77	120	98	↑	96.124	↑	↑	↑	.9653	1.009	1.0097	3038.2609	292,049	
19:00	49	↑	77	94	111	↑	85.076	↑	↑	↑	.9543	1.008	1.0078	2995.0153	254,803	
20:00	50	↑	78	97	109	↑	86.982	↑	↑	↑	.9560	1.008	1.0078	3000.3509	260,976	
22:00	52	↑	85	92	106	↑	88.430	↑	↑	↑	.9585	1.009	1.0065	3007.297	265,935	
24:00	54	↓	92	79	105	↓	85.252	↓	↓	↓	.9594	1.010	1.0058	3011.0083	256,694	
JANUARY	18 TH	1985														
02:00	56	↑	107	68	102	↑	85.299	↑	↑	↑	.9619	1.012	1.0039	3019.1185	257,527	
04:00	58	↑	123	54	102	↑	81.498	↑	↑	↑	.9619	1.014	1.0032	3022.9756	246,366	
06:00	60	↑	74	107	100	↑	88.983	↑	↑	↑	.9636	1.009	1.0091	3031.108	269,717	
08:00	62	↑	69	125	104	↑	92.870	↑	↑	↑	.9602	1.007	1.0117	3022.1928	280,671	
10:00	64	↑	86	94	111	↑	89.911	↑	↑	↑	.9543	1.009	1.0065	2994.1193	269,204	
12:00	66	↑	85	94	114	↑	89.386	↑	↑	↑	.9581	1.009	1.0071	3007.8339	268,858	
14:00	68	↑	86	100	118	↑	92.736	↑	↑	↑	.9485	1.008	1.0078	2976.8124	276,057	
16:00	70	↑	86	98	118	↑	91.804	↑	↑	↑	.9485	1.008	1.0078	2976.8124	273,283	
18:00	72	↑	87	92	116	↑	89.465	↑	↑	↑	.9501	1.009	1.0071	2982.7189	266,848	
20:00	74	↑	90	90	113	↑	90.000	↑	↑	↑	.9526	1.009	1.0065	2988.7856	268,990	
22:00	76	↓	98	85	111	↓	91.268	↓	↓	↓	.9543	1.010	1.0058	2995.0023	273,347	
24:00	78	10/64	106	76	109	.750	89.755	24	115.14	1.1180	.9560	1.011	1.0045	2999.4265	269,213	

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CLIENT DELHI PETROLEUM

WELL WANGOOCHA # 2



Date 19.1.85

Page No. 4

Operator J. HOFF.

 Orifice Fitting Type DANIELS SENIOR
 Gas Flow Recorder Type BARTON
 Date of Last Calibration 22.12.84

 Orifice Fitting Size 2.067
 Pressure Range 0-500 PSI
 Differential Range 0-200" H₂O

 Gas Specific Gravity .800
 Perforated Interval 5630' - 5640'
 Formation Tested PATCHAWARRA

 Base Conditions = 14.73psi @ 60°F
☒ Flange Taps ☐ Pipe Taps

TIME DATA		Choke Size 64ths Inch	METER RUN DATA					C' = Fu x Fb x Fg x Ftf x Fpv x Y2							Flow Rate Q = C' x $\sqrt{PI \times HW}$
Date	Elapsed Time Hours		(PI) Press P.S.I. A.	Diff (Hw) Inches Water	Temp. °F	Plate Size Inches	$\sqrt{PI \times HW}$	Fu	Fb	Fg	Ftf	Fpv	Y2	C'	
JANUARY 19 TH 1985															
02:00	80	10/64	112	70	108	.750	88.543	24	115.14	1.1180	.9568	1.012	1.0039	3003.1111	265,904
04:00	82	↑	120	64	108		87.635	↑	↑	↑	.9568	1.012	1.0032	3001.017	262,994
06:00	84	↑	129	59	106		87.241	↑	↑	↑	.9585	1.013	1.0029	3008.42	262,457
08:00	86	↑	71	120	106		92.303	↑	↑	↑	.9585	1.008	1.0110	3017.748	278,547
10:00	88	↑	64	148	109		97.324	↑	↑	↑	.9560	1.006	1.0150	3015.7904	293,508
12:00	90	↑	64	140	117		94.657	↑	↑	↑	.9493	1.006	1.0136	2990.524	283,074
14:00	92	↑	66	144	113		97.488	↑	↑	↑	.9526	1.006	1.0136	3000.920	292,553
16:00	94	↑	68	144	118		98.954	↑	↑	↑	.9485	1.006	1.0136	2988.004	295,674
18:00	96	↑	64	144	114		96.000	↑	↑	↑	.9518	1.006	1.0150	3002.5411	288,243
20:00	98	↑	68	144	116		98.954	↑	↑	↑	.9501	1.006	1.0136	2993.0443	296,173
22:00	100	↑	72	134	116		98.224	↑	↑	↑	.9501	1.007	1.0120	2991.2902	293,816
24:00	102	↓	73	128	114		96.664	↓	↓	↓	.9518	1.008	1.0143	3006.4356	290,614
JANUARY 20 TH 1985															
02:00	104	↑	79	118	102		96.550	↑	↑	↑	.9619	1.009	1.0117	3033.5564	292,889
04:00	106	↑	85	110	109		96.695	↑	↑	↑	.9560	1.009	1.0130	3018.8236	291,905
06:00	108	↑	135	64	118		92.951	↑	↑	↑	.9485	1.013	1.0032	2977.9238	276,800
08:00	110	↑	81	112	107		95.247	↑	↑	↑	.9577	1.009	1.0110	3018.2211	287,476
10:00	112	↓	64	148	109		97.324	↓	↓	↓	.9560	1.006	1.0150	3015.790	293,508
12:00	114	10/64	60	156	122	.750	96.747	24	115.14	1.1180	.9452	1.006	1.0150	2987.596	289,040

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CLIENT ... PETROLEUM

WELL ... WANCOCUA. #. 2



Date ... 20.1.85 Page No. ... 5

Operator ... J. HOFF

 Orifice Fitting Type DANIELS SENIOR
 Gas Flow Recorder Type BARTON
 Date of Last Calibration ... 22.12.84

 Orifice Fitting Size ... 2.067
 Pressure Range ... 0-500. PSI
 Differential Range ... 0-200" H2O

 Gas Specific Gravity ... 800
 Perforated Interval ... 5630' - 5640'
 Formation Tested ... PATCHAWARRA

 Base Conditions = 14.73psi @ 60°F
☒ Flange Taps ☐ Pipe Taps

TIME DATA		Choke Size 64ths Inch	METER RUN DATA				$\sqrt{P_f \times H_w}$	$C' = F_u \times F_b \times F_g \times F_{fl} \times F_{pv} \times Y_2$							Flow Rate $Q = C' \times \sqrt{P_f \times H_w}$
Date	Elapsed Time Hours		(P _f) Press P.S.I.A.	Diff (H _w) Inches Water	Temp. °F	Plate Size Inches		F _u	F _b	F _g	F _{fl}	F _{pv}	Y ₂	C'	
JANUARY 20 TH 1985			SINGLE RATE FLOW				PATCHAWARRA FORMATION.								
14:00	116	10/64	59	148	126	.750	93.445	24	115.14	1.1180	.9420	1.005	1.0163	2972.474	277,762
16:00	118		59	140	118		90.884				.9485	1.005	1.0156	2990.9237	271,827
18:00	120		60	156	107		96.747				.9577	1.006	1.0170	3027.1062	292,863
20:00	122		64	146	104		96.664				.9602	1.007	1.0150	3032.0507	293,090
22:00	124		68	142	114		98.264				.9518	1.006	1.0130	2996.6247	294,460
24:00	126		70	132	111		96.124				.9543	1.008	1.0123	3008.3885	289,178
JANUARY 21 ST 1985															
02:00	128		74	131	107		98.458				.9577	1.008	1.0110	3015.2298	296,873
04:00	130		76	116	100		93.893				.9636	1.009	1.0097	3032.9103	284,769
06:00	132		91	105	107		97.749				.9577	1.010	1.0078	3011.6497	294,385
08:00	134		68	140	111		97.570				.9543	1.006	1.0130	3004.4959	293,145
10:00	136		70	134	120		96.850				.9469	1.006	1.0130	2981.1979	288,729
12:00	138		70	148	122		101.784				.9452	1.006	1.0130	2975.845	302,893
14:00	140		68	148	115		100.319				.9510	1.006	1.0130	2994.106	300,365
16:00	142		70	144	111		100.339				.9543	1.007	1.0170	3019.3578	302,959
16:30	142.30		70	144	109		100.339				.9560	1.007	1.0170	3019.3578	302,959
18:00	144		71	140	105		99.699		115.14		.9594	1.008	1.0130	3026.5575	301,749
20:00	146		73	64	109		68.352		158.47		.9560	1.009	1.0058	4125.3497	281,975
20:00	146	10/64	73	120	109		93.594	24	115.14	1.1180	.9560	1.009	1.0104	3011.075	281,818

2000 - ORIFICE PLATE CHECK.

0293

CLIENT . DELHI. PETROLEUM.....

WELL . WANCOCOA # 2.....



Date 21.01.85 Page No. ... 6

Operator J. HOFF.....

Orifice Fitting Type . DANIELS SENIOR
Gas Flow Recorder Type . BARTON
Date of Last Calibration . 22.12.84

Orifice Fitting Size . 2.067
Pressure Range . 0-500PSI
Differential Range . 0-200" H₂O

Gas Specific Gravity . . . 800
Perforated Interval . . . 5630'-5640'
Formation Tested . . . PATCHAWARRA

Base Conditions = 14.73psi @ 60°F
☒ Flange Taps ☐ Pipe Taps

TIME DATA		Choke Size 64ths Inch	METER RUN DATA				$\sqrt{P_i \times H_w}$	$C' = F_u \times F_b \times F_g \times F_{tf} \times F_{pv} \times Y_2$							Flow Rate $Q = C' \times \sqrt{P_i \times H_w}$
Date Time	Elapsed Time Hours		(P _i) Press P.S.I.A.	Diff (H _w) Inches Water	Temp. °F	Plate Size Inches		F _u	F _b	F _g	F _{tf}	F _{pv}	Y ₂	C'	
JANUARY 21ST 1985															
SINGLE RATE FLOW															
PATCHAWARRA FORMATION															
22:00	148	10/64	77	68	123	.875	72.360	24	158.47	1.1180	.9444	1.007	1.0058	4067.2153	294,303
24:00	1.50	10/64	83	62	111	.875	71.735	24	158.47	1.1180	.9543	1.009	1.0058	4118.0139	295,405
JANUARY 22ND 1985															
02:00	152	↑	83	57	104	↑	68.782	↑	↑	↑					
04:00	154		81	56	104		67.349				.9602	1.009	1.0045	4138.1183	284,628
06:00	156		79	60	105		68.847				.9602	1.009	1.0045	4138.1183	278,698
08:00	158		80	60	109		69.282				.9594	1.008	1.0052	4133.4511	284,575
10:00	160		74	66	111		69.885				.9560	1.009	1.0052	4122.8888	285,641
12:00	162		72	70	116		70.992				.9543	1.008	1.0058	4113.9326	287,502
14:00	164		73	70	113		71.484				.9501	1.008	1.0065	4098.6772	290,973
16:00	166		72	72	113		72.000				.9526	1.008	1.0065	4109.4621	293,760
18:00	168		74	72	114		72.993				.9526	1.008	1.0065	4109.4621	295,881
20:00	170		75	67	109		70.887				.9518	1.008	1.0065	4106.0109	299,710
22:00	172	79	65	107	71.658	.9560	1.009	1.0058	4125.3497	292,434					
24:00	174	↓	85	60	107	↓	71.414	↓	↓	↓	.9577	1.008	1.0052	4126.1269	295,670
JANUARY 23RD 1985															
02:00	176	↓	99	48	104	↓	68.934	↓	↓	↓					
04:00	178		76	64	104		69.742				.9602	1.011	1.0032	4140.9545	285,452
06:00	180		10/64	110	40		113				.875	66.332	24	158.47	1.1180
											.9526	1.012	1.0026	4109.783	272,610

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0294

CLIENT . . . DELHI PETROLEUM . . .

WELL . . . WANGQOCHA # 2 . . .



Date . . . 23.01.85 . . .

Page No. . . . 7 . . .

Operator . . . J. HOFF . . .

Orifice Fitting Type . . . DANIELS SENIOR . . .
Gas Flow Recorder Type . . . BARTON . . .
Date of Last Calibration . . . 22.12.84 . . .

Orifice Fitting Size . . . 2.067" . . .
Pressure Range . . . 0-500 PSI . . .
Differential Range . . . 0-200" H₂O . . .

Gas Specific Gravity . . . 800 . . .
Perforated Interval . . . 5630'-5640' . . .
Formation Tested . . . PATCHAWARRA . . .

Base Conditions = 14.73psi @ 60°F
☒ Flange Taps ☐ Pipe Taps

TIME DATA		Choke Size 64ths Inch	METER RUN DATA					C' = Fu x Fb x Fg x Ftf x Fpv x Y2							Flow Rate Q = C' x √Pf x Hw
Date	Time		(Pf) Press P.S.I.A.	Diff (Hw) Inches Water	Temp. °F	Plate Size Inches	√Pf x Hw	Fu	Fb	Fg	Ftf	Fpv	Y2	C'	
JANUARY 23RD 1985															
						SINGLE RATE FLOW				PATCHAWARRA FORMATION					
08:00	182	10/64	62	80	113	.875	70.427	24	158.47	1.1180	.9526	1.006	1.0078	4106.605	289,215
10:00	184		74	72	118		72.993				.9485	1.007	1.0065	4087.7155	298,374
12:00	186		75	68	113		71.414				.9526	1.008	1.0065	4109.4621	293,473
14:00	188		73	72	113		72.498				.9526	1.009	1.0065	4113.5389	298,223
16:00	190		72	74	109		72.993				.9560	1.008	1.0065	4124.1295	301,032
18:00	192		72	72	104		72.000				.9602	1.009	1.0065	4146.3574	298,537
20:00	194		69	72	111		69.498				.9543	1.006	1.0065	4108.6275	285,541
22:00	196		70	72	109		70.992				.9560	1.008	1.0065	4124.1295	292,780
24:00	198		70	71	105		70.498				.9594	1.007	1.0065	4134.6909	291,487
JANUARY 24TH 1985															
02:00	200		71	71	109		71.000				.9560	1.007	1.0065	4120.0381	292,522
04:00	202		71	72	115		71.498				.9510	1.007	1.0065	4098.4899	293,033
06:00	204		71	73	116		71.993				.9501	1.007	1.0065	4094.6112	294,783
08:00	206		70	74	118		71.972				.9485	1.007	1.0065	4087.7157	294,201
10:00	208		70	76	125		72.938				.9428	1.007	1.0065	4063.1505	296,358
12:00	210		72	76	120		73.972				.9469	1.007	1.0065	4080.820	301,866
14:00	212		73	74	113		73.498				.9526	1.007	1.0065	4105.3854	301,737
14:30		10/64	73	74	113	.875	73.498	24	158.47	1.1180	.9526	1.007	1.0065	4105.3854	301,737
14:30	SAMPLE OF OIL TAKEN														

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WELL . . . WANGOOCHA. #. 2.



Date 24.1.85 Page No. 8

Operator . . . J. HOFF

Orifice Fitting Type . DANIEL SENIOR
Gas Flow Recorder Type . . BARTON
Date of Last Calibration . . 22.12.84

Orifice Fitting Size . . . 2.067"
Pressure Range . . . 0-500 PSI
Differential Range . . . 0-200" H₂O

Gas Specific Gravity.80Q
Perforated Interval.5630'-5640'
Formation TestedPATCHAWARRA

Base Conditions = 14.73psi @ 60°F
☒ Flange Taps ☐ Pipe Taps

[illegible]

E11

0299

Well: WANCOOCHA # 2 DELHI PETROLEUM Date: 15/1/85

Lubricator Data: PATCHAWARRA FORMATION Operator J. HOFF

Pressure with D.W.T. In 974 PSI Out 1002 PSI

Time Pressured 15:40 HRS Time Depressed 11:00 HRS

Time Run in Hole 16:10 HRS ON BOTTOM 1635 Time off Bottom 10:00 HRS

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	15 x 3000 PSI	62039 x 3000 PSI
Recorder No.	13027	61374
Clock and Lead Screw Data	24580 x 120 HR	24578 x 120 HR
Engage Stylus	Date: 15/1/85 Time: 13:58	Date: 15/1/85 Time: 13:58
Disengage	Date: 20/1/85 Time: 11:10	Date: 20/1/85 Time: 11:10

Remarks: 1413. PRES. LUB. TO FLEX. BOMBS VALVE WAS CLOSED SO REFLEX @ 1520HRS

5. MIN. ON 5. MIN. OFF PRESSURED LUB FOR 30 MIN. LUB STOP @ 15:40

TOP CLOCK STOPPED # 24580 x 120 HR

Well-Head Data for Final Build-up

MRNT 228°F

Date	Time	HOURS SHUT-IN TIME	WELLHEAD PSIG	CASING PSIG	WELLHEAD TEMP	REMARKS
15/1/85	1540		960	681		PRES LUB
	1545		965	681		
	1550		968	681		
	1555		970	681		
	1600		972	681		
	1605		973	681		
	1610		974	681		RIH
	1635					ON BOTTOM
	1800		887	688		OPENED WELL
16/1/85	0600	12 HRS WELL FLOWING	917	692	88	
	1800	24 HRS	925	690	104	
17/1/85	0600	36	938	693	89	
	1800	48	909	694	100	
18/1/85	0600	60	962	697	91	
	1800	72	972	697	104	
19/1/85	0600	84	991	699	95	
	1800	96	996	696	107	
20/1/85	0600	108	1012	700	97	
	1000	110	1007	699	102	P.O.O.N.
	1030		1012	699		IN LUB
	1100		1002	699		DEPRES LUB

Well: WANCOOCHA # 2 DELHI PETROLEUM
PATCHAWARRA FORMATION

Date: 20/1/85

Lubricator Data:

Operator J. HOFF

Pressure with D.W.T. In 1023 PSI

Out 1025 PSI

Time Pressured 15:10 HRS

Time Depressed 18:00 HRS

Time Run in Hole 15:40 ON BOTTOM 16:00

Time off Bottom 17:00 HRS

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	28515 x 3000 PSI	62039 x 3000 PSI
Recorder No.	13027	61374
Clock and Lead Screw Data	F.15685 x 120HR	F 15695 x 120 HR
Engage Stylus	Date: 20/1/85 Time: 15:00	Date: 20/1/85 Time: 15:00
Disengage	Date: 24/1/85 Time: 18:11	Date: 24/1/85 Time: 18:11

Remarks: SOMETHING OBSTRUCTED THE CHOKE WHEN PRESSURE LUB
SINGLE RATE FLOW

Well-Head Data for Final Build-up

M.B.H.T. 228°F

Date	Time	Hours FLOWING Time	Wellhead P.S.I.G.	Casing P.S.I.G.	Wellhead Temp.	Remarks
20/1/85	1510		1016	696	106	PRESSURE LUB
	1515		1016			)
	1520		1025			) PRESSURE BUILDING
	1525		1035			) OBSTRUCTION IN
	1530		1041			) CHOKE
	1535		1043			ROCKED CHOKE
	1540		1023			RUN IN HOLE
	1600		1025	696	106	ON BOTTOM
	1800	2 HRS BOTTOM TIME	1002	696	109	
21/1/85	0600	14	1002	700	98	
	1600	24	1011	697	109	
	1800	26	1011	699	111	PULL BOMB 100' UP HOLE TO 5695' KB
22/1/85	0600	38	1008	699	102	
	1800	50	1013	698	105	
23/1/85	0600	62	1020	698	98	
	1800	74	1021	698	109	
24/1/85	0600	86	1023	697	98	
	1700	97	1016	696	111	P.O.O.H.
	1730		1027	696	111	IN LUB
	1800		1025	696	111	DEPRESS LUB

Date: 24/01/85

OperatorJ...HOFF

Out11.76 PSI

Time Depressured.....14:00 HRS

Time off Bottom.....13:00 HRS

Bomb No. 2 Data
MTD

Remarks:..... SINGLE RATE FLOW & BUILD UP.....
..... BOMB # 1 & 2 CALIBRATED TOGETHER @ 228°F..... (BOMB # 3 CALIBRATED 220°F)
..... (NOT CALIBRATED WITH # 1
..... & # 2)

M.B.H.T. 228° F

Date	Time	Hours shut-in Time	Wellhead P.S.I.G.	Casing P.S.I.G.	Wellhead Temp.	Remarks
24/1/85	2000	Well Flowing	1046	696	106	Bomb on bottom 5695'KB
	2100	"	1050	698	102	Shut in for build up
	2300	2	1234	698		
25/1/85	0100	4	1259	696		
	0300	6	1263	696		
	0500	8	1260	695		
	0700	10	1257	693		
	0900	12	1252	690		
	1300	16	1245	688		
	1700	20	1243	690		
	2100	24	1242	691		
26/1/85	0500	32	1233	690		
	0900	36	1228	690		
	2100	48	1192	690		
27/1/85	0900	60	1179	689		
	1300	64	1177	689		P.O.O.H.
	1330		1176	690		IN LUB
	1400		1176	690		DEPRESS LUB
N.B. @ 1100 HRS 27/1/85 PULLED UP ON LINE TO MAKE TIME REF. MARK.						

CLIENT DELHI PETROLEUM WELL WANCOOCHA # 2 PATCHAWARRA
 OPERATOR J. HOFF DATE 15 to 20/1/85
 SURVEY SINGLE RATE FLOW
 TOP BOMB 28515 x 3000 PSI REC. No. 13027 CLOCK DATA 24580 x 120HR
 MID BOMB REC. No. CLOCK DATA
 BTM BOMB 62039 x 3000 PSI REC. No. 61374 CLOCK DATA 24578 x 120 HR
 ENG. SYLUS 13:58 15/1/85 DISENGAGE SYLUS 11:10 20/1/85
 DWT IN 974 PSI DWTOUT 1002 PSI MBHT 228°F

Date	Time	Cum. Time	Depth	Top Def. PSI	Mid Def. PSI	Bot Def. PSI	Remarks
15/1/85	1610		LUB	.635 982		.602 967	R.I.N.
	1635		5795'	1.680 2610.4		1.614 2600.9	Bomb on Bottom
	1800			1.680 2610.4		1.615 2602.5	Open Well
	1815			1.595 2477.6		1.546 2491.2	
	1830			1.619 2515.1		1.554 2504.1	
	1845			1.622 2519.8		1.553 2502.5	
	1900	1		1.609 2499.4		1.553 2502.5	
	1915			1.599 2483.8		1.541 2483.2	
	1930			1.587 2465		1.528 2462.2	
	1945			1.587 2465		1.515 2441.2	
	2000	2		1.585 2461.9		1.504 2423.4	
	2030			1.567 2465		1.508 2429.9	
	2100	3		1.561 2424.4		1.500 2417	
	2130			1.550 2407.2		1.488 2397.6	
	2200	4		1.548 2404.1		1.487 2396	
	2300	5		1.559 2421.3		1.506 2426.7	
	2400	6		1.544 2397.8		1.488 2397.6	
16/1/85	0200	8		1.546 2401		1.486 2394.4	
	0400	10		1.546 2401		1.485 2392.8	
	0600	12		1.553 2411.9		1.493 2405.7	
	0800	14		1.563 2427.5		1.501 2418.6	
	1000	16		1.568 2435.3		1.508 2429.9	
	1200	18		1.564 2429.1		1.512 2436.4	
	1400	20		1.570 2438.5		1.509 2431.5	
	1600	22		1.579 2452.5		1.518 2446	
	1800	24		1.555 2415		1.494 2407.3	
	2000	26		1.561 2424.4		1.501 2418.6	
	2200	28		1.562 2426		1.502 2420.2	
	2400	30	5795	1.565 2430.7		1.505 2425.1	

CLIENT DELHI PETROLEUM WELL WANCOOCHA # 2 PATCHAWARRA

OPERATOR J. HOFF DATE 15 to 20/1/85

SURVEY SINGLE RATE FLOW

TOP BOMB 28515 x 3000 PSI REC. No. 13627 CLOCK DATA 24580 x 120

MID BOMB REC. No. CLOCK DATA

BTM BOMB 62039 x 3000 PSI REC. No. 61374 CLOCK DATA 24578 x 120HR

ENG. SYLUS 13:58 15/1/85 DISENGAGE SYLUS 11:10 20/1/85

DWT IN 974 PSI DWTOUT 1002 PSI MBHT 228°F

Date	Time	Cum. Time	Depth	Top Def.	Top PSI	Mid Def.	Mid PSI	Bot Def.	Bot PSI	Remarks
17/1/85	0200	32	5795	1.569	2436.9			1.508	2429.9	
	0400	34	↑	1.571	2440			1.511	2434.7	
	0600	36		1.571	2440			1.512	2436.4	
	0800	38	↓	1.571	2440			1.512	2436.4	
	0834		5795	1.571	2440					
	TOP CLOCK STOPPED									
	1000	40	↑					1.512	2436.4	
	1200	4						1.512	2436.4	
	1400	4						1.513	2438	
	1600	4						1.495	2408.9	
	1800	48						1.476	2378.2	
	2000	50						1.486	2394.4	
	2200	52						1.485	2392.8	
	2400	54						1.485	2392.8	
18/1/85	0200	56						1.484	2391.1	
	0400	58						1.484	2391.1	
	0600	60						1.483	2389.5	
	0800	62						1.484	2391.1	
	1000	64						1.484	2391.1	
	1200	66						1.485	2392.8	
	1400	68						1.485	2392.8	
	1600	70						1.485	2392.8	
	1800	72						1.484	2391.1	
	2000	74						1.484	2391.1	
	2200	76						1.484	2391.1	
	2400	78						1.484	2391.1	
19/1/85	0200	80						1.484	2391.1	
	0400	82	↓					1.485	2392.8	
	0600	84	5795					1.484	2391.1	

Date	Time	Cum. Time	Depth	Top		Mid		Bot		Remarks	
				Def.	PSI	Def.	PSI	Def.	PSI		
19/1/85	0800	86						1.485	2392.8		
	1000	88						1.483	2389.5		
	1200	90						1.483	2389.5		
	1400	92						1.482	2387.9		
				BOTTOM CHART RAN OUT. SPRING ON CLOCK SLIPPED AND ADVANCED CHART SOME 20 HRS.							

CLIENT DELHI PETROLEUM WELL WANGOOCHA # 2 PATCHAWARRA
 OPERATOR J. HOFF DATE 20 to 24/1/85
 SURVEY SINGLE RATE FLOW
 TOP BOMB 28515 x 3000 PSI REC. No. 13027 CLOCK DATA 15685 x 120HR
 MID BOMB - REC. No. - CLOCK DATA -
 BTM BOMB 62039 x 3000 PSI REC. No. 61374 CLOCK DATA 15695 x 120HR
 ENG. STYLUS 15:00 20/1/85 DISENGAGE STYLUS 18:11 24/1/85
 DWT IN 1023PSI DWTOUT 1025 PSI MBHT 228°F

Date	Time	Cum. Time	Depth	Top Def. PSI	Mid Def. PSI	Bot Def. PSI	Remarks
20/1/85	1540		LUB	.679 1050.9		.637 1023.3	R.I.H.
	1600		5795'	1.559 2421.3		1.486 2394.4	Bombs on bottom
	1615			1.553 2411.9		1.481 2386.3	
	1630			1.550 2407.2		1.479 2383.1	
	1645			1.547 2402.5		1.475 2376.6	
	1700	1		1.547 2402.5		1.476 2378.2	
	1715			1.546 2401		1.475 2376.6	
	1730			1.546 2401		1.475 2376.6	
	1745			1.546 2401		1.475 2376.6	
	1800			1.545 2399.4		1.475 2376.6	
	2200			1.547 2402.5		1.475 2376.6	
21/1/85	0200	10		1.546 2401		1.475 2376.6	
	0600			1.546 2401		1.475 2376.6	
	1000			1.548 2404.1		1.478 2381.5	
	1400		5795'	1.544 2397.8		1.474 2375	
	1800		5695'	1.542 2394.7		1.473 2373.4	Bomb pulled to 5695'. Mistake made in programme printing.
	2200			1.523 2365		1.453 2340	
22/1/85	0200	34		1.520 2360.3		1.451 2337.8	
	0600			1.520 2360.3		1.451 2337.8	
	1000			1.520 2360.3		1.451 2337.8	
	1400			1.519 2358.8		1.451 2337.8	
	1800			1.519 2358.8		1.451 2337.8	
	2200			1.518 2357.2		1.450 2336.2	
23/1/85	0200	58		1.517 2355.6		1.449 2334.6	
	0600			1.520 2360.3		1.452 2339.5	
	1000			1.519 2358.8		1.451 2337.8	
	1400			1.516 2354.1		1.447 2331.4	
	1800			1.514 2350.9		1.446 2329.8	
	2200		5695'	1.516 2354.1		1.448 2333	

[illegible]

CLIENT DELHI PETROLEUM WELL WANCOOCHA # 2 PATCHAWARRA

OPERATOR J. HOFF DATE 24-27/1/85

SURVEY SINGLE RATE FLOW & BUILD UP SURVEY

TOP BOMB 28515 REC. No. 13027 CLOCK DATA E14541 x 72HR

MID BOMB 62093 REC. No. 61375 CLOCK DATA E14540 x 72HR

BTM BOMB 57413 REC. No. 61127 CLOCK DATA 3038 x 24HR

ENG. SYLUS 18:38 24.1.85 DISENGAGE SYLUS 14:12 27.1.85

DWT IN 1043 DWTOUT 1176 MBHT 228°F

Date	Time	Cum. Time	Depth	Top Def.	Top PSI	Mid Def.	Mid PSI	Bot Def.	Bot PSI	Remarks
24.1.85	1910		LUB	.658	1018.3	.647	1039.4	.673	1045.9	
	1940		LUB	.669	1035.4	.655	1052.3	.673	1045.9	R.I.H.
	2000		5695'	1.495	2321.3	1.447	2331.4	1.499	2330.4	
	2015			1.495	2321.3	1.448	2333.0	1.500	2332.0	
	2030			1.497	2324.4	1.451	2337.8	1.503	2336.7	
	2045			1.500	2329.1	1.453	2341.1	1.506	2341.3	
	2100	0		1.500	2329.1	1.455	2344.3	1.507	2342.9	SHUT WELL IN
	2105							1.572	2444.2	
	2110							1.605	2495.7	
	2115			1.611	2502.6	1.566	2523.5	1.622	2522.2	
	2120							1.630	2534.7	
	2125							1.634	2540.9	
	2130			1.628	2529.1	1.579	2544.5	1.635	2542.5	
	2135							1.636	2544	
	2140							1.637	2545.6	
	2145			1.630	2532.3	1.580	2546.1	1.638	2547.1	
	2150							1.638	2547.1	
	2155							1.638	2547.1	
	2200	1		1.631	2533.8	1.581	2547.7	1.638	2547.1	
	2215			1.631	2533.8	1.580	2546.1	1.638	2547.1	
	2230			1.630	2532.3	1.580	2546.1	1.638	2547.1	
	2245			1.630	2532.3	1.580	2546.1	1.638	2547.1	
	2300	2		1.630	2532.3	1.581	2547.7	1.639	2548.7	
	2330			1.632	2535.4	1.582	2549.3	1.640	2550.3	
	2400	3		1.632	2535.4	1.582	2549.3	1.640	2550.3	
25/1/85	0100	4		1.632	2535.4	1.582	2549.3	1.640	2550.3	
	0200	5		1.631	2533.8	1.580	2546.1	1.638	2547.1	
	0300	6		1.630	2532.3	1.579	2544.5	1.637	2545.6	
	0400	7		1.629	2530.7	1.579	2544.5	1.637	2545.6	

CLIENT DELHI PETROLEUM WELL WANCOOCHA # 2 PATCHAWARRA

OPERATOR J. HOFF DATE 24-27/1/85

SURVEY SINGLE RATE FLOW AND BUILD UP SURVEY

TOP BOMB 28515 x 3000 PSI REC. No. 13027 CLOCK DATA E-14541 x 72HR

MID BOMB 62093 x 3000 PSI REC. No. 61374 CLOCK DATA E-14540 x 72HR

BTM BOMB 57413 x 3000 PSI REC. No. 61127 CLOCK DATA 3038 x 24 HR

ENG. STYLUS 1830 24/1/85 DISENGAGE STYLUS 1412 27/1/85

DWT IN 1043 PSI DWTOUT 1176 PSI MBHT 228°F

Date	Time	Cum. Time	Depth	Top Def. PSI	Mid Def. PSI	Bot Def. PSI	Remarks
25/1/85	0500	8	5695	1.629 2530.7	1.579 2544.5	1.637 2545.6	
	0900	12	↑	1.630 2532.3	1.579 2544.5	1.637 2545.6	
	1300	16		1.629 2530.7	1.578 2542.8	1.637 2545.6	
	1700	20		1.629 2530.7	1.578 2542.8	1.637 2545.6	24 HR CLOCK RUN
	2100	24		1.629 2530.7	1.577 2541.2		OUT
26/1/85	0100	28		1.629 2530.7	1.577 2541.2		
	0500	32		1.630 2532.3	1.577 2541.2		
	0900	36		1.630 2532.3	1.578 2542.8		
	1300	40		1.629 2530.7	1.576 2539.6		
	1700	44		1.629 2532.3	1.576 2539.6		
	2100	48		1.630 2532.3	1.576 2539.6		
27/1/85	0100	52		1.631 2533.8	1.577 2541.2		
	0500	56		1.632 2534.4	1.578 2542.8		
	0900	60	↓	1.633 2537	1.578 2542.8		
	1300	64	5695	1.633 2537	1.577 2541.2		P.O.O.H.
	LUB			.757 1171.9	.729 1171.5		

WELL WANCOOCHA #2 (PATCHAWARRA)

DATE 27/1/85

CLOCK DATA E-14541 x 72HR

CLOCK DATA

CLOCK DATA E-14540 x 72HR

15:46

MBHT 227°F

[illegible]

ENVELOPE 5739

TENEMENT: PELs 5 and 6, Murta Block; Eromanga and Cooper Basins

TENEMENT HOLDER: Delhi Petroleum Pty Ltd (operator), Santos Ltd, Vamgas Ltd, South Australian Oil and Gas Corp. Pty Ltd and Hartogen Energy Ltd

CONTENTS OF VOLUME ONE

REPORTS:	Gearhart Australia Pty Ltd, 1984. Wancoocha 2 separator DST [fluid flow measurement at surface] reports for open hole DSTs 2, 3, 6 and 7 (well production testing contractor's report for Delhi, 15/11/84).	MESA NO. 5739 R 1 Pgs 3-11
	Marty, P. and Koutrouzas, A., 1985. Results of laboratory analysis of an oil sample collected from the Patchawarra Formation reservoir on 21/1/85 (Amdel Ltd report no. F3341/85 for Delhi Petroleum, 13/3/85).	5739 R 2 Pgs 12-15
	Flopetrol-Johnston/Schlumberger, 1985. Report on a PVT study of reservoir fluid bottomhole samples taken from the Patchawarra Formation oil and gas reservoir on 13/1/85 (Adelaide Laboratory report no. 85ADL006, March 1985).	5739 R 3 Pgs 16-71
	Flopetrol-Johnston/Schlumberger, 1985. Report on a PVT study of reservoir fluid bottomhole samples taken from the Birkhead Formation oil reservoir on 7/2/85 (Adelaide Laboratory report no. 85ADL007, March 1985).	5739 R 4 Pgs 72-116

CONTENTS OF VOLUME TWO

REPORT:	Provias, D., 1985. Field operator's reservoir engineering interpretation report on the clean-up flow test and reservoir pressure buildup survey, plus results of the preliminary extended production test, of the Birkhead oil reservoir perforated interval 5102-5120 feet depth KB, conducted during February-May 1985 (16/5/85).	5739 R 5 Pgs 117-149
APPENDIX 1:	Method of calculating theoretical buildup curve for a steady-state reservoir.	Pgs 150-154
ATTACH 1:	Flow/buildup test raw data (Expertest Pty Ltd).	Pgs 155-177
ATTACH 2:	Extended production test raw data (Expertest Pty Ltd).	Pgs 178-228
REPORT:	Provias, D., 1985. Field operator's reservoir engineering interpretation report on the clean-up flow test and reservoir pressure buildup survey of the Patchawarra oil and gas reservoir perforated interval 5720-5739 feet depth KB, conducted over the period 15-30/1/85 (16/5/85).	5739 R 6 Pgs 229-259
ATTACH 1:	Flow/buildup test raw data (Expertest Pty Ltd).	Pgs 260-307

CONTENTS OF VOLUME THREE

REPORT:	Gearhart Australia Pty Ltd, 1985. Field maintenance contractor's results of the flowing bottomhole pressure and 26 hour reservoir pressure buildup surveys of the Birkhead producing zone, conducted over the period 20-22/6/85.	5739 R 7 Pgs 308-339
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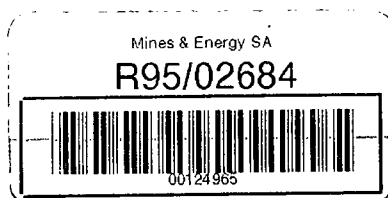
REPORT:	Provias, D.A., 1985. Field operator's reservoir engineering interpretation report on the above flow and buildup test (16/11/85).	MESA NO. 5739 R 8 Pgs 340-376
	Campbell, R., 1987. Operator's summary and field maintenance contractor's results of the single rate oil production test, 48.5 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the Patchawarra producing zone, conducted over the period 20-24/11/87 (Expertest Pty Ltd).	5739 R 9 Pgs 377-392
	Mueller, M., 1988. Operator's summary and field maintenance contractor's results of the single rate oil production test, 47 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the Patchawarra producing zone, conducted over the period 5-9/2/88 (Expertest Pty Ltd).	5739 R 10 Pgs 393-406
	Peterson, G. and Oakman, S., 1988. Operator's summary and field maintenance contractor's results of the single rate oil production test, 49.25 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the Hutton Sandstone oil reservoir perforated interval 1564.8-1568.5 metres depth KB, conducted over the period 19-23/3/88 (Expertest Pty Ltd).	5739 R 11 Pgs 407-422
	Peterson, G. 1988. Operator's summary and field maintenance contractor's results of the single rate oil production test of the Patchawarra producing zone, conducted over the period 23-24/3/88 (Expertest Pty Ltd).	5739 R 12 Pgs 423-424

END OF CONTENTS

DELHI PETROLUEM PTY. LTD.

WANCOOCHA # 2

20th. June 1985



GEARHART AUSTRALIA

GEARHART PTY.LTD
1/17-19 MUSGRAVE AVE.,
WELLAND, S.A. 5007.

DELHI PETROLEUM PTY. LTD.

WANCOOCHA # 2

OPERATIONS SCHEDULE

HOURS

REMARKS

20th. June 1985

To record the bottom hole, well head and Annulus pressures during a shut-in.

1315 hrs.

Arrive on lease with pressure logging unit, commence unloading generator and other equipment.

1415 hrs.

Commence rigging pressure logging unit to wellhead.

1615 hrs.

Open swab valve to pressure lubricator.

1625 hrs.

Commence logging flowing tubing pressure with Serac gauge and monitoring with Vaetrix gauge. Well producing at a rate of 500 Bbls./day through a 10/64" pos. choke. (See separate page for wellhead pressure recordings).

1710 hrs.

R.I.H. with Serac gauge.

1800 hrs.

Hang measure point of Serac gauge at 5079'.

1810 hrs.

Commence monitoring bottom-hole flowing pressure with Serac gauge at a rate of 1 sample per 5 mins. Also monitoring tubing and annulus pressure hourly with Vaetrix gauge.

21st. June 1985

Continue to monitor flowing bottom hole pressure with Serac gauge (1 sample / 5 mins.) and tubing and annulus pressure with Vaetrix gauge, well still producing @ 500 Bbls./day (10/64")

0735 hrs.

Instructed by Mrs. D. Provias to shut well in at 0800 hrs Wancoocha # 5 to be shut in simultaneously.

GEARHART PTY.LTD
1/17-19 MUSGRAVE AVE.,
WELLAND, S.A. 5007.

DELHI PETROLEUM PTY. LTD.

WANCOOCHA # 2

OPERATIONS SCHEDULE

HOURS

REMARKS

21st. June 1985

0800 hrs. Shut well in and record building bottom-hole pressure with Serac gauge, initially at 1 sample per 2 seconds then less frequently as per program.

22nd. June 1985

Continue to monitor building bottom hole pressure with Serac gauge (1 per 30 mins.) and tubing and annulus pressure with Vaetrix gauge.

1000 hrs. End of build-up survey.

1010 hrs. P.O.O.H.

1125 hrs. O.O.H.

1130 hrs. Bleed down lubricator and commence rigging down.

1150 hrs. Gearhart off wellhead, Expertest commence rig-up.

1220 hrs. Gearhart off lease.

PLEASE NOTE THAT AFTER SURVEY TOOL CALIBRATION CHECK PROVED TOOL TO BE INACCURATE. IT WAS DISCOVERED TO BE READING 11 PSI TOO LOW. AS THE ERROR WAS LINEAR IT HAS BEEN POSSIBLE TO AMEND THIS REPORT SO AS TO CORRECT THIS ERROR. THEREFORE ALL THE PRESSURE RECORDINGS SHOWN ARE 11 PSI HIGHER THAN THE ACTUAL LOGGED DATA INCLUDING THE BEFORE SURVEY TOOL CHECK.

TOOL CALIBRATION CHECK.

DATE: 28/6/85

TOOL

MAKE: SERAC

SERIAL #: 10006

DEAD WIEGHT TESTER

MAKE: RUSKA

SERIAL #: 11374

TOOL LEFT OPEN TO ATMOSPHERE FOR ONE HOUR THEN RECORDED:

TIME	TOOL	DWT	TEMP. ACTUAL
0900 HRS.	4.3 PSIA	65 DEG.F. (ATMOS.)	65 DEG.F.
0915 HRS.	4.4 PSIA	65 DEG.F. "	65 DEG.F.
0930 HRS.	4.4 PSIA	65 DEG.F. "	65 DEG.F.
0945 HRS.	4.4 PSIA	65 DEG.F. "	65 DEG.F.

TOOL TAKEN TO 220 DEG.F. IN OIL BATH FOR ONE HOUR THEN RECORDED:

TIME	TOOL	DWT	TEMP. ACTUAL
1300 HRS.	2495.58 PSIA	220 DEG.F.	220 DEG.F.
1315 HRS.	2495.53 PSIA	220 DEG.F.	220 DEG.F.
1330 HRS.	2495.56 PSIA	220 DEG.F.	220 DEG.F.
1345 HRS.	2495.53 PSIA	220 DEG.F.	220 DEG.F.
1400 HRS.	2992.80 PSIA	3004.3 PSIA	220 DEG.F.
1415 HRS.	2992.83 PSIA	"	220 DEG.F.
1430 HRS.	2992.77 PSIA	"	220 DEG.F.
1345 HRS.	2992.82 PSIA	"	220 DEG.F.

GEARHART PTY. LTD
1/17-19 MUSGRAVE AVE.,
WELLAND, S.A. 5007.

DELHI PETROLEUM PTY. LTD.

WANCOOCHA # 2

WELL HEAD PRESSURES

20th. June

1985

Time hrs.	Tubing psig	Annulus psig.
1630	658	683
1635	658	683
1640	658	683
1645	659	683
1650	659	683
1655	659	682
1700	659	682
1705	660	682
1710	660	682
1715	660	682
1716	(Run in hole).	
1800	662	682
1801	(Hang at 5079').	
1900	662	681
2000	663	682
2100	664	682
2200	664	682
2300	662	681

21st. June

1985

0000	666	681
0100	666	681
0200	665	681
0300	666	682
0400	666	682
0500	666	682
0600	666	682
0700	666	682
0759:45	666	682
0800	(Well shut in).	
0801	690	694
0802	690	694
0804	690	694
0805	690	695

GEARHART PTY. LTD
1/17-19 MUSGRAVE AVE.,
WELLAND, S.A. 5007.

DELHI PETROLEUM PTY. LTD.

WANCOOCHA # 2

WELL HEAD PRESSURES

21st. June

1985

Time hrs.	Tubing psig	Annulus psig.
0806	691	695
0807	691	695
0808	691	695
0809	691	695
8010	691	695
0815	691	695
0830	692	696
0900	692	697
1000	690	697
1100	690	697
1200	690	698
1300	690	698
1400	690	698
1600	689	697
1800	688	696
2000	688	695
2200	688	694

22nd. June

1985

0000	688	693
0200	688	693
0400	688	693
0800	688	692
1000	688	692

End of 26 hr. build-up survey.

PRESSURE vs TIME - (LINEAR)

COMPANY : DELHI PETROLEUM PTY. LTD.

Eq. Type: H.P.

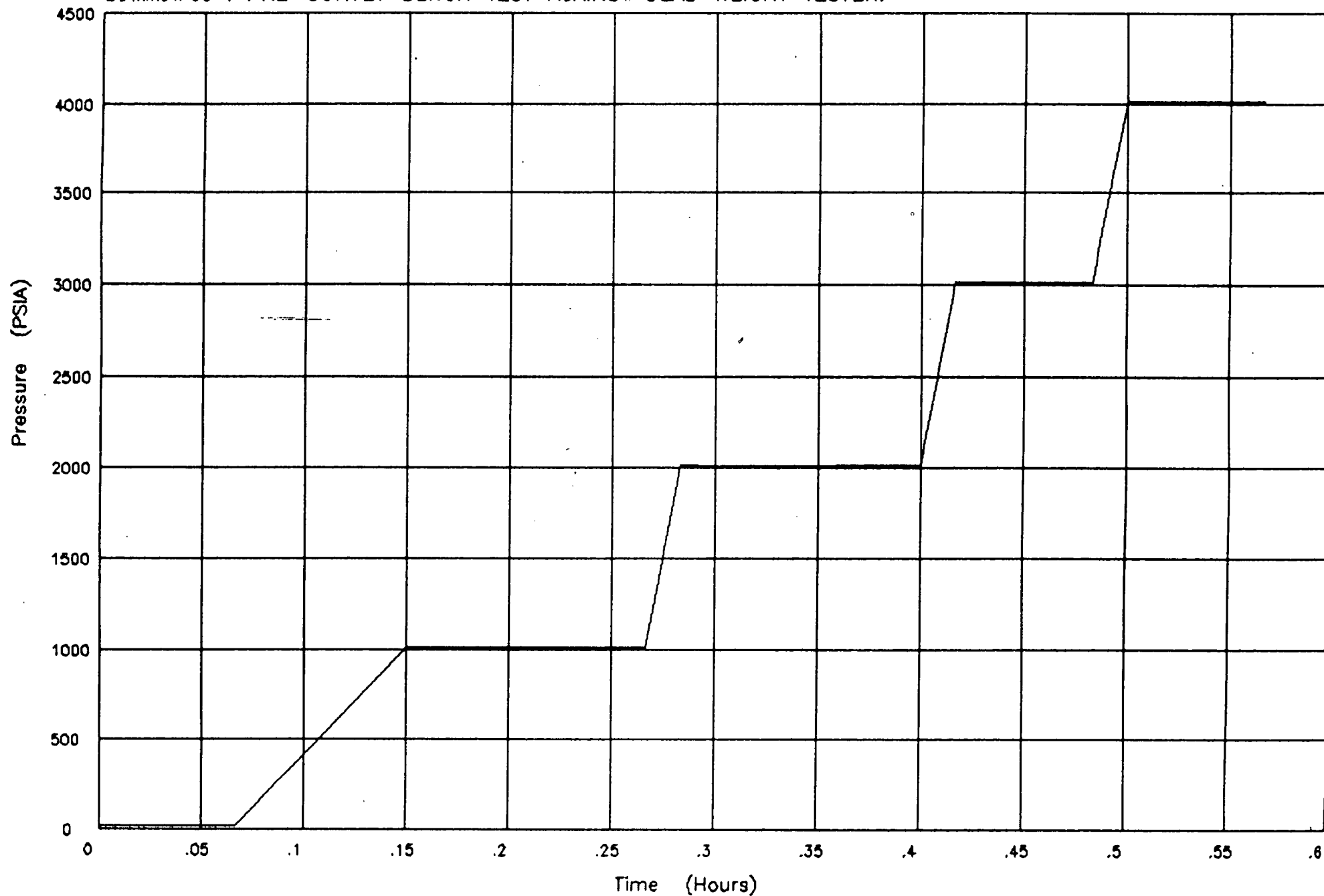
From : 00:50:00 20/06/85

WELL : WANCOOCHA # 2.

Gauge No: 627

To : 01:24:00 20/06/85

Comments : PRE-SURVEY BENCH TEST AGAINST DEAD WEIGHT TESTER.



PRESSURE vs TIME - (LINEAR) PLOT DATA

PAGE: 1

0314

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 0 Feet

Comments : PRE-SURVEY BENCH TEST AGAINST DEAD WEIGHT TESTER.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
1	20/06/85	00:50:00	0.0000	16.91	+59.2
2	20/06/85	00:51:00	0.0167	16.63	+59.0
3	20/06/85	00:52:00	0.0333	16.43	+58.9
4	20/06/85	00:53:00	0.0500	16.41	+58.6
5	20/06/85	00:54:00	0.0667	16.12	+58.6
6	20/06/85	00:59:00	0.1500	1,013.77	+59.6
7	20/06/85	01:00:00	0.1667	1,013.90	+59.6
8	20/06/85	01:01:00	0.1833	1,013.89	+59.5
9	20/06/85	01:02:00	0.2000	1,013.79	+59.5
10	20/06/85	01:03:00	0.2167	1,013.24	+59.5
11	20/06/85	01:04:00	0.2333	1,013.52	+59.5
12	20/06/85	01:05:00	0.2500	1,013.70	+59.5
13	20/06/85	01:06:00	0.2667	1,013.64	+59.4
14	20/06/85	01:07:00	0.2833	2,013.22	+59.4
15	20/06/85	01:08:00	0.3000	2,012.03	+59.4
16	20/06/85	01:09:00	0.3167	2,012.03	+59.3
17	20/06/85	01:10:00	0.3333	2,012.09	+59.2
18	20/06/85	01:11:00	0.3500	2,012.02	+59.2
19	20/06/85	01:12:00	0.3667	2,012.55	+59.1
20	20/06/85	01:13:00	0.3833	2,012.69	+59.0
21	20/06/85	01:14:00	0.4000	2,012.68	+59.0
22	20/06/85	01:15:00	0.4167	3,011.86	+58.9
23	20/06/85	01:16:00	0.4333	3,011.07	+58.9
24	20/06/85	01:17:00	0.4500	3,011.68	+58.8
25	20/06/85	01:18:00	0.4667	3,011.05	+58.7
26	20/06/85	01:19:00	0.4833	3,011.24	+58.7
27	20/06/85	01:20:00	0.5000	4,010.89	+58.6
28	20/06/85	01:21:00	0.5167	4,010.25	+58.5
29	20/06/85	01:22:00	0.5333	4,010.41	+58.5
30	20/06/85	01:23:00	0.5500	4,010.15	+58.4
31	20/06/85	01:24:00	0.5667	4,010.41	+58.4

PRESSURE vs TIME - (LINEAR)

COMPANY : DELHI PETROLEUM PTY. LTD.

Eq. Type: H.P.

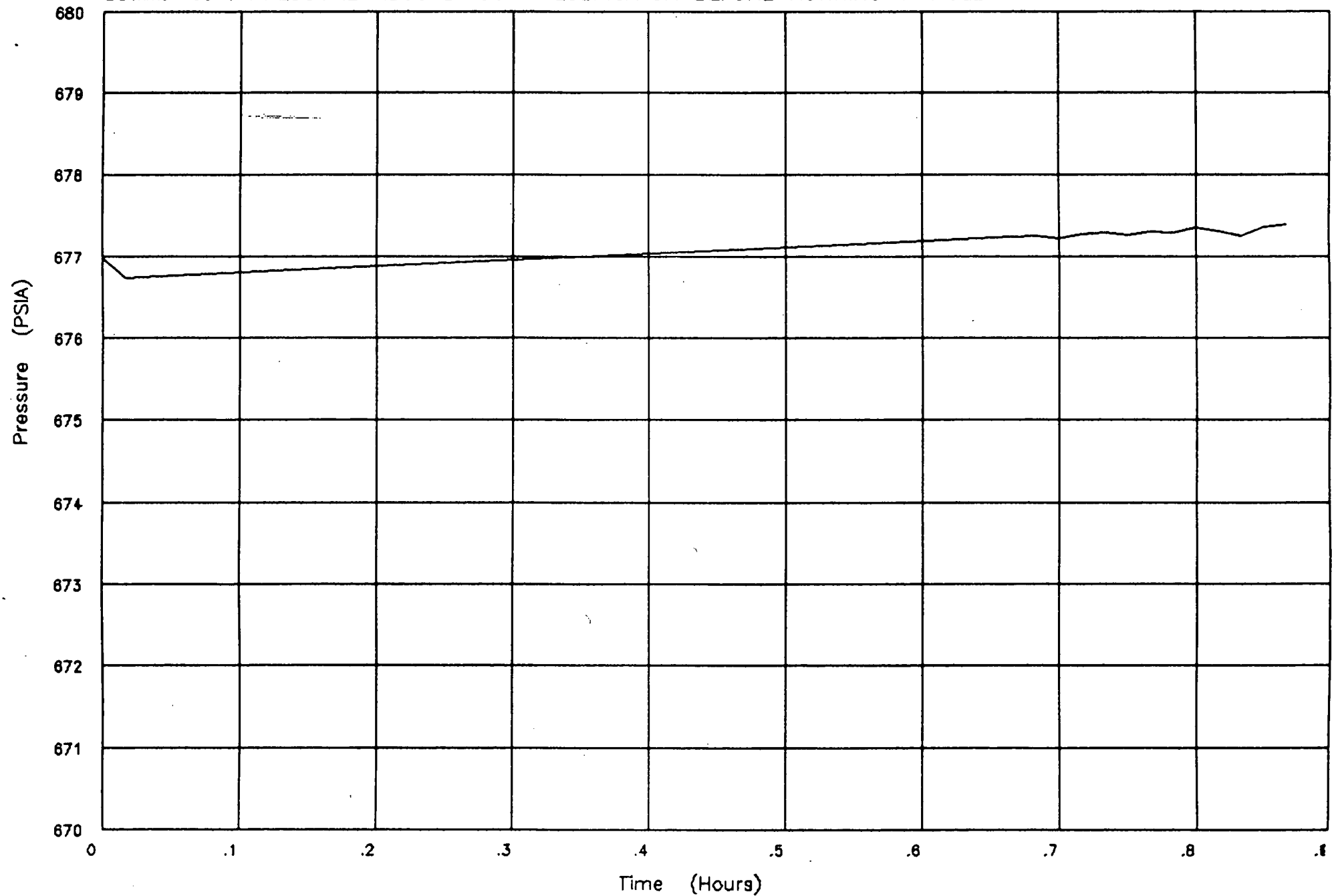
From: 16:15:00 20/06/85

WELL : WANCOOCHA # 2.

Gauge No: 627

To : 17:07:00 20/06/85

Comments : PRESSURE RECORDINGS IN LUBRICATOR BEFORE RUNNING IN HOLE.



PRESSURE vs TIME - (LINEAR) PLOT DATA

PAGE: 1

0316

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : PRESSURE RECORDINGS IN LUBRICATOR BEFORE RUNNING IN HOLE.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
1	20/06/85	16:15:00	0.0000	676.98	+71.6
2	20/06/85	16:16:00	0.0167	676.73	+72.2
3	20/06/85	16:56:00	0.6833	677.25	+76.9
4	20/06/85	16:57:00	0.7000	677.22	+76.8
5	20/06/85	16:58:00	0.7167	677.27	+76.7
6	20/06/85	16:59:00	0.7333	677.29	+76.6
7	20/06/85	17:00:00	0.7500	677.26	+76.5
8	20/06/85	17:01:00	0.7667	677.30	+76.4
9	20/06/85	17:02:00	0.7833	677.29	+76.3
10	20/06/85	17:03:00	0.8000	677.35	+76.2
11	20/06/85	17:04:00	0.8167	677.31	+76.1
12	20/06/85	17:05:00	0.8333	677.25	+76.0
13	20/06/85	17:06:00	0.8500	677.36	+75.9
14	20/06/85	17:07:00	0.8667	677.39	+75.8

PRESSURE vs TIME - (LINEAR)

COMPANY : DELHI PETROLEUM PTY. LTD.

Eq. Type: H.P.

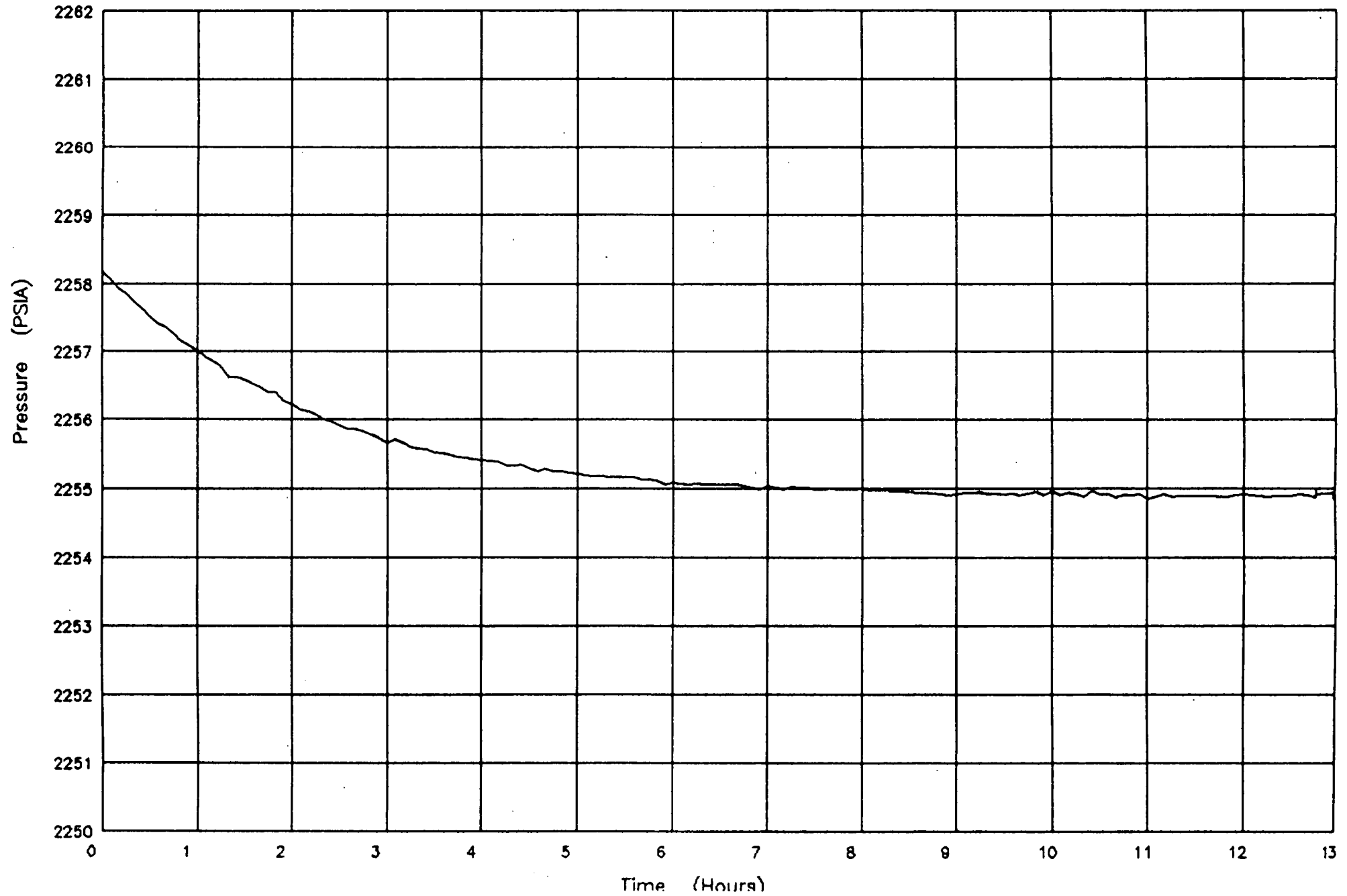
From : 19:00:00 20/06/85

WELL : WANGOOCHA # 2.

Gauge No: 627

To : 08:00:06 21/06/85

Comments : FLOWING BOTTOM HOLE RECORDINGS BEFORE SHUT IN.



PRESSURE vs TIME - (LINEAR) PLOT DATA

PAGE: 1

0318

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANC00CHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : FLOWING BOTTOM HOLE RECORDINGS BEFORE SHUT IN.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
1	20/06/85	19:00:00	0.0000	2,258.17	+213.7
2	20/06/85	19:05:00	0.0833	2,258.08	+213.7
3	20/06/85	19:10:00	0.1667	2,257.94	+213.7
4	20/06/85	19:15:00	0.2500	2,257.86	+213.7
5	20/06/85	19:20:00	0.3333	2,257.74	+213.7
6	20/06/85	19:25:00	0.4167	2,257.63	+213.7
7	20/06/85	19:30:00	0.5000	2,257.53	+213.7
8	20/06/85	19:35:00	0.5833	2,257.43	+213.8
9	20/06/85	19:40:00	0.6667	2,257.36	+213.8
10	20/06/85	19:45:00	0.7500	2,257.26	+213.8
11	20/06/85	19:50:00	0.8333	2,257.16	+213.8
12	20/06/85	19:55:00	0.9167	2,257.09	+213.8
13	20/06/85	20:00:00	1.0000	2,257.01	+213.8
14	20/06/85	20:05:00	1.0833	2,256.92	+213.8
15	20/06/85	20:10:00	1.1667	2,256.86	+213.8
16	20/06/85	20:15:00	1.2500	2,256.79	+213.8
17	20/06/85	20:20:00	1.3333	2,256.63	+213.8
18	20/06/85	20:25:00	1.4167	2,256.63	+213.8
19	20/06/85	20:30:00	1.5000	2,256.59	+213.8
20	20/06/85	20:35:00	1.5833	2,256.53	+213.8
21	20/06/85	20:40:00	1.6667	2,256.48	+213.8
22	20/06/85	20:45:00	1.7500	2,256.41	+213.8
23	20/06/85	20:50:00	1.8333	2,256.41	+213.8
24	20/06/85	20:55:00	1.9167	2,256.28	+213.8
25	20/06/85	21:00:00	2.0000	2,256.23	+213.8
26	20/06/85	21:05:00	2.0833	2,256.15	+213.8
27	20/06/85	21:10:00	2.1667	2,256.12	+213.8
28	20/06/85	21:15:00	2.2500	2,256.07	+213.8
29	20/06/85	21:20:00	2.3333	2,256.00	+213.8
30	20/06/85	21:25:00	2.4167	2,255.97	+213.8
31	20/06/85	21:30:00	2.5000	2,255.91	+213.8
32	20/06/85	21:35:00	2.5833	2,255.86	+213.8
33	20/06/85	21:40:00	2.6667	2,255.87	+213.8
34	20/06/85	21:45:00	2.7500	2,255.83	+213.8
35	20/06/85	21:50:00	2.8333	2,255.78	+213.8
36	20/06/85	21:55:00	2.9167	2,255.74	+213.8
37	20/06/85	22:00:00	3.0000	2,255.67	+213.8
38	20/06/85	22:05:00	3.0833	2,255.71	+213.8
39	20/06/85	22:10:00	3.1667	2,255.67	+213.9
40	20/06/85	22:15:00	3.2500	2,255.61	+213.9
41	20/06/85	22:20:00	3.3333	2,255.58	+213.9
42	20/06/85	22:25:00	3.4167	2,255.57	+213.9
43	20/06/85	22:30:00	3.5000	2,255.53	+213.9
44	20/06/85	22:35:00	3.5833	2,255.51	+213.9
45	20/06/85	22:40:00	3.6667	2,255.49	+213.9
46	20/06/85	22:45:00	3.7500	2,255.45	+213.9
47	20/06/85	22:50:00	3.8333	2,255.44	+213.9
48	20/06/85	22:55:00	3.9167	2,255.42	+213.9
49	20/06/85	23:00:00	4.0000	2,255.41	+213.9
50	20/06/85	23:05:00	4.0833	2,255.40	+213.9

PRESSURE vs TIME - (LINEAR) PLOT DATA

PAGE: 2

0319

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : FLOWING BOTTOM HOLE RECORDINGS BEFORE SHUT IN.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
51	20/06/85	23:10:00	4.1667	2,255.38	+213.9
52	20/06/85	23:15:00	4.2500	2,255.33	+213.9
53	20/06/85	23:20:00	4.3333	2,255.33	+213.9
54	20/06/85	23:25:00	4.4167	2,255.34	+213.9
55	20/06/85	23:30:00	4.5000	2,255.28	+213.9
56	20/06/85	23:35:00	4.5833	2,255.24	+213.9
57	20/06/85	23:40:00	4.6667	2,255.28	+213.9
58	20/06/85	23:45:00	4.7500	2,255.24	+213.9
59	20/06/85	23:50:00	4.8333	2,255.24	+213.9
60	20/06/85	23:55:00	4.9167	2,255.22	+213.9
61	21/06/85	00:00:00	5.0000	2,255.21	+213.9
62	21/06/85	00:05:00	5.0833	2,255.19	+213.9
63	21/06/85	00:10:00	5.1667	2,255.17	+213.9
64	21/06/85	00:15:00	5.2500	2,255.17	+213.9
65	21/06/85	00:20:00	5.3333	2,255.16	+213.9
66	21/06/85	00:25:00	5.4167	2,255.16	+213.9
67	21/06/85	00:30:00	5.5000	2,255.16	+213.9
68	21/06/85	00:35:00	5.5833	2,255.16	+213.9
69	21/06/85	00:40:00	5.6667	2,255.12	+213.9
70	21/06/85	00:45:00	5.7500	2,255.12	+213.9
71	21/06/85	00:50:00	5.8333	2,255.11	+213.9
72	21/06/85	00:55:00	5.9167	2,255.06	+213.9
73	21/06/85	01:00:00	6.0000	2,255.08	+213.9
74	21/06/85	01:05:00	6.0833	2,255.07	+213.9
75	21/06/85	01:10:00	6.1667	2,255.06	+213.9
76	21/06/85	01:15:00	6.2500	2,255.07	+213.9
77	21/06/85	01:20:00	6.3333	2,255.06	+213.9
78	21/06/85	01:25:00	6.4167	2,255.05	+213.9
79	21/06/85	01:30:00	6.5000	2,255.06	+213.9
80	21/06/85	01:40:00	6.6667	2,255.06	+213.9
81	21/06/85	01:55:00	6.9167	2,254.99	+213.9
82	21/06/85	02:00:00	7.0000	2,255.03	+213.9
83	21/06/85	02:05:00	7.0833	2,255.01	+213.9
84	21/06/85	02:10:00	7.1667	2,254.99	+213.9
85	21/06/85	02:15:00	7.2500	2,255.02	+213.9
86	21/06/85	02:20:00	7.3333	2,255.01	+213.9
87	21/06/85	02:25:00	7.4167	2,255.01	+213.9
88	21/06/85	02:30:00	7.5000	2,254.99	+213.9
89	21/06/85	02:35:00	7.5833	2,254.98	+213.9
90	21/06/85	02:40:00	7.6667	2,255.00	+213.9
91	21/06/85	02:45:00	7.7500	2,254.98	+213.9
92	21/06/85	02:50:00	7.8333	2,254.98	+213.9
93	21/06/85	02:55:00	7.9167	2,254.99	+213.9
94	21/06/85	03:00:00	8.0000	2,255.00	+213.9
95	21/06/85	03:05:00	8.0833	2,254.97	+213.9
96	21/06/85	03:10:00	8.1667	2,254.97	+213.9
97	21/06/85	03:15:00	8.2500	2,254.97	+213.9
98	21/06/85	03:20:00	8.3333	2,254.96	+213.9
99	21/06/85	03:25:00	8.4167	2,254.96	+213.9
100	21/06/85	03:30:00	8.5000	2,254.95	+214.0

PRESSURE vs TIME - (LINEAR) PLOT DATA

PAGE: 3

0320

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : FLOWING BOTTOM HOLE RECORDINGS BEFORE SHUT IN.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
101	21/06/85	03:35:00	8.5833	2,254.94	+213.9
102	21/06/85	03:40:00	8.6667	2,254.94	+214.0
103	21/06/85	03:45:00	8.7500	2,254.93	+214.0
104	21/06/85	03:50:00	8.8333	2,254.91	+214.0
105	21/06/85	03:55:00	8.9167	2,254.90	+214.0
106	21/06/85	04:00:00	9.0000	2,254.91	+214.0
107	21/06/85	04:05:00	9.0833	2,254.94	+214.0
108	21/06/85	04:10:00	9.1667	2,254.94	+214.0
109	21/06/85	04:15:00	9.2500	2,254.95	+214.0
110	21/06/85	04:20:00	9.3333	2,254.92	+214.0
111	21/06/85	04:25:00	9.4167	2,254.93	+214.0
112	21/06/85	04:30:00	9.5000	2,254.91	+214.0
113	21/06/85	04:10:00	9.1667	2,254.94	+214.0
114	21/06/85	04:15:00	9.2500	2,254.95	+214.0
115	21/06/85	04:20:00	9.3333	2,254.92	+214.0
116	21/06/85	04:25:00	9.4167	2,254.93	+214.0
117	21/06/85	04:30:00	9.5000	2,254.91	+214.0
118	21/06/85	04:35:00	9.5833	2,254.93	+214.0
119	21/06/85	04:40:00	9.6667	2,254.90	+214.0
120	21/06/85	04:45:00	9.7500	2,254.93	+214.0
121	21/06/85	04:50:00	9.8333	2,254.95	+214.0
122	21/06/85	04:55:00	9.9167	2,254.90	+214.0
123	21/06/85	05:00:00	10.0000	2,254.96	+214.0
124	21/06/85	05:05:00	10.0833	2,254.90	+214.0
125	21/06/85	05:10:00	10.1667	2,254.94	+214.0
126	21/06/85	05:15:00	10.2500	2,254.92	+214.0
127	21/06/85	05:20:00	10.3333	2,254.88	+214.0
128	21/06/85	05:25:00	10.4167	2,254.96	+214.0
129	21/06/85	05:30:00	10.5000	2,254.91	+214.0
130	21/06/85	05:35:00	10.5833	2,254.91	+214.0
131	21/06/85	05:40:00	10.6667	2,254.87	+214.0
132	21/06/85	05:45:00	10.7500	2,254.90	+214.0
133	21/06/85	05:50:00	10.8333	2,254.90	+214.0
134	21/06/85	05:55:00	10.9167	2,254.91	+214.0
135	21/06/85	06:00:00	11.0000	2,254.85	+214.0
136	21/06/85	06:05:00	11.0833	2,254.88	+214.0
137	21/06/85	06:10:00	11.1667	2,254.91	+214.0
138	21/06/85	06:15:00	11.2500	2,254.88	+214.0
139	21/06/85	06:20:00	11.3333	2,254.89	+214.0
140	21/06/85	06:35:00	11.5833	2,254.89	+214.0
141	21/06/85	06:50:00	11.8333	2,254.88	+214.0
142	21/06/85	06:55:00	11.9167	2,254.90	+214.0
143	21/06/85	07:00:00	12.0000	2,254.91	+214.0
144	21/06/85	07:05:00	12.0833	2,254.90	+214.0
145	21/06/85	07:10:00	12.1667	2,254.89	+214.0
146	21/06/85	07:15:00	12.2500	2,254.88	+214.0
147	21/06/85	07:20:00	12.3333	2,254.89	+214.0
148	21/06/85	07:25:00	12.4167	2,254.89	+214.0
149	21/06/85	07:30:00	12.5000	2,254.89	+214.0
150	21/06/85	07:35:00	12.5833	2,254.92	+214.0

PRESSURE vs TIME - (LINEAR) PLOT DATA

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0321

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : FLOWING BOTTOM HOLE RECORDINGS BEFORE SHUT IN.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
151	21/06/85	07:40:00	12.6667	2,254.90	+214.0
152	21/06/85	07:44:40	12.7444	2,254.87	+214.0
153	21/06/85	07:44:42	12.7450	2,254.87	+214.0
154	21/06/85	07:44:44	12.7456	2,254.88	+214.0
155	21/06/85	07:44:48	12.7467	2,254.89	+214.0
156	21/06/85	07:44:50	12.7472	2,254.89	+214.0
157	21/06/85	07:44:52	12.7478	2,254.89	+214.0
158	21/06/85	07:44:56	12.7489	2,254.89	+214.0
159	21/06/85	07:44:58	12.7494	2,254.90	+214.0
160	21/06/85	07:45:02	12.7506	2,254.87	+214.0
161	21/06/85	07:45:06	12.7517	2,254.90	+214.0
162	21/06/85	07:45:10	12.7528	2,254.89	+214.0
163	21/06/85	07:45:14	12.7539	2,254.87	+214.0
164	21/06/85	07:45:18	12.7550	2,254.91	+214.0
165	21/06/85	07:45:20	12.7556	2,254.91	+214.0
166	21/06/85	07:45:22	12.7561	2,254.92	+214.0
167	21/06/85	07:45:26	12.7572	2,254.96	+214.0
168	21/06/85	07:45:28	12.7578	2,254.96	+214.0
169	21/06/85	07:45:30	12.7583	2,254.87	+214.0
170	21/06/85	07:45:32	12.7589	2,254.91	+214.0
171	21/06/85	07:45:34	12.7594	2,254.91	+214.0
172	21/06/85	07:45:36	12.7600	2,254.91	+214.0
173	21/06/85	07:59:28	12.9911	2,254.94	+214.0
174	21/06/85	07:59:32	12.9922	2,254.91	+214.0
175	21/06/85	07:59:36	12.9933	2,254.92	+214.0
176	21/06/85	07:59:38	12.9939	2,254.86	+214.0
177	21/06/85	07:59:42	12.9950	2,254.84	+214.0
178	21/06/85	07:59:46	12.9961	2,254.90	+214.0
179	21/06/85	07:59:50	12.9972	2,254.90	+214.0
180	21/06/85	07:59:54	12.9983	2,254.92	+214.0
181	21/06/85	07:59:58	12.9994	2,254.87	+214.0
182	21/06/85	08:00:02	13.0006	2,254.88	+214.0
183	21/06/85	08:00:06	13.0017	2,254.89	+214.0

PRESSURE vs TIME - (LINEAR)

COMPANY : DELHI PETROLEUM PTY. LTD.

Eq. Type: H.P.

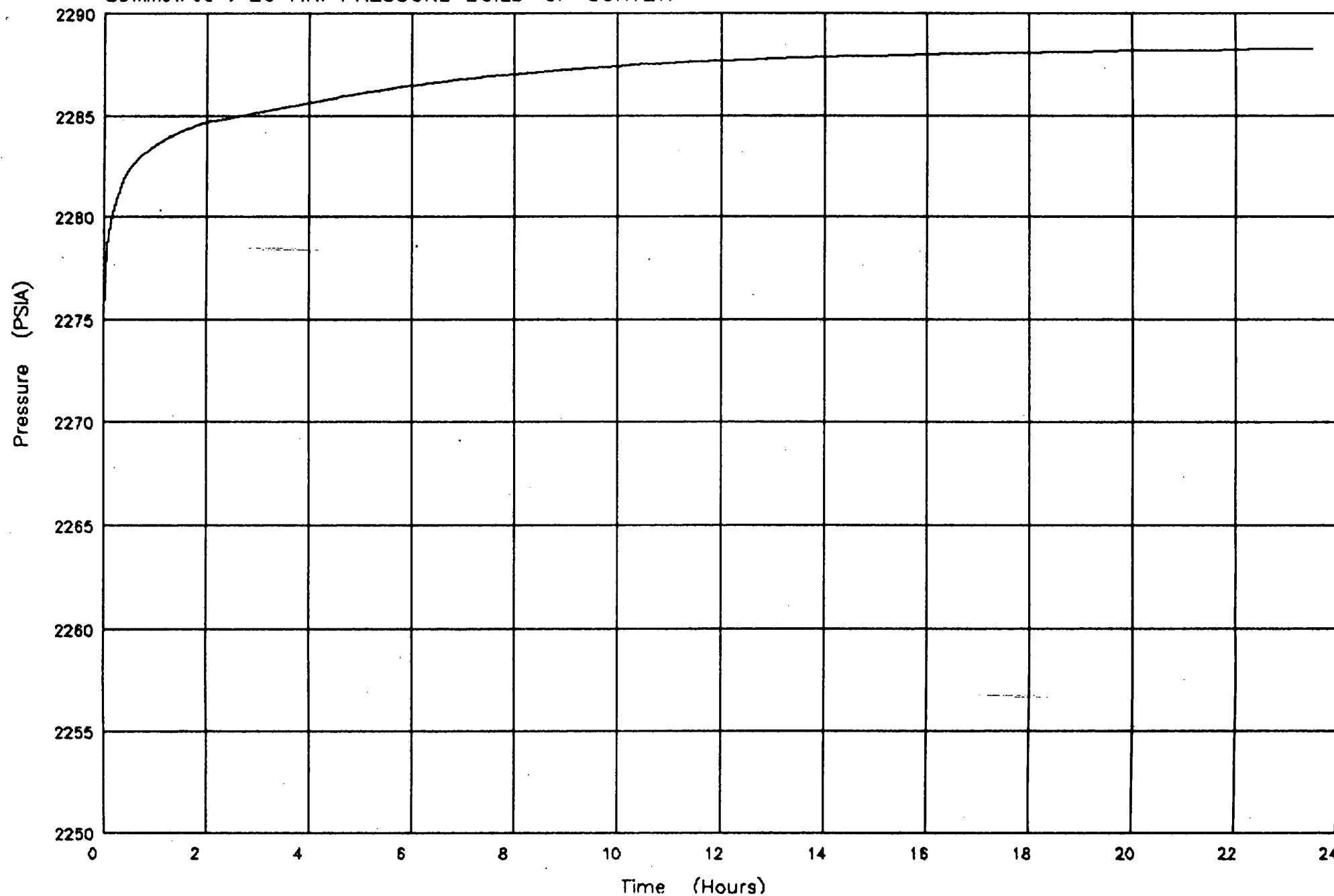
From : 08:00:06 21/06/85

WELL : WANCOOCHA # 2.

Gauge No: 627

To : 07:30:00 22/06/85

Comments : 26 HR. PRESSURE BUILD-UP SURVEY.



PRESSURE vs TIME - (LINEAR) PLOT DATA

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0323

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : 26 HR. PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
1	21/06/85	08:00:06	0.0000	2,254.89	+214.0
2	21/06/85	08:00:10	0.0011	2,267.04	+214.0
3	21/06/85	08:00:14	0.0022	2,272.41	+214.0
4	21/06/85	08:00:18	0.0033	2,274.60	+214.0
5	21/06/85	08:00:22	0.0044	2,274.74	+214.0
6	21/06/85	08:00:26	0.0056	2,274.52	+214.0
7	21/06/85	08:00:30	0.0067	2,275.07	+214.0
8	21/06/85	08:00:32	0.0072	2,275.07	+214.0
9	21/06/85	08:00:34	0.0078	2,275.30	+214.0
10	21/06/85	08:00:38	0.0089	2,275.24	+214.0
11	21/06/85	08:00:40	0.0094	2,275.49	+214.0
12	21/06/85	08:00:44	0.0106	2,275.47	+214.0
13	21/06/85	08:00:48	0.0117	2,275.67	+214.0
14	21/06/85	08:00:52	0.0128	2,275.85	+214.0
15	21/06/85	08:00:56	0.0139	2,275.85	+214.0
16	21/06/85	08:01:00	0.0150	2,275.98	+214.0
17	21/06/85	08:01:04	0.0161	2,276.13	+214.0
18	21/06/85	08:01:08	0.0172	2,276.17	+214.0
19	21/06/85	08:01:12	0.0183	2,276.26	+214.0
20	21/06/85	08:01:16	0.0194	2,276.38	+214.0
21	21/06/85	08:01:18	0.0200	2,276.38	+214.0
22	21/06/85	08:01:20	0.0206	2,276.42	+214.0
23	21/06/85	08:01:24	0.0217	2,276.51	+214.0
24	21/06/85	08:01:28	0.0228	2,276.59	+214.1
25	21/06/85	08:01:32	0.0239	2,276.64	+214.1
26	21/06/85	08:01:34	0.0244	2,276.64	+214.1
27	21/06/85	08:01:36	0.0250	2,276.71	+214.0
28	21/06/85	08:01:40	0.0261	2,276.80	+214.0
29	21/06/85	08:01:44	0.0272	2,276.84	+214.0
30	21/06/85	08:01:48	0.0283	2,276.91	+214.0
31	21/06/85	08:01:52	0.0294	2,276.98	+214.0
32	21/06/85	08:01:56	0.0306	2,277.02	+214.0
33	21/06/85	08:01:58	0.0311	2,277.08	+214.0
34	21/06/85	08:02:02	0.0322	2,277.11	+214.0
35	21/06/85	08:02:06	0.0333	2,277.17	+214.0
36	21/06/85	08:02:12	0.0350	2,277.23	+214.0
37	21/06/85	08:02:16	0.0361	2,277.29	+214.0
38	21/06/85	08:02:20	0.0372	2,277.35	+214.0
39	21/06/85	08:02:24	0.0383	2,277.39	+214.0
40	21/06/85	08:02:28	0.0394	2,277.44	+214.0
41	21/06/85	08:02:32	0.0406	2,277.50	+214.0
42	21/06/85	08:02:36	0.0417	2,277.54	+214.0
43	21/06/85	08:02:38	0.0422	2,277.58	+214.0
44	21/06/85	08:02:42	0.0433	2,277.59	+214.0
45	21/06/85	08:02:46	0.0444	2,277.65	+214.0
46	21/06/85	08:02:50	0.0456	2,277.67	+214.0
47	21/06/85	08:02:52	0.0461	2,277.67	+270.0
48	21/06/85	08:02:54	0.0467	2,277.71	+214.0
49	21/06/85	08:02:58	0.0478	2,277.76	+214.0
50	21/06/85	08:03:02	0.0489	2,277.80	+214.0

PRESSURE vs TIME - (LINEAR) PLOT DATA

PAGE: 2

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

0324

Comments : 26 HR. PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
51	21/06/85	08:03:06	0.0500	2,277.83	+214.0
52	21/06/85	08:03:10	0.0511	2,277.85	+214.0
53	21/06/85	08:03:14	0.0522	2,277.92	+214.0
54	21/06/85	08:03:16	0.0528	2,277.94	+214.0
55	21/06/85	08:03:20	0.0539	2,277.97	+214.0
56	21/06/85	08:03:24	0.0550	2,277.99	+214.0
57	21/06/85	08:03:28	0.0561	2,278.03	+214.0
58	21/06/85	08:03:30	0.0567	2,278.03	+214.0
59	21/06/85	08:03:32	0.0572	2,278.07	+214.0
60	21/06/85	08:03:36	0.0583	2,278.10	+214.0
61	21/06/85	08:03:38	0.0589	2,278.14	+214.0
62	21/06/85	08:03:42	0.0600	2,278.15	+214.0
63	21/06/85	08:03:46	0.0611	2,278.18	+214.0
64	21/06/85	08:03:50	0.0622	2,278.21	+214.0
65	21/06/85	08:03:54	0.0633	2,278.26	+214.0
66	21/06/85	08:03:58	0.0644	2,278.27	+214.0
67	21/06/85	08:04:02	0.0656	2,278.31	+214.0
68	21/06/85	08:04:06	0.0667	2,278.34	+214.0
69	21/06/85	08:04:08	0.0672	2,278.34	+214.0
70	21/06/85	08:04:10	0.0678	2,278.35	+214.0
71	21/06/85	08:04:14	0.0689	2,278.39	+214.0
72	21/06/85	08:04:18	0.0700	2,278.42	+214.0
73	21/06/85	08:04:22	0.0711	2,278.50	+214.0
74	21/06/85	08:04:24	0.0717	2,278.50	+214.0
75	21/06/85	08:04:26	0.0722	2,278.46	+214.0
76	21/06/85	08:04:30	0.0733	2,278.51	+214.0
77	21/06/85	08:04:32	0.0739	2,278.51	+300.0
78	21/06/85	08:04:34	0.0744	2,278.52	+214.0
79	21/06/85	08:04:38	0.0756	2,278.55	+214.0
80	21/06/85	08:04:42	0.0767	2,278.65	+214.0
81	21/06/85	08:04:46	0.0778	2,278.60	+214.0
82	21/06/85	08:04:48	0.0783	2,278.60	+214.0
83	21/06/85	08:04:50	0.0789	2,278.64	+214.0
84	21/06/85	08:04:54	0.0800	2,278.65	+214.0
85	21/06/85	08:04:56	0.0806	2,278.65	+214.0
86	21/06/85	08:04:58	0.0811	2,278.68	+214.0
87	21/06/85	08:05:02	0.0822	2,278.71	+214.0
88	21/06/85	08:05:06	0.0833	2,278.72	+214.0
89	21/06/85	08:05:10	0.0844	2,278.76	+214.0
90	21/06/85	08:05:12	0.0850	2,278.76	+214.0
91	21/06/85	08:05:14	0.0856	2,278.78	+214.0
92	21/06/85	08:05:18	0.0867	2,278.79	+214.0
93	21/06/85	08:05:22	0.0878	2,278.81	+214.0
94	21/06/85	08:05:26	0.0889	2,278.86	+214.0
95	21/06/85	08:05:30	0.0900	2,278.86	+214.0
96	21/06/85	08:05:34	0.0911	2,278.89	+214.0
97	21/06/85	08:05:36	0.0917	2,278.90	+214.0
98	21/06/85	08:05:40	0.0928	2,278.92	+214.0
99	21/06/85	08:05:42	0.0933	2,278.92	+214.0
100	21/06/85	08:05:44	0.0939	2,278.94	+214.0

PRESSURE vs TIME - (LINEAR) PLOT DATA

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0325

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : 26 HR. PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
101	21/06/85	08:05:50	0.0956	2,278.96	+214.0
102	21/06/85	08:06:00	0.0983	2,279.03	+214.0
103	21/06/85	08:06:10	0.1011	2,279.07	+214.0
104	21/06/85	08:06:20	0.1039	2,279.11	+214.0
105	21/06/85	08:06:40	0.1094	2,279.22	+214.0
106	21/06/85	08:07:00	0.1150	2,279.31	+214.0
107	21/06/85	08:07:20	0.1206	2,279.40	+214.0
108	21/06/85	08:07:50	0.1289	2,279.52	+214.0
109	21/06/85	08:08:00	0.1317	2,279.56	+214.0
110	21/06/85	08:08:20	0.1372	2,279.63	+214.0
111	21/06/85	08:08:40	0.1428	2,279.70	+214.0
112	21/06/85	08:09:00	0.1483	2,279.81	+214.1
113	21/06/85	08:09:10	0.1511	2,279.80	+214.1
114	21/06/85	08:09:20	0.1539	2,279.84	+214.1
115	21/06/85	08:09:40	0.1594	2,279.93	+214.1
116	21/06/85	08:10:10	0.1678	2,280.02	+214.1
117	21/06/85	08:10:30	0.1733	2,280.08	+214.1
118	21/06/85	08:10:50	0.1789	2,280.14	+214.1
119	21/06/85	08:11:10	0.1844	2,280.21	+214.1
120	21/06/85	08:11:20	0.1872	2,280.23	+214.1
121	21/06/85	08:11:30	0.1900	2,280.31	+214.1
122	21/06/85	08:11:50	0.1956	2,280.32	+214.1
123	21/06/85	08:12:00	0.1983	2,280.35	+214.1
124	21/06/85	08:12:30	0.2067	2,280.42	+214.1
125	21/06/85	08:12:40	0.2094	2,280.45	+214.1
126	21/06/85	08:13:00	0.2150	2,280.50	+214.1
127	21/06/85	08:13:10	0.2178	2,280.53	+214.1
128	21/06/85	08:13:30	0.2233	2,280.57	+214.1
129	21/06/85	08:13:40	0.2261	2,280.59	+214.1
130	21/06/85	08:14:10	0.2344	2,280.67	+214.1
131	21/06/85	08:14:20	0.2372	2,280.70	+214.1
132	21/06/85	08:14:30	0.2400	2,280.73	+214.1
133	21/06/85	08:14:50	0.2456	2,280.77	+214.1
134	21/06/85	08:15:10	0.2511	2,280.82	+214.1
135	21/06/85	08:15:20	0.2539	2,280.84	+214.1
136	21/06/85	08:15:30	0.2567	2,280.86	+214.1
137	21/06/85	08:15:50	0.2622	2,280.91	+214.1
138	21/06/85	08:16:00	0.2650	2,280.92	+214.1
139	21/06/85	08:16:10	0.2678	2,280.96	+214.1
140	21/06/85	08:16:30	0.2733	2,281.01	+214.1
141	21/06/85	08:16:40	0.2761	2,281.02	+214.1
142	21/06/85	08:16:50	0.2789	2,281.05	+214.1
143	21/06/85	08:17:00	0.2817	2,281.06	+214.1
144	21/06/85	08:17:10	0.2844	2,281.11	+214.1
145	21/06/85	08:17:30	0.2900	2,281.11	+214.1
146	21/06/85	08:17:40	0.2928	2,281.14	+214.1
147	21/06/85	08:17:50	0.2956	2,281.16	+214.1
148	21/06/85	08:18:00	0.2983	2,281.18	+214.1
149	21/06/85	08:18:20	0.3039	2,281.22	+214.1
150	21/06/85	08:18:40	0.3094	2,281.26	+214.1

PRESSURE vs TIME - (LINEAR) PLOT DATA

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0326

COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : 26 HR. PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
151	21/06/85	08:18:50	0.3122	2,281.28	+214.1
152	21/06/85	08:19:00	0.3150	2,281.30	+214.1
153	21/06/85	08:19:10	0.3178	2,281.31	+214.1
154	21/06/85	08:19:20	0.3206	2,281.33	+214.1
155	21/06/85	08:19:30	0.3233	2,281.36	+214.1
156	21/06/85	08:19:40	0.3261	2,281.38	+214.1
157	21/06/85	08:20:00	0.3317	2,281.42	+214.1
158	21/06/85	08:20:10	0.3344	2,281.42	+214.1
159	21/06/85	08:20:20	0.3372	2,281.44	+214.1
160	21/06/85	08:20:30	0.3400	2,281.46	+214.1
161	21/06/85	08:20:40	0.3428	2,281.48	+214.1
162	21/06/85	08:20:50	0.3456	2,281.51	+214.1
163	21/06/85	08:21:00	0.3483	2,281.52	+214.1
164	21/06/85	08:21:10	0.3511	2,281.54	+214.1
165	21/06/85	08:21:20	0.3539	2,281.54	+214.1
166	21/06/85	08:21:30	0.3567	2,281.57	+214.1
167	21/06/85	08:21:40	0.3594	2,281.58	+214.1
168	21/06/85	08:21:50	0.3622	2,281.61	+214.1
169	21/06/85	08:22:00	0.3650	2,281.63	+214.1
170	21/06/85	08:22:10	0.3678	2,281.64	+214.1
171	21/06/85	08:22:20	0.3706	2,281.65	+214.1
172	21/06/85	08:22:30	0.3733	2,281.68	+214.1
173	21/06/85	08:22:40	0.3761	2,281.71	+214.1
174	21/06/85	08:22:50	0.3789	2,281.70	+214.1
175	21/06/85	08:23:00	0.3817	2,281.73	+214.1
176	21/06/85	08:24:00	0.3983	2,281.81	+214.2
177	21/06/85	08:25:00	0.4150	2,281.91	+214.2
178	21/06/85	08:26:00	0.4317	2,282.00	+214.2
179	21/06/85	08:27:00	0.4483	2,282.08	+214.2
180	21/06/85	08:28:00	0.4650	2,282.17	+214.2
181	21/06/85	08:29:00	0.4817	2,282.23	+214.2
182	21/06/85	08:30:00	0.4983	2,282.30	+214.2
183	21/06/85	08:31:00	0.5150	2,282.37	+214.2
184	21/06/85	08:32:00	0.5317	2,282.42	+214.2
185	21/06/85	08:33:00	0.5483	2,282.49	+214.2
186	21/06/85	08:34:00	0.5650	2,282.53	+214.2
187	21/06/85	08:35:00	0.5817	2,282.60	+214.2
188	21/06/85	08:36:00	0.5983	2,282.66	+214.2
189	21/06/85	08:37:00	0.6150	2,282.70	+214.2
190	21/06/85	08:38:00	0.6317	2,282.76	+214.2
191	21/06/85	08:39:00	0.6483	2,282.79	+214.2
192	21/06/85	08:40:00	0.6650	2,282.85	+214.2
193	21/06/85	08:41:00	0.6817	2,282.90	+214.2
194	21/06/85	08:42:00	0.6983	2,282.95	+214.2
195	21/06/85	08:43:00	0.7150	2,282.99	+214.2
196	21/06/85	08:44:00	0.7317	2,283.02	+214.2
197	21/06/85	08:45:00	0.7483	2,283.07	+214.2
198	21/06/85	08:46:00	0.7650	2,283.11	+214.2
199	21/06/85	08:47:00	0.7817	2,283.14	+214.2
200	21/06/85	08:48:00	0.7983	2,283.18	+214.2

PRESSURE vs TIME - (LINEAR) PLOT DATA

PAGE: 5

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COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : 26 HR. PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
201	21/06/85	08:49:00	0.8150	2,283.21	+214.2
202	21/06/85	08:50:00	0.8317	2,283.25	+214.2
203	21/06/85	08:51:00	0.8483	2,283.28	+214.2
204	21/06/85	08:52:00	0.8650	2,283.32	+214.2
205	21/06/85	08:53:00	0.8817	2,283.35	+214.2
206	21/06/85	08:54:00	0.8983	2,283.38	+214.2
207	21/06/85	08:55:00	0.9150	2,283.42	+214.2
208	21/06/85	08:56:00	0.9317	2,283.44	+214.2
209	21/06/85	08:57:00	0.9483	2,283.47	+214.2
210	21/06/85	08:58:00	0.9650	2,283.50	+214.2
211	21/06/85	08:59:00	0.9817	2,283.54	+214.2
212	21/06/85	09:00:00	0.9983	2,283.57	+214.2
213	21/06/85	09:01:00	1.0150	2,283.60	+214.2
214	21/06/85	09:02:00	1.0317	2,283.62	+214.2
215	21/06/85	09:03:00	1.0483	2,283.64	+214.2
216	21/06/85	09:04:00	1.0650	2,283.68	+214.2
217	21/06/85	09:05:00	1.0817	2,283.69	+214.2
218	21/06/85	09:06:00	1.0983	2,283.72	+214.2
219	21/06/85	09:07:00	1.1150	2,283.74	+214.2
220	21/06/85	09:08:00	1.1317	2,283.77	+214.2
221	21/06/85	09:09:00	1.1483	2,283.79	+214.2
222	21/06/85	09:10:00	1.1650	2,283.81	+214.2
223	21/06/85	09:11:00	1.1817	2,283.84	+214.2
224	21/06/85	09:12:00	1.1983	2,283.87	+214.3
225	21/06/85	09:13:00	1.2150	2,283.89	+214.3
226	21/06/85	09:14:00	1.2317	2,283.90	+214.3
227	21/06/85	09:15:00	1.2483	2,283.93	+214.3
228	21/06/85	09:16:00	1.2650	2,284.00	+214.2
229	21/06/85	09:17:00	1.2817	2,283.97	+214.3
230	21/06/85	09:18:00	1.2983	2,284.00	+214.3
231	21/06/85	09:19:00	1.3150	2,284.01	+214.3
232	21/06/85	09:20:00	1.3317	2,284.03	+214.3
233	21/06/85	09:21:00	1.3483	2,284.06	+214.3
234	21/06/85	09:22:00	1.3650	2,284.08	+214.3
235	21/06/85	09:23:00	1.3817	2,284.10	+214.3
236	21/06/85	09:24:00	1.3983	2,284.13	+214.3
237	21/06/85	09:25:00	1.4150	2,284.15	+214.3
238	21/06/85	09:26:00	1.4317	2,284.16	+214.3
239	21/06/85	09:27:00	1.4483	2,284.18	+214.3
240	21/06/85	09:28:00	1.4650	2,284.20	+214.3
241	21/06/85	09:29:00	1.4817	2,284.22	+214.3
242	21/06/85	09:30:00	1.4983	2,284.25	+214.3
243	21/06/85	09:31:00	1.5150	2,284.26	+214.3
244	21/06/85	09:32:00	1.5317	2,284.28	+214.3
245	21/06/85	09:33:00	1.5483	2,284.30	+214.3
246	21/06/85	09:34:00	1.5650	2,284.32	+214.3
247	21/06/85	09:35:00	1.5817	2,284.33	+214.3
248	21/06/85	09:36:00	1.5983	2,284.36	+214.3
249	21/06/85	09:40:00	1.6650	2,284.42	+214.3
250	21/06/85	09:45:00	1.7483	2,284.50	+214.3

GEARHART AUSTRALIA

PRESSURE vs TIME - (LINEAR) PLOT DATA

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COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

0328

Comments : 26 HR. PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
251	21/06/85	09:50:00	1.8317	2,284.58	+214.3
252	21/06/85	09:55:00	1.9150	2,284.63	+214.3
253	21/06/85	10:00:00	1.9983	2,284.67	+214.3
254	21/06/85	10:05:00	2.0817	2,284.74	+214.3
255	21/06/85	10:10:00	2.1650	2,284.77	+214.3
256	21/06/85	10:15:00	2.2483	2,284.81	+214.3
257	21/06/85	10:20:00	2.3317	2,284.85	+214.2
258	21/06/85	10:25:00	2.4150	2,284.87	+214.3
259	21/06/85	10:30:00	2.4983	2,284.93	+214.3
260	21/06/85	10:41:30	2.6900	2,285.01	+214.3
261	21/06/85	10:50:00	2.8317	2,285.06	+214.3
262	21/06/85	11:00:00	2.9983	2,285.14	+214.3
263	21/06/85	11:10:00	3.1650	2,285.21	+214.3
264	21/06/85	11:20:00	3.3317	2,285.29	+214.3
265	21/06/85	11:30:00	3.4983	2,285.37	+214.3
266	21/06/85	11:40:00	3.6650	2,285.45	+214.3
267	21/06/85	11:50:00	3.8317	2,285.52	+214.3
268	21/06/85	12:00:00	3.9983	2,285.61	+214.3
269	21/06/85	12:10:00	4.1650	2,285.69	+214.3
270	21/06/85	12:20:00	4.3317	2,285.78	+214.3
271	21/06/85	12:30:00	4.4983	2,285.86	+214.3
272	21/06/85	12:40:00	4.6650	2,285.95	+214.3
273	21/06/85	12:50:00	4.8317	2,286.01	+214.3
274	21/06/85	13:00:00	4.9983	2,286.08	+214.3
275	21/06/85	13:10:00	5.1650	2,286.16	+214.3
276	21/06/85	13:20:00	5.3317	2,286.22	+214.3
277	21/06/85	13:30:00	5.4983	2,286.30	+214.3
278	21/06/85	13:40:00	5.6650	2,286.36	+214.3
279	21/06/85	13:50:00	5.8317	2,286.42	+214.3
280	21/06/85	14:00:00	5.9983	2,286.49	+214.4
281	21/06/85	14:10:00	6.1650	2,286.53	+214.4
282	21/06/85	14:20:00	6.3317	2,286.60	+214.4
283	21/06/85	14:30:00	6.4983	2,286.65	+214.3
284	21/06/85	14:40:00	6.6650	2,286.68	+214.4
285	21/06/85	14:50:00	6.8317	2,286.74	+214.4
286	21/06/85	15:00:00	6.9983	2,286.77	+214.4
287	21/06/85	15:10:00	7.1650	2,286.82	+214.3
288	21/06/85	15:20:00	7.3317	2,286.87	+214.3
289	21/06/85	15:30:00	7.4983	2,286.93	+214.4
290	21/06/85	16:00:00	7.9983	2,287.04	+214.3
291	21/06/85	16:30:00	8.4983	2,287.16	+214.3
292	21/06/85	17:00:00	8.9983	2,287.26	+214.3
293	21/06/85	17:30:00	9.4983	2,287.34	+214.3
294	21/06/85	18:00:00	9.9983	2,287.42	+214.4
295	21/06/85	18:30:00	10.4983	2,287.52	+214.4
296	21/06/85	19:00:00	10.9983	2,287.58	+214.3
297	21/06/85	19:30:00	11.4983	2,287.63	+214.4
298	21/06/85	20:00:00	11.9983	2,287.69	+214.4
299	21/06/85	20:30:00	12.4983	2,287.74	+214.4
300	21/06/85	21:00:00	12.9983	2,287.79	+214.4

PRESSURE vs TIME - (LINEAR) PLOT DATA

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COMPANY : DELHI PETROLEUM PTY. LTD.
WELL : WANCOOCHA # 2.

Eq. Type : H.P.
Gauge # : 627
Depth : 5079 Feet

Comments : 26 HR. PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	Pressure (PSIA)	Temp (Deg.F)
301	21/06/85	21:30:00	13.4983	2,287.83	+214.4
302	21/06/85	22:00:00	13.9983	2,287.88	+214.4
303	21/06/85	22:30:00	14.4983	2,287.92	+214.4
304	21/06/85	23:00:00	14.9983	2,287.94	+214.4
305	21/06/85	23:30:00	15.4983	2,287.97	+214.4
306	22/06/85	00:00:00	15.9983	2,287.99	+214.4
307	22/06/85	00:30:00	16.4983	2,288.03	+214.4
308	22/06/85	01:00:00	16.9983	2,288.05	+214.4
309	22/06/85	01:30:00	17.4983	2,288.06	+214.4
310	22/06/85	02:00:00	17.9983	2,288.08	+214.4
311	22/06/85	02:30:00	18.4983	2,288.10	+214.4
312	22/06/85	03:00:00	18.9983	2,288.11	+214.4
313	22/06/85	03:30:00	19.4983	2,288.16	+214.4
314	22/06/85	04:00:00	19.9983	2,288.18	+214.4
315	22/06/85	04:30:00	20.4983	2,288.18	+214.4
316	22/06/85	05:00:00	20.9983	2,288.20	+214.4
317	22/06/85	05:30:00	21.4983	2,288.21	+214.4
318	22/06/85	06:00:00	21.9983	2,288.23	+214.4
319	22/06/85	06:30:00	22.4983	2,288.26	+214.4
320	22/06/85	07:00:00	22.9983	2,288.27	+214.4
321	22/06/85	07:30:00	23.4983	2,288.29	+214.4

COMPANY : DELHI PETROLEUM PTY. LTD.

Eq. Type: H.P.

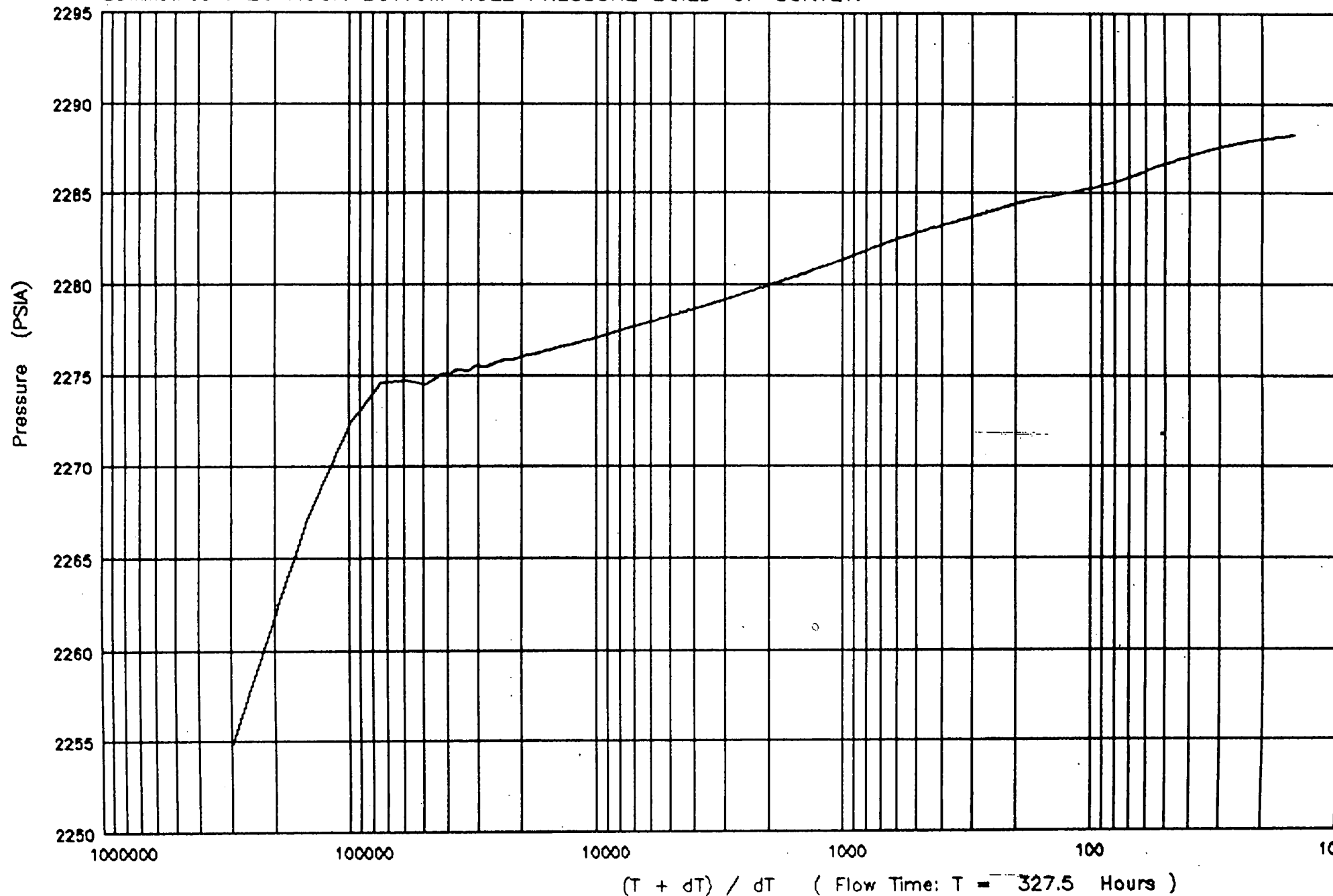
From : 08:00:02 21/06/85

WELL : WANCOOCHA # 2.

Gauge No: 627

To : 07:30:00 22/06/85

Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.



COMPANY : DELHI PETROLEUM PTY. LTD.

WELL : WANCOOCHA # 2.

Flow Time: 327.5 Hours

From : 08:00:02

Eq. Type : H.P.

Gauge # : 627

Depth : 5079 Feet

Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	T+dt/dt	Pressure (PSIA)	Temp (Deg.F)
1	21/06/85	08:00:02	0.0000	9999.999	2,254.88	+214.0
2	21/06/85	08:00:06	0.0011	294772	2,254.89	+214.0
3	21/06/85	08:00:10	0.0022	147387	2,267.04	+214.0
4	21/06/85	08:00:14	0.0033	98258	2,272.41	+214.0
5	21/06/85	08:00:18	0.0044	73694	2,274.60	+214.0
6	21/06/85	08:00:22	0.0056	58955	2,274.74	+214.0
7	21/06/85	08:00:26	0.0067	49130	2,274.52	+214.0
8	21/06/85	08:00:30	0.0078	42111	2,275.07	+214.0
9	21/06/85	08:00:32	0.0083	39302	2,275.07	+214.0
10	21/06/85	08:00:34	0.0089	36847	2,275.30	+214.0
11	21/06/85	08:00:38	0.0100	32753	2,275.24	+214.0
12	21/06/85	08:00:40	0.0106	31028	2,275.49	+214.0
13	21/06/85	08:00:44	0.0117	28073	2,275.47	+214.0
14	21/06/85	08:00:48	0.0128	25632	2,275.67	+214.0
15	21/06/85	08:00:52	0.0139	23582	2,275.85	+214.0
16	21/06/85	08:00:56	0.0150	21835	2,275.85	+214.0
17	21/06/85	08:01:00	0.0161	20329	2,275.98	+214.0
18	21/06/85	08:01:04	0.0172	19018	2,276.13	+214.0
19	21/06/85	08:01:08	0.0183	17865	2,276.17	+214.0
20	21/06/85	08:01:12	0.0194	16844	2,276.26	+214.0
21	21/06/85	08:01:16	0.0206	15933	2,276.38	+214.0
22	21/06/85	08:01:18	0.0211	15515	2,276.38	+214.0
23	21/06/85	08:01:20	0.0217	15116	2,276.42	+214.0
24	21/06/85	08:01:24	0.0228	14379	2,276.51	+214.0
25	21/06/85	08:01:28	0.0239	13710	2,276.59	+214.1
26	21/06/85	08:01:32	0.0250	13101	2,276.64	+214.1
27	21/06/85	08:01:34	0.0256	12817	2,276.64	+214.1
28	21/06/85	08:01:36	0.0261	12544	2,276.71	+214.0
29	21/06/85	08:01:40	0.0272	12032	2,276.80	+214.0
30	21/06/85	08:01:44	0.0283	11560	2,276.84	+214.0
31	21/06/85	08:01:48	0.0294	11124	2,276.91	+214.0
32	21/06/85	08:01:52	0.0306	10719	2,276.98	+214.0
33	21/06/85	08:01:56	0.0317	10343	2,277.02	+214.0
34	21/06/85	08:01:58	0.0322	10165	2,277.08	+214.0
35	21/06/85	08:02:02	0.0333	9826.149	2,277.11	+214.0
36	21/06/85	08:02:06	0.0344	9509.228	2,277.17	+214.0
37	21/06/85	08:02:12	0.0361	9070.289	2,277.23	+214.0
38	21/06/85	08:02:16	0.0372	8799.582	2,277.29	+214.0
39	21/06/85	08:02:20	0.0383	8544.566	2,277.35	+214.0
40	21/06/85	08:02:24	0.0394	8303.916	2,277.39	+214.0
41	21/06/85	08:02:28	0.0406	8076.453	2,277.44	+214.0
42	21/06/85	08:02:32	0.0417	7861.120	2,277.50	+214.0
43	21/06/85	08:02:36	0.0428	7656.973	2,277.54	+214.0
44	21/06/85	08:02:38	0.0433	7558.741	2,277.58	+214.0
45	21/06/85	08:02:42	0.0444	7369.810	2,277.59	+214.0
46	21/06/85	08:02:46	0.0456	7190.094	2,277.65	+214.0
47	21/06/85	08:02:50	0.0467	7018.936	2,277.67	+214.0
48	21/06/85	08:02:52	0.0472	6936.306	2,277.67	+270.0
49	21/06/85	08:02:54	0.0478	6855.738	2,277.71	+214.0
50	21/06/85	08:02:58	0.0489	6699.957	2,277.76	+214.0

COMPANY : DELHI PETROLEUM PTY. LTD.

WELL : WANCOOCHA # 2.

Flow Time: 327.5 Hours

From : 08:00:02

Eq. Type : H.P.

Gauge # : 627

Depth : 5079 Feet

Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	T+dt/dt	Pressure (PSIA)	Temp (Deg.F)
51	21/06/85	08:03:02	0.0500	6551.100	2,277.80	+214.0
52	21/06/85	08:03:06	0.0511	6408.714	2,277.83	+214.0
53	21/06/85	08:03:10	0.0522	6272.273	2,277.85	+214.0
54	21/06/85	08:03:14	0.0533	6141.631	2,277.92	+214.0
55	21/06/85	08:03:16	0.0539	6078.384	2,277.94	+214.0
56	21/06/85	08:03:20	0.0550	5955.616	2,277.97	+214.0
57	21/06/85	08:03:24	0.0561	5837.710	2,277.99	+214.0
58	21/06/85	08:03:28	0.0572	5724.382	2,278.03	+214.0
59	21/06/85	08:03:30	0.0578	5669.306	2,278.03	+214.0
60	21/06/85	08:03:32	0.0583	5615.371	2,278.07	+214.0
61	21/06/85	08:03:36	0.0594	5510.348	2,278.10	+214.0
62	21/06/85	08:03:38	0.0600	5459.382	2,278.14	+214.0
63	21/06/85	08:03:42	0.0611	5360.145	2,278.15	+214.0
64	21/06/85	08:03:46	0.0622	5264.452	2,278.18	+214.0
65	21/06/85	08:03:50	0.0633	5172.116	2,278.21	+214.0
66	21/06/85	08:03:54	0.0644	5082.964	2,278.26	+214.0
67	21/06/85	08:03:58	0.0656	4996.761	2,278.27	+214.0
68	21/06/85	08:04:02	0.0667	4913.505	2,278.31	+214.0
69	21/06/85	08:04:06	0.0678	4832.978	2,278.34	+214.0
70	21/06/85	08:04:08	0.0683	4793.729	2,278.34	+214.0
71	21/06/85	08:04:10	0.0689	4755.048	2,278.35	+214.0
72	21/06/85	08:04:14	0.0700	4679.592	2,278.39	+214.0
73	21/06/85	08:04:18	0.0711	4606.494	2,278.42	+214.0
74	21/06/85	08:04:22	0.0722	4535.645	2,278.50	+214.0
75	21/06/85	08:04:24	0.0728	4501.002	2,278.50	+214.0
76	21/06/85	08:04:26	0.0733	4466.942	2,278.46	+214.0
77	21/06/85	08:04:30	0.0744	4400.291	2,278.51	+214.0
78	21/06/85	08:04:32	0.0750	4367.678	2,278.51	+300.0
79	21/06/85	08:04:34	0.0756	4335.600	2,278.52	+214.0
80	21/06/85	08:04:38	0.0767	4272.783	2,278.55	+214.0
81	21/06/85	08:04:42	0.0778	4211.762	2,278.65	+214.0
82	21/06/85	08:04:46	0.0789	4152.408	2,278.60	+214.0
83	21/06/85	08:04:48	0.0794	4123.404	2,278.60	+214.0
84	21/06/85	08:04:50	0.0800	4094.754	2,278.64	+214.0
85	21/06/85	08:04:54	0.0811	4038.679	2,278.65	+214.0
86	21/06/85	08:04:56	0.0817	4011.237	2,278.65	+214.0
87	21/06/85	08:04:58	0.0822	3984.120	2,278.68	+214.0
88	21/06/85	08:05:02	0.0833	3931.015	2,278.71	+214.0
89	21/06/85	08:05:06	0.0844	3879.308	2,278.72	+214.0
90	21/06/85	08:05:10	0.0856	3828.943	2,278.76	+214.0
91	21/06/85	08:05:12	0.0861	3804.228	2,278.76	+214.0
92	21/06/85	08:05:14	0.0867	3779.871	2,278.78	+214.0
93	21/06/85	08:05:18	0.0878	3732.040	2,278.79	+214.0
94	21/06/85	08:05:22	0.0889	3685.405	2,278.81	+214.0
95	21/06/85	08:05:26	0.0900	3639.921	2,278.86	+214.0
96	21/06/85	08:05:30	0.0911	3595.547	2,278.86	+214.0
97	21/06/85	08:05:34	0.0922	3552.205	2,278.89	+214.0
98	21/06/85	08:05:36	0.0928	3530.960	2,278.90	+214.0
99	21/06/85	08:05:40	0.0939	3489.188	2,278.92	+214.0
100	21/06/85	08:05:42	0.0944	3468.653	2,278.92	+214.0

0333

COMPANY : DELHI PETROLEUM PTY. LTD.

WELL : WANCOOCHA # 2.

Flow Time: 327.5 Hours

From : 08:00:02

Eq. Type : H.P.

Gauge # : 627

Depth : 5079 Feet

Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	T+dt/dt	Pressure (PSIA)	Temp (Deg.F)
101	21/06/85	08:05:44	0.0950	3448.393	2,278.94	+214.0
102	21/06/85	08:05:50	0.0967	3388.943	2,278.96	+214.0
103	21/06/85	08:06:00	0.0994	3294.298	2,279.03	+214.0
104	21/06/85	08:06:10	0.1022	3204.827	2,279.07	+214.0
105	21/06/85	08:06:20	0.1050	3120.061	2,279.11	+214.0
106	21/06/85	08:06:40	0.1106	2963.335	2,279.22	+214.0
107	21/06/85	08:07:00	0.1161	2821.582	2,279.31	+214.0
108	21/06/85	08:07:20	0.1217	2692.797	2,279.40	+214.0
109	21/06/85	08:07:50	0.1300	2520.247	2,279.52	+214.0
110	21/06/85	08:08:00	0.1328	2467.538	2,279.56	+214.0
111	21/06/85	08:08:20	0.1383	2368.470	2,279.63	+214.0
112	21/06/85	08:08:40	0.1439	2277.068	2,279.70	+214.0
113	21/06/85	08:09:00	0.1494	2192.462	2,279.81	+214.1
114	21/06/85	08:09:10	0.1522	2152.468	2,279.80	+214.1
115	21/06/85	08:09:20	0.1550	2113.907	2,279.84	+214.1
116	21/06/85	08:09:40	0.1606	2040.801	2,279.93	+214.1
117	21/06/85	08:10:10	0.1689	1940.154	2,280.02	+214.1
118	21/06/85	08:10:30	0.1744	1878.391	2,280.08	+214.1
119	21/06/85	08:10:50	0.1800	1820.451	2,280.14	+214.1
120	21/06/85	08:11:10	0.1856	1765.971	2,280.21	+214.1
121	21/06/85	08:11:20	0.1883	1739.945	2,280.23	+214.1
122	21/06/85	08:11:30	0.1911	1714.667	2,280.31	+214.1
123	21/06/85	08:11:50	0.1967	1666.262	2,280.32	+214.1
124	21/06/85	08:12:00	0.1994	1643.066	2,280.35	+214.1
125	21/06/85	08:12:30	0.2078	1577.209	2,280.42	+214.1
126	21/06/85	08:12:40	0.2106	1556.412	2,280.45	+214.1
127	21/06/85	08:13:00	0.2161	1516.430	2,280.50	+214.1
128	21/06/85	08:13:10	0.2189	1497.197	2,280.53	+214.1
129	21/06/85	08:13:30	0.2244	1460.159	2,280.57	+214.1
130	21/06/85	08:13:40	0.2272	1442.325	2,280.59	+214.1
131	21/06/85	08:14:10	0.2356	1391.335	2,280.67	+214.1
132	21/06/85	08:14:20	0.2383	1375.129	2,280.70	+214.1
133	21/06/85	08:14:30	0.2411	1359.297	2,280.73	+214.1
134	21/06/85	08:14:50	0.2467	1328.707	2,280.77	+214.1
135	21/06/85	08:15:10	0.2522	1299.459	2,280.82	+214.1
136	21/06/85	08:15:20	0.2550	1285.318	2,280.84	+214.1
137	21/06/85	08:15:30	0.2578	1271.477	2,280.86	+214.1
138	21/06/85	08:15:50	0.2633	1244.671	2,280.91	+214.1
139	21/06/85	08:16:00	0.2661	1231.692	2,280.92	+214.1
140	21/06/85	08:16:10	0.2689	1218.977	2,280.96	+214.1
141	21/06/85	08:16:30	0.2744	1194.323	2,281.01	+214.1
142	21/06/85	08:16:40	0.2772	1182.365	2,281.02	+214.1
143	21/06/85	08:16:50	0.2800	1170.644	2,281.05	+214.1
144	21/06/85	08:17:00	0.2828	1159.153	2,281.06	+214.1
145	21/06/85	08:17:10	0.2856	1147.890	2,281.11	+214.1
146	21/06/85	08:17:30	0.2911	1126.000	2,281.11	+214.1
147	21/06/85	08:17:40	0.2939	1115.370	2,281.14	+214.1
148	21/06/85	08:17:50	0.2967	1104.934	2,281.16	+214.1
149	21/06/85	08:18:00	0.2994	1094.693	2,281.18	+214.1
150	21/06/85	08:18:20	0.3050	1074.773	2,281.22	+214.1

0334

COMPANY : DELHI PETROLEUM PTY. LTD.

WELL : WANCOOCHA # 2.

Flow Time: 327.5 Hours

From : 08:00:02

Eq. Type : H.P.

Gauge # : 627

Depth : 5079 Feet

Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	T+dt/dt	Pressure (PSIA)	Temp (Deg.F)
151	21/06/85	08:18:40	0.3106	1055.562	2,281.26	+214.1
152	21/06/85	08:18:50	0.3133	1046.215	2,281.28	+214.1
153	21/06/85	08:19:00	0.3161	1037.030	2,281.30	+214.1
154	21/06/85	08:19:10	0.3189	1028.004	2,281.31	+214.1
155	21/06/85	08:19:20	0.3217	1019.138	2,281.33	+214.1
156	21/06/85	08:19:30	0.3244	1010.420	2,281.36	+214.1
157	21/06/85	08:19:40	0.3272	1001.850	2,281.38	+214.1
158	21/06/85	08:20:00	0.3328	985.142	2,281.42	+214.1
159	21/06/85	08:20:10	0.3356	976.995	2,281.42	+214.1
160	21/06/85	08:20:20	0.3383	968.981	2,281.44	+214.1
161	21/06/85	08:20:30	0.3411	961.100	2,281.46	+214.1
162	21/06/85	08:20:40	0.3439	953.344	2,281.48	+214.1
163	21/06/85	08:20:50	0.3467	945.712	2,281.51	+214.1
164	21/06/85	08:21:00	0.3494	938.202	2,281.52	+214.1
165	21/06/85	08:21:10	0.3522	930.813	2,281.54	+214.1
166	21/06/85	08:21:20	0.3550	923.536	2,281.54	+214.1
167	21/06/85	08:21:30	0.3578	916.373	2,281.57	+214.1
168	21/06/85	08:21:40	0.3606	909.323	2,281.58	+214.1
169	21/06/85	08:21:50	0.3633	902.378	2,281.61	+214.1
170	21/06/85	08:22:00	0.3661	895.538	2,281.63	+214.1
171	21/06/85	08:22:10	0.3689	888.801	2,281.64	+214.1
172	21/06/85	08:22:20	0.3717	882.168	2,281.65	+214.1
173	21/06/85	08:22:30	0.3744	875.630	2,281.68	+214.1
174	21/06/85	08:22:40	0.3772	869.189	2,281.71	+214.1
175	21/06/85	08:22:50	0.3800	862.844	2,281.70	+214.1
176	21/06/85	08:23:00	0.3828	856.589	2,281.73	+214.1
177	21/06/85	08:24:00	0.3994	820.890	2,281.81	+214.2
178	21/06/85	08:25:00	0.4161	788.050	2,281.91	+214.2
179	21/06/85	08:26:00	0.4328	757.740	2,282.00	+214.2
180	21/06/85	08:27:00	0.4494	729.678	2,282.08	+214.2
181	21/06/85	08:28:00	0.4661	703.624	2,282.17	+214.2
182	21/06/85	08:29:00	0.4828	679.366	2,282.23	+214.2
183	21/06/85	08:30:00	0.4994	656.729	2,282.30	+214.2
184	21/06/85	08:31:00	0.5161	635.554	2,282.37	+214.2
185	21/06/85	08:32:00	0.5328	615.703	2,282.42	+214.2
186	21/06/85	08:33:00	0.5494	597.057	2,282.49	+214.2
187	21/06/85	08:34:00	0.5661	579.509	2,282.53	+214.2
188	21/06/85	08:35:00	0.5828	562.964	2,282.60	+214.2
189	21/06/85	08:36:00	0.5994	547.339	2,282.66	+214.2
190	21/06/85	08:37:00	0.6161	532.560	2,282.70	+214.2
191	21/06/85	08:38:00	0.6328	518.560	2,282.76	+214.2
192	21/06/85	08:39:00	0.6494	505.278	2,282.79	+214.2
193	21/06/85	08:40:00	0.6661	492.660	2,282.85	+214.2
194	21/06/85	08:41:00	0.6828	480.659	2,282.90	+214.2
195	21/06/85	08:42:00	0.6994	469.229	2,282.95	+214.2
196	21/06/85	08:43:00	0.7161	458.332	2,282.99	+214.2
197	21/06/85	08:44:00	0.7328	447.930	2,283.02	+214.2
198	21/06/85	08:45:00	0.7494	437.991	2,283.07	+214.2
199	21/06/85	08:46:00	0.7661	428.484	2,283.11	+214.2
200	21/06/85	08:47:00	0.7828	419.382	2,283.14	+214.2

0335

COMPANY : DELHI PETROLEUM PTY. LTD.

From : 08:00:02

WELL : WANCOOCHA # 2.

Eq. Type : H.P.

Flow Time: 327.5 Hours

Gauge # : 627

Depth : 5079 Feet

Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	T+dt/dt	Pressure (PSIA)	Temp (Deg.F)
201	21/06/85	08:48:00	0.7994	410.660	2,283.18	+214.2
202	21/06/85	08:49:00	0.8161	402.294	2,283.21	+214.2
203	21/06/85	08:50:00	0.8328	394.263	2,283.25	+214.2
204	21/06/85	08:51:00	0.8494	386.546	2,283.28	+214.2
205	21/06/85	08:52:00	0.8661	379.127	2,283.32	+214.2
206	21/06/85	08:53:00	0.8828	371.988	2,283.35	+214.2
207	21/06/85	08:54:00	0.8994	365.114	2,283.38	+214.2
208	21/06/85	08:55:00	0.9161	358.489	2,283.42	+214.2
209	21/06/85	08:56:00	0.9328	352.102	2,283.44	+214.2
210	21/06/85	08:57:00	0.9494	345.939	2,283.47	+214.2
211	21/06/85	08:58:00	0.9661	339.988	2,283.50	+214.2
212	21/06/85	08:59:00	0.9828	334.239	2,283.54	+214.2
213	21/06/85	09:00:00	0.9994	328.682	2,283.57	+214.2
214	21/06/85	09:01:00	1.0161	323.308	2,283.60	+214.2
215	21/06/85	09:02:00	1.0328	318.106	2,283.62	+214.2
216	21/06/85	09:03:00	1.0494	313.070	2,283.64	+214.2
217	21/06/85	09:04:00	1.0661	308.191	2,283.68	+214.2
218	21/06/85	09:05:00	1.0828	303.463	2,283.69	+214.2
219	21/06/85	09:06:00	1.0994	298.878	2,283.72	+214.2
220	21/06/85	09:07:00	1.1161	294.430	2,283.74	+214.2
221	21/06/85	09:08:00	1.1328	290.112	2,283.77	+214.2
222	21/06/85	09:09:00	1.1494	285.920	2,283.79	+214.2
223	21/06/85	09:10:00	1.1661	281.848	2,283.81	+214.2
224	21/06/85	09:11:00	1.1828	277.891	2,283.84	+214.2
225	21/06/85	09:12:00	1.1994	274.043	2,283.87	+214.3
226	21/06/85	09:13:00	1.2161	270.301	2,283.89	+214.3
227	21/06/85	09:14:00	1.2328	266.660	2,283.90	+214.3
228	21/06/85	09:15:00	1.2494	263.117	2,283.93	+214.3
229	21/06/85	09:16:00	1.2661	259.666	2,284.00	+214.2
230	21/06/85	09:17:00	1.2828	256.305	2,283.97	+214.3
231	21/06/85	09:18:00	1.2994	253.031	2,284.00	+214.3
232	21/06/85	09:19:00	1.3161	249.839	2,284.01	+214.3
233	21/06/85	09:20:00	1.3328	246.728	2,284.03	+214.3
234	21/06/85	09:21:00	1.3494	243.692	2,284.06	+214.3
235	21/06/85	09:22:00	1.3661	240.732	2,284.08	+214.3
236	21/06/85	09:23:00	1.3828	237.842	2,284.10	+214.3
237	21/06/85	09:24:00	1.3994	235.022	2,284.13	+214.3
238	21/06/85	09:25:00	1.4161	232.267	2,284.15	+214.3
239	21/06/85	09:26:00	1.4328	229.577	2,284.16	+214.3
240	21/06/85	09:27:00	1.4494	226.949	2,284.18	+214.3
241	21/06/85	09:28:00	1.4661	224.380	2,284.20	+214.3
242	21/06/85	09:29:00	1.4828	221.869	2,284.22	+214.3
243	21/06/85	09:30:00	1.4994	219.414	2,284.25	+214.3
244	21/06/85	09:31:00	1.5161	217.013	2,284.26	+214.3
245	21/06/85	09:32:00	1.5328	214.664	2,284.28	+214.3
246	21/06/85	09:33:00	1.5494	212.366	2,284.30	+214.3
247	21/06/85	09:34:00	1.5661	210.117	2,284.32	+214.3
248	21/06/85	09:35:00	1.5828	207.915	2,284.33	+214.3
249	21/06/85	09:36:00	1.5994	205.759	2,284.36	+214.3
250	21/06/85	09:40:00	1.6661	197.566	2,284.42	+214.3

COMPANY : DELHI PETROLEUM PTY. LTD.

From : 08:00:02

WELL : WANCOOCHA # 2.

Eq. Type : H.P.

Flow Time: 327.5 Hours

Gauge # : 627

Depth : 5079 Feet

Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.

0336

Seq.#	Date	Time	dt	T+dt/dt	Pressure (PSIA)	Temp (Deg.F)
251	21/06/85	09:45:00	1.7494	188.202	2,284.50	+214.3
252	21/06/85	09:50:00	1.8328	179.691	2,284.58	+214.3
253	21/06/85	09:55:00	1.9161	171.919	2,284.63	+214.3
254	21/06/85	10:00:00	1.9994	164.796	2,284.67	+214.3
255	21/06/85	10:05:00	2.0828	158.242	2,284.74	+214.3
256	21/06/85	10:10:00	2.1661	152.193	2,284.77	+214.3
257	21/06/85	10:15:00	2.2494	146.592	2,284.81	+214.3
258	21/06/85	10:20:00	2.3328	141.391	2,284.85	+214.2
259	21/06/85	10:25:00	2.4161	136.548	2,284.87	+214.3
260	21/06/85	10:30:00	2.4994	132.029	2,284.93	+214.3
261	21/06/85	10:41:30	2.6911	122.697	2,285.01	+214.3
262	21/06/85	10:50:00	2.8328	116.611	2,285.06	+214.3
263	21/06/85	11:00:00	2.9994	110.187	2,285.14	+214.3
264	21/06/85	11:10:00	3.1661	104.439	2,285.21	+214.3
265	21/06/85	11:20:00	3.3328	99.266	2,285.29	+214.3
266	21/06/85	11:30:00	3.4994	94.586	2,285.37	+214.3
267	21/06/85	11:40:00	3.6661	90.332	2,285.45	+214.3
268	21/06/85	11:50:00	3.8328	86.447	2,285.52	+214.3
269	21/06/85	12:00:00	3.9994	82.886	2,285.61	+214.3
270	21/06/85	12:10:00	4.1661	79.610	2,285.69	+214.3
271	21/06/85	12:20:00	4.3328	76.587	2,285.78	+214.3
272	21/06/85	12:30:00	4.4994	73.787	2,285.86	+214.3
273	21/06/85	12:40:00	4.6661	71.187	2,285.95	+214.3
274	21/06/85	12:50:00	4.8328	68.766	2,286.01	+214.3
275	21/06/85	13:00:00	4.9994	66.507	2,286.08	+214.3
276	21/06/85	13:10:00	5.1661	64.394	2,286.16	+214.3
277	21/06/85	13:20:00	5.3328	62.413	2,286.22	+214.3
278	21/06/85	13:30:00	5.4994	60.551	2,286.30	+214.3
279	21/06/85	13:40:00	5.6661	58.800	2,286.36	+214.3
280	21/06/85	13:50:00	5.8328	57.148	2,286.42	+214.3
281	21/06/85	14:00:00	5.9994	55.588	2,286.49	+214.4
282	21/06/85	14:10:00	6.1661	54.113	2,286.53	+214.4
283	21/06/85	14:20:00	6.3328	52.715	2,286.60	+214.4
284	21/06/85	14:30:00	6.4994	51.389	2,286.65	+214.3
285	21/06/85	14:40:00	6.6661	50.129	2,286.68	+214.4
286	21/06/85	14:50:00	6.8328	48.931	2,286.74	+214.4
287	21/06/85	15:00:00	6.9994	47.789	2,286.77	+214.4
288	21/06/85	15:10:00	7.1661	46.701	2,286.82	+214.3
289	21/06/85	15:20:00	7.3328	45.662	2,286.87	+214.3
290	21/06/85	15:30:00	7.4994	44.670	2,286.93	+214.4
291	21/06/85	16:00:00	7.9994	41.940	2,287.04	+214.3
292	21/06/85	16:30:00	8.4994	39.532	2,287.16	+214.3
293	21/06/85	17:00:00	8.9994	37.391	2,287.26	+214.3
294	21/06/85	17:30:00	9.4994	35.476	2,287.34	+214.3
295	21/06/85	18:00:00	9.9994	33.752	2,287.42	+214.4
296	21/06/85	18:30:00	10.4994	32.192	2,287.52	+214.4
297	21/06/85	19:00:00	10.9994	30.774	2,287.58	+214.3
298	21/06/85	19:30:00	11.4994	29.480	2,287.63	+214.4
299	21/06/85	20:00:00	11.9994	28.293	2,287.69	+214.4
300	21/06/85	20:30:00	12.4994	27.201	2,287.74	+214.4

0337

COMPANY : DELHI PETROLEUM PTY. LTD.

WELL : WANCOOCHA # 2.

Flow Time: 327.5 Hours

From : 08:00:02

Eq. Type : H.P.

Gauge # : 627

Depth : 5079 Feet

Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.

Seq.#	Date	Time	dt	T+dt/dt	Pressure (PSIA)	Temp (Deg.F)
301	21/06/85	21:00:00	12.9994	26.193	2,287.79	+214.4
302	21/06/85	21:30:00	13.4994	25.260	2,287.83	+214.4
303	21/06/85	22:00:00	13.9994	24.394	2,287.88	+214.4
304	21/06/85	22:30:00	14.4994	23.587	2,287.92	+214.4
305	21/06/85	23:00:00	14.9994	22.834	2,287.94	+214.4
306	21/06/85	23:30:00	15.4994	22.130	2,287.97	+214.4
307	22/06/85	00:00:00	15.9994	21.469	2,287.99	+214.4
308	22/06/85	00:30:00	16.4994	20.849	2,288.03	+214.4
309	22/06/85	01:00:00	16.9994	20.265	2,288.05	+214.4
310	22/06/85	01:30:00	17.4994	19.715	2,288.06	+214.4
311	22/06/85	02:00:00	17.9994	19.195	2,288.08	+214.4
312	22/06/85	02:30:00	18.4994	18.703	2,288.10	+214.4
313	22/06/85	03:00:00	18.9994	18.237	2,288.11	+214.4
314	22/06/85	03:30:00	19.4994	17.795	2,288.16	+214.4
315	22/06/85	04:00:00	19.9994	17.375	2,288.18	+214.4
316	22/06/85	04:30:00	20.4994	16.976	2,288.18	+214.4
317	22/06/85	05:00:00	20.9994	16.596	2,288.20	+214.4
318	22/06/85	05:30:00	21.4994	16.233	2,288.21	+214.4
319	22/06/85	06:00:00	21.9994	15.887	2,288.23	+214.4
320	22/06/85	06:30:00	22.4994	15.556	2,288.26	+214.4
321	22/06/85	07:00:00	22.9994	15.239	2,288.27	+214.4
322	22/06/85	07:30:00	23.4994	14.937	2,288.29	+214.4

PRESSURE vs dt (Ln-Log) M.D.H.

COMPANY : DELHI PETROLEUM PTY. LTD.

WELL : WANCOOCHA # 2.

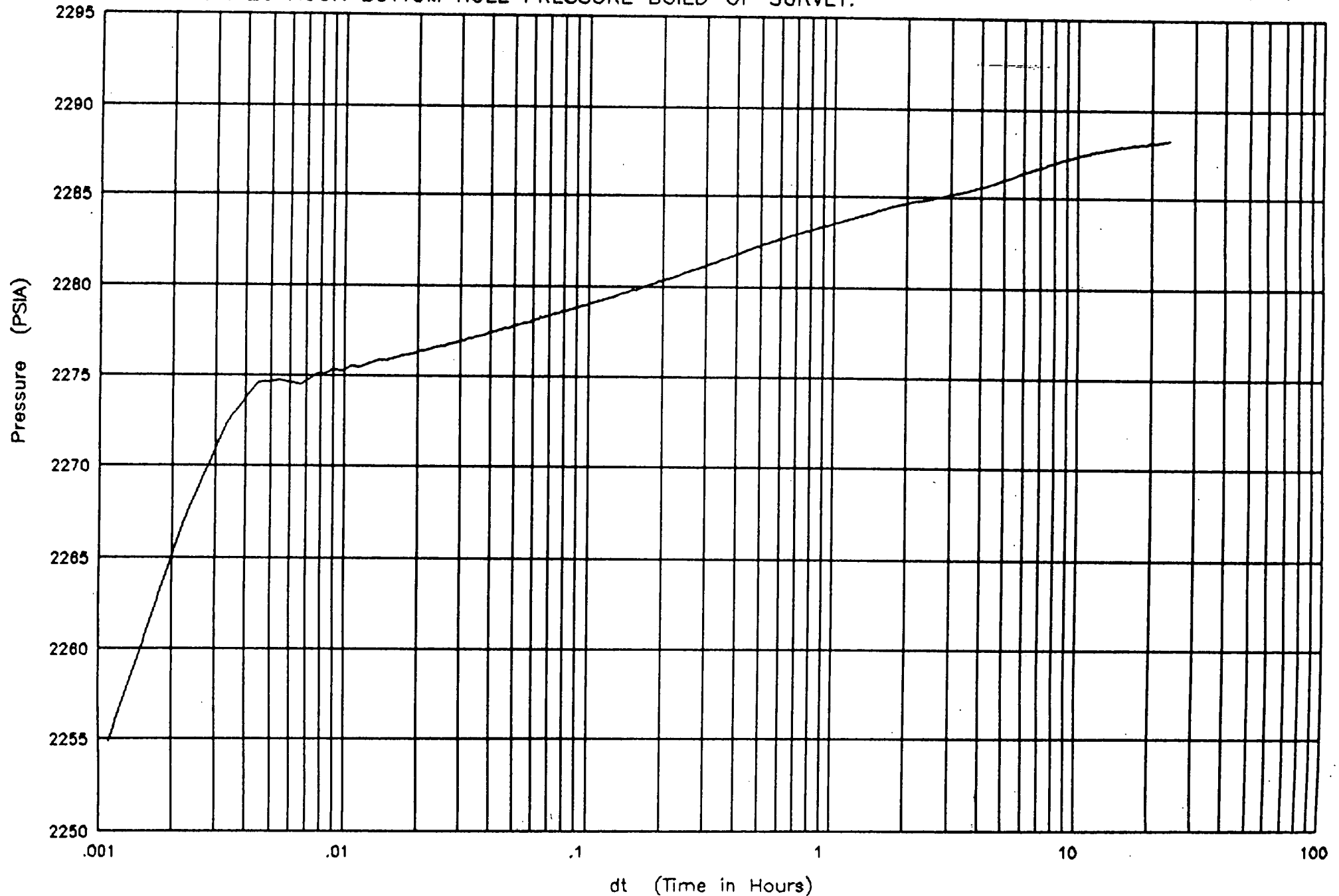
Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.

Eq. Type: H.P.

Gauge No: 627

From : 08:00:02 21/06/85

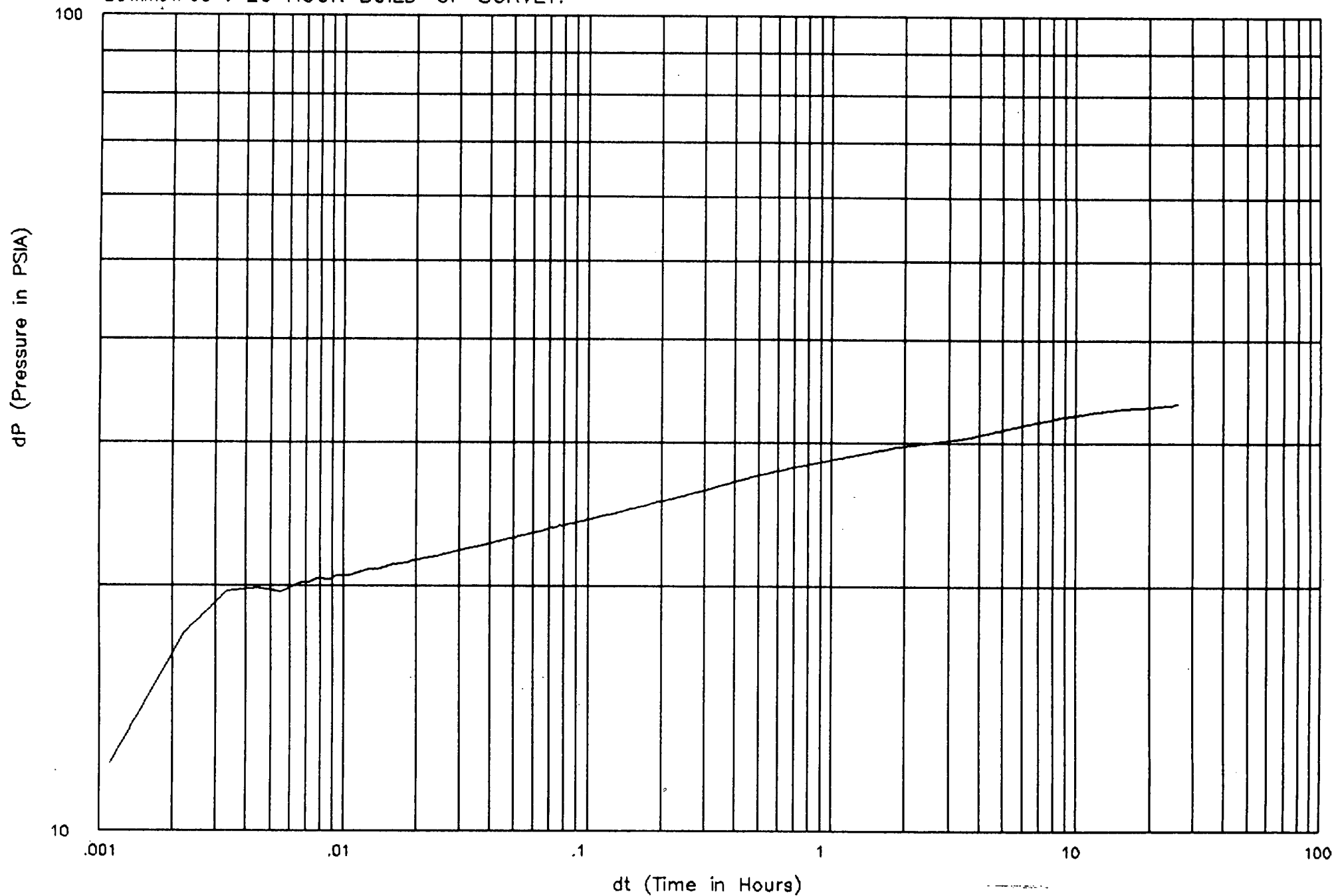
To : 07:30:00 22/06/85



COMPANY : DELHI PETROLEUM PTY. LTD.
 WELL : WANCOOCHA # 2.
 Comments : 26 HOUR BUILD-UP SURVEY.

Eq. Type: Serac
 Gauge No: 10006

From : 08:00:06 21/06/85
 To : 10:00:00 22/06/85



FLOW AND BUILDUP TEST
JUNE 20 TO 22, 1985
WANCOOCHA #2 BIRKHEAD

Prepared by: D.A. PROVIAS
Date: 16 NOVEMBER, 1985



INTRODUCTION

The Birkhead reservoir in the Wancoocha field commenced production in December 1984. After a cumulative production of 7% of the recoverable reserves, the initial offtake well Wancoocha #2 was shut-in for buildup.

This report evaluates the data obtained for this buildup conducted in from June 20 to June 21, 1985. Results are integrated with previously collected field data and comments made as to drive mechanisms and reservoir geometry.

CONCLUSIONS

1. A flow capacity of 11834 md ft was calculated based on conventional Horner analysis of the buildup response for the Birkhead zone in Wancoocha #2.
2. Permeability is taken as 910 md based on a log analysis pay thickness of 13'.
3. The apparent skin was calculated as +1.0. This is slightly higher than that calculated from previous test analyses.
4. The stabilized reservoir pressure obtained by Mead extrapolation of the buildup data is comparable to the initial reservoir pressure of 2300 psia at 5000' ss.
5. An actual productivity index of 14.9 bpd/psi drawdown was observed during the flow portion of the test. This value when incorporating measured skin equates to an ideal productivity index of 16.4 bpd/psi. A similar ideal PI was obtained in an earlier buildup test.
6. Two Horner semi log straight lines were apparent from the analysis of buildup data for the first 10 minutes of shut-in. This lateral change in reservoir conditions occurs at a relatively close radius to the wellbore and is interpreted as a reduction in flow capacity rather than a no-flow boundary situation.
7. Evidence of a constant pressure boundary i.e. oil-water contact, is present at radius similar to that of the no-flow boundaries set up by adjacent producing wells. This radius is estimated as 250 to 300 m.

RECOMMENDATIONS

1. The buildup test confirms the reservoir properties obtained from previously conducted Wancoocha #2 well tests. In addition, results further document the presence of a strong water drive mechanism in the Birkhead reservoir. Further buildup testing is not recommended at this point in time.
2. As a part of continued reservoir management, static pressure should be measured following any extended field shutdown.
3. Offtake rates should be optimized by monitoring stepped rate increases. A target rate of 750 BFPD was recommended after preliminary results from this buildup test had been evaluated. This represents an additional 250 bbls over the 500 BFPD rate existing at the time of this test. Future increases will be considered given sufficient production monitoring and an established water cut trend.

WELL HISTORY

Wancoocha #2 was drilled on the crest of the Wancoocha Dome and discovered commercial hydrocarbons in the Birkhead, Patchawarra and Hutton formations. The field outline and well location are shown in figure #1. The well was dually completed with the Birkhead zone producing through the annulus and the Patchawarra through tubing. A chronological well history and well data sheets are included as table #1 and #2.

2 The well intersected 13' of Birkhead pay in a fully oil saturated sand bounded by two shale packages. The Birkhead zone was initially evaluated by a DST and flow/buildup test prior to extended production commencing February, 1985. DST and completion intervals are shown on the log in figure #2. Log analysis results are summarized in table #3.

Bottomhole Birkhead oil samples collected in this well were analysed to provide PVT data. This data is presented in table #4.

PRODUCTION HISTORY

The Birkhead zone in Wancoocha #2 produced a cumulative of 2563 bbls of oil and 0 bbls of water during initial clean-up and test production. The well was put on extended production testing (EPT) February 9, 1985. Initial offtake was set on 500 BOPD obtained on a 10/64" choke with initial flowing casing head pressure of 685 psi.

A cumulative of 61578 bbls of oil and 0 bbls of water was produced on EPT prior to this buildup test. Flow rate remained constant and surface flowing pressure declined slightly to 625 psi.

DISCUSSION

Bottomhole flowing and buildup pressures were recorded at 5079' kb by a Serac gauge supplied by Gearhart Pty Ltd. Expertest monitored flow rates, tubing and coring pressures. Gearhart data is included as a separate bound report and Expertest data is summarized in table #6.

An after-survey calibration check on the Serac gauge was requested by Delhi because resultant pressure data was lower than expected. A linear correction of +11 psi appears to have satisfactorily corrected pressure data.

The flow rate versus time plot in figure #3 indicates that rates were maintained relatively constant prior to shut-in for the buildup test. The start of the flow period was taken as 16.30 hours June 7, 1985, the startup date after a 6 day field shut-in due to weather conditions. Reservoir pressure is assumed to have stabilized during this shut-in period.

The Gearhart computer generated drawdown curve in figure #4 represents bottomhole flowing pressures during the last 13 hours of the flow period. The curve indicates that steady state conditions existed at the time of shut-in as bottomhole flowing pressures were constant at 2254.9 psia. The effects of rate fluctuations occurring between 16 to 23 hours prior to shut-in as a result of changing flow path from the annulus to the tubing will therefore have a negligible effect on the pressure analysis.

Because it is uncertain what flow conditions existed at the time of the first measured bottomhole flowing pressure, and to what extent reservoir pressure increased during the flow path changeover, analysis of the drawdown data is not possible.

DISCUSSION (Continued)

The log-log plot as shown in figure #5 indicates that wellbore storage effects are minor. Recorded data indicates a slope somewhat less than unity interpreted as the transition from storage dominated to transient conditions. Log-log plot data is presented in table #7.

Horner time was calculated using the actual flow period of 327.5 hours which followed the last stabilized shut-in period. The zone is assumed to have produced at a constant rate equal to the actual average value of 497 BOPD obtained based on the cumulative production. Horner data is summarized in table #8 and hand plotted in figure #6.

It is interesting to note that the Gearhart computer generated Horner plot shown in figure #7 exhibits compressional pressure fluctuations in the early time data due to a rapid shut-in at the wellhead. The end of the compressional effects appears to coincide with the end of wellbore storage.

A Horner semi-log straight line with slope 3.7 psi/cycle was drawn through Horner data after a shut-in time of .015 hours, equivalent to a Horner time of approximately 22,000. Data deviates above this straight line after a shut-in time of approximately .15 hours. This increase in slope was also observed in this initial DST run over the interval and represents a reservoir discontinuity at some distance out from the wellbore.

The Horner curve trends away from the second semi-log slope at later buildup times. It is believed that the pressure profile during this portion of the test reflects the response due to no-flow boundaries caused by adjacent producing wells interacting and being dominated by a constant pressure system.

RESERVOIR PROPERTIES

The reservoir properties as calculated from the Birkhead buildup test, June 1985 are as follows:

Flow Capacity	11834 md ft
Permeability	910 md
Apparent Skin	.99 bpd/psi

The permeability and flow capacity values here are comparable with previously documented results as presented in table #9.

The Horner plot of this buildup test identified two semi-log straight lines of similar slope ratio to that observed in the initial DST. This confirms the presence of a discontinuity at some distance from the wellbore. This discontinuity is not interpreted as a flow barrier but rather a reduction in flow capacity either due to reduced permeability away from the wellbore or a reduction in channel thickness. Assuming this reservoir variance acts radially around the wellbore the flow capacity based on the second slope can be calculated and is also presented in table #9.

The initial flow/buildup test conducted in February 1985 resulted in a single Horner semi-log straight line. Only a few data points were available for early shut-in times on this test given that Amerada gauges were used to record pressures. The resulting reservoir parameters tend to coincide with those representing the second Horner slope obtained on this June 1985 buildup test.

There is a slight increase in apparent skin as noted by comparison of the initial open hole DST and the buildup results present here. Skin is still minimal although differences indicate changing conditions around the wellbore.

RESERVOIR PRESSURE

The static reservoir pressure for the Birkhead zone was obtained by hyperbolic extrapolation of buildup data using Mead techniques. Although the assumption of a bounded system inherent in Meads analysis is not satisfied, results are considered to approximate this steady state case.

A reservoir pressure of 2288.3 psia at 5079' kb was obtained. This value is slightly lower but in good agreement with previously obtained pressures from this well. Pressure history for Wancoocha #2, corrected to the midpoint of perforations are summarized in table #11.

Pressure data for the Wancoocha field with corresponding cumulative production data is shown in table #12. Reservoir pressure continues to approximate initial reservoir conditions of 2300 psia at 5000' ss. The slight variation in pressure measurements over the field production life is within acceptable accuracy limits.

PRODUCTIVITY INDEX

The actual productivity index based on average flow rate and stabilized bottomhole flowing pressure was calculated as 14.9 bpd/psi drawdown. This value is slightly lower than the theoretical PI of 17.4 bpd/psi for a 820 ft (250m) drainage radius as assumed to reflect current well spacing.

The theoretical PI equation is based on radial flow. As mentioned in the discussion, the effects of several boundary conditions are observed during the period of this test. Given these conditions, variation from simple radial flow theory is expected.

Previously documented productivity indices are summarized in table #10. The actual PI value from the initial DST was obtained before bottomhole flowing pressures had stabilized and this higher value of 32.7 bpd/psi reflects transient flow conditions. Buildup derived ideal PI values are comparable and the decline in actual PI recorded on this test reflects the slightly high calculated skin value.

RESERVOIR DRIVE MECHANISM

The June 1985 buildup test on Wancoocha #2 further documents the presence of a strong water drive system. Reservoir pressure can be extrapolated back to initial reservoir pressure after a cumulative field production of 103 MSTB of oil or approximately 7% of recoverable reserves.

The presence of a strong water drive system tends to mask the pressure response of no-flow boundaries, in this case due to adjacent producing wells. The influence of the constant pressure boundary is estimated all approximately 250 to 300 metres based on current well spacing pattern. A more rapid buildup pressure stabilization would have been expected if the oil-water contact was reached at a radius of investigation much closer than no-flow boundaries.

Figure 1

139°59'

140°00'

WANCOOCHA I

ROAD TO
DARALINGIE

28°32'

APPROX. FIELD LIMIT
BIRKHEAD SANDSTONETRUNKLINE
TO MOOMBAPROPOSED FACILITIES
LOCATIONAPPROX. FIELD LIMIT
PATCHAWARRA SANDSTONE

28°33'

LEGEND

- EXISTING OIL WELL
- NEW WELL
-  EXISTING ARTIFICIAL LIFT

DELHI PETROLEUM PTY. LTD.

WANCOOCHA OIL FIELD MURTA BLOCK, P.E.L. 5 & 6, S.A. DEVELOPMENT LOCATIONS

SCALE 1:15,000

METRES 100 0 500 METRES



Drafted : W.A.

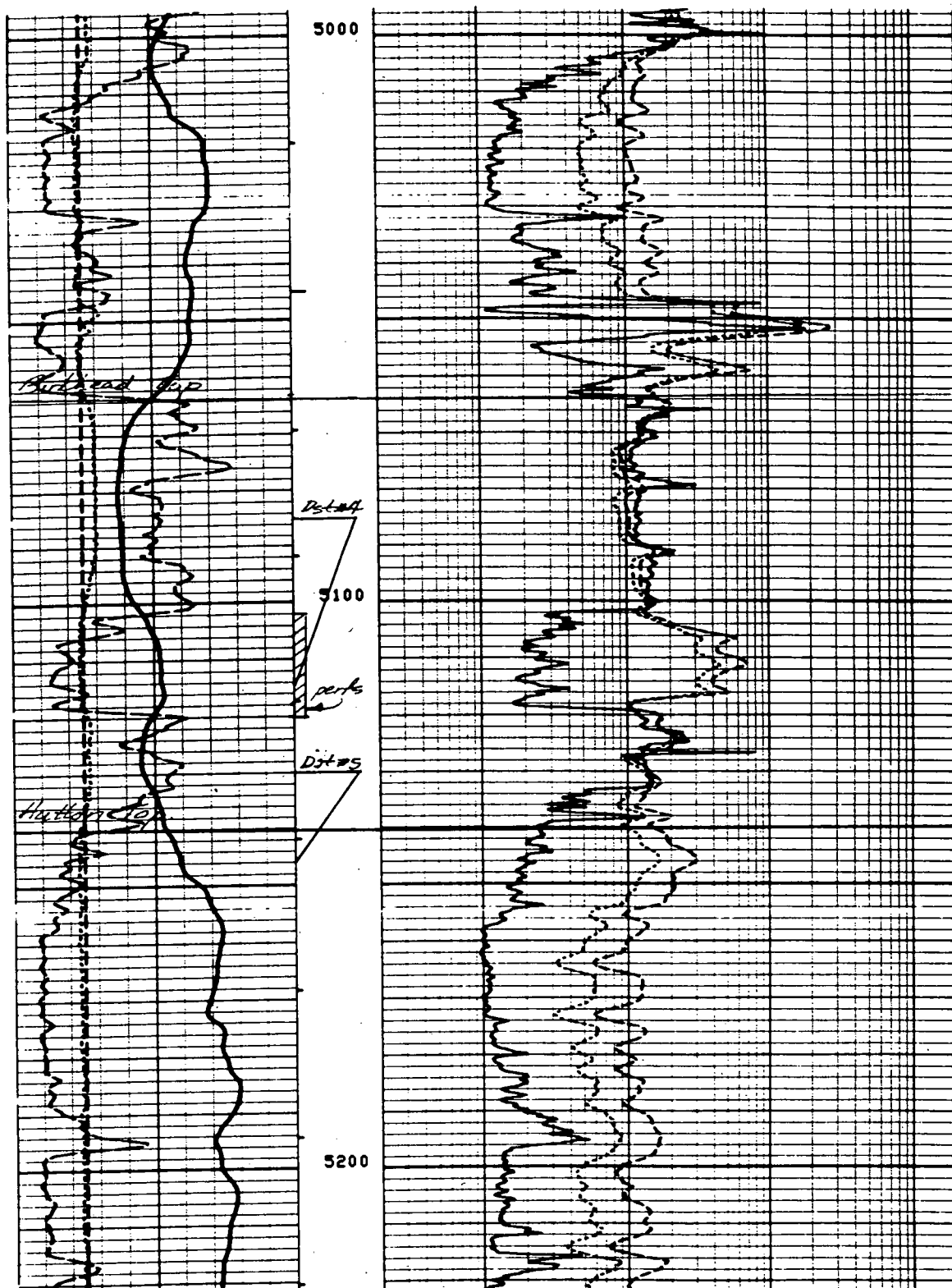
Dwg. No. 850P-07

Date : MAY 1985

File SI-24

Author : G. MATHEWS

Figure 2
Wanoocha #2
Birkhead / Hutton
66 92'



Birkhead Warracocha #2 Flowing Pressure at Surface vs. Rate
 Flow Period 16:30 June 7, 1985 to 08:00 June 21, 1985

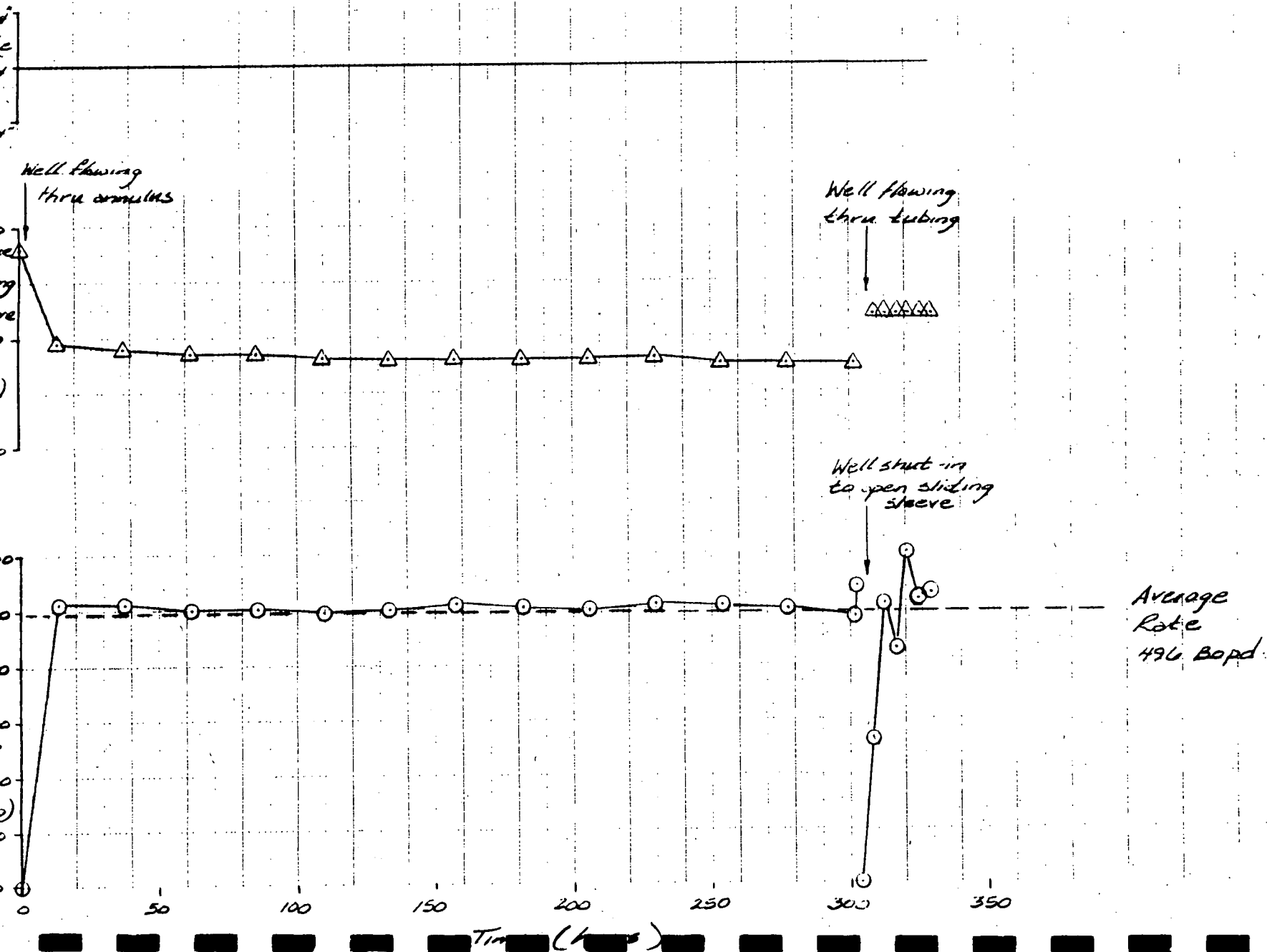


Figure 3.

PRESSURE vs TIME - (LINEAR)

COMPANY : DELHI PETROLEUM PTY. LTD.

Eq. Type: H.P.

From: 19:00:00 20/06/85

WELL : WANCOOCHA # 2.

Gauge No: 627

To : 08:00:06 21/06/85

Comments : FLOWING BOTTOM HOLE RECORDINGS BEFORE SHUT IN.

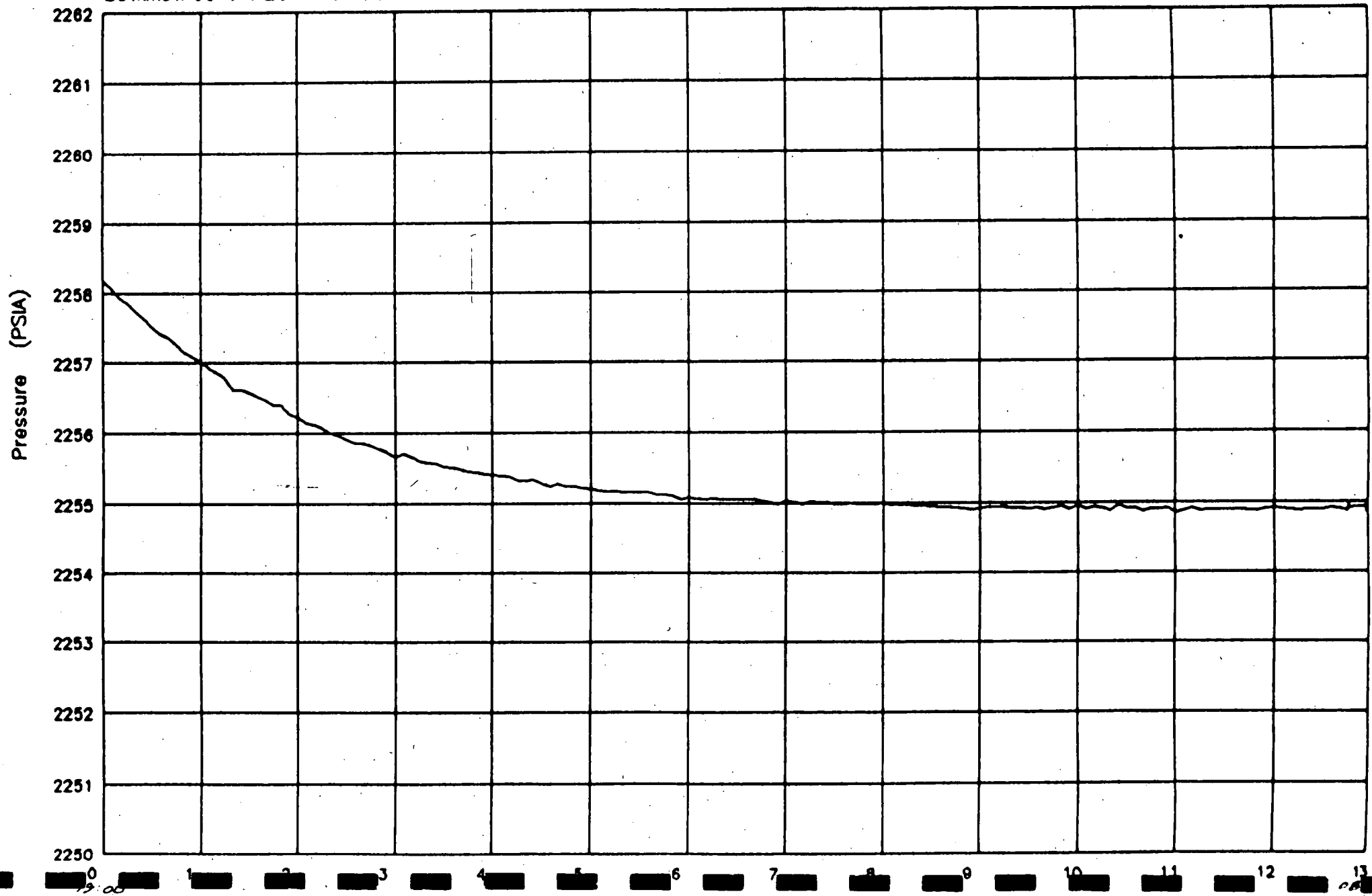


Figure 4

0355

Birkhead Wamoa #2 Log-Log Plot
 Buildup 8:00 June 21, 1985 to 10:00 June 22, 1985

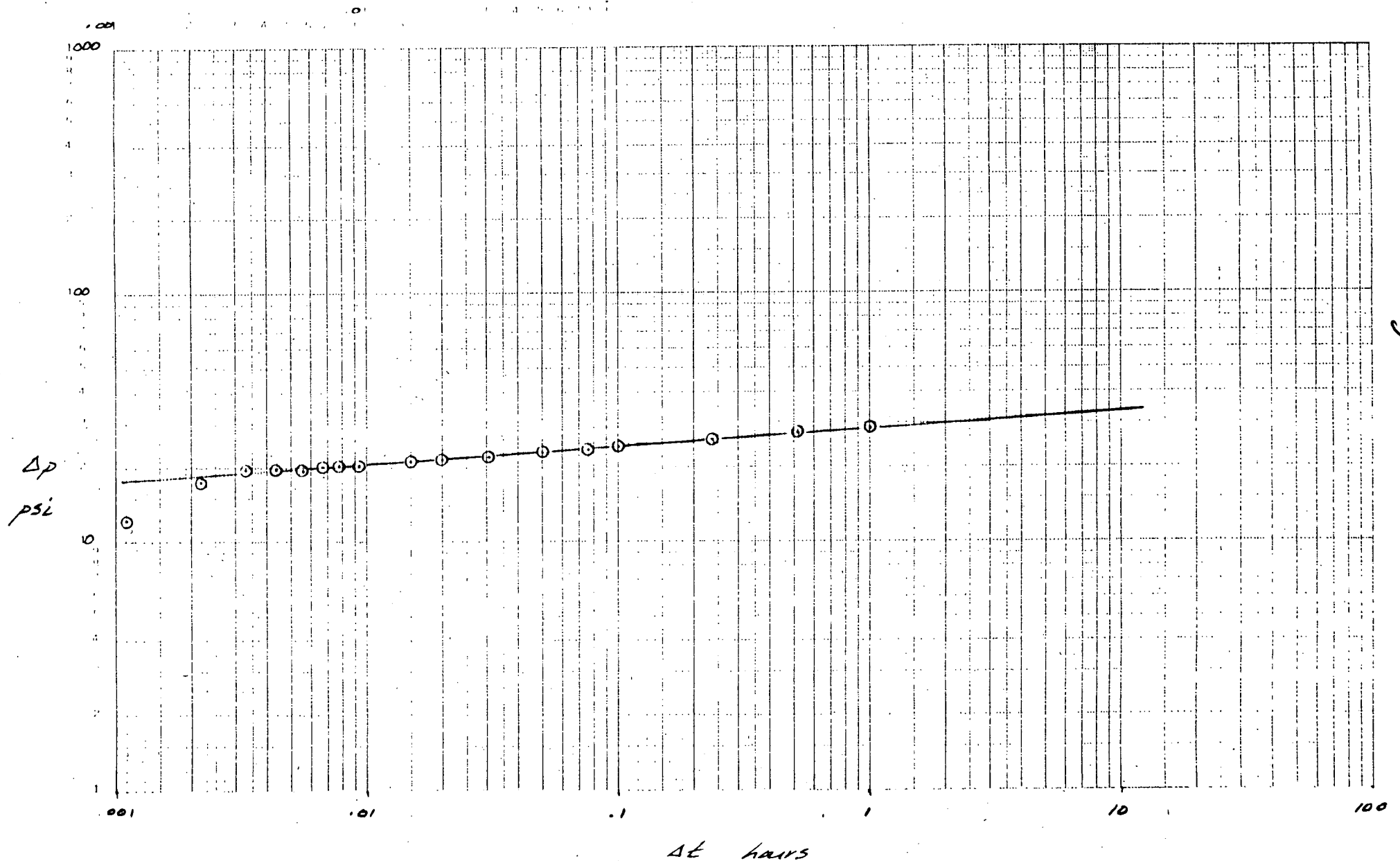


Figure 5

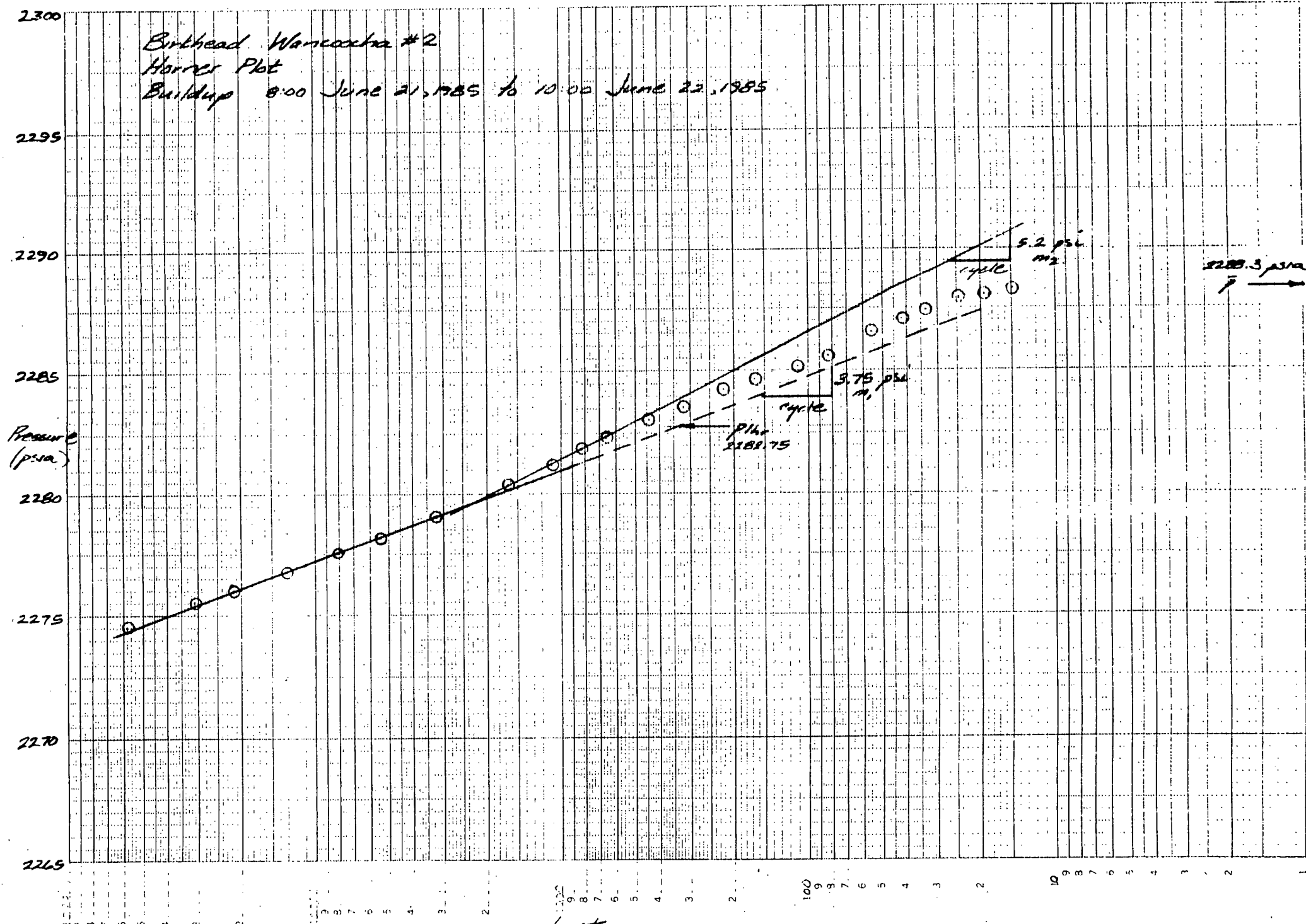


Figure 6

COMPANY : DELHI PETROLEUM PTY. LTD.

Eq. Type: H.P.

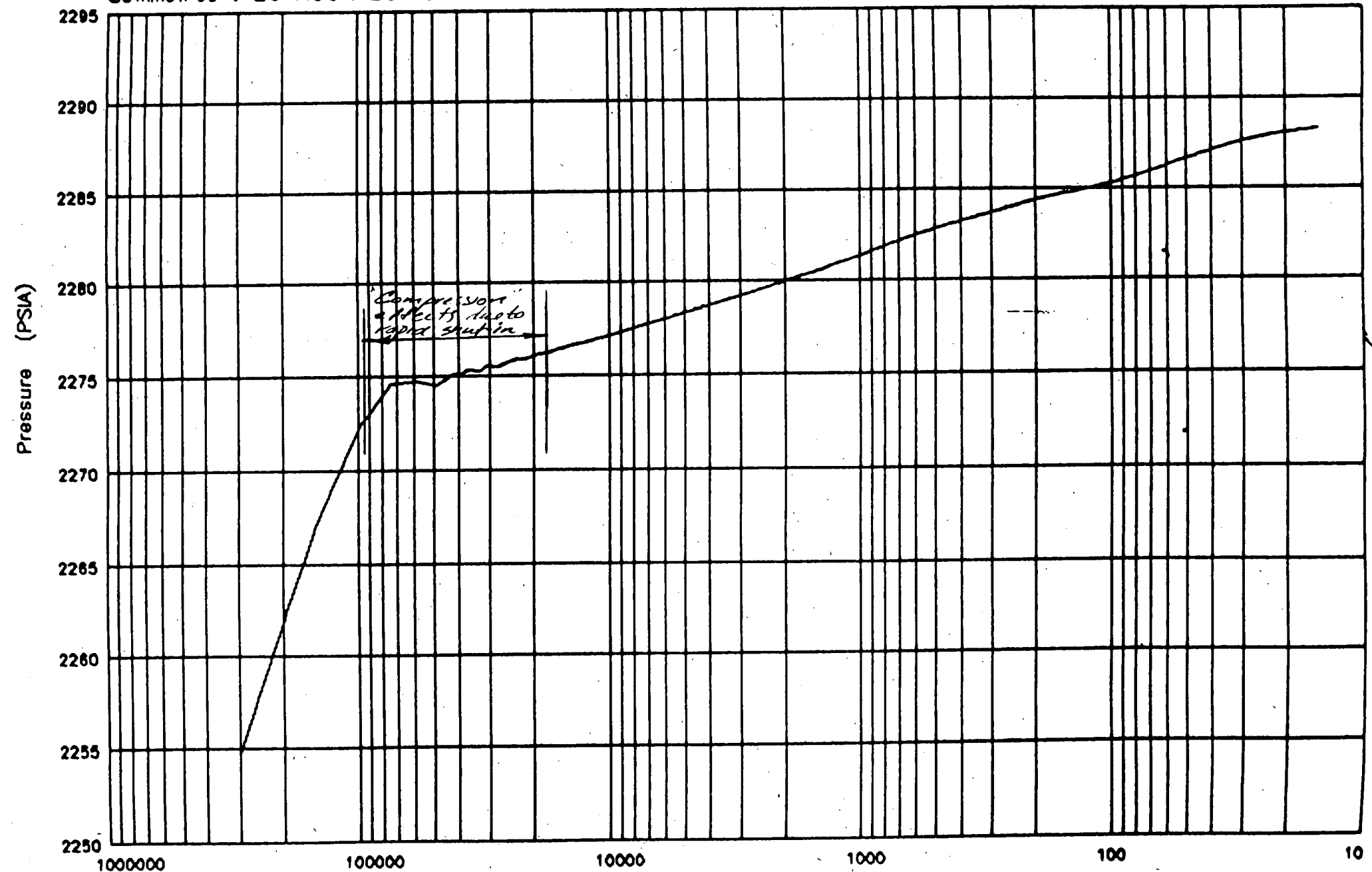
From : 08:00:02 21/06/85

WELL : WANCOOCHA # 2.

Gauge No: 627

To : 07:30:00 22/06/85

Comments : 26 HOUR BOTTOM HOLE PRESSURE BUILD-UP SURVEY.



GEARHART AUSTRALIA

Figure 7

0358

TABLE 1
CHRONOLOGICAL WELL HISTORY
WANCOOCHA #2

6/11/84	Spud well.
10/11/84	DST#1 in the Murta from 4260' to 4331' KB. Recovered 90' OCM and 10' oil.
14/11/85	DST#2 in the Patchawarra from 5591' to 5684' KB. Flowed GTS at RTSTM. DST#3 in the Patchawarra from 5678' to 5746' KB. Flowed 1747 BOPD with 2.2 MMCF/D gas.
17/11/84	Ran logs.
18/11/84	DST#4 in the Birkhead from 5085' to 5124' KB. Flowed 3752 BOPD.
19/11/84	DST#5 in the Hutton from 5130' to 5146' KB. Flowed 3240 BOPD.
20/11/84	DST#6 in the Namur from 4378' to 4416' KB.
21/11/84	Ran RFT with shots from 5101' to 5731' KB. Samples recovered at 5703' and 5731' KB in the Patchawarra and at 5117' KB in the Birkhead.
23/11/84	DST#7 at basement from 5750' to 5970' KB. Recovered 718' of SGCMW and SGCWM.
7/1/85	Perforate the Patchawarra from 5720' to 5739' KB. Perforate the Birkhead from 5102' to 5120' KB.

TABLE 1 (Continued)

8/1/85	Flow the Birkhead through the annulus on cleanup for 45 minutes on 1/2" choke at 6720 BOPD.
8/1/85	Flow the Patchawarra through the tubing for 1 hour on 16/64" choke at 750 BOPD plus an unmeasured volume of gas.
12/1/85	Run static gradient in the Patchawarra.
12-13/1/85	Flow the Patchawarra on 8/64" choke to condition for bottomhole sampling. Cumulative production of 70 bbls over 12 hours.
13/1/85	Ran a static gradient in the Patchawarra.
13-14/1/85	Take tandem bottomhole samples at 5720' KB. Field bubble points of 1920 psi, 1840 psi and 1865 psi.
15-24/1/85	Flow Patchawarra through tubing for 219 hours and monitor bottomhole flowing pressure. Cumulative oil production of 2462 bbls. GOR increasing from 704 to a final rate of 1119 SCF/STB.
22-24/1/85	Collect separator samples during flow test on 22/1/85 and 24/1/85.
24-30/1/85	Patchawarra shut-in for buildup.
30-31/1/85	Flow Birkhead through the annulus for cleanup. Cumulative production of 642 bbls of oil over 28 hours.
2-5/2/85	Flow the Birkhead through tubing and monitor bottomhole flowing pressure with a cumulative production of 1627 bbls over 72 hours.

TABLE 1 (Continued)

5-6/2/85	Shut-in Birkhead for buildup.
6/2/85	Run static gradient in Birkhead.
6-7/2/85	Flow Birkhead well to condition for bottomhole sampling. Cumulative production of 83 bbls over 28 hours. Run flowing gradient and catch 4 samples at 5132' KB. Field bubble points of 210, 172, 152 and 165 psig.
10/2/85 - Present	Flow Patchawarra (tubing) and Birkhead (annulus) on extended production test.

TABLE 2
DELHI PETROLEUM PTY. LTD.

WELL DATA SHEET

WELL NAME: Wanchocha #2
DATE PREPARED: November 1995
PREPARED BY: D. Praxair
OBJECTIVE (ZONES): Birkhead Hutton
Patchawarra

LOCATION: Lat 26° 32' 34.86" S
Long: 139° 59' 29.33" E
DATA SOURCES: _____
CURRENT STATUS: Birkhead/Patch oil well
WI/CR/ORR: 1 1

DEPTHS: (ft)
KB: 92
SS/GL: 76
FTD: 5790' ociller and logger
PBD: _____
CASING: 155 SIZE: 7"
TUBING: 155 SIZE: 2 7/8"

DATES:
SPUD: 6/11/84
RIG RELEASED: _____
COMPLETION: 25/11/84
PRODUCTION: _____
NOPE #: _____

DRILLING:

LOST CIRCULATION ZONES: _____
PROBLEMS: _____

DRILL STEM TESTS:

DST RECOVERY	DATE YR/MO/DY	ZONE	INTERVAL (ft)	VO (min)	SI (min)	HP (psi)	(BOTTOM GAUGES)	
							FP (psi)	SIP (psi)
1.	<u>84/11/10</u>	<u>Murtia</u>	<u>4260-4331</u>	<u>120</u>	<u>120</u>	—	<u>123</u>	<u>174</u>
		<u>Recovered 30' core</u>						
2.		<u>Patchawarra</u>	<u>5591-5684</u>	<u>145</u>	—	—	<u>179</u>	—
		<u>Miscum</u>						
3.		<u>Patchawarra</u>	<u>5678-5684</u>	<u>124</u>	<u>240</u>	—	<u>2152</u>	<u>2363</u>
		<u>Flowed 1747 BOPD</u>						
4.		<u>Birkhead</u>	<u>5085-5114</u>	<u>97</u>	<u>120</u>	—	<u>2206</u>	<u>2309</u>
		<u>Flowed 3752 BOPD</u>						
5.		<u>Hutton</u>	<u>5130-5146</u>	<u>84</u>	<u>120</u>	—	<u>2191</u>	<u>2253</u>
		<u>Flowed 3240 BOPD</u>						
6.		<u>Namur</u>	<u>4378-4416</u>	<u>60</u>	<u>60</u>	—	<u>1944</u>	<u>2017</u>
7.		<u>Basement</u>	<u>5760-5970</u>	<u>120</u>	<u>180</u>	—	<u>415</u>	<u>2005</u>
<u>CORED INTERVALS:</u>								
ZONE	INTERVAL	g	Sw	LOGS		g	Sw	
	(ft)	(%)	(%)	(%)		(%)	(%)	

COMPLETIONS:

1) ZONE: Birkhead STIMULATION: Y/N FRAC: _____ ACID: _____
PERF INTERVAL (ft): _____ SAND QUALITY: _____ SAND SIZE: _____ TYPE: _____
SHOT DENSITY: _____ FEEDRATE (bbbls/min): _____ VOLUME: _____
2) ZONE: Patchawarra STIMULATION: Y/N SAND SIZE: _____ TYPE: _____
PERF INTERVAL (ft): 5720-5739 SAND QUALITY: _____ VOLUME: _____
SHOT DENSITY: _____ FEEDRATE (bbbls/min): _____ FEEDRATE (bbbl/min): _____

PRODUCTION TEST: (Main Zone)

ZONE: _____ GAS AOF (MMCF): _____ OIL RATE (BOPD): _____
INTERVAL (ft): _____ BUILDUP PRESSURE (psi): _____ PUMP/FLOWING: _____
GAS PAY (ft): _____ BUILDUP PRESSURE (psi): _____
OIL PAY (ft): _____

COMMENTS:

TABLE 3
BIRKHEAD - WANCOOCHA #2
LOG ANALYSIS SUMMARY

Interval	5101' - 5117' KB
Pay	13'
Average Porosity	21.1%
Average Sw	35.5%
Average Vsh	22.5%

TABLE 4
BIRKHEAD - WANCOOCHA #2
PVT FLUID PROPERTIES

Oil Gravity	54.3° API
Bubble Point	168 psig at 214°F
Oil Compressibility	$10.324 \times 10^{-6} \text{ psi}^{-1}$
Oil Volume Factor	1.123 bbl/STB — ?
Oil Viscosity	.49 cp
Solution Gas-Oil Ratio	32 scf/STB

TABLE 5
BIRKHEAD - WANCOOCHA #2
PRODUCTION HISTORY

	TIME	BBL	AVE. RATE
Cleanup Flow 8/1/85	.75	210	6720
Cleanup Flow thru annulus 30/1/85 - 31/1/85 14:00 18:00	28	642	550
Production Test thru tubing 2/2/85 - 5/2/85 19:00 19:00	72	1627	542
Conditioning for BHS thru tubing 6/2/85 - 7/2/85 20:00 24:00	28	83.5	72
Extended Production Test 9/2/85 - 16/3/85 19:00 18:00	839	18039	516
19/3/85 - 1/6/85 18:00 02:00	1760	36776	501
7/6/85 - 21/6/85 16:30 08:00	327.5	6763	496
22/6/85 to current 16:30			

TABLE 6
BIRKHEAD - WANCOOCHA #2
FLOW TEST DATA

TIME	Δt (HRS)	OIL RATE (BOPD)	SURFACE PRESSURE		COMMENTS
			CHFP (PSIG)	THFP (PSIG)	
01/06/85 02:00					Well shut-in
07/06/85 16:30	0		680	-	Well flowing thru annulus
08/06/85 06:00	13.5	513	645	-	
09/06/85 06:00	37.5	510	640	-	
10/06/85 06:00	61.5	500	635	-	
11/06/85 06:00	85.5	502	635	-	
12/06/85 06:00	109.5	494	632	-	
13/06/85 06:00	133.5	499	630	-	
14/06/85 06:00	157.5	508	629	-	
15/06/85 06:00	181.5	503	629	-	
16/06/85 06:00	205.5	497	629	-	
17/06/85 06:00	229.5	507	632	-	
18/06/85 06:00	253.5	504	626	-	
19/06/85 06:00	277.5	498	625	-	
20/06/85 06:00	301.5	485	625	-	
08:00	303.5	539	N/A	-	Well shut-in
09:30	305.0	0	-	N/A	Well flowing thru tubing
14:00	309.5	264	-	N/A	
18:00	313.5	508	-	668	
22:00	317.5	427	-	668	
21/06/85 02:00	321.5	600	-	668	
06:00	325.5	513	-	668	
08:00	327.5	528	-	668	

TABLE 7
BIRKHEAD - WANCOOCHA #2
LOG - LOG PLOT DATA

Δt HRS	P PSIA	ΔP PSI
.0000	2254.89	0
.0011	2267.04	12.15
.0022	2272.41	17.52
.0033	2274.60	19.71
.0044	2274.74	19.85
.0056	2274.52	19.63
.0067	2275.07	20.18
.0078	2275.30	20.41
.0089	2275.24	20.35
.0094	2275.49	20.60
.0150	2275.98	21.09
.0200	2276.38	21.49
.0306	2277.02	22.13
.0500	2277.83	22.94
.0756	2278.58	23.69
.0101	2279.11	24.22
.2400	2280.73	25.84
.5150	2282.37	27.48
1.0150	2283.60	28.71

TABLE 8
BIRKHEAD - WANCOOCHA #2
HORNER DATA

Δt HRS	$\frac{t + \Delta t}{\Delta t}$	P PSIA
.0056	58483	2274.52
.0106	30897	2275.47
.0150	21835	2275.98
.0250	13101	2276.71
.0406	8068	2277.50
.0600	5459	2278.15
.1011	3240	2279.07
.1983	1653	2280.35
.2983	1099	2281.18
.3983	823	2281.81
.4983	658	2282.30
.7483	439	2283.07
.9983	329	2283.57
1.4983	220	2284.25
1.9983	165	2284.67
2.9983	110	2285.14
3.9983	82.9	2285.61
5.9983	55.6	2286.49
7.9983	42.0	2287.04
9.9983	33.8	2287.42
13.9983	24.4	2287.88
17.9983	19.2	2288.08
23.4983	14.9	2288.29

TABLE 9
BIRKHEAD - WANCOOCHA #2
WELL TEST SUMMARY

RESERVOIR PROPERTIES BASED ON FIRST HORNER SEMI-LOG STRAIGHT LINE

TEST	q	m	kh	k	S
DST#4	3752	27	12424	956	-3.5
Buildup February 1985	542	(5.2)	(9326)	(717)	(-3.1)
Buildup June 1985	496	3.75	11834	910	+1.0

RESERVOIR PROPERTIES BASED ON SECOND HORNER SEMI-LOG STRAIGHT LINE

TEST	q	m	kh	k
DST#4	3752	39	8609	662
Buildup February 1985	542	5.2	9326	717
Buildup June 1985	496	5.10	8702	669

COMMENTS: The first Horner semi-log straight line occurs at early shut-in times and does not appear to be defined by the 24 hour clock Amerada gauges run on the February 1985 buildup test. Data has been presented in both tables of the above for comparison.

TABLE 10
BIRKHEAD - WANCOOCHA #2
PRODUCTIVITY INDICE SUMMARY

	PI actual	Skin	ΔP Skin	PI idea
DST#4	32.7	-3.50	-82	19.1
Buildup February 1985	24.0	-3.21	-14.0	16.1
Buildup June 1985	14.9	+1.0	+3.3	16.5

NOTE: The skin factor for the February 1985 buildup test has been recalculated after further evaluation of the initial pressure readings.

A slope of 3.9 was obtained when drawing a best fit straight line through the four data points between .017 and .167 hours of shut-in. P_{1hr} was estimated as 2289.5 psig and the resulting skin calculated as -3.21.

TABLE 11
BIRKHEAD - WANCOOCHA #2
PRESSURE HISTORY

1. DST#1 18/11/84
p* = 2347 psia @ 5119' KB
Corrected to mpp using .31 gradient gives:
p* = 2345 psia @ 5111' KB
2. RFT survey 21/11/84
P = 2305 psia @ 5111' KB
3. Buildup 6/2/85
p* = 2315 psia @ 5155' KB
Corrected to mpp using static gradient gives:
p* = 2306 psia @ 5111' KB
4. Static gradient 6/2/85
Bottom element: p = 2315 psia @ 5155' KB
= 2306 psia @ 5111' KB
Top element: p = 2303 psia @ 5155' KB
= 2292 psia @ 5111' KB
5. Buildup 22/6/85
p = 2288.3 psia @ 5079; KB
Corrected to mpp using .32 psi/ft gradient gives:
p = 2298.5 psia @ 5111' KB

TABLE 12
BIRKHEAD - WANCOOCHA FIELD
PRESSURE HISTORY

DATE	WELL	SOURCE	DATUM PRESSURE PSIA @ 5000'SS	FIELD PRODUCTION BBL	COMMENTS
1. 18/11/84	#2	DST#2	(2338)	-	anomolously high
2. 06/02/85	#2	Buildup/ Gradient	2300	2479	
3. 31/03/85	#4	Initial Static Gradient	2304	26873	
4. 06/04/85	#4	Buildup/ Gradient	2296	31169	Muskat extrapolation
5. 18/06/85	#5	Initial Static Gradient	2294	97964	
6. 22/06/85	#5	Buildup	2301	102537	Mead extrapolation
7. 22/06/85	#2	Buildup	2293	102537	Mead extrapolation

CALCULATION SUMMARY #1
BIRKHEAD - WANCOOCHA #2
RESERVOIR PROPERTIES

Flow Capacity

$$\begin{aligned}
 kh &= \frac{162.6 \text{ quB}}{m} \\
 &= \frac{162.6(496)(.49)(1.123)}{3.75} \\
 &= 11834 \text{ md ft}
 \end{aligned}$$

Permeability

$$\begin{aligned}
 k &= \frac{kh}{h} \\
 &= \frac{11834}{13} \\
 &= 910
 \end{aligned}$$

Total Compressibility

$$\begin{aligned}
 C_t &= C_oS_o + C_wS_w + C_f \\
 &= .645(10.324 \times 10^{-6}) + .355(3.1 \times 10^{-6}) + 3.57 \times 10^{-6} \\
 &= 11.358 \times 10^{-6}
 \end{aligned}$$

$$\begin{aligned}
 \text{where } C_w &= 3.18 \times 10^{-6} \text{ assumed} \\
 C_f &= 3.57 \times 10^{-6} \text{ assumed}
 \end{aligned}$$

Apparent Skin

$$\begin{aligned}
 S &= 1.151 \left[\frac{P_{ihr} - P_{wf}}{m} - \log \frac{k}{\phi U C_t r_w^2} + 3.228 \right] \\
 &= 1.151 \left[\frac{2282.75 - 2254.9}{3.75} - \log \frac{910}{.211(.49)(11.358 \times 10^{-6})(354)^2} + 3.228 \right] \\
 &= .99
 \end{aligned}$$

CALCULATION SUMMARY #2
BIRKHEAD - WANCOOCHA #2
PRODUCTIVITY INDEX

$$\begin{aligned}
 \text{Actual PI} &= \frac{q_{\text{ave}}}{P_i - P_{wf}} \\
 &= \frac{496}{2288.3 - 2254.9} \\
 &= 14.9
 \end{aligned}$$

$$\begin{aligned}
 \text{Theoretical PI} &= \frac{7.08 \times 10^{-3} kh}{UB \ln(re/r_{wi})} \\
 &= \frac{7.08 \times 10^{-3} (11834)}{(.49)(1.123) \ln(\frac{820}{.132})} \\
 &= 17.4
 \end{aligned}$$

$$\begin{aligned}
 \text{where } r_{wi} &= r_w e^{-S} \\
 &= .354 e^{-.99} \\
 &= .132
 \end{aligned}$$

CALCULATION SUMMARY #3
BIRKHEAD - WANCOOCHA FIELD
PRESSURE CORRECTION TO COMMON DATUM

1. DST#2 Wancoocha #2 18/11/84 KB 92'
 $p^* = 2347 \text{ psia at } 5119' \text{ KB}$

Corrected to datum using .32 psi/ft gradient
 $p^* = 2347 + [5000 - (5119 - 92)] .32$
 $= 2338 \text{ psia at } 5000' \text{ SS}$
2. Buildup/Static Gradient Wancoocha #2 06/02/84 KB 92'
 $p = 2306 \text{ psia at midpoint of perfs. } 5111' \text{ KB}$

Corrected to datum using .32 psi/ft gradient
 $p = 2306 + [5000 - (5111 - 92)] .32$
 $= 2300 \text{ psia at } 5000' \text{ SS}$
3. Initial Static Gradient Wancoocha #4 31/03/85 KB 104'
 $p_{ave} = 2310 \text{ psia at midpoint of perfs. } 5124' \text{ KB}$

Corrected to datum using .32 psi/ft gradient
 $p = 2310 + [5000 - (5124 - 104)] .32$
 $= 2304 \text{ psia at } 5000' \text{ SS}$
4. Buildup Wancoocha #4 06/04/85 KB 104'
 $p = 2302 \text{ psia at midpoint of perfs. } 5124' \text{ KB}$

Corrected at datum using .32 psi/ft gradient
 $p = 2302 + [5000 - (5124 - 104)] .32$
 $= 2296 \text{ psia at } 5000' \text{ SS}$

CALCULATION SUMMARY #3
BIRKHEAD - WANCOOCHA FIELD
PRESSURE CORRECTION TO COMMON DATUM

5. Static Wancoocha #5 18/06/85 KB 93'
 $p_{ave} = 2305$ psia at midpoint of perfs. 5127' KB

Corrected to datum using .32 psi/ft gradient
 $p = 2305 + [5000 - (5127 - 93)] .32$
 $= 2294$ psia at 5000' SS
6. Buildup Wancoocha #5 22/06/85 KB 93'
 $p = 2312$ psia at midpoint of perfs. 5127' KB

Corrected to datum using .32 psi/ft gradient
 $p = 2312 + [5000 - (5127 - 93)] .32$
 $= 2301$ psia at 5000' SS
7. Buildup Wancoocha #2 22/06/85 KB 92'
 $p = 2298.5$ psia at midpoint of perfs. 5111' KB

Corrected to datum using .32 psi/ft gradient
 $p = 2299 + [5000 - (5111 - 92)] .32$
 $= 2293$ psia at 5000' SS

WANCOOCHA #2SUMMARY OF SINGLE RATE TEST AND BUILD UP SURVEY19TH - 24TH NOVEMBER 1987Flow Test

20th - 22nd November

20.11.87: Diverted flow through separator @ 1630 hrs on 9.5/64" choke.
 Increased choke to 11/64" @ 1700 hrs.
 Started test @ 1800 hrs. Flowed well on 11/64" choke for 40 hours.

F.T.H.P.	=	434	psig
Separator Pressure	=	100	psig
Separator Temperature	=	100	°F
Gas Flow Rate	=	0.051	MMSCF/D
Oil Production	=	41.254	BPD
Water Production	=	109.173	BPD

22.11.87: Shut well in @ 1000 hrs.

Build Up Survey

22nd - 24th November

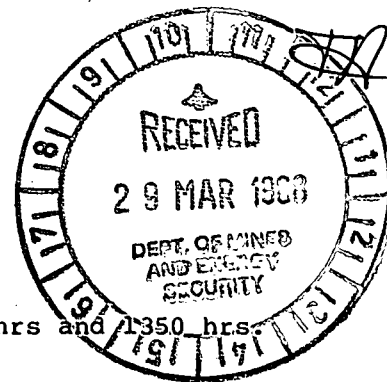
22.11.87: Shut well in @ 1000 hrs for 48.5 hours build up.
 Element #29387 @ 5689'KB after 48.5 hours build up = 2489.0 psig.
 Element #28514 @ 5695'KB after 48.5 hours build up = 2492.4 psig.

24.11.87: POH @ 1030 hrs.

Static Reservoir Pressure

Mid Point of Perforations = 5729'KB

24.11.87: Ran static pressure gradient between 1209 hrs and 1350 hrs.
 Element # 29387 @ 5729'KB = 2496.0 psig.
 Element # 28514 @ 5729'KB = 2494.0 psig.
 Maximum shut in bottomhole temperature = 234°F.



SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS	RUN 01 FIELD WANCOOCHA	WELL 02
EFF DEPTH	WELL STAT	TOOL HUNG 5689'
CASING 7"	CASING PRESS	ON BOTTOM
LINER	TUBING PRESS	OFF BOTTOM 1030 24/11
DATE 871124	ELEMENT RANGE 0 - 2998	ZERO POINT
ELEVATION	ZONE	SHUT-IN 1000 22/11
MAX TEMP	PICK-UP	ON-PROD
PERF 5720' - 5739'	CAL SER NO. 29387	MPP 5729'
TUBING 2-7/8"	PURPOSE BUILD-UP	
UNITS ENGLISH		

SURVEY DATA

CO. SANTOS			RUN 01 FIELD WANCOOCHA			WELL 02		
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	
10:00	2182.6	0.0	0.0	10:47	2498.2	315.5	0.8	
10:02	2238.4	55.7	0.0	10:59	2497.3	314.6	1.0	
10:06	2297.2	114.5	.1	11:19	2495.7	313.1	1.3	
10:10	2336.2	153.5	.2	11:49	2493.3	310.6	1.8	
10:12	2364.9	182.2	.2	13:03	2488.0	305.3	3.0	
10:15	2396.4	213.8	.3	15:25	2485.2	302.5	5.4	
10:19	2424.8	242.1	.3	19:02	2485.1	302.4	9.0	
10:23	2455.4	272.7	.4	0:13	2486.6	303.9	14.2	
10:26	2476.3	293.6	.4	7:10	2487.6	305.0	21.2	
10:29	2482.9	300.2	.5	16:11	2488.6	306.0	30.2	
10:32	2488.6	306.0	.5	2:35	2489.8	307.2	40.6	
10:37	2493.1	310.5	.6	10:30	2489.0	306.4	48.5	
10:41	2496.7	314.1	.7	0:00	0.0	0.0	0.0	

LUB IN AMERADA = 415 PSI / OUT = 734 PSI

SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 02 FIELD WANCOOCHA	WELL 02
EFF DEPTH		WELL STAT	TOOL HUNG 5695'
CASING 7"	-	CASING PRESS	ON BOTTOM
LINER	-	TUBING PRESS	OFF BOTTOM 1030 24/11
DATE 871124		ELEMENT RANGE 0 - 3084	ZERO POINT
ELEVATION		ZONE	SHUT-IN 1000 22/11
MAX TEMP		PICK-UP	ON-PROD
PERF 5720' -5739'		CAL SER NO. 28514	MPP 5729'
TUBING 2-7/8"	-		
UNITS ENGLISH		PURPOSE BUILD-UP	

SURVEY DATA

CO. SANTOS			RUN 01 FIELD WANCOOCHA			WELL 02		
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	
10:00	2183.6	0.0	0.0	11:41	2497.5	313.9	1.7	
10:02	2232.6	49.0	.0	12:32	2493.1	309.5	2.5	
10:07	2292.6	108.9	.1	14:01	2491.2	307.5	4.0	
10:11	2343.5	159.9	.2	16:23	2488.2	304.6	6.4	
10:15	2389.3	205.7	.3	20:25	2489.6	305.9	10.4	
10:22	2451.1	267.5	.4	1:57	2491.0	307.4	15.9	
10:26	2478.6	294.9	.4	9:25	2492.2	308.6	23.4	
10:30	2492.6	309.0	.5	18:57	2492.0	308.4	33.0	
10:36	2497.5	313.9	.6	4:31	2492.5	308.8	42.5	
10:44	2501.7	318.0	.7	10:30	2492.4	308.8	48.5	
11:08	2500.2	316.6	1.1	0:00	0.0	0.0	0.0	

LUB IN AMERADA = 417 PSI / OUT = 731 PSI



WIRELINE REPORT

CLIENT SANTOS LTD. WELL WANCOOCHIA*2.

DATE 20/11/87

PROGRAMME BLIND BOX RUN 1.75" PRIOR TO RUNNING PRESSURE GAUGES.

PURPOSE OF WORK ENSURE TUBING AND PERFS CLEAR OF OBSTRUCTIONS, PRIOR TO RUNNING PRESSURE GAUGES FOR FLOW AND BUILD UP.

REPORT OF WORK PERFORMED 20/11/87

1000 HRS ARRIVED ON LOCATION

1115 HRS COMPLETED RIG UP OF WIRELINE UNIT, GAPS, LUBRICATE TOOL STRING

1740 HRS RUNNING HOLE WITH 1.75" BLIND BOX TUBING 470 PSI

1750 HRS ARRIVED AT DEPTH OF 5,700' KB

1752 HRS PULL OUT OF HOLE.

1805 HRS ARRIVED AT SURFACE WITH 1.75" BLIND BOX, PREPARE TOOL STRING TO RUN TANDEM PRESSURE ELEMENTS.

1840 HRS PRESSURE LUBRICATOR WITH TANDEM PRESSURE ELEMENTS HITTING AT SURFACE FOR APPROX 1 HR.

1945 HRS RUN IN HOLE WITH ELEMENTS TO HANG DEPTH OF 5,695' KB

1959 HRS ARRIVED AT HANG DEPTH OF 5,695' KB.

21/11/87

1030 HRS PULL OUT OF HOLE WITH TANDEM PRESSURE ELEMENTS.

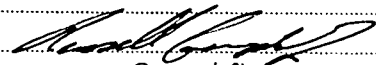
1046 HRS AT SURFACE

1148 HRS DEPRESSURE LUBRICATOR, GOOD CONTACTS, PREPARE ELEMENTS FOR STATIC GRADIENT SURVEY. MAX BOTTOM HOLE TEMP 278°F

1224 HRS RUN IN HOLE WITH TANDEM PRESSURE ELEMENTS FOR STATIC GRADIENT.

1311 HRS AT BOTTOM DEPTH OF 5,729' KB

1321 HRS PULL OUT OF HOLE AT SURFACE


Operator's Signature

WORKED PERFORMED BY R. CAMPBELL OF EXPERTEST.

WELL DATA:

Tubing Size 2 7/8" FWHP 470 PSI SIWHP

Subsurface S.V./Landing Nipple @ 5,322' KB S.S.D. @ 5,322' KB

'X' Nipple @ 5,615' KB 'N/X' Nipple @ 5,638' KB Other @

Min. I.D. 2.205" @ 5,638' KB @ 5,602' KB Packer @ 5,602' KB

Perforated Interval: 5,720' - 5,739' KB

WELL: <i>WANGDOOCHA #2</i>						 SANTOS LTD. WELL TEST DATA SHEET										DATE: <i>19/11/87</i>				
TYPE OF TEST: <i>PRODUCTION</i>						PAGE No: <i>1 (ONE)</i>														
DATE TIME	WELLHEAD					GAS FLOW DATA					OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS				
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLs	API GRAVITY @ 60 °F	TANK DIP INS.	TANK PROD BBLs	GAS FLOW RATE MMSCFD	OIL FLOW RATE BBLs/ DAY	WATER FLOW RATE BBLs/ DAY	TOTAL LIQUID FLOW RATE BBLs/ DAY	G.O.R. SCF/BBL	
<i>19/11/87</i>																				
<i>1030</i>																				
<i>1100</i>																				
<i>1130</i>																				
<i>1630</i>																				
<i>20/11/87</i>																				
<i>1000</i>																				
<i>1115</i>																				
<i>1130</i>																				
<i>1150</i>																				
<i>1245</i>																				
<i>1500</i>																				
<i>1630</i>	<i>152</i>	<i>440</i>		<i>9.5/16</i>																
<i>1700</i>		<i>474</i>		<i>11/64</i>																
<i>1730</i>																				
<i>1735</i>		<i>470</i>																		
<i>1740</i>																				

OPERATOR: *RUSSEN CAMPBELL*

0381

TYPE OF TEST: PRODUCTION



SANTOS LTD.

WELL TEST DATA SHEET

DATE:....20/11/87.....

PAGE No: 2 (two)

OPERATOR... RUSSELL CAMPBELL...

0382

WELL: <u>WANGCOOCHIA #2</u>						 SANTOS LTD. WELL TEST DATA SHEET										DATE: <u>21/11/87</u>					
TYPE OF TEST: <u>Production</u>						PAGE No: <u>3 (THREE)</u>															
DATE TIME	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS						
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLs	API GRAVITY @ 60 °F	TANK DIP INS.	TANK PROD BBLs	GAS	OIL	WATER	TOTAL LIQUID	GOR	TOTAL GLR	
															FLOW RATE MMSCFD	FLOW RATE BBLs/ DAY	FLOW RATE BBLs/ DAY	FLOW RATE BBLs/ DAY	SCF/BBL		
21/11/87	<u>SINGLE RATE PRODUCTION TEST PRIOR TO PERFORATING.</u>																				
0800	152	419	170	1/64		85	43	86	.375	13.75	6.3	42.3	32	5.9	.044	75.5	70.4	145.9	582	301	
1000	152	435	168	"		80	40	98.6	"	14.5	1.3		38.5	10.9	.041	15.1	130.8	145.9	2715	281	
1200	152	449	163	"		110	50	111.2	"	16	2.5	43.8	45	10.9	.052	30.2	130.8	161	1721	322	
1400	152	440	165	"		105	50	116.6	"	17.25	2.1		51.5	10.9	.051	25.2	130.8	156	2023	326	
1600	152	427	168	"		115	51	116.6	"	20	4.6	43.4	57	9.2	.053	55.3	110.7	166	958	319	
1800	152	450	168	"		140	60	116.6	"	21.75	2.9		64.5	12.6	.064	35.2	150.9	186.1	1818	343	
2000	152	463	170	"		120	52	107.6	"	23.5	2.9	43.8	69	7.5	.055	35.2	90.6	125.8	1562	437	
2200	152	432	156	"		120	52	102.2	"	27.5	6.7		74	8.4	.056	80.5	100.6	181.1	695	309	
2400	152	447	161	"		120	54	98.6	"	29.75	3.8	44.4	79.5	9.2	.057	45.3	110.7	156	1258	365	
22/11/87																					
0200	152	432	152	"		125	56	98.6	"	31.5	2.9		85.5	10.06	.059	35.2	120.7	155.9	1676	378	
0400	152	451	172	"		105	60	89.6	"	34.75	5.5	44.8	96.5	16.8	.057	43.6	134.2	177.8	1307	320	
0600	152	449	150	"		100	62	96.8	"	35.5	1.5		99.5	6.7	.056	30.2	160.9	191.1	1854	293	
	21/11/87 0600HRS TO 20/11/87 0600HRS GAS FLOWED .054 MMSCF																				
	TOTAL 2 DAYS PRODUCTION OIL PRODUCED 42.8 BBLs																				
	H ₂ O PRODUCED 119.2 BBLs																				
0800	152	451	149	"		110	64	86	"	38.5	5.03	44.2	104	7.5	.061	60.3	90.6	150.9	1011	404	
1000	152	448	156	"		110	66	95	"	41	4.2		110	10.1	.061	50.3	120.7	171	1212	356	
1000	SHUT WELL IN FOR BUILD UP.																				

OPERATOR: RUSSELL CAMPBELL

0383

WELL: <u>NANCOCHA #2</u> TYPE OF TEST: <u>PRODUCTION</u>		SANTOS LTD. WELL TEST DATA SHEET	DATE: <u>22/11/87</u> PAGE No: <u>1 (Four)</u>
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DATE	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS				
															GAS	OIL	WATER	TOTAL LIQUID	G.O.R.
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLs	API GRAVITY @ 60 °F	TANK DIP INS.	TANK PROD BBLs	FLOW RATE MMSCFD	FLOW RATE BBLs/ DAY	FLOW RATE BBLs/ DAY	FLOW RATE BBLs/ DAY	SCF/BBL
22/11/87	SINGLE RATE PRODUCTION TEST PRIOR TO PERFORATING																		
22/11/87	0600 HRS TO 1000 HRS. GAS FLARED 010 MMSCFD																		
	TOTAL 4 HRS PRODUCTION OIL PRODUCED 9.2 BBLs																		
	H ₂ O PRODUCED 17.6 BBLs																		
20/11/87	1800 HRS TO 22/11/87 1000 HRS. TOTAL CUMULATIVE GAS FLARED 086 MMSCFD																		
	TOTAL 40 HRS PRODUCTION TOTAL CUMULATIVE OIL PRODUCED 68.7 BBLs																		
	TOTAL CUMULATIVE H ₂ O PRODUCED 182 BBLs																		
1000	SHUT WELL IN FOR BUILD UP.																		
TIME	CASING	TUBING	DATE	CASING	TUBING	DATE	CASING	TUBING	DATE	CASING	TUBING	DATE	CASING	TUBING	DATE	CASING	TUBING	DATE	CASING
1000	152	448	1230	152	794	0600	"	810											
1005	"	513	1300	"	804	1000	"	805											
1010	"	571	1330	"	817	1400	"	794											
1015	"	604	1400	"	830	1800	"	778											
1020	"	645	1500	"	838	2200	"	765											
1025	"	669	1600	"	838	24/11/87													
1030	"	694	1700	"	834	0200	"	757											
1045	"	714	1800	"	832	0600	"	749											
1100	"	735	2200	"	822	1000	"	740											
1130	"	755	23/11/87			1030	"	740											
1200	"	777	0200	"	817	1030	"	PULL OUT OF HOLE WITH TANDEM PRESSURE ELEMENTS.											

OPERATOR.....

0384

CLIENT SANTOS, KTR.....WELL WANCOCCHA*2.....Date 20/11/87..... Page No. 1 (ONE)....Operator RUSSELL CAMPBELL.....
 Orifice Fitting Type DANIELS, SNE...
 Gas Flow Recorder Type FOREGO...
 Date of Last Calibration 24/10/87

 Orifice Fitting Size 3.068
 Pressure Range 0-1500 PSI
 Differential Range 0-200 INCH

 Gas Specific Gravity 1.000
 Perforated Interval 5720-5739' MS
 Formation Tested PITCHAMUNGA

 Base Conditions = 14.73psi @ 60°F
☒ Flange Taps ☐ Pipe Taps

TIME DATA		Choke Size 64ths Inch	METER RUN DATA				$\sqrt{P_f \times H_w}$	C' = $F_u \times F_b \times F_g \times F_{tf} \times F_{pv} \times Y_2$							Flow Rate $Q = C' \times \sqrt{P_f \times H_w}$
Date Time	Elapsed Time Hours		(P _f) Press P.S.I.A.	Diff (H _w) Inches Water	Temp. °F	Plate Size Inches		F _u	F _b	F _g	F _{tf}	F _{pv}	Y ₂	C'	
20/11/87		VARIABLE													
1800	0	"/64	101.73	31	98.6	.375	59.6726	24	28.120	1	.9648	1.0191	1.0022	665.0271	.040
2000			PRESSURE ELEMENTS ON BOTTOM HAVING DEPTH OF 5695' KB "START TEST"												
2000	2	"	99.73	30	95	"	54.6983	"	"	"	.9680	1.0185	1.0020	666.7046	.036
2200	4	"	89.73	41	107.6	"	60.6542	"	"	"	.9572	1.0154	1.0031	657.9317	.040
2400	6	"	89.73	38	96	"	58.3930	"	"	"	.9671	1.0165	1.0028	665.3165	.039
21/11/87															
0200	8	"	84.73	42	96	"	59.6545	"	"	"	.9671	1.0155	1.0033	665.0108	.040
0400	10	"	84.73	52	91.4	"	68.3078	"	"	"	.9711	1.0169	1.0039	669.0826	.046
0600	12	"	84.73	72	89.6	"	80.3716	"	"	"	.9727	1.0171	1.0054	671.2977	.054
0800	14	"	94.73	43	86	"	65.4858	"	"	"	.9759	1.0196	1.0029	673.4422	.044
1000	16	"	94.73	40	98.6	"	61.5565	"	"	"	.9648	1.0172	1.0028	664.2155	.041
1200	18	"	124.73	50	111.2	"	78.9715	"	"	"	.9541	1.0213	1.0027	659.4202	.052
1400	20	"	119.73	50	116.6	"	77.3725	"	"	"	.9497	1.0198	1.0028	655.4162	.051
1600	22	"	129.73	51	116.6	"	81.3402	"	"	"	.9497	1.0215	1.0026	656.4304	.053
1800	24	"	154.73	60	116.6	"	96.3525	"	"	"	.9497	1.0260	1.0026	659.2347	.064
2000	26	"	134.73	52	107.6	"	83.7016	"	"	"	.9572	1.0236	1.0026	662.9380	.055
2200	28	"	134.73	52	102.2	"	83.7016	"	"	"	.9617	1.0244	1.0026	666.6168	.056
2400	30	"	134.73	54	98.6	"	85.2961	"	"	"	.9648	1.0249	1.0027	669.1766	.057

211

0386

WELL...WANYROOCHA[#]2.....



Date . 22/11/87. Page No. . 2 (Two)

Operator Russell Campbell

Orifice Fitting Type . . . DANIEL'S SAK.
Gas Flow Recorder Type . . . FOXBO CO.
Date of Last Calibration . . . 24/10/87

Orifice Fitting Size . . . 3.068
Pressure Range . . . 0-1500 psi
Differential Range . . . 0-200 mm

Gas Specific Gravity. 1.000
Perforated Interval. 5720 - 5739' MB
Formation Tested. PATCHAWARIA

Base Conditions = 14.73psi @ 60°F
☒ Flange Taps ☐ Pipe Taps

[illegible]

WELL WAPIROONA #2
 TANK:— CAPACITY 358 BBLs
52 SCALE 1"=1.677 GAL



SANTOS LTD
 FLUID PRODUCTION SHEET

DATE 20/11/87
 PAGE No. 1 (ONE)
 OPERATOR RUSSELL CAMPBELL

DATE TIME	CUM. TIME	OIL/CONDENSATE PRODUCTION					WATER PRODUCTION					REMARKS
		TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/D	CUM.PROD. BBLs	OIL CONDENSATE GRAVITY "API60F"	TANK DIP INS	TANK PROD. BBLs	FLOWRATE BBLs/D	CUM.PROD. BBLs	SALINITY PPM	
20/11/87												
1800	0	0										
2000	2	2.5	4.1925	50.31	4.1925	44.6	1.5					
2200	4	3	8.385	10.062	5.031		4.5	5.031	60.372	5.031		
2400	6	5.5	4.1925	50.31	9.2235	44.6	10	9.2235	110.682	14.2545		*START TEST*
21/11/87							13.5	5.8695	70.434	20.124		
0200	8	6.75	2.09625	25.155	11.31975							
0400	10	8.75	3.354	40.248	14.67375		18.5	8.385	100.62	28.509		
0600	12	10	2.09625	25.155	16.77		23	7.5465	90.558	36.0555		
0800	14	13.75	6.28875	75.465	23.05875	42.3	28.5	9.2235	110.682	45.279		
1000	16	14.5	1.25775	15.093	24.3165		32	5.8695	70.434	51.1485		
1200	18	16	2.5155	30.186	26.832	43.8	38.5	10.9005	130.806	62.049		
1400	20	17.25	2.09625	25.155	28.92825		45	10.9005	130.806	72.9495		
1600	22	20	4.6175	55.341	33.54	43.4	51.5	10.9005	130.806	83.85		
1800	24	21.75	2.93475	35.217	36.47475		57	9.2235	110.682	93.0735		
2000	26	23.5	2.93475	35.217	39.4095	43.8	64.5	12.5775	150.93	105.651		
2200	28	27.5	6.708	80.496	46.1175		69	7.5465	90.558	113.1975		
2400	30	29.75	3.77325	45.279	49.89075	44.4	74	8.385	100.62	121.5825		
22/11/87							79.5	9.2235	110.682	130.806		
0200	32	31.5	2.93475	35.217	52.8255		85.5	10.062	120.744	140.968		

*O/6927

#52. SCALE $1" = 1.677884...$



FLUID PRODUCTION SHEET

OPERATOR RUSSEU CAMARGO

[illegible]

WELL NAME: WANCOOCHA #2

STATIC GRADIENT SURVEY

DATE: 24/11/87

BOMB No. 1 DATA

ELEMENT No. 29387 ELEMENT RANGE: 2975 PSI
REORDER No. 59791 x 157LS CLOCK DATA: 2509 x 3 HR.
ENGAGE STYLUS: 1205 DISENGAGE: 1357

BOMB No. 2 DATA

ELEMENT No. 2851A ELEMENT RANGE: 3000-481
 RECORDER No. 14631-5715 CLOCK DATA: 2530 x 3 AM
 ENGAGE SYLUS: 1203 DISENGAGE: 1357

LUBRICATOR DATA

PRESSURE WITH D.W.T.: IN 720 PS OUT 724 PS
TIME PRESSURED: 1209
TIME DEPRESSURED: 1350

DATE	TIME	DEPTH'	DEFLECTION	PRESSURE TEMP.	GRADIENT ps/VL	DEPTH'	DEFLECTION	PRESSURE TEMP.	GRADIENT ps/VL	REMARKS
9/11/87	1209	LUB	.4895			LUB	.471			15 mins
	1224	R.I.H				R.I.H				
	1232	1,000	.5035			1,000	.4835			5mins ↓
	1240	2,000	.676			2,000	.6515			
	1248	3,000	.915			3,000	.885			
	1256	4,000	1.189			4,000	1.1555			
	1304	5,000	1.465			5,000	1.4255			5mins ↓
	1311	5,729	1.6695			5,729	1.621			M.P.P. 10mins Tu 728 pm G _s 152 pm.
	1321	P.O.H				P.O.H				1335 AT SURFACE.
	1350	LUB	.4775			LUB	.461			15mins.

General Comments: M.B.H. Temp. 234°F

G O I O

0330



**** WANCOOCHA #2 ****

STATIC PRESSURE GRADIENT

TEST DATE: 24/11/87

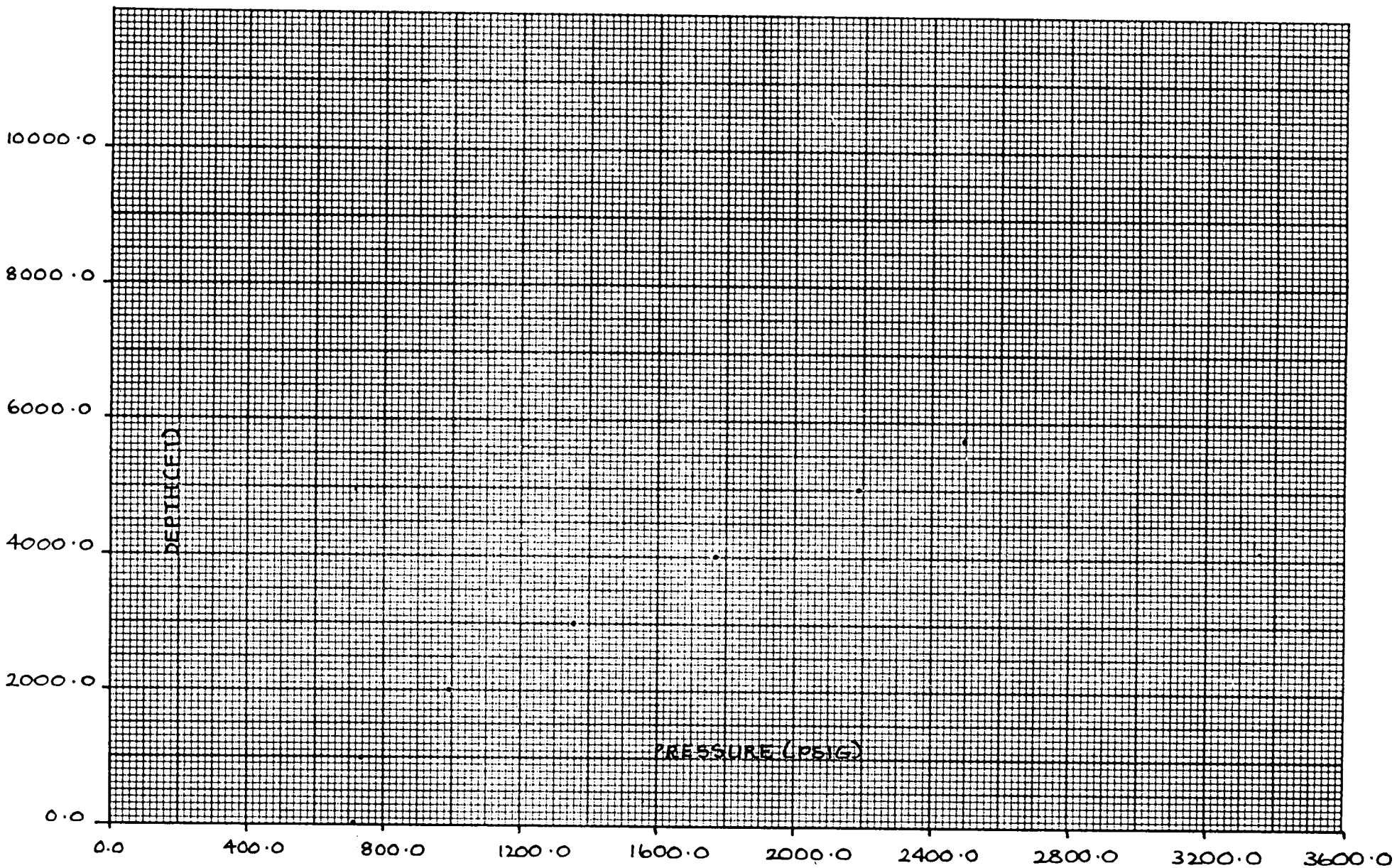
TOP PRESSURE ELEMENT 29387/2975				BOTTOM PRESSURE ELEMENT 28514/3000		
DEPTH (FT.)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)
LUB	0.4895	716.2	----	0.4710	713.2	----
1000	0.5035	737.2	0.0210	0.4835	732.4	0.0193
2000	0.6760	996.0	0.2588	0.6515	991.6	0.2592
3000	0.9150	1355.5	0.3595	0.8850	1352.6	0.3610
4000	1.1890	1768.8	0.4133	1.1555	1771.6	0.4190
5000	1.4650	2186.1	0.4174	1.4255	2190.4	0.4188
5729	1.6695	2496.0	0.4250	1.6210	2494.0	0.4164
LUB	0.4775	698.2	----	0.4610	697.7	----

GENERAL REMARKS:

DWT IN: 720
DWT OUT: 724
MAX BHT: 234

ELEMENT 29387/2975 CALIBRATED 19.11.87
ELEMENT 28514/3000 CALIBRATED 19.11.87

WANCOOCHA # 2 - STATIC PRESSURE GRADIENT - 24/11/87
ELEMENT # 29387/2975 (TOP)



WANCOOCHA #2
SUMMARY OF SINGLE RATE TEST AND BUILD UP SURVEY
5TH - 9TH FEBRUARY 1988

Flow Test
 5th - 7th February

5/2/88: Flowed well through separator @ 1725 hrs.
 Started test @ 1800 hrs on 12/64" choke.
 Flowed well on 12/64" choke for 38 hours.

F.T.H.P. (final)	=	5599	kPa
F.W.H.T. (final)	=	76	°C
Gas Flow Rate	=	5.609	10 ³ m ³ /d
Oil Production	=	10.217	m ³ /d
Water Production	=	28.510	m ³ /d
Flowing Bottomhole Pressure	=	15160	kPa

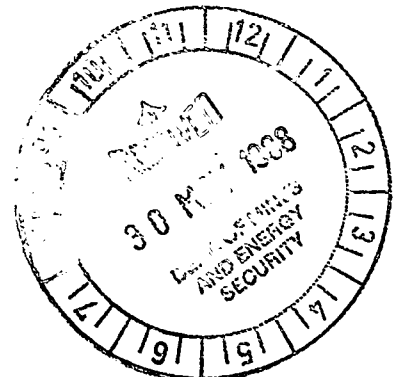
Build Up Survey
 7th - 9th February

7/2/88: Shut well in @ 0800 hrs for 46.95 hours build up.
 Element #57414 @ 1732m KB after 46.95 hours build up = 17101 kPa.
 Element #62039 @ 1734m KB after 46.95 hours build up = 17166 kPa.

Static Reservoir Pressure

9/2/88: Ran static pressure gradient between 0838 hrs and 0943 hrs.
 Element # 57414 @ 5730'KB (1746.5m) = 2491.1 psig (17176 kPa).
 Element # 62039 @ 5730'KB (1746.5m) = 2493.4 psig (17192 kPa).
 Maximum shut in bottomhole temperature = 109°C.

WP3786G (92)
 LGA:ih
 13th April 1988



SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 01 FIELD WANCOOCHA	WELL 02
EFF DEPTH		WELL STAT	TOOL HUNG 1732m
CASING	-	CASING PRESS	ON BOTTOM 1204 6/8
LINER	-	TUBING PRESS	OFF BOTTOM 0657 9/8
DATE 880209		ELEMENT RANGE 0 - 3106	ZERO POINT
ELEVATION		ZONE	SHUT-IN 0800 7/8
MAX TEMP		PICK-UP	ON-PROD
PERF	-	CAL SER NO. 57414	MPP
TUBING	-		
UNITS ENGLISH		PURPOSE BUILD-UP	

SURVEY DATA

CO. SANTOS			RUN 01 FIELD WANCOOCHA			WELL 02		
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	
8:00	2198.7	0.0	0.0	8:38	2481.4	282.7	.6	
8:02	2257.1	58.4	.0	8:46	2482.4	283.7	.8	
8:05	2323.0	124.3	.1	8:58	2483.0	284.2	1.0	
8:10	2375.8	177.0	.2	9:21	2482.8	284.0	1.4	
8:11	2401.6	202.9	.2	9:55	2481.5	282.8	1.9	
8:13	2417.1	218.4	.2	10:49	2478.4	279.7	2.8	
8:16	2433.1	234.3	.3	12:44	2476.7	278.0	4.7	
8:17	2445.9	247.2	.3	16:15	2476.8	278.0	8.2	
8:19	2454.4	255.7	.3	20:42	2479.0	280.3	12.7	
8:22	2461.7	263.0	.4	3:41	2479.0	280.3	19.7	
8:23	2470.1	271.3	.4	12:15	2479.8	281.0	28.2	
8:26	2475.2	276.4	.4	22:50	2480.3	281.6	38.8	
8:29	2477.9	279.2	.5	6:57	2480.2	281.4	47.0	
8:33	2479.9	281.2	.6	0:00	0.0	0.0	0.0	

LUB IN DWT = 824 PSI / OUT = 1155 PSI
 LUB IN AMERADA = 820 PSI / OUT = 1151 PSI

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 02 FIELD WANCOOCHA	WELL 02
EFF DEPTH		WELL STAT	TOOL HUNG 1734m
CASING	-	CASING PRESS	ON BOTTOM 1204 6/1
LINER	-	TUBING PRESS	OFF BOTTOM 0657 9/1
DATE 880209		ELEMENT RANGE 0 - 3223	ZERO POINT
ELEVATION		ZONE	SHUT-IN 0800 7/1
MAX TEMP		PICK-UP	ON-PROD
PERF	-	CAL SER NO. 62039	MPP
TUBING	-		
UNITS ENGLISH		PURPOSE BUILD-UP	

SURVEY DATA

CO. SANTOS				RUN 02 FIELD WANCOOCHA				WELL 02			
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
8:00	2200.6	0.0	0.0	8:49	2487.5	286.8	.8				
8:01	2230.3	29.7	.0	9:03	2487.4	286.8	1.0				
8:02	2287.0	86.3	.0	9:23	2486.2	285.6	1.4				
8:05	2344.6	143.9	.1	9:58	2484.8	284.2	2.0				
8:09	2393.4	192.7	.2	10:36	2481.8	281.2	2.6				
8:11	2419.1	218.4	.2	12:13	2480.7	280.1	4.2				
8:15	2440.9	240.3	.3	14:34	2481.5	280.9	6.6				
8:18	2459.6	258.9	.3	17:41	2482.6	281.9	9.7				
8:20	2471.6	271.0	.3	22:06	2483.6	283.0	14.1				
8:23	2476.8	276.1	.4	3:44	2484.8	284.2	19.7				
8:26	2482.6	281.9	.4	11:58	2486.6	286.0	28.0				
8:29	2484.6	284.0	.5	21:56	2488.4	287.8	37.1				
8:39	2487.5	286.9	.6	6:57	2489.7	289.1	47.1				

LUB IN DWT = 824 PSI / OUT = 1155 PSI

LUB IN AMERADA = 815 PSI / OUT = 1157 PSI

Well: WANCOCCHA #2 (PATCHAWARRA) Date: 6-2-88

Lubricator Data: ① 820 1151 Operator M. MUELLER
② 815 1157

Pressure with D.W.T. In 5681 kPa Out 7964 kPa
824 PSIG 1155 PSIG

Time Pressured 1051 6-2-88 Time Depressed 0810 9-2-88

Time Run in Hole 1151 6-2-88 Time off Bottom 0657 9-2-88

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	57414 x 3000	62039 x 3000
Recorder No.	12959 x 15745	0-15186 x 15745
Clock and Lead Screw Data	F-15308 x 120 HA.	F-15309 x 120 HA.
Engage Stylus	Date: 6-2-88 Time: 1045	Date: 6-2-88 Time: 1045
Disengage	Date: 9-2-88 Time: 0820	Date: 9-2-88 Time: 0820

Remarks:

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead P.S.I.G.	Casing P.S.I.G.	Wellhead Temp.	Remarks
6-2-88						
	1051	WELL FLOWING.				PRESSURE LUB.
	1151		5681	950	77	RLH.
	1204					HANG BOMAS @ 1734m KB.
	1400		5626	950	76	
	1800		5599	950	76	
	2200		5537	950	78	
7-2-88						
	0200		5550	950	75	
	0600		5557	950	77	
	0800		5599	950	76	BWI START BUILD UP.
	0805		6357			
	0810		6723			
	0815		6992			
	0830		7309			
	0845		7502			
	0900	1	7729			
	0930		8005			
	1000	2	8198			
	1100	3	8371			
	1200	4	8426			
	1600	8	8391			
	2000	12	8322			
	0000	16	8240	950		

Well: WANCOOCHA #2 (PATCHAWARRA) Date: 8-2-88

Lubricator Data: Operator M. M. MELLER.

Pressure with D.W.T. In 5681 kPa Out 7964 kPa

Time Pressured.....1051.....6-2-88.....Time Depressed.....0810.....9-2-88.....

Time Run in Hole..... 1151 6-2-88..... Time off Bottom..... 0657 9-2-88.....

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	57414 x 3000	62039 x 3000
Recorder No.	12959 x 157LS	D-15186 x 157LS
Clock and Lead Screw Data	F-15308 x 120 HR.	F-15309 x 120 HR.
Engage Stylus	Date: 6-2-88 Time: 1043	Date: 6-2-88 Time: 1043
Disengage	Date: 9-2-88 Time: 0820	Date: 9-2-88 Time: 0820

Remarks:.....

Well-Head Data for Final Build-up

[illegible]

WELL:..... <u>WANSOCHA #2</u>						 SANTOS LTD. WELL TEST DATA SHEET										DATE:..... <u>5-2-88</u>				
TYPE OF TEST: <u>SINGLE RATE</u>						PAGE No:..... <u>1</u>of..... <u>2</u>														
DATE TIME	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS					
	CASING KPA	TUBING KPA	TEMP. C	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS.H ₂ O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD M ³	API GRAVITY @60 °F	TANK DIP INS.	TANK PROD M ³	GAS FLOW RATE	OIL FLOW RATE M ³ /DAY	WATER FLOW RATE M ³ /DAY	TOTAL LIQUID FLOW RATE M ³ /DAY	G.O.R. M ³ /M ³	
0930						ARRIVE ON LOCATION & RIG IN WIRELINE & TEST EQUIPMENT.														
1400						RUN BANG BOX 1.75" SEE ATTACHED WIRELINE REPORT.														
1700						SWI														
1715	950	6964				SIWHP.														
1725						FLOW WELL THROUGH SEPARATOR & TRIM.														
1800	950	5978	76	12/64				750	5	TARE DIP.		1.0						LEVELS UP	START TEST.	
2200	950	5626	81	↑		65	74	144	↑	9.0	2.266		20.5	5.199	6.255	13.596	31.194	44.79	460.1	
6-2-88																				
0200	950	5619	83			67	62	144		16.25	1.933		41.0	5.453	5.776	11.598	32.718	44.316	498.0	
0600	950	5640	80			68	48	136		21.25	1.333		57.0	4.266	5.156	7.998	25.596	33.594	644.7	
1000	950	5654	76			70	47	122		27.0	1.533		74.25	4.599	5.212	9.998	27.594	36.792	566.6	
1151						RUN 2x3000 SI AMERADPS IN HOLE FOR FLOW BUILD UP SURVEY SEE ATTACHED REPORT.														
1400	950	5626	76			66	51	129		31.25	1.133	40.9	91.25	4.532	5.269	6.798	27.192	33.99	775.1	
1800	950	5599	76			65	42	124		36.0	1.447	41.9	104.0	3.885	4.790	9.922	26.640	36.562	482.8	
1800										39.5	TARE DIP		11.0						DRAIN WATER.	
2200	950	5537	78			80	50	124		46.0	1.733		30.0	5.332	5.691	10.398	31.992	42.39	547.3	
7-2-88																				
0200	950	5550	75	↓		105	45	120	↓	52.5	1.733		50.25	5.132	6.114	10.398	30.792	41.19	588.0	
0600	950	5557	77	12/64		90	45	122	750	60.0	2.000		68.50	4.865	5.691	12.000	29.190	41.19	474.3	

OPERATOR.....M. MUELLER.....

0398

TYPE OF TEST: SINGLE RATE



WELL TEST DATA SHEET

DATE:.....7-2-88.....

PAGE No:.....2 OF 2.....

OPERATOR.....MMUELLER.....

0306

WELL WANCOCCHA #2

TANK:- CAPACITY 56.6 m³

SCALE 1" = 246 m³



SANTOS LTD

FLUID PRODUCTION SHEET

DATE 5-2-88

PAGE No. 1 OF 1

OPERATOR M. MUELLER

DATE TIME	CUM. TIME	OIL/CONDENSATE PRODUCTION					WATER PRODUCTION					REMARKS
		TANK DIP INS	TANK PROD. m ³	FLOWRATE m ³ /D	CUM. PROD. m ³	OIL CONDENSATE GRAVITY *APIGF*	TANK DIP INS	TANK PROD. m ³	FLOWRATE m ³ /D	CUM. PROD. m ³	SALINITY PPM	
1800	0	5					10					TARE D.P.
2200	4	9.0	2.266	13.596	2.266		20.5	5.199	31.194	5.199		
5-2-88												
0200	8	16.25	1.933	11.598	4.199		41.0	5.453	32.718	10.652		
0600	12	21.25	1.333	7.998	5.532		57.0	4.266	25.596	14.918		
1000	16	27.0	1.533	9.198	7.065		74.25	4.599	27.594	19.517		
1400	20	31.25	1.133	6.798	8.198		91.25	4.532	27.192	24.049		
1730												DRAIN WATER
1730		36.0	1.266	8.681			104.0	3.399	23.307			
			.181	1.241	HALF HOUR ADDED PRODUCTION			.486	3.333			
1800	24			9.922	9.645	✓			26.640	27.934		
1800		39.5					11.0					TARE D.P.
2200	28	46.0	1.733	10.398	11.378		31.0	5.332	31.992	33.266		
5-2-88	32	52.5	1.733	10.398	13.111		50.25	5.132	30.792	38.398		
0600	36	60.0	2.000	12.000	15.111		68.50	4.865	29.190	43.263		
0800	38	64.0	1.066	12.792	16.177		75.50	1.866	22.392	45.129		
				SWI	START BUILD UP.							

0400

CLIENT ... <u>BLOCK OIL</u> WELL ... <u>WANSORCHA #2</u>		Date .. <u>5-2-88</u> Page No. <u>1</u> .. of <u>1</u> Operator ... <u>N. MUELLER</u>
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Orifice Fitting Type <u>DANIELS SR</u> Gas Flow Recorder Type <u>FOXBORO</u> Date of Last Calibration <u>27-12-87</u>	Orifice Fitting Size <u>3.048</u> Pressure Range <u>0-1500 PSI</u> Differential Range <u>0-200 WG</u>	Gas Specific Gravity <u>0.70</u> Perforated Interval <u>5720 - 5739 KB</u> Formation Tested <u>PATCHAWARRA</u> Base Conditions = 14.73psi @ 60°F ☒ Flange Taps ☐ Pipe Taps
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TIME DATA		Choke Size 64ths Inch	METER RUN DATA				$\sqrt{Pf \times Hw}$	$C' = Fu \times Fb \times Fg \times Ftf \times Fpv \times Y2$							Flow Rate $Q = C' \times \sqrt{Pf \times Hw}$
Date Time	Elapsed Time Hours		(Pf) Press P.S.I.A.	Diff (Hw) Inches Water	Temp. °F	Plate Size Inches		Fu	Fb	Fg	Ftf	Fpv	Y2	C'	
SINGLE RATE FLOW															
2200	4	12/64	80	74	144	750	76.941536	24	113.56	1.125	.9279	1.007	1.006	2882.1578	.222
6-2-88		↑				↑		↑	↑						
0200	8		82	62	144		71.302173				.9279	1.007	1.0053	2880.1523	.205
0600	12		83	48	136		63.118735				.9341	1.0075	1.004	2897.0851	.183
1000	16		85	47	122		63.206012				.9452	1.008	1.004	2932.9664	.185
1400	20		81	51	129		64.272855				.9396	1.007	1.004	2912.697	.187
1800	24		80	42	124		57.965506				.9436	1.008	1.0033	2925.9602	.170
2200	28		95	50	124		68.920243				.9436	1.009	1.0033	2928.8629	.202
7-2-88															
0200	32		120	45	120		73.484692				.9469	1.014	1.0027	2951.9039	.217
0600	36	↓	105	45	122	↓	68.738635	↓	↓	↓	.9452	1.012	1.0027	2940.7924	.202
0800	38	12/64	105	52	118	750	73.811812	24	113.56	1.125	.9485	1.012	1.0033	2952.8255	.218



WIRELINE REPORT

WELL: WANCOCCHA *2 (PITCHAWARRA)

DATE: 5-2-88

PROGRAM: SINGLE RATE & STATIC GRADIENT

PURPOSE OF WORK:

REPORT OF WORK PERFORMED:

12:00 : RIG UP WIRELINE UNIT.

1400 : RUN IN HOLE WITH 1.75" BLIND BOX

1418 : TAG PSTD @ 1798 m KB NO OBSTRUCTIONS

1420 : POOH.

1432 : IN LUB.

6-2-88

1151 : R.I.H. WITH 2x 3000 m AMERADÁ'S FOR FLOW BUILD UP.

SEE ATTACHED COMP. RUN & BUILDS UP SHEET.

9-2-88

0657 : PULL AMERADÁ OUT OF HOLE.

0848 : RUN STATIC GRADIENT SEE GRADIENT REPORT


 OPERATOR'S SIGNATURE

WORK PERFORMED BY: M. MUELLER OF EGYPT

WELL DATA:

Tubing Size: 2 7/8 EUE FWHP: 5806 KPA SIWHP: -

Sub Surface S.V./Landing Nipple @ : S.S.D. @: 1564 m KB

"X" Nipple @ 1711 m KB "N"/"XN" Nipple @ 1718 m KB other

Min I.D. 2.205 " @ 1718 m KB Packer @ 1707 m KB

Perforated Interval: 1743 - 1749 m KB

Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba



WIRELINE REPORT

WELL: WAXCXXHA " 2

DATE: 9-2-88

PROGRAM: OPEN SSD

PURPOSE OF WORK:

REPORT OF WORK PERFORMED:

10:40 ARRIVED LOCATION RIGED UP

11:00 R/H. 2.313 SHIFTING TOOL TO 1561 MKB + OPENED SSD P.O.H.

11:30 RIGED DOWN

Karl Da...
OPERATOR'S SIGNATURE

WORK PERFORMED BY: K. DOWE + R. SARGEANT OF EXPERTEST

WELL DATA:

Tubing Size: 2 7/8" EUE FWHP: SIWHP: ~~7584~~ 7584 KPA

Sub Surface S.V./Landing Nipple @ S.S.D. @:

"X" Nipple @ "N"/"XN" Nipple @ other

Min I.D. " @ Packer @

Perforated Interval:

Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba



**** WANCOOCHA 2 ****

STATIC PRESSURE GRADIENT

TEST DATE: 9-2-88

DEPTH (FT.)	TOP PRESSURE ELEMENT 57414/3000			BOTTOM PRESSURE ELEMENT 62039/3000		
	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)
LUB	0.7340	1138.8	----	0.7035	1136.2	----
1000	0.7540	1169.8	0.0310	0.7225	1166.8	0.0306
2000	0.7740	1200.8	0.0310	0.7425	1199.0	0.0322
3000	0.9260	1436.3	0.2355	0.8880	1433.1	0.2341
4000	1.1440	1773.8	0.3375	1.0975	1769.9	0.3368
5000	1.4120	2188.7	0.4149	1.3570	2187.0	0.4171
5695	1.6000	2480.2	0.4195	1.5380	2478.1	0.4188
5730	1.6070	2491.1	0.3106	1.5475	2493.4	0.4368
LUB	0.7260	1126.4	----	0.7000	1130.6	----

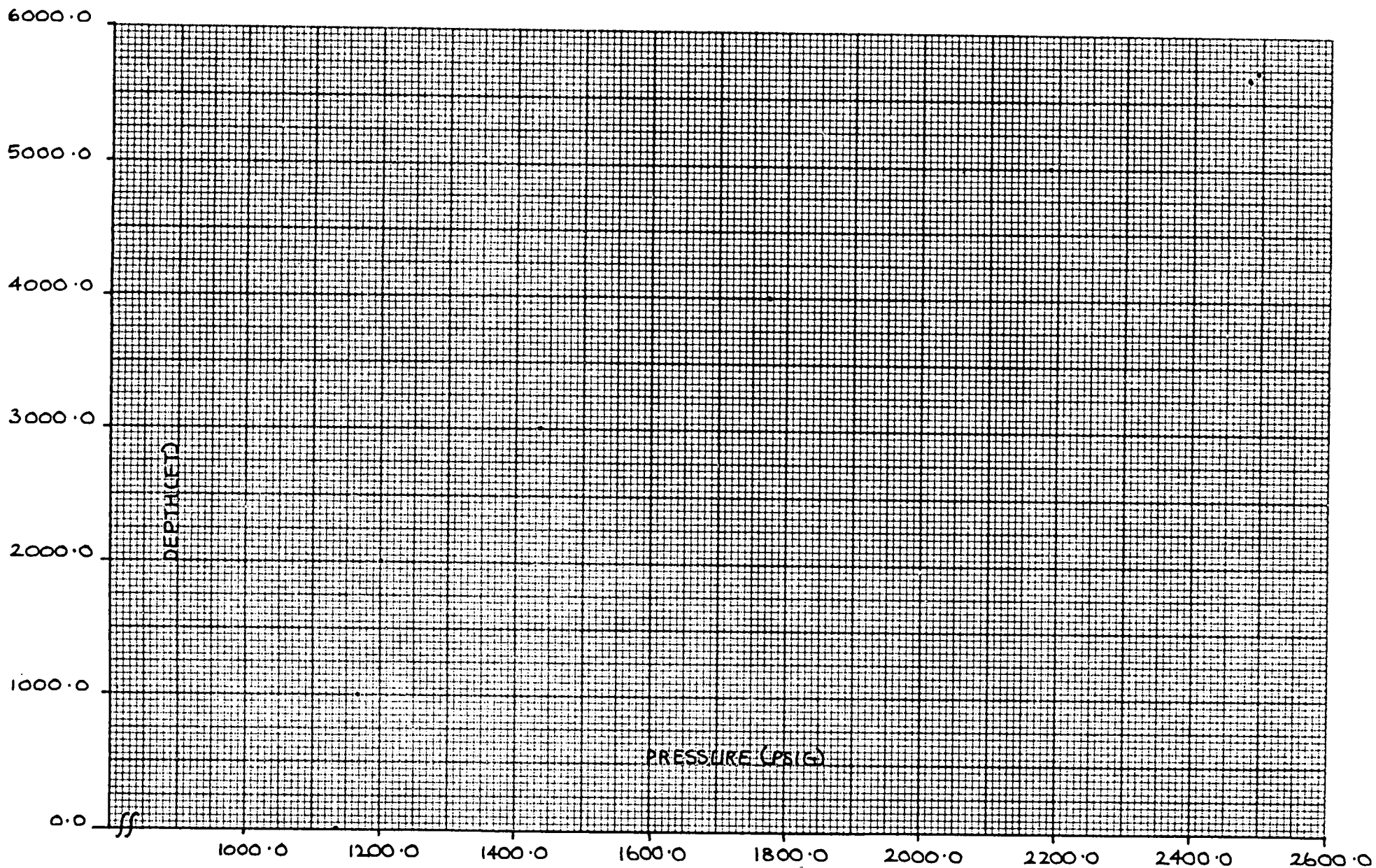
GENERAL REMARKS:

DWT IN: 1150
DWT OUT: 1130
MAX BHT: 109 C

ELEMENT 57414/3000 CALIBRATED 5.2.88
ELEMENT 62039/3000 CALIBRATED 5.2.88

WANCOOCHA # 2 - STATIC PRESSURE GRADIENT - 9/2/88

ELEMENT # 57414 / 3000 (TOP)



DATE: 9-2-88

LUBRICATOR DATA

PRESSURE WITH D.W.T.: 127929 KRA On 7791 m
TIME PRESSURED: 0838
TIME DEPRESSURED: 0943

General Comments:

WANCOOCHA #2 (HUTTON)
SUMMARY OF SINGLE RATE TEST AND BUILD UP SURVEY
19TH - 23RD MARCH 1988

Flowing Reservoir Pressure
 (12/64" choke)

19/3/88 Ran flowing pressure gradient between 1043 hrs and 1213 hrs.
 Element #24708 @ 5108' KB (1557m KB) = 2204.1 psig (15197 kPa).
 Element #57413 @ 5108' KB (1557m KB) = 2207.6 psig (15221 kPa).
 Flowing bottomhole temperature = 216°F (102°C).

Flow Test
 12th - 21st March

19/3/88: Well flowing on 12/64" choke @ 0910 hrs.
 Started test @ 1230 hrs.
 Flowed well on 12/64" choke for 41 hours.

F.T.H.P. (final)	=	2282	kPa
F.W.H.T. (final)	=	73	°C
Oil Production	=	28.402	m ³ /d
Water Production	=	25.715	m ³ /d
Flowing Bottomhole Pressure	=	15254	kPa

21/3/88: Shut well in @ 0530 hrs.

Build Up Survey
 21st - 23rd March

21/3/88: Shut well in @ 0530 hrs for 49.25 hours.
 Element #24708 @ 1555m KB after 49.25 hours build up = 2286.8 psig (15767 kPa).
 Element #57413 @ 1557m KB after 49.25 hours build up = 2287.5 psig (15772 kPa).
 Maximum shut in bottomhole temperature = 102°C

Static Reservoir Pressure

23/3/88: Ran static pressure gradient between 0824 hrs and 1010 hrs.
 Element #24708 @ 5109'KB (1557m KB) = 2286.7 psig (15767 kPa).
 Element #57413 @ 5109'KB (1557m KB) = 2286.8 psig (15767 kPa).
 Maximum shut in bottomhole temperature = 216°F (102°C).

SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 01 FIELD WANCDOOCHA	WELL 02
EFF DEPTH		WELL STAT	TOOL HUNG 1555m
CASING	-	CASING PRESS	ON BOTTOM 1408 19/3
LINER	-	TUBING PRESS	OFF BOTTOM 0645 23/3
DATE	880323	ELEMENT RANGE 0 - 3304	ZERO POINT
ELEVATION		ZONE	SHUT-IN 0530 21/3
MAX TEMP	102 C	PICK-UP	ON-PROD
PERF	-	CAL SER NO. 24708	MPP
TUBING	-		
UNITS	ENGLISH	PURPOSE	BUILD-UP

SURVEY DATA

CO. SANTOS			RUN 01 FIELD WANCDOOCHA			WELL 02		
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	
5:30	2208.1	0.0	0.0	6:14	2289.4	81.3	.7	
5:32	2224.4	16.3	.0	6:42	2289.2	81.1	1.2	
5:32	2236.9	28.8	.0	7:34	2289.7	81.6	2.1	
5:32	2249.4	41.3	.0	8:57	2289.2	81.1	3.5	
5:33	2265.2	57.1	.1	10:27	2289.0	80.9	4.9	
5:33	2274.7	66.6	.1	12:19	2289.0	80.8	6.8	
5:33	2284.5	76.4	.1	15:26	2289.3	81.2	9.9	
5:34	2287.5	79.4	.1	20:31	2288.7	80.6	15.0	
5:35	2289.8	81.7	.1	3:39	2288.1	79.9	22.1	
5:37	2290.8	82.7	.1	9:51	2288.4	80.3	28.4	
5:39	2290.8	82.7	.2	14:52	2287.9	79.7	33.4	
5:46	2290.7	82.6	.3	21:43	2287.6	79.5	40.2	
5:56	2290.2	82.1	.4	6:45	2286.8	78.6	49.2	

LUB IN DWT = 337 PSI, / OUT = 416 PSI
LUB IN AMERADA = 328 PSI / OUT = 406 PSI

SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 02 FIELD WANCOCCHA	WELL 02
EFF DEPTH		WELL STAT	TOOL HUNG 1557 m
CASING	-	CASING PRESS	ON BOTTOM 1408 19/3
LINER	-	TUBING PRESS	OFF BOTTOM 0645 23/3
DATE	880323	ELEMENT RANGE 0 - 3114	ZERO POINT
ELEVATION		ZONE	SHUT-IN 0530 21/3
MAX TEMP	102 C	PICK-UP	ON-PROD
PERF	-	CAL SER NO. 57413	MPP
TUBING	-		
UNITS	ENGLISH	PURPOSE	BUILD-UP

SURVEY DATA

CO. SANTOS				RUN 02 FIELD WANCOCCHA				WELL 02			
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
5:30	2212.4	0.0	0.0	6:32	2290.7	78.2	1.0				
5:31	2222.8	10.4	.0	7:59	2291.3	78.8	2.5				
5:31	2236.9	24.4	.0	9:34	2290.4	77.9	4.1				
5:31	2252.7	40.2	.0	11:34	2290.9	78.5	6.1				
5:31	2268.0	55.6	.0	13:20	2290.7	78.3	7.8				
5:32	2278.1	65.6	.0	16:16	2290.6	78.2	10.8				
5:32	2283.3	70.9	.0	19:51	2290.2	77.7	14.4				
5:32	2288.3	75.9	.0	1:25	2290.6	78.2	19.9				
5:33	2290.3	77.9	.1	6:22	2290.5	78.0	24.9				
5:35	2292.1	79.7	.1	13:29	2289.3	76.8	32.0				
5:37	2292.1	79.7	.1	21:18	2288.6	76.2	39.8				
5:43	2292.1	79.6	.2	2:37	2287.6	75.2	45.1				
5:53	2291.1	78.6	.4	6:45	2287.5	75.0	49.2				
6:06	2290.9	78.5	.6	0:00	0.0	0.0	0.0				

LUB IN DWT = 337 PSI / OUT = 416 PSI
LUB IN AMERADA = 337 PSI / OUT = 414 PSI

Well: Wanoocha #2 Hutton Date: 19.03.88

Lubricator Data: ① 328 406
② 337 414 Operator G Peterson.

Pressure with D.W.T. In 2324 kpa Out 2868 kpa
337 PSI 416 PSI

Time Pressured 12.49 HRS Time Depressed 08.04 HR 23.03.88

Time Run in Hole 13.49 HRS Time off Bottom 06.45 HRS 23.03.88

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	24708 x 3300 PSI	57413 x 3000 PSI
Recorder No.	12978	61127
Clock and Lead Screw Data	24708 x 96 HR 15725	28648 x 96 HR 15725
Engage Stylus	Date: 19-03-88 Time: 12.39 Day light saving Time	Date: 19-03-88 Time: 12.39 Day light saving Time
Disengage	Date: 22-03-88 Time: 08.11 Normal Time	Date: 22-03-88 Time: 08.11 Normal Time

Remarks: M.B.H.T. 102°C

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead Kpa	Casing	Wellhead Temp. °C	Remarks
19 th	March 1988					
	Well					Flowing previously to plant.
	12:30		By passed	Flow into the lease measuring		Tanks.
	13:49	13HP	gauges	RIH		well Flowing to lease Tanks
	14:08	13HP	gauges	@ 1557mkb		
	14:30		2317	N/A	76°	Commenced Flow.
						Build up survey
21 st	March 1988					
	05:30		2282	-	73°	Well shut in for
						48 HR Build up.
23 rd	March 1988					
	06:45		2848			B.H.P gauges off
						Bottom.
						Completed Build
						up.

CLIENT <u>Santos LTD</u> WELL <u>Wanoocha #2</u> ZONE <u>Hutton</u>						 WIRELINE & WELL TESTING SERVICE 138 RICHMOND ROAD MARLBOROUGH SA 5025 TELEPHONE (08) 354 0486 TELEFAX 087183						UNITS OF MEASUREMENTS TBG <u>Kpa</u> CSG <u>—</u> TEMP <u>OC</u>		DATE <u>19.03.88</u> PAGE NO. <u>1</u> OPERATOR <u>G. Peterson</u>			
DATE TIME	FLOWING WELL DATA					OIL/CONDENSATE PRODUCTION							WATER PRODUCTION				REMARKS
	CSG PRESS	TBG PRESS	TEMP	CHOKE SIZE	BS&W	API	TOTAL DIP INCHES	PRODUCTION DIP INCHES	TANK PRODUCTION M ³	PRODUCTION RATE	CUMMULATIVE PRODUCTION M ³	TOTAL WATER DIP INCHES	TANK PRODUCTION M ³	PRODUCTION RATE	CUMMULATIVE PRODUCTION M ³		
19th March 1988																	
09:10																	
12:23																	
12:30		336		12/64													
12:30																	
14:08																	
14:30																	
14:30	—	2317	76°	12/64	5%	52.6°	18"	10"	2.66			8"	2.13			Salinity < 0 ppm.	
16:30	—	2310	76°	12/64	2%	52.6°	34.75	19.25	2.46	29.59	2.46	15.5	1.99	23.99	1.99	< 0 ppm	
18:30	—	2303	74°	12/64	0%	52.8°	51.75	28.5	2.46	29.59	4.92	23.25	2.06	24.79	4.05	< 0 ppm.	
22:30	—	2317	74°	12/64	2%	53.2°	85.75	49.5	5.33	31.99	10.25	37.25	3.73	22.39	7.78	< 0 ppm	
20th March 1988																	
01:30	—	2317	74°	12/64	0%	52.8°	120"	65.75	4.59	27.59	14.84	54.25	4.53	27.19	12.31	< 0 ppm	
05:30	—	2324	73°	12/64	0%	53.0°	153.5	84.75	5.06	30.39	19.9	68.75	3.86	23.19	16.17	< 0 ppm.	
09:30	—	2310	73°	12/64	0%	52.5°	187.25	103.5	4.99	29.99	24.89	83.75	3.99	23.99	20.16	< 0 ppm.	
09:30																	
13:30	—	2289	75°	12/64	0%	52.4°	35.25	17.75	4.73	28.39	29.62	17.5	4.66	27.99	24.82	< 0 ppm.	
17:30	—	2289	74°	12/64	0%	52.6°	71.0"	35.75	4.79	28.79	34.41	35.25	4.73	28.39	29.55	< 0 ppm.	
21:30	—	2282	75°	12/64	0%	52.8°	107"	53.75	4.79	28.79	39.20	53.25	4.79	28.79	34.34	< 0 ppm.	
21st March 1988																	
01:30	—	2275	74°	12/64	0%	52.8°	143.5	71.75	4.79	28.79	43.99	71.75	4.93	29.59	39.27	< 0 ppm	

CLIENT <u>Santos Ltd</u> WELL <u>Wanoocha #2</u> ZONE <u>Hutton</u>						 138 RICHMOND ROAD MARLETON SA 5022 TELEPHONE 08 354 0488 TELEFAX 08 354 1183						UNITS OF MEASUREMENTS TBG <u>kpa</u> CSG <u>—</u> TEMP <u>OC</u>		DATE <u>21.03.88</u> PAGE NO. <u>2</u> OPERATOR <u>G Peterson</u>		
DATE TIME	FLOWING WELL DATA					OIL/CONDENSATE PRODUCTION						WATER PRODUCTION				REMARKS
	CSG PRESS	TBG PRESS	TEMP	CHOKE SIZE	BS&W	API	TOTAL DIP INCHES	PRODUCTION DIP INCHES	TANK PRODUCTION M ³	PRODUCTION RATE	CUMMULATIVE PRODUCTION M ³	TOTAL WATER DIP INCHES	TANK PRODUCTION M ³	PRODUCTION RATE	CUMMULATIVE PRODUCTION M ³	
<u>21st March 1988</u>																
<u>05:30</u>	<u>—</u>	<u>2282</u>	<u>73°</u>	<u>12/64</u>	<u>0%</u>	<u>53.2°</u>	<u>178.75</u>	<u>89.5</u>	<u>4.73</u>	<u>28.39</u>	<u>48.52</u>	<u>89.25</u>	<u>4.66</u>	<u>27.99</u>	<u>43.93</u>	
<u>05:30</u>		<u>Well shut in</u>				<u>For a 48HR Build up survey.</u>									<u>Salinity 2 ppm</u>	
<u>05:35</u>	<u>—</u>	<u>2848</u>	<u>73</u>													
<u>05:40</u>	<u>—</u>	<u>2855</u>	<u>71</u>													
<u>05:45</u>	<u>—</u>	<u>2855</u>	<u>69</u>													
<u>05:50</u>	<u>—</u>	<u>2855</u>	<u>66</u>													
<u>05:55</u>	<u>—</u>	<u>2855</u>	<u>64</u>													
<u>06:00</u>	<u>—</u>	<u>2855</u>	<u>60</u>													
<u>06:05</u>		<u>2855</u>	<u>58</u>													
<u>06:10</u>		<u>2834</u>	<u>56</u>													
<u>06:15</u>		<u>2855</u>	<u>54</u>													
<u>06:20</u>		<u>2827</u>	<u>52</u>													
<u>06:25</u>		<u>2841</u>	<u>50</u>													
<u>06:30</u>		<u>2848</u>	<u>49°</u>													
<u>06:45</u>		<u>2848</u>	<u>45°</u>													
<u>07:00</u>		<u>2855</u>	<u>42</u>													
<u>07:15</u>		<u>2855</u>	<u>39</u>													
<u>07:30</u>		<u>2861</u>	<u>38</u>													
<u>08:00</u>		<u>2868</u>	<u>36°</u>													
<u>08:30</u>		<u>2868</u>	<u>36°</u>													
<u>09:30</u>		<u>2861</u>	<u>37°</u>													
															<u>4HRs shut in Time.</u>	

E12

0412

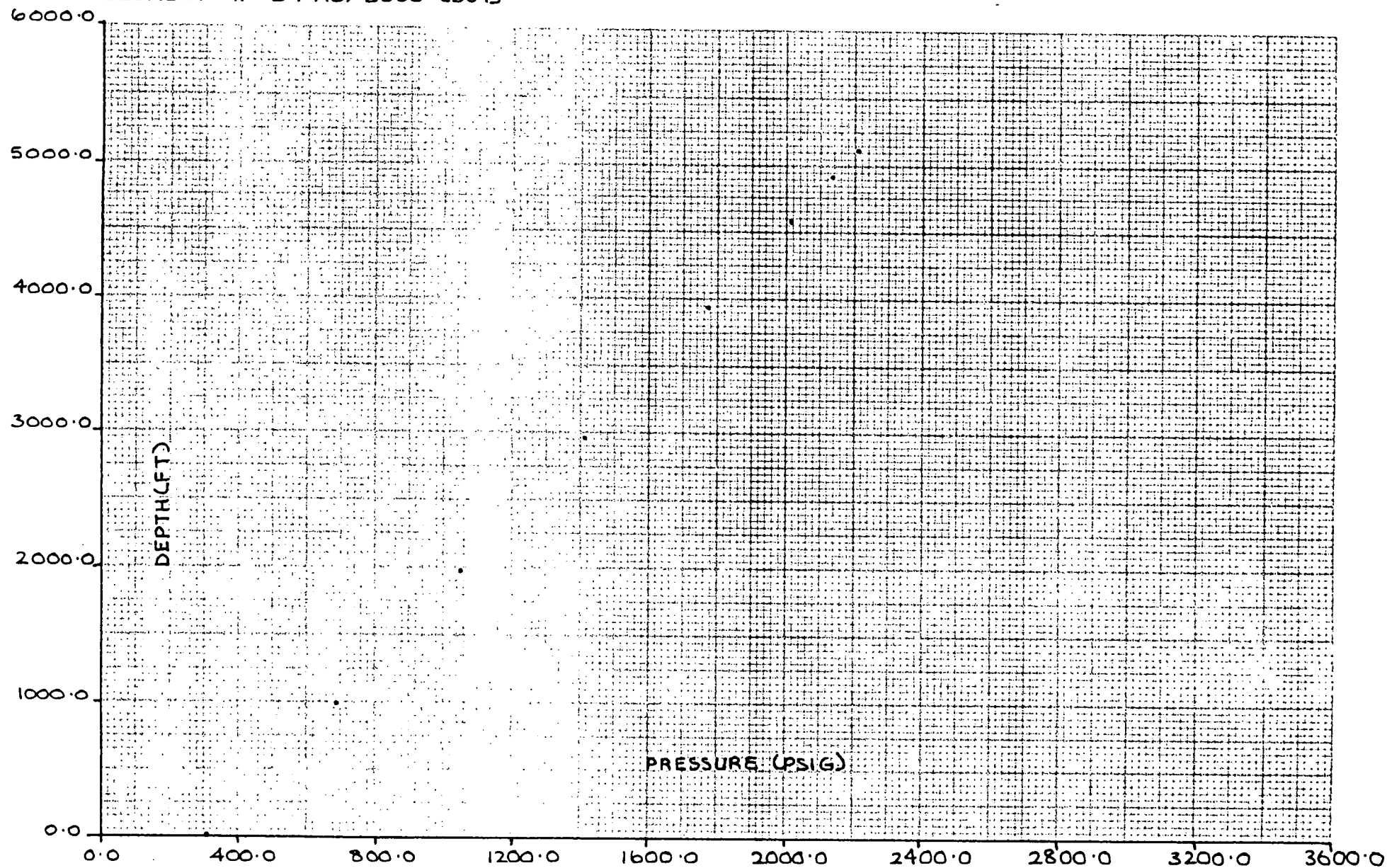
CLIENT <u>Santos Ltd</u> WELL <u>Nancoocha #2</u> ZONE <u>Hutton</u>						 TELEPHONE (08) 354 0488 TELEFAX (08) 354 0489 WIRELINE & WELL TESTING SERVICE 128 RICHMOND ROAD MARLBOROUGH SA 5033 POSTAL ADDRESS PO BOX 364 COMMONWEALTH SA 5033						UNITS OF MEASUREMENTS TBG <u>kpa</u> CSG TEMP <u>OC</u>		DATE <u>21.03.88</u> PAGE NO. <u>3</u> OPERATOR <u>G. Peterson</u>	
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DATE TIME	FLOWING WELL DATA					OIL/CONDENSATE PRODUCTION						WATER PRODUCTION				REMARKS
	CSG PRESS	TBG PRESS	TEMP	CHOKE SIZE	BS&W	API	TOTAL DIP INCHES	PRODUCTION DIP INCHES	TANK PRODUCTION m ³	PRODUCTION RATE	CUMMULATIVE PRODUCTION m ³	TOTAL WATER DIP INCHES	TANK PRODUCTION m ³	PRODUCTION RATE	CUMMULATIVE PRODUCTION m ³	
21 st March 1988																
11:30	-	2855	45°												6	
13:30		2868	48°												8	
17:30															12	
21:30															16	
22 nd March 1988																
01:30		2855	28°												20	
05:30		2848	25°												24	
09:30		2861	38°												28	
13:30		2861	46°												32	
17:30		2861	39°												36	
21:30		2855	30												40	
23 rd March 1988																
01:30		2848	28°												44	
05:30		2848	29°												48	
06:45		2848														
08:04																

E12

WANCOOCHA # 2 - HUTTON - FLOWING PRESSURE GRADIENT - 19/3/88

ELEMENT # 57413/3000 (BOT)



WELL NAME:

FLOWING GRADIENT SURVEY

DATE: 19. 03. 88

BOMB No. 1 DATA

ELEMENT No. 24708
 RECORDER No. 12978
 ENGAGE SYLUS: 10:36
 ELEMENT RANGE: 3300 PSI
 CLOCK DATA: A15014 x 3HR
 DISENGAGE: 12:30
 15 TALS

BOMB No. 2 DATA

ELEMENT No. 57413 ELEMENT RANGE: 300081
RECORDER No. 61127 CLOCK DATA: A16081x342
ENGAGE SYLUS: 10:36 DISENGAGE: 12:30
15765

Kee **LUBRICATOR DATA**

PRESSURE WITH D.W.T. IN 2179 - OUT 2317
TIME PRESSURED: 10:43
TIME DEPRESSURED: 12:23

[illegible]

General Comments:



**** WANCOOCHA #2 HUTTON ****
STATIC PRESSURE GRADIENT

TEST DATE: 23/3/88

TOP PRESSURE ELEMENT 24708/3300				BOTTOM PRESSURE ELEMENT 57413/3000		
DEPTH (FT.)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)
LUB	0.2485	404.7	----	0.2601	407.8	----
984	0.4372	712.7	0.3130	0.4566	713.2	0.3104
1969	0.6241	1018.6	0.3105	0.6535	1019.4	0.3108
2953	0.8462	1383.3	0.3707	0.8890	1385.6	0.3722
3937	1.0960	1795.5	0.4190	1.1539	1797.6	0.4187
4593	1.2609	2068.9	0.4168	1.3296	2070.9	0.4166
4922	1.3432	2205.8	0.4159	1.4181	2208.6	0.4185
5109	1.3918	2286.7	0.4326	1.4684	2286.8	0.4185
LUB	0.2519	410.3	----	0.2621	410.9	----

GENERAL REMARKS:

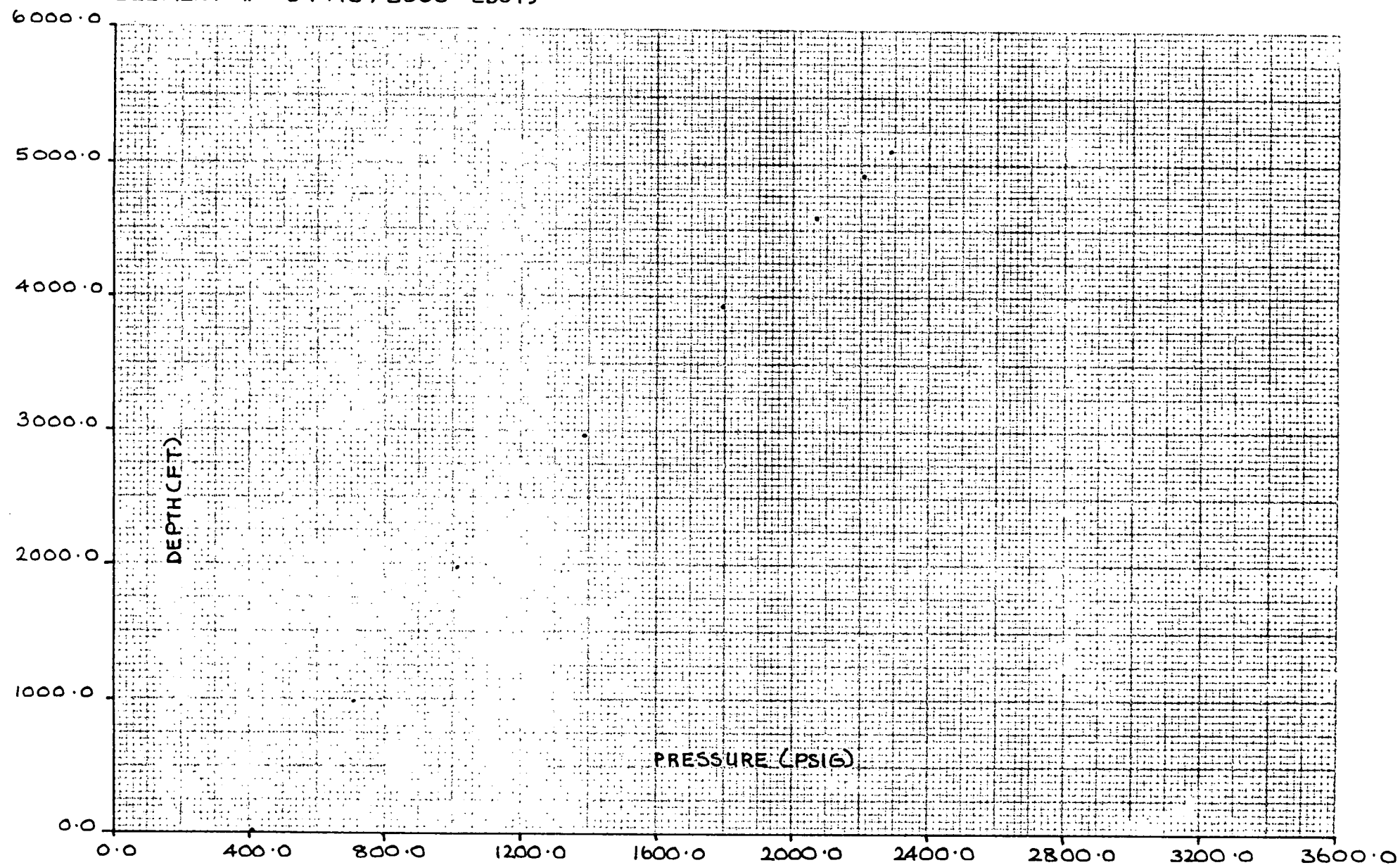
MBHT 216 F

DWT IN: 414
DWT OUT: 414
MAX BHT: 216

ELEMENT 24708/3300 CALIBRATED 16.2.88
ELEMENT 57413/3000 CALIBRATED 16.2.88

WANCOOCHA # 2 HUTTON - STATIC PRESSURE GRADIENT - 23/3/88

ELEMENT # 57413/3000 (BOT)





WIRELINE REPORT

Page 1 of 3

0420

WELL: Wancoocha #2 Hutton

DATE: 19.03.88

PROGRAM: Flow & Build up survey

PURPOSE OF WORK: Well evaluation.

REPORT OF WORK PERFORMED: 19th March 1988

08:45 Completed rig in of the wireline unit
09:50 RIH with a 1.75" B/bar to 1560m KB
as per the program.
10:08 POOH no obstruction in the tubing.
10:25 Depressure the lubricator
Rigged tools for the flowing gradient.
10:53 RIH with BHP gauges to perform a
flowing gradient survey.
11:58 POOH from the bottom stop 1557m KB
12:23 Depressured the lubricator
Recovered the charts

PTD

John R. Peterson
OPERATOR'S SIGNATURE

WORK PERFORMED BY: G Peterson, S Oakman OF Expertest

WELL DATA:

Tubing Size: 73 mm FWHP: 2317 kpa SIWHP:
Sub Surface S.V./Landing Nipple @ S.S.D. @ 1551.11m
"X" Nipple @ 1564.09m "N"/"XN" Nipple @ other
Min I.D. 47.6 mm @ 1564.09m Packer @ 1562.05m & 1706.36m
Perforated Interval: 1564.8m - 1568.5m Hutton

Forward to: Petroleum Engineering - Adelaide
Production Department - Moomba



WIRELINE REPORT

Page 2 of 3

0421

WELL: Warrcoocha #2 Hutton

DATE: 19.03.88

PROGRAM: Flow & Build up survey

PURPOSE OF WORK: Well evaluation

REPORT OF WORK PERFORMED: 19th March 1988

Redressed B.H.P. gauges for the Flow & Build up survey

12:49 Pressured up the lubricator.

13:49 R I H with the B.H.P. gauges

14:08 B.H.P. gauges at 1557m.k.B. as per program.

Note Well has been previously flowing to the tanks on 12/64 choke

14:30 Commenced the Flow & build up survey.

John R. Peterson

OPERATOR'S SIGNATURE

WORK PERFORMED BY: G. Peterson, S. Oakman OF Expertest

WELL DATA:

Tubing Size: 73mm FWHP: SIWHP:

Sub Surface S.V./Landing Nipple @ S.S.D. @:

"X" Nipple @ "N"/"XN" Nipple @ other

Min I.D. @ Packer @

Perforated Interval: 1564.8m - 1568.5m Hutton

Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba



WIRELINE REPORT

0422
Page 3 of 3

WELL: Wancoocha #2 Hutton

DATE: 23.03.88

PROGRAM: Flow & Build up Survey

PURPOSE OF WORK: Well evaluation

REPORT OF WORK PERFORMED: 23RD March 1988.

06:45 B.H.P. gauges off Bottom.
07:04 B.H.P. gauge in the lubricator.
08:04 Depressured lub completed Build up

Redressed B.H.P. gauges to perform
a static gradient survey.

08:34 R.I.H. with B.H.P. gauges to perform a
static gradient survey.

09:30 B.H.P. gauges at the bottom stop 1557mKB.
09:40 POOH

10:10 Depressured lub completed survey
Secured well.

Heath R. R.
OPERATOR'S SIGNATURE

WORK PERFORMED BY: G. Peterson S. Oakman OF Expertest

WELL DATA:

Tubing Size: 73 mm FWHP: SIWHP: 2855 Kpa.

Sub Surface S.V./Landing Nipple @ S.S.D. @:

"X" Nipple @ "N"/"XN" Nipple @ other

Min I.D. @ Packer @

Perforated Interval: 1564.8m - 1568.5m Hutton.

Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba

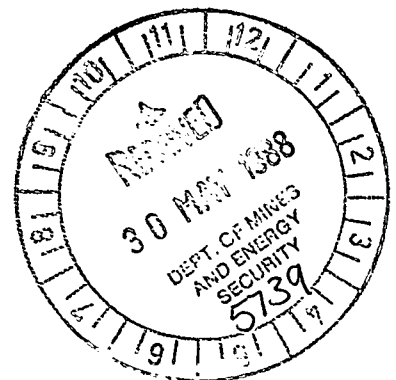
WANCOOCHA #2 (PATCHAWARRA)
SUMMARY OF SINGLE RATE TEST
23RD - 24TH MARCH 1988

23/3/88: Turned flow from plant into lease test tank @ 1400 hrs on 9/64" choke.
Opened choke to 16/64" @ 1405 hrs.
Cut choke to 12/64" @ 1730 hrs.
Flowed well on 12/64" choke for 16.5 hrs.

F.T.H.P. (final)	=	1365	kPa
F.W.H.T. (final)	=	71	°C
Oil Production	=	2.099	m ³ /d
Water Production	=	39.890	m ³ /d

24/3/88: Turned well flow back to plant @ 1000 hrs.
End of test.

WP3786G(94)
LGA:ih
15th April 1988



CLIENT <u>Santos Ltd</u> WELL <u>Wancoocha #2</u> ZONE <u>Patchawarra.</u>						 128 RICHMOND ROAD HAMILTON SA 5022 PORTAL ADDRESS PO BOX 364 COMMERCEVILLE 5023						UNITS OF MEASUREMENTS TBG <u>kpa</u> CSG TEMP <u>OC</u>		DATE <u>23.03.88</u> PAGE NO. <u>1</u> OPERATOR <u>G Peterson</u>		
DATE TIME	FLOWING WELL DATA					OIL/CONDENSATE PRODUCTION						WATER PRODUCTION				REMARKS
	CSG PRESS	TBG PRESS	TEMP	CHOKE SIZE	BS&W	API	TOTAL DIP INCHES	PRODUCTION DIP INCHES	TANK PRODUCTION M ³	PRODUCTION RATE	CUMMULATIVE PRODUCTION M ³	TOTAL WATER DIP INCHES	TANK PRODUCTION M ³	PRODUCTION RATE	CUMMULATIVE PRODUCTION M ³	
23 RD	March 1988															
14:00	-	807	-	9/64			Turned flow from the plant into lease test tank									
		Tank		5/4			0"					0"		Tare Dip only.		
14:05					Open		choke up to 16/64									
15:00	-	800	70°	14/64			10.25	1.5	0.39	9.59	0.39	8.75"	2.33	55.99	2.33	
16:00	-	876	70°	14/64			19.15	1.5	-	-	0.39	18"	2.46	59.19	4.79	
17:00	-	876	70°	14/64			29.25	1.5	-	-	0.39	27.75	2.59	62.39	7.38	
17:30	-	883	70°	14/64			Cut choke back to 12/64									
18:00	-	1172	70°	12/64			37.5	1.5	-	-	0.39	36"	2.19	52.79	9.57	
20:00	-	1048	69°	12/64			50.5	2.25	0.19	2.39	0.58	48.25	3.26	39.19	12.83	
22:00	-	1110	68°	12/64			63.25	2.75	0.13	1.59	0.71	60.5	3.26	39.19	16.09	
24 th	March 1988															
02:00	-	1193	68°	12/64			89.5	4"	0.33	1.99	1.04	85.5	6.66	39.99	22.75	
06:00	-	1275	69°	12/64			116"	5"	0.26	1.59	1.3	111"	6.79	40.79	29.54	
10:00		1365	71°	12/64			142.5"	6.75"	0.46	2.79	1.76	135.75	6.59	39.59	36.13	
10:00							Turned well flow back to plant test completed.									