

# Manitoba



Energy and Mines

Petroleum

1395 Ellice Avenue Suite 360  
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CANADA

PH: (204) 945-6577  
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February 4, 1997

Mr. D. G. Yellowlees, Team Leader  
Manitoba/Sask. Operations  
Chevron Canada Resources  
500 - Fifth Avenue S.W.  
Calgary, AB T2P 0L7

Dear Mr. Yellowlees:

Crown Royalty and Freehold Oil Tax Calculations  
NVSU #1 and Daly #1 & #3

The Branch has conducted a review of Chevron's spreadsheets submitted for calculation of Crown royalties and freehold oil taxes in NVSU #1 and Daly #1 & #3. The following outlines our comments/recommended changes which are consistent with reporting and regulatory requirements set forth in the Crown Royalty and Incentive Regulation and the Oil and Gas Tax Act and regulations:

Crown Royalties Spreadsheets

1. Rounding;

"AWP (allocated well production)" and "ABP (allocated base production)" should be rounded to "0.1" and shown as such.

"base royalty volume (BRV)" and "total royalty volume (TRV)" should be rounded to "0.01" and shown as such.

2. Crown royalties should be calculated as a volume ( $m^3$ ), therefore;

Replace columns OORP (old oil royalty payable), NORP (new oil royalty payable) and TORP (total oil royalty payable) with the following formula to calculate what we term as the CRV (calculated royalty volume -  $m^3$ );

Round  $((TRV - BRV) * 0.55 + BRV) * \text{work.int.} * \text{crown int.}$ , 2  
which is rounded to "0.01"

3. Total oil royalty payable (TORP) should be calculated as follows;

$CRV * \text{wellhead price} = \text{total oil royalty payable (TORP)}$

4. Report format:

To meet our reporting requirements and to conform with Chevron's current reporting format, we request that the spreadsheet insert a "wellhead price" column to be inserted after "working interest factor" column.

It is also not necessary for ABP, BRV and TRV to be shown in the main part of the spreadsheet. These columns can be hidden off to the side of the spreadsheet, if possible.

Freehold Tax Spreadsheets

1. Rounding;

"AWP (allocated well production)" and "ABP (allocated base production)" should be rounded to "0.1" and shown as such.

"old oil freehold tax rate (OOFTR)", "new oil freehold tax rate - based on ABP (NOFTR1) and "new oil freehold tax rate - based on AWP (NOFTR2)" should be rounded to "0.01" and shown as such.

2. Freehold tax should be calculated as a %, therefore;

Replace column TFTP (total freehold tax payable) with two new columns,

a) "Total Freehold Tax Volume - m<sup>3</sup> (TFTV)", which equals (OOFTV + NOFTV)

b) "Total Tax Rate - % (TTR)", calculated by the following formula;

Round (If (AWP < 0.1, 0,  $\frac{TFTV}{AWP} * 100$ ), 2)

3. "Total tax payable (TTP)" should be calculated as follows;

AWP \* total tax rate % \* average wellhead price \* work.int. \* freehold int.  
rounded to "0.01"

4. Report format:

To meet our reporting requirements and to conform with Chevron's current reporting format, we request that the spreadsheet insert a "wellhead price" column to be inserted after "working interest factor" column.

It is also not necessary for ABP, OOFTR, NOFTR1, NOFTR2, OOFTV, NOFTV and TFTV to be shown in the main part of the spreadsheet. These columns can be hidden off to the side of the spreadsheet, if possible.

#### Base Production Decline

Attachment #1 is the Branch's revised "base production decline" calculation for Daly #1, based on the inclusion of the well at 15-05-10-28 WPM as new oil status.

The Branch historical production decline is to be used in all subject units for determination of new oil.

#### Schedule

As previously discussed, we will proceed with amendments once the recommended changes to royalties/tax spreadsheets are implemented as follows;

NVSU #1     June, 1996 to July 31, 2001  
Daly Unit #1   July, 1996 to July 31, 2001  
Daly Unit #3   August, 1996 to July 31, 2001

Chevron will advise unit working interest owners of the new oil status approval and methodology for calculation of Crown royalties and freehold oil tax.

If you have any comments or questions regarding the proposed modifications to the royalty and tax calculations and spreadsheets, please contact the undersigned at (204)945-6570 or John Fox at (204)945-6574 on matters related to the determination of base production decline rates.

Sincerely,



Carol D. Martiniuk, Manager  
Administration and Geology

c.c. C. Isfeld  
J.N. Fox

## ATTACHMENT NO. 1

HISTORICAL PRODUCTION DECLINE FOR  
DETERMINATION OF NEW OIL

YEAR	MONTH	NVSU NO. 1 Production		DALY UNIT NO. 1 Production		DALY UNIT NO. 3 Production	
		Daily (m3/d)	Monthly (m3)	Daily (m3/d)	Monthly (m3)	Daily (m3/d)	Monthly (m3)
1996	June	212.1	6363.0				
	July	210.7	6531.4	34.0	1054.0		
	August	209.3	6488.0	33.9	1049.9	68.4	2120.4
	September	207.9	6237.0	33.7	1012.0	68.1	2043.1
	October	206.5	6402.1	33.6	1041.7	67.8	2102.1
	November	205.1	6154.4	33.5	1004.1	67.5	2025.5
	December	203.8	6317.3	33.3	1033.6	67.2	2084.0
1997	January	202.4	6275.3	33.2	1029.5	66.9	2075.0
	February	201.1	5630.4	33.1	926.3	66.6	1866.0
	March	199.7	6192.2	33.0	1021.5	66.4	2057.0
	April	198.4	5952.6	32.8	984.7	66.1	1982.1
	May	197.1	6110.2	32.7	1013.5	65.8	2039.3
	June	195.8	5873.8	32.6	977.0	65.5	1965.0
	July	194.5	6029.3	32.4	1005.6	65.2	2021.7
	August	193.2	5989.2	32.3	1001.7	64.9	2013.0
	September	191.9	5757.5	32.2	965.6	64.7	1939.6
	October	190.6	5909.9	32.1	993.9	64.4	1995.6
	November	189.4	5681.2	31.9	958.0	64.1	1922.9
	December	188.1	5831.6	31.8	986.1	63.8	1978.4
1998	January	186.9	5792.8	31.7	982.3	63.5	1969.8
	February	185.6	5197.5	31.6	883.7	63.3	1771.5
	March	184.4	5716.1	31.4	974.6	63.0	1952.8
	April	183.2	5495.0	31.3	939.5	62.7	1881.6
	May	181.9	5640.4	31.2	967.0	62.5	1936.0
	June	180.7	5422.2	31.1	932.1	62.2	1865.4
	July	179.5	5565.7	30.9	959.4	61.9	1919.3
	August	178.3	5528.7	30.8	955.7	61.6	1911.0
	September	177.2	5314.8	30.7	921.2	61.4	1841.3
	October	176.0	5455.5	30.6	948.2	61.1	1894.5
	November	174.8	5244.4	30.5	914.1	60.8	1825.4
	December	173.7	5383.2	30.3	940.8	60.6	1878.1
1999	January	172.5	5347.5	30.2	937.2	60.3	1870.0
	February	171.4	4797.9	30.1	843.2	60.1	1681.7
	March	170.2	5276.6	30.0	929.8	59.8	1853.9
	April	169.1	5072.5	29.9	896.3	59.5	1786.3
	May	168.0	5206.8	29.8	922.6	59.3	1837.9
	June	166.8	5005.3	29.6	889.3	59.0	1770.9
	July	165.7	5137.8	29.5	915.4	58.8	1822.0
	August	164.6	5103.7	29.4	911.8	58.5	1814.1
	September	163.5	4906.2	29.3	878.9	58.3	1748.0
	October	162.5	5036.1	29.2	904.7	58.0	1798.5
	November	161.4	4841.2	29.1	872.1	57.8	1732.9
	December	160.3	4969.4	29.0	897.6	57.5	1783.0
2000	January	159.2	4936.3	28.8	894.1	57.3	1775.2
	February	158.2	4587.2	28.7	833.2	57.0	1653.5

revised prod. dec.  
for Daly #1 based  
on 15-6-10-28 being  
a new oil well.  
Carol I will advise  
Chevron in her  
response to their  
letter

Revised January 8, 1997

**ATTACHMENT NO. 1**

**HISTORICAL PRODUCTION DECLINE FOR  
DETERMINATION OF NEW OIL**

YEAR	MONTH	NVSU NO. 1 Production		DALY UNIT NO. 1 Production		DALY UNIT NO. 3 Production	
		Daily (m3/d)	Monthly (m3)	Daily (m3/d)	Monthly (m3)	Daily (m3/d)	Monthly (m3)
	March	157.1	4871.0	28.6	887.2	56.8	1759.9
	April	156.1	4682.5	28.5	855.2	56.5	1695.8
	May	155.0	4806.4	28.4	880.2	56.3	1744.7
	June	154.0	4620.5	28.3	848.5	56.0	1681.2
	July	153.0	4742.8	28.2	873.4	55.8	1729.7
	August	152.0	4711.3	28.1	869.9	55.6	1722.2
	September	151.0	4529.0	28.0	838.6	55.3	1659.4
	October	150.0	4648.9	27.8	863.2	55.1	1707.3
	November	149.0	4469.0	27.7	832.0	54.8	1645.1
	December	148.0	4587.3	27.6	856.4	54.6	1692.6
2001	January	147.0	4556.8	27.5	853.1	54.4	1685.3
	February	146.0	4088.5	27.4	767.5	54.1	1515.6
	March	145.0	4496.5	27.3	846.4	53.9	1670.7
	April	144.1	4322.5	27.2	815.9	53.7	1609.9
	May	143.1	4436.9	27.1	839.8	53.4	1656.3
	June	142.2	4265.2	27.0	809.5	53.2	1596.0
	July	141.2	4378.1	26.9	833.3	53.0	1642.0

# Production Report

Group : Daly 59A Date : January 8, 1997 8:46:39 am  
Well : Rundle M & H Daly 15-05-10-28W1 User : DAN  
: 00/15-05-010-28W1/0

## Production Data from April, 1974 to June, 1996 (cont.)

Year	Days On days	Monthly Oil m3	Avg Daily Oil m3/d
Dec., 1993	31	15.3	0.493548
Jan., 1994	31	15	0.483871
Feb., 1994	28	12.9	0.460714
Mar., 1994	31	14.9	0.480645
Apr., 1994	30	14.1	0.47
May., 1994	31	14.4	0.464516
Jun., 1994	30	14.7	0.49
Jul., 1994	31	15.2	0.490323
Aug., 1994	31	15.4	0.496774
Sep., 1994	30	13.2	0.44
Oct., 1994	31	12.6	0.406452
Nov., 1994	30	12.3	0.41
Dec., 1994	31	12.6	0.406452
Jan., 1995	31	12.6	0.406452
Feb., 1995	28	11.3	0.403571
Mar., 1995	30	12.5	0.416667
Apr., 1995	30	11.9	0.396667
May., 1995	31	12.2	0.393548
Jun., 1995	30	10.1	0.336667
Jul., 1995	30	11.1	0.37
Aug., 1995	31	11.8	0.380645
Sep., 1995	30	11.3	0.376667
Oct., 1995	31	11.2	0.36129
Nov., 1995	30	11.2	0.373333
Dec., 1995	31	11	0.354839
Jan., 1996	30	11.7	0.39
Feb., 1996	29	10.7	0.368966
Mar., 1996	28	11.1	0.396429
Apr., 1996	30	11	0.366667
May., 1996	31	11	0.354839
Jun., 1996	30	11.3	0.376667

} 0.375 w30PD



**Chevron**

December 24, 1996

Ms. Carol Martiniuk  
Manitoba Energy and Mines  
360 - 1395 Ellice Avenue  
Winnipeg, Manitoba  
R3G 3P2

**Chevron Canada Resources**  
500 - Fifth Avenue S.W.  
Calgary, Alberta T2P 0L7  
Phone (403) 234-5000  
Fax (403) 234-5124

Dave Yellowlees  
Team Leader  
Manitoba/Sask Operations

Dear Ms. Martiniuk

**Re: Crown Royalty and Freehold Oil Tax Calculations  
NVSU #1, Daly #1, Daly #3**

Enclosed is a disk that contains Excel spreadsheets which recalculate royalties and taxes based upon the approved methodology developed by Chevron and the Petroleum Branch. Because of the delay in getting these spreadsheets to you we have gone ahead and completed the calculations for the following months in an effort to expedite the amendment process.

NVSU #1	June to November 1996
Daly #1	July to November 1996
Daly #3	August to November 1996

Also please note that while preparing the spreadsheets for Daly #1 we realized that the 15-05-10-28 W1 well was a new oil status well. And based upon the methodology we developed the "Base Production Decline For Determination of New Oil" is supposed to be the unit base production net of new oil production. As a result I have taken the liberty to modify the Base Production Decline for Daly #1 to take into account the 15-05 well. The impact is negligible considering this well only produces on average 10 to 11 m3 per month. The revised Base Production Declines are shown on Attachment #1 and the spreadsheet is also on the enclosed disk.

Please review the enclosed spreadsheets and advise us at your earliest possible convenience as to any problems you may have with either the spreadsheet calculations or the revised Base Production Declines for Daly #1. Once we have your approval we will then formally advise the unit working interest owners of the new oil status and the revised methodology for calculating crown royalties and freehold oil taxes.

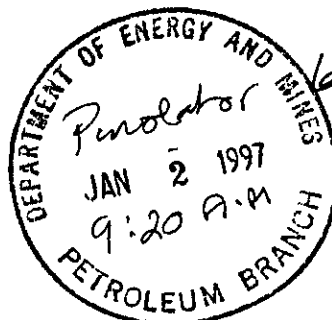
Please direct any questions to either Dale Lewis at (204) 748-6338 or myself at (403) 234-5021.

Yours truly,

*D.G. Yellowlees*

D.G. Yellowlees

pc: Dale Lewis



Attachment #1

Base Production Decline For  
Determination of New Oil

15-5-10-28  
720D  
JAN-JUN/96  
NEW OIL  
W30PD

Year	Month	NVSU #1 8.0% p.a.		** Revised ** Daly Unit #1 4.7% p.a.		Daly Unit #3 5.2% p.a.	
		m3/day	m3	m3/day	m3	m3/day	m3
1996	June	212.1	6363.9				
	July	210.7	6532.2	34.0	1054.0		
	August	209.3	6488.7	33.9	1049.9	68.4	2120.8
	September	207.9	6237.5	33.7	1012.0	68.1	2043.5
	October	206.5	6402.4	33.6	1041.7	67.8	2102.5
	November	205.2	6154.6	33.5	1004.1	67.5	2025.8
	December	203.8	6317.3	33.3	1033.5	67.2	2084.3
1997	January	202.4	6275.2	33.2	1029.5	66.9	2075.3
	February	201.1	5630.2	33.1	926.2	66.7	1866.3
	March	199.7	6191.8	32.9	1021.4	66.4	2057.3
	April	198.4	5952.2	32.8	984.6	66.1	1982.3
	May	197.1	6109.6	32.7	1013.4	65.8	2039.5
	June	195.8	5873.1	32.6	976.9	65.5	1965.2
	July	194.5	6028.4	32.4	1005.5	65.2	2021.9
	August	193.2	5988.2	32.3	1001.6	64.9	2013.1
	September	191.9	5756.4	32.2	965.5	64.7	1939.7
	October	190.6	5908.6	32.1	993.7	64.4	1995.7
	November	189.3	5679.9	31.9	957.9	64.1	1923.0
	December	188.1	5830.1	31.8	986.0	63.8	1978.4
	January	186.8	5791.2	31.7	982.1	63.5	1969.9
	February	185.6	5195.9	31.6	883.6	63.3	1771.5
1998	March	184.3	5714.3	31.4	974.4	63.0	1952.8
	April	183.1	5493.1	31.3	939.3	62.7	1881.7
	May	181.9	5638.3	31.2	966.8	62.5	1936.0
	June	180.7	5420.1	31.1	932.0	62.2	1865.4
	July	179.5	5563.4	30.9	959.3	61.9	1919.2
	August	178.3	5526.3	30.8	955.5	61.6	1910.9
	September	177.1	5312.4	30.7	921.1	61.4	1841.2
	October	175.9	5452.9	30.6	948.0	61.1	1894.4
	November	174.7	5241.8	30.5	913.9	60.8	1825.3
	December	173.6	5380.4	30.3	940.6	60.6	1878.0
	January	172.4	5344.5	30.2	936.9	60.3	1869.8
	February	171.3	4795.1	30.1	843.0	60.1	1681.6
	March	170.1	5273.5	30.0	929.6	59.8	1853.7
	April	169.0	5069.4	29.9	896.1	59.5	1786.1
1999	May	167.9	5203.4	29.8	922.3	59.3	1837.6
	June	166.7	5002.0	29.6	889.1	59.0	1770.7
	July	165.6	5134.3	29.5	915.1	58.8	1821.8
	August	164.5	5100.1	29.4	911.6	58.5	1813.9



**Attachment #1**

**Base Production Decline For  
Determination of New Oil**

Year	Month	NVSU #1 8.0% p.a.		** Revised ** Daly Unit #1 4.7% p.a.		Daly Unit #3 5.2% p.a.	
		m3/day	m3	m3/day	m3	m3/day	m3
2000	September	163.4	4902.6	29.3	878.7	58.3	1747.7
	October	162.3	5032.3	29.2	904.4	58.0	1798.2
	November	161.2	4837.5	29.1	871.8	57.8	1732.6
	December	160.2	4965.4	28.9	897.4	57.5	1782.6
	January	159.1	4932.3	28.8	893.8	57.3	1774.9
	February	158.0	4425.3	28.7	804.2	57.0	1596.2
	March	157.0	4866.8	28.6	886.9	56.8	1759.6
	April	155.9	4678.4	28.5	854.9	56.5	1695.4
	May	154.9	4802.1	28.4	879.9	56.3	1744.3
	June	153.9	4616.2	28.3	848.2	56.0	1680.8
	July	152.8	4738.3	28.2	873.0	55.8	1729.2
	August	151.8	4706.7	28.1	869.6	55.5	1721.8
2001	September	150.8	4524.5	27.9	838.3	55.3	1659.0
	October	149.8	4644.1	27.8	862.8	55.1	1706.9
	November	148.8	4464.4	27.7	831.7	54.8	1644.6
	December	147.8	4582.4	27.6	856.1	54.6	1692.1
	January	146.8	4551.9	27.5	852.7	54.3	1684.8
	February	145.9	4084.0	27.4	767.2	54.1	1515.1
	March	144.9	4491.4	27.3	846.1	53.9	1670.2
	April	143.9	4317.5	27.2	815.6	53.6	1609.3
	May	143.0	4431.7	27.1	839.4	53.4	1655.8
	June	142.0	4260.1	27.0	809.2	53.2	1595.4
	July	141.1	4372.8	26.9	832.9	52.9	1641.4
	August	140.1	4343.7	26.8		52.7	1634.3



October 21, 1996

Mr. Dave Yellowlees  
Eastern Business Unit  
Chevron Canada Resources  
500 Fifth Ave SW  
Calgary AB T2P 0L7

Dear Mr. Yellowlees:

**RE: NEW OIL STATUS**

The Branch has approved new oil status in North Virden Scallion Unit No. 1 (NVSU No. 1) and Daly Unit No.'s 1 and 3 based on establishment of a historical production decline for each unit. The Branch's letter to Chevron dated September 4, 1996 discusses in detail the decline curve determination.

New oil status for production from NVSU No. 1 and Daly Unit No.'s 1 and 3 exceeding the historical production decline is approved for the following period:

NVSU No.1	June 1, 1996 to July 31, 2001
Daly Unit No. 1	July 1, 1996 to July 31, 2001
Daly Unit No. 3	August 1, 1996 to July 31, 2001

Attachment No. 1 lists the historical unit production rates to be used to determine the volume of new oil for each month of the approval period. Production from infill wells drilled on 8 ha spacing and horizontal wells qualifies as holiday oil or new oil and is not governed by this approval.

Chevron's proposed methodology for calculating royalty and production tax is approved subject to review and acceptance by the Branch of a sample spreadsheet (Lotus 1-2-3- or compatible) for the royalty/tax calculations. The sample spreadsheet should be submitted to Carol Martiniuk, Manager, Administration and Geology. Amendments for the months of June, July and August 1996 will be processed by the Branch when the sample spreadsheet is reviewed and accepted. At that time our current methodology for calculation of royalty/tax at NVSU No. 1 and Daly Unit No.'s 1 and 3 will be converted. Chevron will have to advise unit working interest owners of the new oil status approval and methodology for calculating royalty/tax.

If you have any questions regarding this approval please contact John Fox at (204) 945-6574 on engineering issues or Carol Martiniuk at (204) 945-6570 on matters relating to royalty/tax calculations.

Yours truly,

A handwritten signature in cursive script, appearing to read "L. R. Dubreuil".

L. R. Dubreuil  
Director  
Petroleum and Energy Branch

cc: Engineering  
Administration

**ATTACHMENT NO. 1**

**HISTORICAL PRODUCTION DECLINE FOR  
DETERMINATION OF NEW OIL**

YEAR	MONTH	NVSU NO. 1 Production		DALY UNIT NO. 1 Production		DALY UNIT NO. 3 Production	
		Daily (m3/d)	Monthly (m3)	Daily (m3/d)	Monthly (m3)	Daily (m3/d)	Monthly (m3)
1996	June	212.1	6363.0				
	July	210.7	6531.4	34.4	1066.4		
	August	209.3	6488.0	34.3	1062.2	68.4	2120.4
	September	207.9	6237.0	34.1	1023.9	68.1	2043.1
	October	206.5	6402.1	34.0	1053.9	67.8	2102.1
	November	205.1	6154.4	33.9	1016.0	67.5	2025.5
	December	203.8	6317.3	33.7	1045.7	67.2	2084.0
1997	January	202.4	6275.3	33.6	1041.6	66.9	2075.0
	February	201.1	5630.4	33.5	937.2	66.6	1866.0
	March	199.7	6192.2	33.3	1033.5	66.4	2057.0
	April	198.4	5952.6	33.2	996.3	66.1	1982.1
	May	197.1	6110.2	33.1	1025.4	65.8	2039.3
	June	195.8	5873.8	32.9	988.5	65.5	1965.0
	July	194.5	6029.3	32.8	1017.4	65.2	2021.7
	August	193.2	5989.2	32.7	1013.5	64.9	2013.0
	September	191.9	5757.5	32.6	976.9	64.7	1939.6
	October	190.6	5909.9	32.4	1005.6	64.4	1995.6
	November	189.4	5681.2	32.3	969.3	64.1	1922.9
	December	188.1	5831.6	32.2	997.7	63.8	1978.4
1998	January	186.9	5792.8	32.1	993.8	63.5	1969.8
	February	185.6	5197.5	31.9	894.1	63.3	1771.5
	March	184.4	5716.1	31.8	986.1	63.0	1952.8
	April	183.2	5495.0	31.7	950.5	62.7	1881.6
	May	181.9	5640.4	31.6	978.4	62.5	1936.0
	June	180.7	5422.2	31.4	943.1	62.2	1865.4
	July	179.5	5565.7	31.3	970.7	61.9	1919.3
	August	178.3	5528.7	31.2	966.9	61.6	1911.0
	September	177.2	5314.8	31.1	932.1	61.4	1841.3
	October	176.0	5455.5	30.9	959.4	61.1	1894.5
	November	174.8	5244.4	30.8	924.8	60.8	1825.4
	December	173.7	5383.2	30.7	951.9	60.6	1878.1
1999	January	172.5	5347.5	30.6	948.2	60.3	1870.0
	February	171.4	4797.9	30.5	853.1	60.1	1681.7
	March	170.2	5276.6	30.3	940.8	59.8	1853.9
	April	169.1	5072.5	30.2	906.9	59.5	1786.3
	May	168.0	5206.8	30.1	933.4	59.3	1837.9
	June	166.8	5005.3	30.0	899.8	59.0	1770.9
	July	165.7	5137.8	29.9	926.2	58.8	1822.0
	August	164.6	5103.7	29.8	922.5	58.5	1814.1
	September	163.5	4906.2	29.6	889.3	58.3	1748.0
	October	162.5	5036.1	29.5	915.3	58.0	1798.5
	November	161.4	4841.2	29.4	882.3	57.8	1732.9
	December	160.3	4969.4	29.3	908.2	57.5	1783.0
2000	January	159.2	4936.3	29.2	904.6	57.3	1775.2
	February	158.2	4587.2	29.1	843.0	57.0	1653.5

**ATTACHMENT NO. 1**

**HISTORICAL PRODUCTION DECLINE FOR  
DETERMINATION OF NEW OIL**

YEAR	MONTH	NVSU NO. 1 Production		DALY UNIT NO. 1 Production		DALY UNIT NO. 3 Production	
		Daily (m3/d)	Monthly (m3)	Daily (m3/d)	Monthly (m3)	Daily (m3/d)	Monthly (m3)
	March	157.1	4871.0	29.0	897.6	56.8	1759.9
	April	156.1	4682.5	28.8	865.2	56.5	1695.8
	May	155.0	4806.4	28.7	890.6	56.3	1744.7
	June	154.0	4620.5	28.6	858.5	56.0	1681.2
	July	153.0	4742.8	28.5	883.6	55.8	1729.7
	August	152.0	4711.3	28.4	880.2	55.6	1722.2
	September	151.0	4529.0	28.3	848.5	55.3	1659.4
	October	150.0	4648.9	28.2	873.3	55.1	1707.3
	November	149.0	4469.0	28.1	841.8	54.8	1645.1
	December	148.0	4587.3	28.0	866.5	54.6	1692.6
2001	January	147.0	4556.8	27.8	863.1	54.4	1685.3
	February	146.0	4088.5	27.7	776.5	54.1	1515.6
	March	145.0	4496.5	27.6	856.4	53.9	1670.7
	April	144.1	4322.5	27.5	825.5	53.7	1609.9
	May	143.1	4436.9	27.4	849.7	53.4	1656.3
	June	142.2	4265.2	27.3	819.1	53.2	1596.0
	July	141.2	4378.1	27.2	843.1	53.0	1642.0



Chevron Canada Resources  
500 - Fifth Avenue S.W.  
Calgary, Alberta T2P 0L7  
Phone (403) 234-5000  
Fax (403) 234-5124

Eastern Business Unit

**FAX COVER PAGE**

DATE: October 11, 1996 NO. OF PAGES: 5  
TO: John Fox  
COMPANY: Manitoba Energy & Mines FAX NO.: (204) 945-0586  
FROM: Dave Yellowlees ROOM #: \_\_\_\_\_ G&A #: \_\_\_\_\_

☐ Rush/Urgent

☐ Confidential

☐ Regular Service

## Attachment #1

Base Production Decline For  
Determination of New Oil

Year	Month	NVSU #1 8.0% p.a.		Daly Unit #1 4.7% p.a.		Daly Unit #3 5.2% p.a.	
		m3/day	m3	m3/day	m3	m3/day	m3
1996	June	212.1	6363.9				
	July	210.7	6532.2	34.4	1067.3		
	August	209.3	6488.7	34.3	1063.1	68.4	2120.8
	September	207.9	6237.5	34.2	1024.8	68.1	2043.5
	October	206.5	6402.4	34.0	1054.8	67.8	2102.5
	November	205.2	6154.6	33.9	1016.8	67.5	2025.8
	December	203.8	6317.3	33.8	1046.5	67.2	2084.3
1997	January	202.4	6275.2	33.6	1042.4	66.9	2075.3
	February	201.1	5630.2	33.5	937.9	66.7	1866.3
	March	199.7	6191.8	33.4	1034.3	66.4	2057.3
	April	198.4	5952.2	33.2	997.0	66.1	1982.3
	May	197.1	6109.6	33.1	1026.2	65.8	2039.5
	June	195.8	5873.1	33.0	989.2	65.5	1965.2
	July	194.5	6028.4	32.8	1018.2	65.2	2021.9
	August	193.2	5988.2	32.7	1014.2	64.9	2013.1
	September	191.9	5756.4	32.6	977.6	64.7	1939.7
	October	190.6	5908.6	32.5	1006.3	64.4	1995.7
	November	189.3	5679.9	32.3	970.0	64.1	1923.0
	December	188.1	5830.1	32.2	998.4	63.8	1978.4
1998	January	186.8	5791.2	32.1	994.5	63.5	1969.9
	February	185.6	5195.9	32.0	894.7	63.3	1771.5
	March	184.3	5714.3	31.8	986.7	63.0	1952.8
	April	183.1	5493.1	31.7	951.1	62.7	1881.7
	May	181.9	5638.3	31.6	979.0	62.5	1936.0
	June	180.7	5420.1	31.5	943.7	62.2	1865.4
	July	179.5	5563.4	31.3	971.4	61.9	1919.2
	August	178.3	5526.3	31.2	967.5	61.6	1910.9
	September	177.1	5312.4	31.1	932.7	61.4	1841.2
	October	175.9	5452.9	31.0	960.0	61.1	1894.4
	November	174.7	5241.8	30.8	925.4	60.8	1825.3
	December	173.6	5380.4	30.7	952.5	60.6	1878.0
1999	January	172.4	5344.5	30.6	948.7	60.3	1869.8
	February	171.3	4795.1	30.5	853.6	60.1	1681.6
	March	170.1	5273.5	30.4	941.3	59.8	1853.7
	April	169.0	5069.4	30.2	907.4	59.5	1786.1
	May	167.9	5203.4	30.1	934.0	59.3	1837.6
	June	166.7	5002.0	30.0	900.3	59.0	1770.7
	July	165.6	5134.3	29.9	926.7	58.8	1821.8
	August	164.5	5100.1	29.8	923.0	58.5	1813.9

## Attachment #1

Base Production Decline For  
Determination of New Oil

Year	Month	NVSU #1 8.0% p.a.		Daly Unit #1 4.7% p.a.		Daly Unit #3 5.2% p.a.	
		m3/day	m3	m3/day	m3	m3/day	m3
2000	September	163.4	4902.6	29.7	889.8	58.3	1747.7
	October	162.3	5032.3	29.5	915.8	58.0	1798.2
	November	161.2	4837.5	29.4	882.8	57.8	1732.6
	December	160.2	4965.4	29.3	908.7	57.5	1782.6
	January	159.1	4932.3	29.2	905.1	57.3	1774.9
	February	158.0	4425.3	29.1	814.3	57.0	1596.2
	March	157.0	4866.8	29.0	898.0	56.8	1759.6
	April	155.9	4678.4	28.9	865.7	56.5	1695.4
	May	154.9	4802.1	28.7	891.0	56.3	1744.3
	June	153.9	4616.2	28.6	858.9	56.0	1680.8
	July	152.8	4738.3	28.5	884.0	55.8	1729.2
	August	151.8	4706.7	28.4	880.6	55.5	1721.8
2001	September	150.8	4524.5	28.3	848.8	55.3	1659.0
	October	149.8	4644.1	28.2	873.7	55.1	1706.9
	November	148.8	4464.4	28.1	842.2	54.8	1644.6
	December	147.8	4582.4	28.0	866.9	54.6	1692.1
	January	146.8	4551.9	27.9	863.5	54.3	1684.8
	February	145.9	4084.0	27.7	776.9	54.1	1515.1
	March	144.9	4491.4	27.6	856.7	53.9	1670.2
	April	143.9	4317.5	27.5	825.8	53.6	1609.3
	May	143.0	4431.7	27.4	850.0	53.4	1655.8
	June	142.0	4260.1	27.3	819.4	53.2	1595.4
	July	141.1	4372.8	27.2	843.4	52.9	1641.4
	August	140.1	4343.7	27.1		52.7	1634.3



**Attachment #2****North Virden Scallion Unit #1  
Waterflood Optimization  
June 1996 Field Work Summary**

1. Repair 9-16 to 4-22 Water Transit Line	AFE 740-6-902	\$ 43,000
2. Reactivate 8-16-11-26 W1	AFE 712-6-404	\$ 35,000
3. Upgrade 2-21-11-26 W1 Sub-Pump	AFE 712-6-900	\$ 50,000
4. 1-28-11-26 W1 Conversion	AFE 714-6-902	\$ 40,000
5. 4-27-11-26 W1 Conversion	AFE 714-6-901	\$ 40,000
6. 10-15-11-26 W1 Polymer	AFE 740-6-955	\$ 83,000
7. 12-13-11-26 W1 Polymer	AFE 740-6-953	\$ 107,000
8. 8-33-11-26 W1 Polymer	AFE 740-6-954	\$ 52,000
Total		\$ 450,000

Reference: Chevron

Fax No: (204) 945-0586

Date: 01-OCT-96

Total No. of Pages: 3  
(including this page)

**FROM:**

John N. Fox, P. Eng.  
Petroleum Branch, Energy & Mines  
Phone: (204) 945-6574

**TO:**

Name: DAVE YELLOWLEES / JOHN FALCK

Branch: CHEVRON CANADA RESOURCES

Fax No: (403) 234-5124

**Comments:**

ATTACHED IS THE PROPOSED HISTORICAL PRODUCTION  
TABLE FOR DETERMINATION OF NEW OIL FOR  
NVSU #1 & DALY UNIT NO'S 1 & 3. YOUR REQUEST  
TO COMMENCE APPROVAL IN NVSU #1 IN JUNE IS  
UNDER REVIEW. PLEASE ADVISE ME IN WRITING OF  
CHEVRON'S INVESTMENTS IN NVSU #1 IN JUNE 1996 IN  
SUPPORT OF YOUR REQUEST. PLEASE CALL IF YOU  
Originals will be: WANT TO GET TOGETHER WED/THURS  
WHEN I'M IN CALGARY.  
Mailed to you \_\_\_\_\_ Mailed upon request \_\_\_\_\_ Remain on file \_\_\_\_\_

## ATTACHMENT NO. 1

HISTORICAL PRODUCTION DECLINE FOR  
DETERMINATION OF NEW OIL

YEAR	MONTH	NVSU NO. 1		DALY UNIT NO. 1		DALY UNIT NO. 3	
		Monthly Production		Monthly Production		Monthly Production	
		(m3)		(m3)		(m3)	
1996	June	215.1	6452.3				
	July		6409.4	33.7	1047.2		
	August		6366.8		1043.1	67.1	2080.9
	September		6324.5		1039.0		2071.9
	October		6282.5		1035.0		2063.0
	November		6240.7		1030.9		2054.0
	December		6199.3	6330.1	1026.9		2045.2
1997	January		6158.1		1022.9		2036.3
	February		6117.2		1018.9		2027.5
	March		6076.5		1014.9		2018.7
	April		6036.1		1010.9		2010.0
71251	May		5996.0		1007.0		2001.3
	June		5956.2		1003.0		1992.7
	July		5916.6		999.1		1984.0
	August		5877.3		995.2		1975.5
	September		5838.3		991.3		1966.9
	October		5799.5		987.4		1958.4
	November		5760.9		983.6		1950.0
	December		5722.7	1200%	979.7	23455	1941.5
1998	January		5684.6		975.9		1933.1
	February		5646.9		972.1		1924.8
	March		5609.3		968.3		1916.4
	April		5572.1		964.5		1908.2
	May		5535.0		960.7		1899.9
65772	June		5498.3		957.0		1891.7
	July		5461.7		953.2		1883.5
	August		5425.4		949.5		1875.4
	September		5389.4		945.8		1867.3
	October		5353.6		942.1		1859.2
	November		5318.0		938.4		1851.1
	December		5282.7		934.8		1843.1
1999	January		5247.6		931.1		1835.2
	February		5212.7		927.5		1827.2
	March		5178.1		923.8		1819.3
	April		5143.7		920.2		1811.5
	May		5109.5		916.6		1803.6
	June		5075.5		913.0		1795.8
	July		5041.8		909.5		1788.1
	August		5008.3		905.9		1780.3
	September		4975.0		902.4		1772.6
	October		4942.0		898.8		1765.0
	November		4909.1		895.3		1757.3
	December		4876.5		891.8		1749.8

10315

11

# ATTACHMENT NO. 1

## HISTORICAL PRODUCTION DECLINE FOR DETERMINATION OF NEW OIL

YEAR	MONTH	NVSU NO. 1	DALY UNIT NO. 1	DALY UNIT NO. 3
		Monthly Production	Monthly Production	Monthly Production
		(m3)	(m3)	(m3)
2000	January	4844.1	888.3	1742.2
	February	4811.9	884.9	1734.7
	March	4780.0	881.4	1727.2
	April	4748.2	878.0	1719.7
	May	4716.7	874.5	1712.2
	June	4685.3	871.1	1704.8
	July	4654.2	867.7	1697.5
	August	4623.3	864.3	1690.1
	September	4592.5	860.9	1682.8
	October	4562.0	857.6	1675.5
	November	4531.7	854.2	1668.3
	December	4501.6	850.9	1661.1
2001	January	4471.7	847.6	1653.9
	February	4442.0	844.3	1646.8
	March	4412.5	841.0	1639.6
	April	4383.1	837.7	1632.5
	May	4354.0	834.4	1625.5
	June	4325.1	831.1	1618.5
	July	4296.3	827.9	1611.5
	August	4267.8	824.6	1604.5

07-AUG-96

# ULRICH - UNIT - PRODUCTION '96

MONTH	NVSU #1 *		DALY #1	DALY #3	
	TOTAL	EX. INFILL WELLS		TOTAL	TOTAL EX. INFILL WELLS
JAN	6732.6	6662.2	1074.5	2363.7	2219.6
FEB	6260.6	6195	985.5	2161.5	2025.1
MAR	6740.4	6670.2	1027.3	2361.9	2216.2
APR	6434.7	6367.4	1010.5	2294.9	2154.8
MAY	6584.5	6514.4	1007.2	2312.4	2170.7
JUN	6646.8	6569.6	1039.9	2264.0	2125.8
JUL	6909.4	6860.7	1039.7	2227.5	2104.3

AUG

'95	AVG.	6874.1	226.1 m <sup>3</sup> /d	1040.2	34.2 m <sup>3</sup> /d	72.3	2196.5
'95	4TH QU AVG.	6750.8 m <sup>3</sup>	222.1 m <sup>3</sup> /d	1028.1	33.8 m <sup>3</sup> /d	71.2	2165.4
'96	6 MONTH AVG	6496.5 m <sup>3</sup>	213.7 m <sup>3</sup> /d	1024.2	33.6 m <sup>3</sup> /d	70.7	2152.0

## \* EXCLUDING INFILL WELLS

NVSU #1	June	July
9D-23-11-26	11.4	12.9
10D-23	19.9	22.5
11D-23	Ø ADD.P.	—
14D-23	Ø ADD.P.	—
15D-23	Ø ADD.P.	—
13C-24	.3	.3
1D-26	Ø ADD.P.	—
2D-26	Ø ADD.P.	—
3D-26	45.6	13.0

DALY UNIT #3	June	July
5A-12		
5B-12		
12A-12		
12B-12		
13B-12		
14B-12		

(see other sheet) ←



September 4, 1996

Mr. L. Skow, Reservoir Engineer  
Eastern Business Unit  
Chevron Canada Resources  
500 Fifth Avenue SW  
Calgary AB T2P 0L7

Dear Mr. Skow:

**Re: New Oil Status**

The Branch has completed its review of your application for new oil status in North Virden Scallion Unit No. 1 (NVSU No. 1) and Daly Unit No.'s 1 & 3 and for special royalty/tax treatment for workovers in Routledge Unit No. 1.

The Branch has determined proposed historical production declines for NVSU No. 1 and Daly Unit No.'s 1 and 3. In general the Branch determined the historical production declines using the preceding 5-year period, 1990-95. During the past 3 years, combined production from the units has declined 22.8%, equal to an exponential decline rate of 8.6% p.a. In comparison between 1990-92 the combined unit exponential decline rate was only 4.3% p.a.

The purpose of the historical production decline is to establish a baseline for determination of incremental recoverable reserves resulting from waterflood modifications. A cursory examination of Chevron's operations indicates combined water injection into the 3 units was reduced by 39.5% between 1992 and 1995. Total fluid production (oil+water) has declined 35.2% over the same period. The reduction in injection appears to have had a negative impact on production and unit oil recovery. In establishing the unit historical production decline rates the Branch balanced the current and pre-1993 unit performance. The proposed individual unit decline rates are outlined in the following sections.

## **NVSU No. 1**

The Branch proposes a historical production decline of 8.0% p.a. (exponential) for NVSU No.1. The proposed decline was determined over the period 1990-1995, excluding production from the 1989 infill wells. The proposed decline blends the current decline rate of 11.4% p.a. (1993-95) and the pre-1993 decline rate of 6.5% p.a.

### **Daly Unit No. 1**

The Branch proposes a historical production decline of 4.7% p.a. (exponential) for Daly No.1. The proposed decline was determined over the period 1990-1995.

### **Daly Unit No. 3**

The Branch approved a historical production decline rate of 1.0% p.a. (exponential) in Daly Unit No. 3 in 1984 for waterflood modifications done during that year. That approval has been extended three times with the current 5-year approval ending June 30, 1999. The Branch is prepared to modify this approval recognizing the 1% decline may not provide sufficient incentive for Chevron to proceed with it's proposed waterflood modifications in the unit.

The Branch proposes a historical production decline of 5.2% p.a. (exponential) for Daly No. 3. The proposed decline was determined over the period 1992-1995. Under Option A outlined in our letter dated June 26, 1996 the change in the historical production decline rate from 1% p.a. to 5.2% p.a. takes effect August 1, 1996, the month the Branch predicts unit production will drop below the 1% historical production decline.

### **New Oil Status Approval**

New oil status in NVSU No.1 and Daly Unit No.'s 1 & 3 will be approved for a 5-year period, beginning July 1, 1996 for NVSU No. 1 and Daly Unit No. 1 and August 1, 1996 for Daly Unit No. 3. The Branch will supply Chevron with a table for each unit listing the monthly base unit production determined from the historical decline production.

Royalty and production tax are currently calculated differently in NVSU No. 1 and Daly Unit No. 3. The Branch has compared the methods of calculating royalty and production tax proposed by Chevron and the Branch and is prepared to approved Chevron's method.

### **Routledge Unit No. 1**

The Branch sent a proposal to industry (July 17, 1996) regarding changes to our incentive programs. One proposed change is to amend the definition of a major workover under the Marginal Well Major Workover Program to include "any workover designed to increase recovery from the pool". The Branch has requested industry provide comments on our proposal by September 1, 1996.

Chevron plans to install high volume artificial lift equipment in Routledge Unit No. 1 beginning in 1997. Changes to the marginal well major workover incentive program should be finalized before Chevron plans to commence these workovers. The Branch proposes to deal with the issue of whether to include the installation of high volume artificial lift equipment in the marginal well major workover incentive program as part of our incentive program review, as opposed to considering it separately as an application for special royalty/tax treatment. The Branch does however have the following concerns with including installation of high volume artificial lift equipment in the marginal well major workover incentive program:

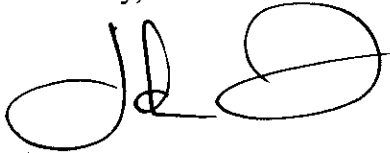
- (1) high volume lift equipment can be moved from location to location;

- (2) installation of high volume lift equipment accelerates production versus recovering incremental reserves;
- (3) the wells included in Chevron's program appear to currently produce more than 1 m3/d, the cut-off to qualify as a marginal well; and
- (4) the economics of high volume lift equipment installation appear quite attractive without any incentive.

Chevron may wish to comment on the Branch's concerns in their response to our incentives proposal.

If you have any questions in response to this letter, please don't hesitate to contact the undersigned at (204) 945-6574.

Yours truly,

A handwritten signature in black ink, consisting of a large, stylized 'J' followed by a series of loops and a final horizontal stroke.

John N. Fox, P.Eng.  
Chief Petroleum Engineer

cc. Administration





## Memorandum

Date August 26, 1996

To Bob Dubreuil  
Director  
Petroleum & Energy Branch

From John N. Fox  
Chief Petroleum Engineer

Subject **New Oil Status**

Telephone

In response to the Branch's deficiency letter, Chevron submitted (July 26, 1996) revised historical production decline estimates for NVSU No. 1 and Daly Unit No. 3. The company also applied for special royalty/tax treatment for production optimization activities planned for Routledge Unit No. 1.

### Recommendations

It is recommended that new oil status be granted for NVSU No.1 and Daly Unit No. 1 for a 5-year period July 1, 1996 to June 30, 2001. The proposed historical production decline rates for determination of new oil are; NVSU No.1 - 8.0% p.a.; and Daly Unit No. 1 - 4.7% p.a. It is recommended that the historical production decline rate for new oil status approval for Daly Unit No. 3 be changed from 1.0% p.a. to 5.2% p.a. effective August 1, 1996.

Chevron's request for special royalty/tax treatment for the installation of high volume artificial lift equipment in Routledge Unit No.1 should be considered with other comments on the Branch's proposed changes to the marginal well major Workover incentive program.

### Discussion

Chevron has applied for new oil status for NVSU No.1 and Daly Unit No. 1 and for modification of the historical production decline rate in Daly Unit No. 3. The Branch has reviewed unit production to determine a historical production decline rate for each unit. In general the Branch has used the preceding 5-year period 1990 - 1995 to establish the historical production decline rate.

During the past 3 years, 1993-1995, combined production from the units has declined 22.8%, equal to a decline rate of 8.6% p.a. In comparison between 1990-1992 the combined unit production decline was only 4.3% p.a. The doubling of the decline in the past 3 years has made it difficult for the Branch to determine an appropriate historical production decline rate for each unit.

The Branch believes Chevron's interest in selling their Manitoba properties and their emphasis on financial performance ( limited capital investment and operating cost reductions) over the past 2 years has had a negative on unit production. In response to this operating philosophy, Chevron has reduced combined injection into the 3 units by 39.5%, from 4253 m<sup>3</sup>/d in 1992 to 2573 m<sup>3</sup>/d in 1995. The reduction in injection in turn has resulted in a 35.2% drop in total fluid (oil+water) production from 4486 m<sup>3</sup>/d in 1992 to 2907 m<sup>3</sup>/d in 1995 ( note: the number of active producers during the same period dropped only 4.9%).

First | Fold

New oil status can be granted by the Director to oil that is produced from an old oil well that can be reasonably attributed to an increase in reserves as a result of an enhanced recovery project. With respect to an existing waterflood, new oil status has been previously applied to incremental reserves resulting from waterflood modifications. Under current operating conditions the combined ultimate recovery from NVSU No. 1 and Daly Unit No.'s 1 & 3 is substantially less than would have been estimated on December 31, 1992; 1992 -  $2.82 \times 10^6 \text{ m}^3$  versus 1995 -  $1.02 \times 10^6 \text{ m}^3$ . In estimating the historical unit production decline rates the Branch has tried to balance current and pre-1993 unit performance, recognizing without capital investment the current decline rates will continue and Crown royalty/tax revenues will decline accordingly. Individual unit historical production decline rates are discussed in the following sections.

#### NVSU No. 1

Chevron has proposed a "most likely" decline of 10.3% p.a. based on unit production between 1992 - 1996, excluding production from the 1989 infill wells. The Branch has matched the unit production history between 1979 - 1992 using a hyperbolic decline (see Fig. 1). As illustrated between 1993 - 1995 unit production has dropped rapidly below this trend. The Branch estimates unit production declined 11.4% p.a. between 1993 - 1995. The rapid decline coincides with a 39% reduction in injection volumes between 1992 - 1995, from  $2874 \text{ m}^3/\text{d}$  in 1992 to  $1745 \times 10^3 \text{ m}^3/\text{d}$  in 1995.

Chevron's 1989 & 1991 applications for infill drilling in NVSU No. 1 included historical production forecasts for the unit. The production forecasts assumed an exponential decline rate of 6.5% p.a. The 1989 unit production forecast estimated recoverable reserves between 1996 - 2011 of  $785.8 \times 10^3 \text{ m}^3$ . Chevron's "most likely" decline of 10.3% p.a. yields estimated recoverable reserves over the same period of  $634.5 \times 10^3 \text{ m}^3$ . The Branch believes the difference in recovery of  $151.3 \times 10^3 \text{ m}^3$  can be partly attributed to reduced injection volumes. It should also be recognized that financial factors such as operating costs, oil prices, return on capital, finding costs and netbacks can also have an impact on the ultimate recovery from the unit.

The Branch is proposing blending the current and previously observed decline trends in NVSU No. 1 to yield the most representative historical production decline for determination of new oil. An exponential decline of 8.0% p.a., which roughly models unit performance between 1990 - 1995 (see Fig. 2) is proposed. Table 1 shows a comparison between the Branch's and Chevron's proposed historical decline rates.

Table 1  
NVSU No. 1 Historical Decline Rate

	Exponential Decline Rate	1996 Average Production	Recoverable Reserves (1996-2011)	Volume of New Oil
Chevron	10.3% p.a.	$210.2 \text{ m}^3/\text{d}$	$634.5 \times 10^3 \text{ m}^3$	$119.2 \times 10^3 \text{ m}^3$
Branch	8.0% p.a.	$211.5 \text{ m}^3/\text{d}$	$724.8 \times 10^3 \text{ m}^3$	$71.8 \times 10^3 \text{ m}^3$

### Daly Unit No. 1

Chevron has proposed a “most likely” decline of 5.7% p.a. based on unit production between 1985 -1993. The Branch has determined a historical production decline for the unit of 4.7% p.a. between 1990-1995 (see Fig. 3). The Branch’s decline matches more closely with Chevron’s “optimistic “ hyperbolic decline (1985 - 1993) for the unit. Table 2 shows a comparison between the Branch’s and Chevron’s proposed historical decline rates.

Table 2  
Daly Unit No. 1 Historical Decline Rate

	Exponential Decline Rate	1996 Average Production	Recoverable Reserves (1996-2009)	Volume of New Oil
Chevron	5.7% p.a.	33.8 m <sup>3</sup> /d	123.0 10 <sup>3</sup> m <sup>3</sup>	9.5 10 <sup>3</sup> m <sup>3</sup>
Branch	4.7% p.a.	34.5 m <sup>3</sup> /d	132.2 10 <sup>3</sup> m <sup>3</sup>	4.9 10 <sup>3</sup> m <sup>3</sup>

### Daly Unit No. 3

Chevron currently has new oil status approval in Daly Unit No. 3 until June 30, 1999 based on a historical production decline of 1.0% p.a. Chevron has proposed modifying the historical production decline to reflect current production performance. Chevron has proposed a “most likely” decline of 5.3% p.a. based on unit production between 1993 -1996, excluding the 1991 infill wells.

Figure 4 is a plot of the unit’s production history. The plot shows an annual increase in production between 1984 - 1992. This increase in production can be attributed to Chevron’s 1984 waterflood modifications which involved a number of injector conversions and reactivations and a significant increase in injection volumes at high injection pressures. In March 1993, Chevron reduced injection 54.9% from 459 m<sup>3</sup>/d in 1992 to an average of 207 m<sup>3</sup>/d between 1993 - 1995. Since 1992 the Branch estimates unit production has declined at 5.2% p.a., closing matching Chevron’s prediction.

There is no doubt that the reduction in injection has had a negative impact on unit production. High pressure, high volume injection has also been responsible for operational and environmental problems, especially with respect to infill drilling. At issue is whether the Branch should modify the historical production decline from the current 1.0% p.a. In a letter to Chevron (26-Jun-96) the Branch suggested two possible options for modifying the historical production decline:

- (a) Modification of the historical production decline rate from 1%/yr to 5.2%/yr when unit production drops below or is predicted to drop below the historical production decline rate.

- (b) Modification of the historical production decline rate from 1%/yr to 5.2%/yr, effective July 1, 1996, on the condition Chevron forgoes new oil status on any production currently qualifying for new oil status under the 1%/yr historical production decline rate.

Note: Unit production using the 5.2% p.a. decline is predicted to drop below the 1.0% p.a. decline in Aug/96 making Options A & B almost identical.

Chevron indicated it's preference for Option A. Table 3 shows a comparison of Crown royalty and taxes payable under the current 1.0% p.a. approval with and without the proposed waterflood modifications and royalty and taxes payable under Option A, using a historical production decline of 5.2% p.a.

Table 3

Daly Unit No. 3  
Crown Royalty & Tax Comparison Option A  
(July/96 to June/99)

Year	Crown Royalty & Tax Revenue (\$M)		
	No Waterflood Modifications 1.0% Decline	Waterflood Modifications 1% Decline	Waterflood Modifications 5.2% Decline
1996	270.3	314.0	295.7
1997	499.5	750.8	742.6
1998	458.7	694.2	668.5
1999	418.8	633.5	596.2
Total	1647.3	2392.5	2303.0

Table 3 shows under the current 1.0% decline Crown revenue assuming no waterflood modifications will total \$1647.3M. Waterflood modifications will result in additional Crown revenue of \$745.2M between 1996 - 1999 assuming the 1.0% decline is not changed. Approval of the 5.2% decline with the waterflood modifications will result in an increase in Crown revenue of \$655.7M and forgone revenue of \$89.5M.

This is not the first time Chevron has requested a change in the established historical production decline for Daly Unit No. 3. It is suggested changing production trends and project economics will resulted in future requests to re-establish the historical production decline. By changing the historical production decline in concert with proposed waterflood modifications that are expected to increase recoverable reserves, the Branch can encourage investment, improve recovery and increase Crown revenue. Table 4 shows a comparison between the Branch's 1.0% p.a., 5.2% p.a. and Chevron's 5.3% p.a proposed historical decline rates.

Table 4  
Daly Unit No. 3 Historical Decline Rate

	Exponential Decline Rate	1996 Average Production	Recoverable Reserves (1996-2009)	Volume of New Oil
Chevron	5.3% p.a.	70.4 m <sup>3</sup> /d	259.5 10 <sup>3</sup> m <sup>3</sup>	98.8 10 <sup>3</sup> m <sup>3</sup>
Branch	1.0% p.a	67.2 m <sup>3</sup> /d	322.0 10 <sup>3</sup> m <sup>3</sup>	39.4 10 <sup>3</sup> m <sup>3</sup>
Branch	5.2% p.a.	68.9 m <sup>3</sup> /d	256.5 10 <sup>3</sup> m <sup>3</sup>	101.8 10 <sup>3</sup> m <sup>3</sup>

### New Oil Status Approval

It is proposed to approve new oil status in NVSU No. 1 and Daly Unit No.'s 1 & 3 for a 5-year period, July 1, 1996 to June 30, 2001. The proposed historical production decline rates are; NVSU No. 1 - 8.0% p.a.; Daly Unit No. 1 - 4.7% p.a.; and Daly Unit No. 3 - 5.2% p.a. Chevron will be provided with a table listing the monthly historical production for each unit for the 5-year approval. The majority of incremental reserves will be recovered during the 5-year approval period.

### Routledge Unit No. 1

Chevron has applied for special royalty/tax treatment for the upgrading of artificial lift equipment on wells in the unit. Chevron plans to install higher volume artificial lift equipment on 12 wells in the unit beginning in 1997 at a cost of \$15,000/well. The company estimates the equipment will initially accelerate production by 3 m<sup>3</sup>/d/well and each well will recover an additional 2100 m<sup>3</sup> over the next 4 years.

The Branch has sent a proposal to industry suggesting the definition of a major workover include "any workover designed to increase recovery from the pool". Installation of higher volume artificial lift equipment could fit into this category. There are some concerns with providing Chevron an incentive for this project;

- (1) low initial cost, a large percentage of which are tangible costs;
- (2) low risk and high reward, based on initial additional production of 3 m<sup>3</sup>/d, payout is less than 4 months; and
- (3) accelerated versus incremental production;

The incentive program changes should be finalized before Chevron plans to commence this project. Therefore it is suggested that the issue of whether to include the installation of high volume artificial lift equipment in the marginal well major workover incentive program be considered with other comments on the proposed incentive program changes. Chevron should be advised of our position.

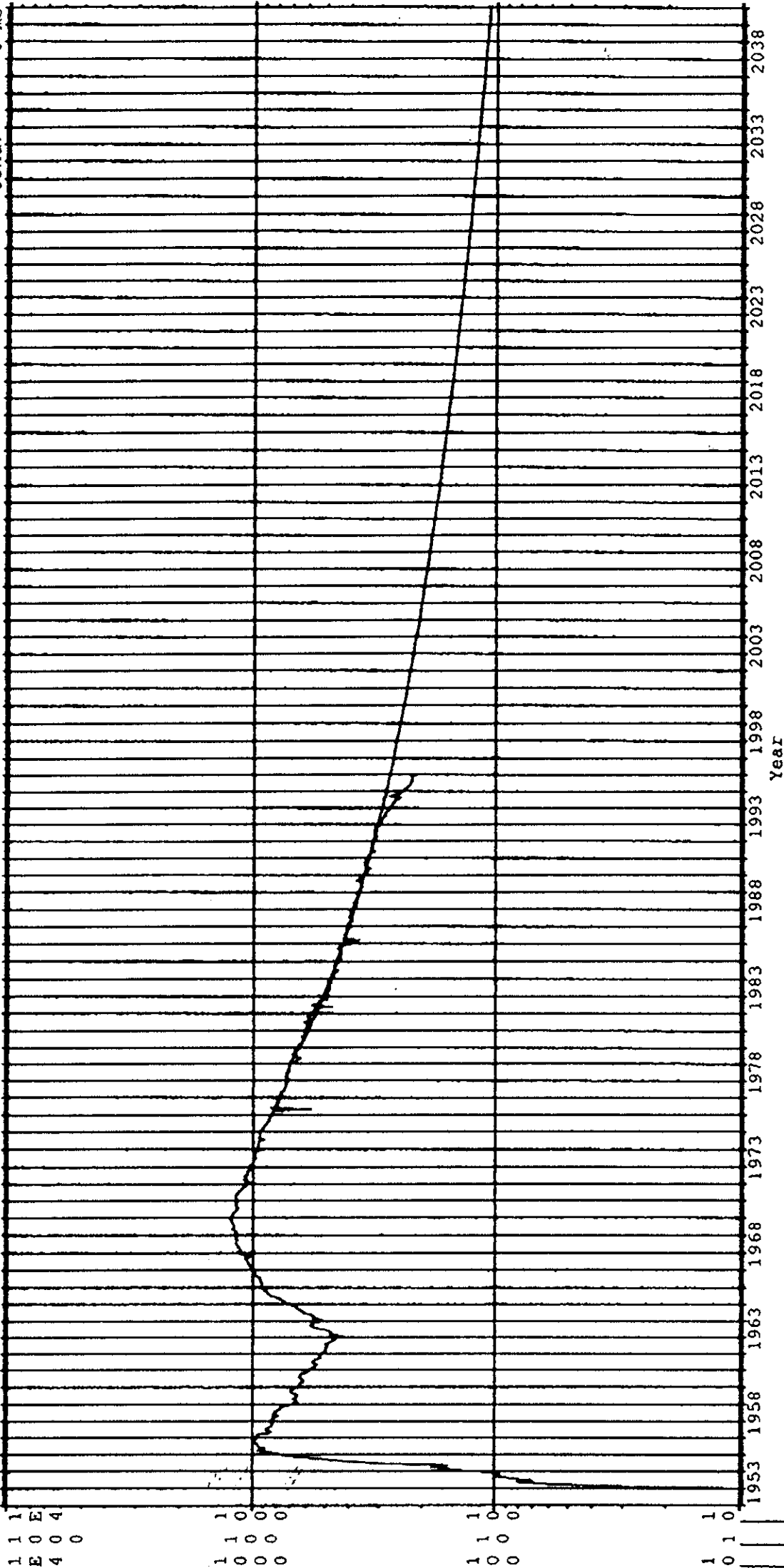
### **Royalty/Tax Calculation**

Chevron has proposed a different methodology for calculating royalty and taxes when new oil status is approved. I have asked Administration to review Chevron's proposal and to determine whether royalties/taxes are calculated differently in NVSU No. 1, VRU No. 1 and Daly Unit No. 3.

Data 01/53-12/95

RR: 2.88791e+06 m3	Tot: 1.26142e+07 m3
--------------------	---------------------

Cond: 0 m3



BRANCH  
HYPERTONIC  
DILUTION  
ESTIMATE

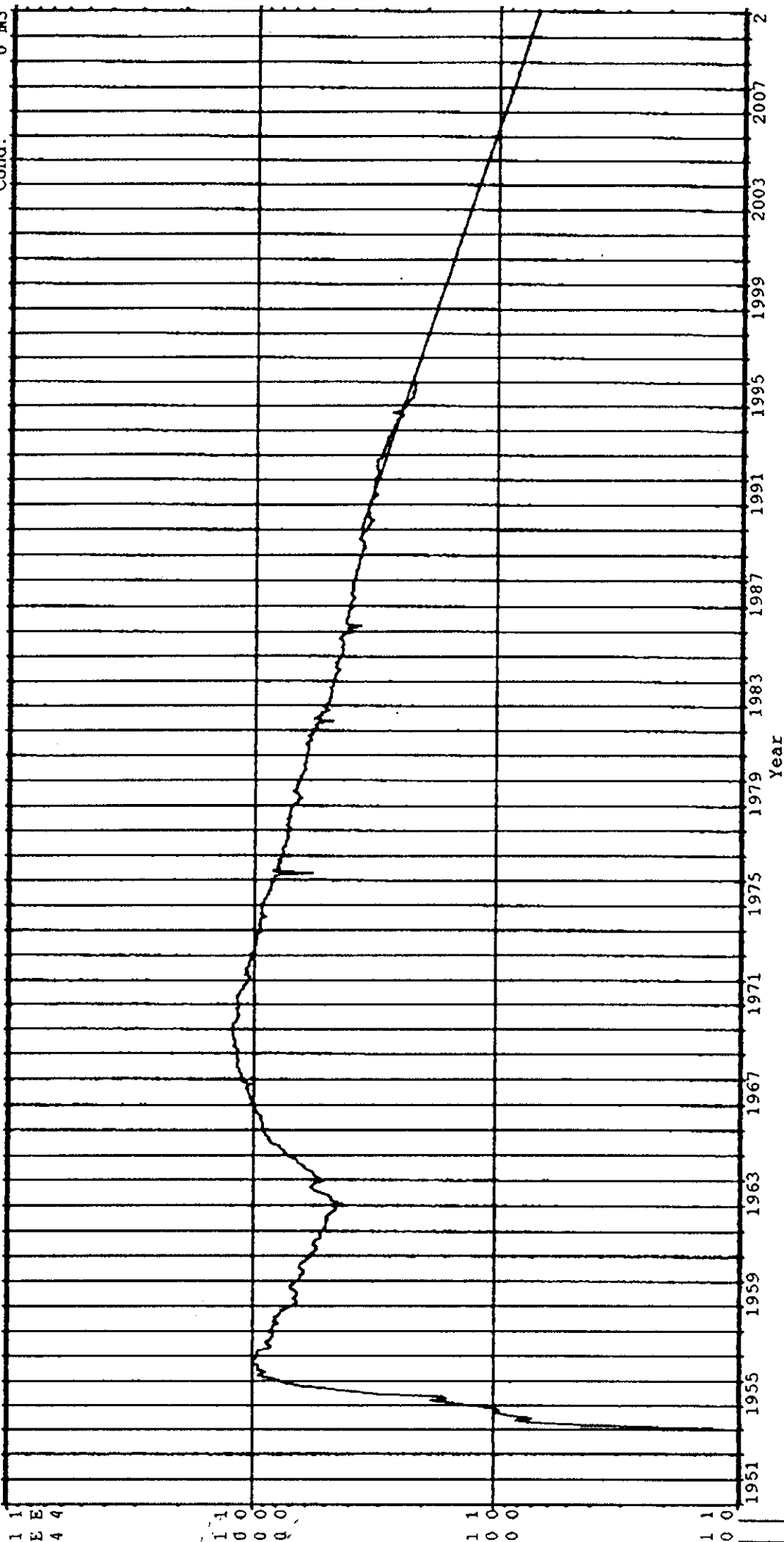
-	Avg Daily Oil - m3/d
-	Not Assigned
-	Decline Before Reduced Inj. - m3/d

**Fig. 1**

NVSU nr 1 (excl. infill wells) Data 01/53-12/95

Current Decline(8.0%) (Rate-Time)  
qi: 370.608 m3/d, Jan, 1990  
qf: 1.62765 m3/d, Feb, 2058  
di(Exp): 7.65406 CTD: 9.72627e+06 m3  
RR: 992971 m3 Tot: 1.07192e+07 m3

Production Cums  
Oil: 9.72627e+06 m3  
Gas: 0 E6m3  
Water: 2.12356e+07 m3  
Cond: 0 m3



Avg Daily Oil - m3/d  
Current Decline(8.0%) - m3/d

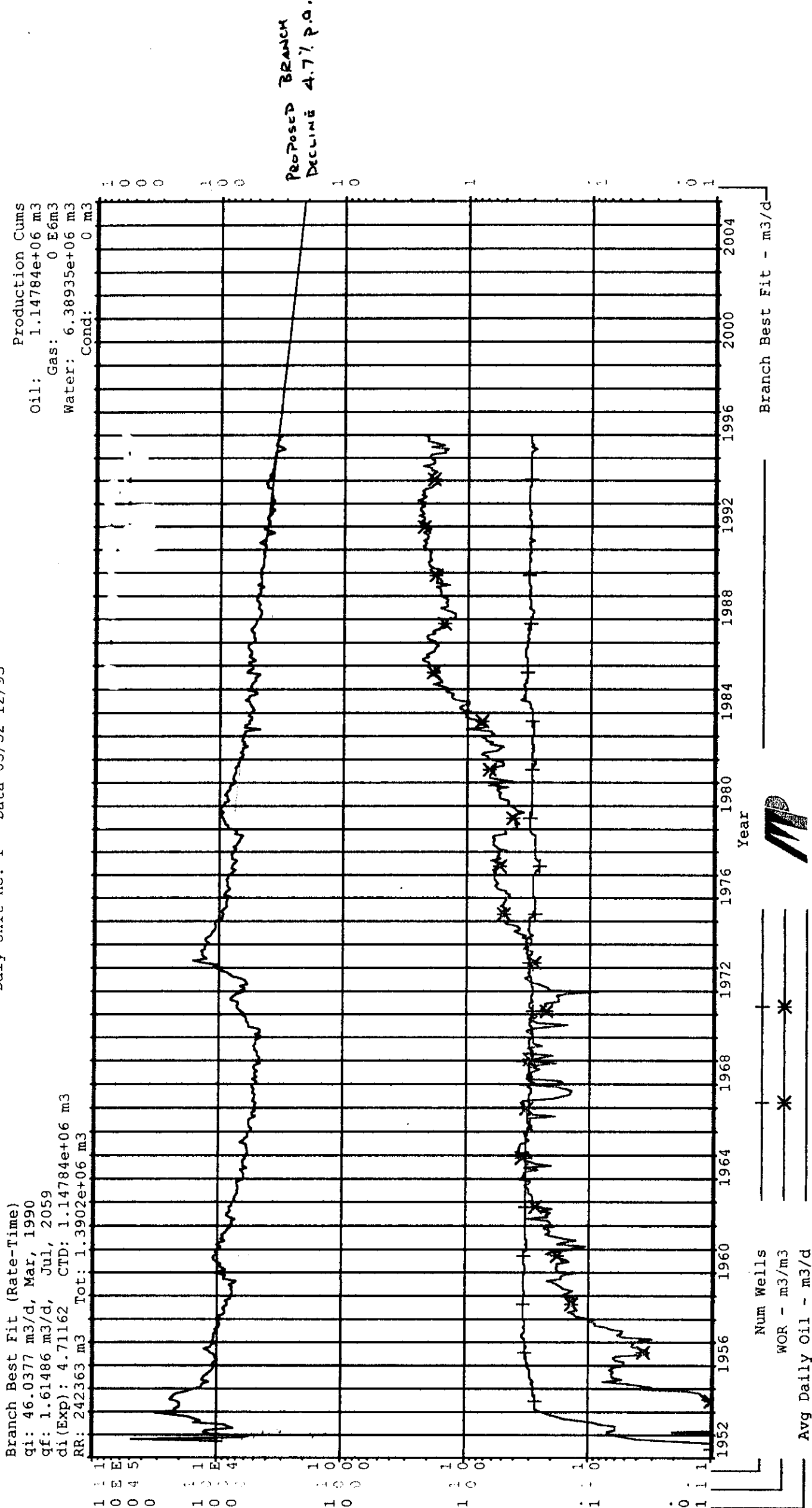


Fig. 2



FIGURE 3

Daily Unit no. 1 Data 05/52-12/95



Daly Unit 3 (excl. infills)    Data 01/52-12/95

Branch Best Fit (Rate-Time)

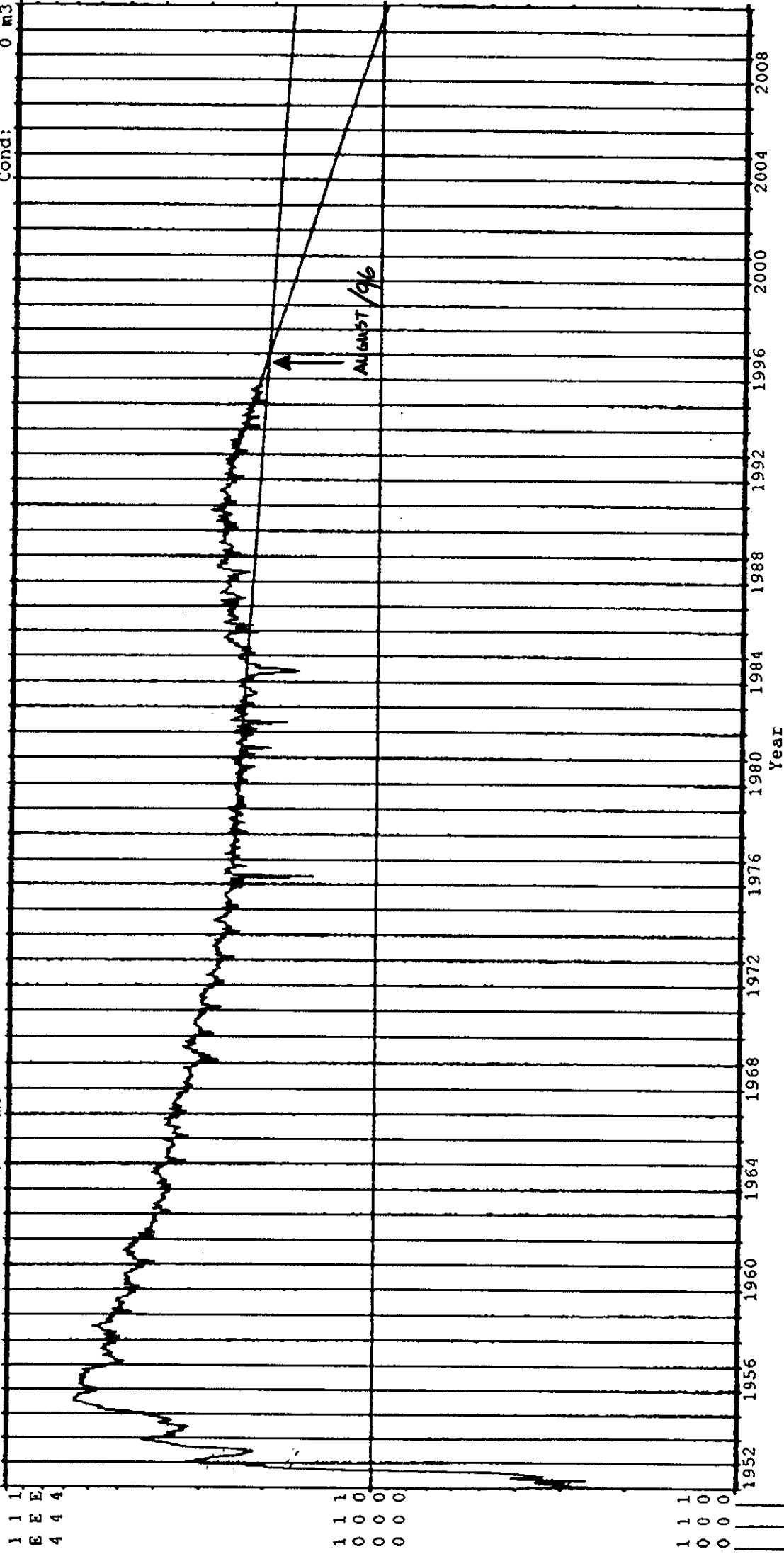
qi: 2667.64 m3, Dec, 1991

qf: 227.33 m3, Dec, 2038

di (Exp): 5.09575    CTD: 1.66894e+06 m3

RR: 437126 m3    Tot: 2.10606e+06 m3

Production Cums  
Oil: 1.66894e+06 m3  
Gas: 0 E6m3  
Water: 1.81057e+06 m3  
Cond: 0 m3



Monthly Oil - m3  
Branch Best Fit - m3  
historic decline(1%) - m3



Fig. 4

ULTIMATE RECOVERABLE RESERVES ESTIMATE - NVSU #1, DAILY UNIT #1 & 3

1/ USING 1992 RATES & DECLINE

$$1992 \quad q_i = 306.4 + 39.5 + 24.9 = 430.8 \text{ L/d}$$

$$\# \text{ of wells} = 164 + 32 + 50 = 246 \text{ wells}$$

$$D = 4.3\%$$

$$q_{+} = 0.4 \text{ m}^3/\text{d}/\text{well} \times 246 \text{ wells} = 98.4$$

$$Q_T = \frac{365 (430.8 - 98.4)}{0.043} = 2.82 \times 10^6 \text{ L}^3$$

2/ USING 1995 RATES & DECLINE

$$q_i = 72.2 + 34.2 + 226 = 332.4$$

$$\# \text{ of wells} = 48 + 30 + 153 = 231$$

$$q_{+} = 231 \times 0.4 \text{ L}^3/\text{d}/\text{well} = 92.4$$

$$D = 8.6\%$$

$$Q_T = \frac{365 (332.4 - 92.4)}{0.086} = 1.02 \times 10^6 \text{ L}^3$$

Date: August 09, 1996

To: John Fox  
Chief Petroleum Engineer

From: Ulrich Oosthuizen  
Petroleum Engineer

Subject: Chevron Waterflood Modification Application

Chevron's revised decline analysis for the Daly Unit 3 and the North Virden Scallion Unit #1 were reviewed. The infill wells were excluded in the production data used for the decline analysis.

#### Daly Unit #3

##### *Decline Analysis (excluding infill wells)*

The Branch has calculated an annual production decline of 5.2% using the exponential decline method. The infill wells were excluded in this analysis. Production data between 12/91- 12/95 is used for this decline analysis. Chevron revised decline analysis for this unit excluding infill wells shows an annual production decline of 5.3% using the exponential decline method.

A comparison of the Branch and Chevron decline analysis reveals that the Branch's calculated current decline trend of 5.2% p.a. better match the production history of the Unit. Figure 1 and 2 are graphical representations of the Branch and Chevron calculated decline curves.

Figure 3 shows that the current decline trend of 5.2% p.a. will drop in August 1996 below the historic decline rate of 1%. Table 1 summarizes the forecast data using the current and the historic decline rate and Chevron's 50% developed case.

The initial production rate for this unit can be based on the data used to establish the current production decline rate of 5.2%. The initial production rate should therefore be 2089.9m<sup>3</sup>/month starting July 31, 1996. Table 2 summarizes the production forecast from July 1996 to July 2002 using the exponential decline rate of 5.2% p.a.

##### *Decline Analysis (including infill wells)*

The current production decline rate for the Daly Unit 3 including the infill wells is estimated at 6.1% p.a. using the exponential decline method. Figure 4 shows the decline analysis for this case. The current decline rate of this Unit will drop below the historic decline rate of 1% in October 1997

The initial production rate for this case will also be based on the data used to establish the current production decline rate of 6.1%. The production rate that can be used to commence on July 31, 1996 is 2296.66 m<sup>3</sup>/month. Table 3 summarizes the production forecast from July 1996 - July 2002.

#### Daly Unit 1

The current exponential the rate for this Unit was estimated to be 4.7% p.a. The same method for Daly Unit 3 will be used to establish the initial production rate for this unit. The initial production rate for July 31, 1996 is 1047.19 m<sup>3</sup>/month based on the data used to determine the current decline rate of 4.7%. Table 4 is a summary of some data that was used to establish the current decline rate. Table 5 summarizes the production forecast from July 01, 1996 to July 01, 2002.

#### North Virden Scallion Unit #1

An examination of the production performance of this Unit shows that the production decline for this unit between January 1979 - December 1989 shows a hyperbolic trend. Figure 4 shows the decline analysis between 1970 and 1989. The production between 1989 and 1995 shows a rapid decline of 11.4% using the exponential method. This rapid production decline coincides with the reduction in water injection that started in the first

quarter of 1993. Figure 5 shows the graph of waterinjection with time. The current production decline of 11.4% seems to forecast the production in the first 4 months of 1996 accurately. Table 6 shows a comparison of the actual production and the production forecast using 11.4%. Table 7 summarizes the production forecast using production decline of 11.4% p.a. from July 01 1996 - July 01, 2002.

Examination of the production period between January 1990 - December 1995 shows that the production decline can be estimated at 8% p.a. using the exponential decline method. The decline curve used to determine this decline rate does not accurately match the current production history of this Unit. Figure 6 shows the results of the decline analysis for the period 01/90 - 12/95. Table 8 summarizes the production forecast using production decline rate of 8% p.a. from July 01, 1996 - July 01, 2002.

#### Recommendation

The following recommendation can be made regarding the Chevron modified waterflood plans:

##### *Daly Unit 3 (excluding infill wells)*

- a) Current exponential production decline rate: 5.2% p.a.
- b) Initial production rate (July 31, 1996): 2099.9 m<sup>3</sup>/month
- c) Intersection 1% & 5.2% decline curve: August, 1996

##### *Daly Unit 3 (including infill wells)*

- a) Current exponential decline rate: 6.2% p.a.
- b) Initial production rate (July 31, 1996): 2296.66 m<sup>3</sup>/month
- c) Intersection 1% & 6.2% decline curve: October, 1997

##### *Daly Unit 1*

- a) Current exponential decline rate: 4.7% p.a.
- b) Initial production rate (July 31, 1996): 1051.3 m<sup>3</sup>/month

##### *NVSU #1*

- a) Current exponential decline rate: 11.4% p.a.
- b) Initial production rate (July 31, 1996): 6409.4 m<sup>3</sup>/month

Table 1

Group :		Daily Unit nr 3 (excl. infill wells)			
Hist.Dat:		01/52-12/95			
		Waterflood modification			
		1996		1986	1996
		Branch Best Fit(5.2%)		Historic Decline (1%)	Chevron
Year		Monthly Oil	m3/month	m3	50% developed (excl. infills)
		m3			Qo
					m3/month
Dec.,	1995	2161.4	2,154.64	2092.63	
Jan.,	1996	2219.6	2,145.27	2090.88	
Feb.,	1996	2025.1	2,135.94	2089.13	
Mar.,	1996	2216.2	2,126.65	2087.38	
Apr.,	1996	2154.84	2,117.40	2085.63	
May.,	1996	2170.7	2,108.20	2083.89	
Jun.,	1996		2,099.03	2082.14	2322.9
Jul.,	1996	2,089.90		2080.4	2400.33
Aug.,	1996		2,080.81	2078.66	2400.33
Sep.,	1996		2,071.76	2076.92	2322.9
Oct.,	1996		2,062.75	2075.18	2400.33
Nov.,	1996		2,053.78	2073.44	2322.9
Dec.,	1996		2,044.85	2071.7	2400.33
Jan.,	1997		2,035.95	2069.97	2762.1
Feb.,	1997	2,027.10		2068.24	2494.8
Mar.,	1997		2,018.28	2066.5	2762.1
Apr.,	1997		2,009.51	2064.77	2673
May.,	1997		2,000.77	2063.05	2762.1
Jun.,	1997		1,992.07	2061.32	2673
Jul.,	1997	1,983.40		2059.59	2762.1
Aug.,	1997		1,974.78	2057.87	2762.1
Sep.,	1997		1,966.19	2056.15	2673
Oct.,	1997		1,957.64	2054.43	2762.1
Nov.,	1997		1,949.12	2052.71	2673
Dec.,	1997		1,940.65	2050.99	2762.1
Jan.,	1998		1,932.21	2049.27	2528.98
Feb.,	1998	1,923.80		2047.55	2284.24
Mar.,	1998		1,915.44	2045.84	2528.98
Apr.,	1998		1,907.11	2044.13	2447.4
May.,	1998		1,898.81	2042.42	2528.98
Jun.,	1998		1,890.55	2040.71	2447.4
Jul.,	1998		1,882.33	2039	2528.98
Aug.,	1998		1,874.15	2037.29	2528.98
Sep.,	1998		1,866.00	2035.59	2447.4
Oct.,	1998		1,857.88	2033.88	2528.98
Nov.,	1998	1,849.80		2032.18	2447.4
Dec.,	1998		1,841.76	2030.48	2528.98

Table 2

DALY UNIT NO. 3 - NEW OIL STATUS (excluded infill)  
HISTORICAL PRODUCTION DECLINE

Year	Month	Monthly Production (m3)
1996	July	2089.95
	August	2080.92
	September	2071.92
	October	2062.96
	November	2054.04
	December	2045.16
1997	January	2036.31
	February	2027.51
	March	2018.74
	April	2010.01
	May	2001.32
	June	1992.67
	July	1984.05
	August	1975.47
	September	1966.93
	October	1958.43
	November	1949.96
	December	1941.53
1998	January	1933.13
	February	1924.77
	March	1916.45
	April	1908.16
	May	1899.91
	June	1891.70
	July	1883.52
	August	1875.37
	September	1867.26
	October	1859.19
	November	1851.15
	December	1843.15

1989.6  
65.38 m<sup>3</sup>/d

62.07 m<sup>3</sup>/d

Table 2

# DALY UNIT NO. 3 - NEW OIL STATUS (excluded infill) HISTORICAL PRODUCTION DECLINE

Year	Month	Monthly Production (m3)	
1999	January	1835.18	
	February	1827.24	
	March	1819.34	
	April	1811.47	
	May	1803.64	
	June	1795.84	58.92
	July	1788.08	
	August	1780.34	
	September	1772.65	
	October	1764.98	
	November	1757.35	
	December	1749.75	
2000	January	1742.19	
	February	1734.65	
	March	1727.15	
	April	1719.68	
	May	1712.25	55.92
	June	1704.84	
	July	1697.47	
	August	1690.13	
	September	1682.82	
	October	1675.55	
	November	1668.30	
	December	1661.09	
2001	January	1653.91	
	February	1646.75	
	March	1639.63	53.10
	April	1632.54	
	May	1625.48	
	June	1618.46	
	July	1611.46	

2002 50.4

2003 47.9

2004 45.4

2005 43.1

2006 40.9

2007 38.9

2008 36.9

2009 35



Table 2 A

Group		Daily Unit nr. 3 (incl. infill wells)		Waterflood Modification	
Hist. Data : 01/52-12/95				1996	
		1996		1989	
		Chevron			
		50% developed (incl. infills)			
Year	Monthly Oil m3	Branch Best Fit (6.1%) m3/month	Historic Decline (1%) m3/month		
Dec., 1995	2315	2296.66	2092.63		
Jan., 1996	2363.7	2285.05	2090.88		
Feb., 1996	2161.5	2273.5	2089.13		
Mar., 1996	2361.9	2262.01	2087.38		
Apr., 1996	2294.9	2250.57	2085.63		
May., 1996	2312.4	2239.19	2083.89		
Jun., 1996		2227.88	2082.14	2422.2	
Jul., 1996		2216.61	2080.4	2502.94	
Aug., 1996		2205.41	2078.66	2502.94	
Sep., 1996		2194.26	2076.92	2422.2	
Oct., 1996		2183.17	2075.18	2502.94	
Nov., 1996		2172.13	2073.44	2422.2	
Dec., 1996		2161.15	2071.7	2502.94	
Jan., 1997		2150.23	2069.97	2726.14	
Feb., 1997		2139.36	2068.24	2462.32	
Mar., 1997		2128.55	2066.5	2726.14	
Apr., 1997		2117.79	2064.77	2638.2	
May., 1997		2107.08	2063.05	2726.14	
Jun., 1997		2096.43	2061.32	2638.2	
Jul., 1997		2085.83	2059.59	2726.14	
Aug., 1997		2075.29	2057.87	2726.14	
Sep., 1997	2064.8		2056.15	2638.2	
Oct., 1997		2054.36	2054.43	2726.14	
Nov., 1997		2043.98	2052.71	2638.2	
Dec., 1997		2033.65	2050.99	2726.14	
Jan., 1998		2023.37	2049.27	2597.8	
Feb., 1998		2013.14	2047.55	2346.4	
Mar., 1998		2002.96	2045.84	2597.8	
Apr., 1998		1992.84	2044.13	2514	
May., 1998		1982.76	2042.42	2597.8	
Jun., 1998		1972.74	2040.71	2514	
Jul., 1998		1962.77	2039	2597.8	
Aug., 1998		1952.85	2037.29	2597.8	
Sep., 1998		1942.98	2035.59	2514	
Oct., 1998		1933.16	2033.88	2597.8	
Nov., 1998		1923.38	2032.18	2514	
Dec., 1998		1913.66	2030.48	2597.8	

Table 3

**DALY UNIT NO. 3 - NEW OIL STATUS (Included infill wells)  
HISTORICAL PRODUCTION DECLINE**

<b>Year</b>	<b>Month</b>	<b>Monthly Production (m3)</b>
<b>1996</b>	<b>July</b>	<b>2296.66</b>
	<b>August</b>	<b>2285.01</b>
	<b>September</b>	<b>2273.43</b>
	<b>October</b>	<b>2261.90</b>
	<b>November</b>	<b>2250.43</b>
	<b>December</b>	<b>2239.02</b>
<b>1997</b>	<b>January</b>	<b>2227.67</b>
	<b>February</b>	<b>2216.37</b>
	<b>March</b>	<b>2205.14</b>
	<b>April</b>	<b>2193.96</b>
	<b>May</b>	<b>2182.83</b>
	<b>June</b>	<b>2171.76</b>
	<b>July</b>	<b>2160.75</b>
	<b>August</b>	<b>2149.80</b>
	<b>September</b>	<b>2138.89</b>
	<b>October</b>	<b>2128.05</b>
	<b>November</b>	<b>2117.26</b>
	<b>December</b>	<b>2106.52</b>
<b>1998</b>	<b>January</b>	<b>2095.84</b>
	<b>February</b>	<b>2085.22</b>
	<b>March</b>	<b>2074.64</b>
	<b>April</b>	<b>2064.12</b>
	<b>May</b>	<b>2053.66</b>
	<b>June</b>	<b>2043.24</b>
	<b>July</b>	<b>2032.88</b>
	<b>August</b>	<b>2022.58</b>
	<b>September</b>	<b>2012.32</b>
	<b>October</b>	<b>2002.12</b>
	<b>November</b>	<b>1991.97</b>
	<b>December</b>	<b>1981.87</b>

Table 3

DALY UNIT NO. 3 - NEW OIL STATUS (Included infill wells)  
HISTORICAL PRODUCTION DECLINE

Year	Month	Monthly Production (m3)
1999	January	1971.82
	February	1961.82
	March	1951.87
	April	1941.98
	May	1932.13
	June	1922.33
	July	1912.59
	August	1902.89
	September	1893.24
	October	1883.64
	November	1874.09
	December	1864.59
2001	January	1855.13
	February	1845.73
	March	1836.37
	April	1827.06
	May	1817.79
	June	1808.57
	July	1799.40
	August	1790.28
	September	1781.20
	October	1772.17
	November	1763.19
	December	1754.25
2002	January	1745.35
	February	1736.50
	March	1727.70
	April	1718.94
	May	1710.22
	June	1701.55
	July	1692.92

Table 3

**DALY UNIT NO. 3 - NEW OIL STATUS (Included infill wells)  
HISTORICAL PRODUCTION DECLINE**

Year	Month	Monthly Production (m3)
1999	January	1971.82
	February	1961.82
	March	1951.87
	April	1941.98
	May	1932.13
	June	1922.33
	July	1912.59
	August	1902.89
	September	1893.24
	October	1883.64
	November	1874.09
	December	1864.59
2001	January	1855.13
	February	1845.73
	March	1836.37
	April	1827.06
	May	1817.79
	June	1808.57
	July	1799.40
	August	1790.28
	September	1781.20
	October	1772.17
	November	1763.19
	December	1754.25
2002	January	1745.35
	February	1736.50
	March	1727.70
	April	1718.94
	May	1710.22
	June	1701.55
	July	1692.92

## Production Report

Table 4

Group	: Daly Lodgepole Unit 1	Date	: August 9, 1996 4:13:05 am
Well	: Daly Unit no. 1	User	: ulrich
	: 000000187		
Hist.Data	: 05/52-12/95	On Prod	: 02/09
Operator	:	Status	: Unknown
Field	:	Zone	:

## Production Data from December, 1994 to October, 1997

Year	Avg Daily Oil m3/d	Branch Best Fit m3/d
Dec., 1994	36.9762	36.4591
Jan., 1995	37.036	36.3128
Feb., 1995	36.8072	36.167
Mar., 1995	36.6083	36.0218
Apr., 1995	34.2716	35.8773
May., 1995	30.7698	35.7332
Jun., 1995	32.9048	35.5898
Jul., 1995	36.1248	35.447
Aug., 1995	35.3886	35.3047
Sep., 1995	35.2626	35.163
Oct., 1995	34.0027	35.0219
Nov., 1995	34.6611	34.8813
Dec., 1995	32.4941	34.7413
Jan., 1996	34.66	34.5073
Feb., 1996	33.98	34.3688
Mar., 1996	33.14	34.2308
Apr., 1996	33.68	34.0934
May., 1996	32.49	33.9566
Jun., 1996		33.8203
Jul., 1996		33.6846
Aug., 1996		33.5494
Sep., 1996		33.4147
Oct., 1996		33.2806
Nov., 1996		33.147
Dec., 1996		33.014
Jan., 1997		32.9715
Feb., 1997		32.8392
Mar., 1997		32.7074
Apr., 1997		32.5761
May., 1997		32.4453
Jun., 1997		32.3151
Jul., 1997		32.1854
Aug., 1997		32.0562
Sep., 1997		31.9276
Oct., 1997		31.7994

## Production Report

Table 4

Group	: Daly Lodgepole Unit 1	Date	: August 9, 1996 4:13:05 am
Well	: Daly Unit no. 1	User	: ulrich
	: 000000187		
Hist.Data	: 05/52-12/95	On Prod	: 02/09
Operator	:	Status	: Unknown
Field	:	Zone	:

## Production Data from December, 1994 to October, 1997

Year	Avg Daily Oil m3/d	Branch Best Fit m3/d
Dec., 1994	36.9762	36.4591
Jan., 1995	37.036	36.3128
Feb., 1995	36.8072	36.167
Mar., 1995	36.6083	36.0218
Apr., 1995	34.2716	35.8773
May., 1995	30.7698	35.7332
Jun., 1995	32.9048	35.5898
Jul., 1995	36.1248	35.447
Aug., 1995	35.3886	35.3047
Sep., 1995	35.2626	35.163
Oct., 1995	34.0027	35.0219
Nov., 1995	34.6611	34.8813
Dec., 1995	32.4941	34.7413
Jan., 1996	34.66	34.5073
Feb., 1996	33.98	34.3688
Mar., 1996	33.14	34.2308
Apr., 1996	33.68	34.0934
May., 1996	32.49	33.9566
Jun., 1996		33.8203
Jul., 1996		33.6846
Aug., 1996		33.5494
Sep., 1996		33.4147
Oct., 1996		33.2806
Nov., 1996		33.147
Dec., 1996		33.014
Jan., 1997		32.9715
Feb., 1997		32.8392
Mar., 1997		32.7074
Apr., 1997		32.5761
May., 1997		32.4453
Jun., 1997		32.3151
Jul., 1997		32.1854
Aug., 1997		32.0562
Sep., 1997		31.9276
Oct., 1997		31.7994

John

Table 5

DALY UNIT NO.1 - NEW OIL STATUS  
HISTORICAL PRODUCTION DECLINE

Year	Month	Monthly Production (m3)
1996	July	1047.19
	August	1043.10
	September	1039.02
	October	1034.96
	November	1030.91
	December	1026.88
1997	January	1022.87
	February	1018.87
	March	1014.89
	April	1010.92
	May	1006.97
	June	1003.03
	July	999.11
	August	995.21
	September	991.31
	October	987.44
	November	983.58
	December	979.74
1998	January	975.91
	February	972.09
	March	968.29
	April	964.51
	May	960.74
	June	956.98
	July	953.24
	August	949.51
	September	945.80
	October	942.10
	November	938.42
	December	934.75

34.49

32.91

31.40

Table 5

DALY UNIT NO.1 - NEW OIL STATUS  
HISTORICAL PRODUCTION DECLINE

Year	Month	Monthly Production (m3)
1999	January	931.10
	February	927.46
	March	923.83
	April	920.22
	May	916.63
	June	913.04
	July	909.47
	August	905.92
	September	902.38
	October	898.85
	November	895.34
	December	891.84
2000	January	888.35
	February	884.88
	March	881.42
	April	877.97
	May	874.54
	June	871.12
	July	867.72
	August	864.33
	September	860.95
	October	857.58
	November	854.23
	December	850.89
2001	January	847.56
	February	844.25
	March	840.95
	April	837.66
	May	834.39
	June	831.13
	July	827.88

29.96

28.59

27.28

m3/d

2002 26.03  
 03 24.83  
 04 23.69  
 06 22.60  
 08 21.56  
 09 20.57  
 08 19.63  
 09 18.72



Table 6

## Production Report

Group	: NVSU nr 1 (no infill wells)	Date	: August 10, 1996 0:36:18 am
Well	: NVSU nr 1 (excl. infill wells)	User	: ulrich
	: 000000195		
Hist.Data	: 01/53-12/95	On Prod	: 01/00
Operator	:	Status	: Unknown
Field	:	Zone	:

## Production Data from December, 1994 to December, 1996

Year	Avg Daily Oil	Current Decline(11.4%)
	m3/d	m3/d
Dec., 1994	244.872	242.279
Jan., 1995	241.654	240.301
Feb., 1995	237.704	238.339
Mar., 1995	236.599	236.394
Apr., 1995	229.431	234.464
May., 1995	227.281	232.549
Jun., 1995	225.695	230.651
Jul., 1995	226.21	228.768
Aug., 1995	223.2	226.9
Sep., 1995	221.952	225.048
Oct., 1995	223.025	223.21
Nov., 1995	222.958	221.388
Dec., 1995	218.374	219.581
Jan., 1996	214.91	217.193
Feb., 1996	213.62	215.42
Mar., 1996	215.17	213.661
Apr., 1996	212.25	211.917
May., 1996	210.14	210.187
Jun., 1996		208.471
Jul., 1996		206.769
Aug., 1996		205.081
Sep., 1996		203.406
Oct., 1996		201.746
Nov., 1996		200.099
Dec., 1996		198.465

Table 7

NORTH VIRDEN SCALLION UNIT NO.1 - NEW OIL STATUS  
HISTORICAL PRODUCTION DECLINE

(11.2% decline)

Year	Month	Monthly Production (m3)
1996	July	6409.40
	August	6348.80
	September	6288.77
	October	6229.31
	November	6170.41
	December	6112.07
1997	January	6054.28
	February	5997.04
	March	5940.34
	April	5884.17
	May	5828.53
	June	5773.43
	July	5718.84
	August	5664.77
	September	5611.21
	October	5558.15
	November	5505.60
	December	5453.54
1998	January	5401.98
	February	5350.90
	March	5300.31
	April	5250.20
	May	5200.56
	June	5151.39
	July	5102.68
	August	5054.43
	September	5006.64
	October	4959.31
	November	4912.41
	December	4865.97

Table 7

NORTH VIRDEN SCALLION UNIT NO.1 - NEW OIL STATUS  
HISTORICAL PRODUCTION DECLINE

Year	Month	(11.2 % decline) Monthly Production (m3)
1999	January	4819.96
	February	4774.39
	March	4729.25
	April	4684.53
	May	4640.24
	June	4596.36
	July	4552.91
	August	4509.86
	September	4467.22
	October	4424.98
	November	4383.14
	December	4341.70
2001	January	4300.65
	February	4259.99
	March	4219.71
	April	4179.81
	May	4140.29
	June	4101.14
	July	4062.37
	August	4023.96
	September	3985.91
	October	3948.22
	November	3910.89
	December	3873.92
2002	January	3837.29
	February	3801.01
	March	3765.07
	April	3729.47
	May	3694.21
	June	3659.28
	July	3624.68
	August	3590.41
	September	3556.46
	October	3522.83
	November	3489.53
	December	3456.53
		3423.85

Table 8

# NORTH VIRDEN SCALLION UNIT NO.1 - NEW OIL STATUS HISTORICAL PRODUCTION DECLINE

Year	Month	8.0% decline rate Monthly Production (m3)
1999	January	5247.58
	February	5212.71
	March	5178.08
	April	5143.67
	May	5109.49
	June	5075.54
	July	5041.82
	August	5008.32
	September	4975.04
	October	4941.99
	November	4909.15
	December	4876.53
2000	January	4844.13
	February	4811.94
	March	4779.97
	April	4748.21
	May	4716.66
	June	4685.32
	July	4654.19
	August	4623.27
	September	4592.55
	October	4562.03
	November	4531.72
	December	4501.61
2001	January	4471.70
	February	4441.99
	March	4412.47
	April	4383.15
	May	4354.03
	June	4325.10
	July	4296.36
	August	4267.81
	September	4239.46
	October	4211.29
	November	4183.31
	December	4155.51

166.35

153.57

141.76

	m <sup>3</sup> /d
2002	130.86
03	120.79
04	111.51
05	102.94
06	95.02
07	87.72
08	80.97
09	74.75
10	69.00
11	63.70

cum Prod  
1996-2011  
724.8 10<sup>3</sup>m<sup>3</sup>

NEW OIL VS  
CHAIRMAN 50% DEV.  
(1996-2002)

71.8 10<sup>3</sup>m<sup>3</sup>

Table 8

NORTH VIRDEN SCALLION UNIT NO.1 - NEW OIL STATUS  
HISTORICAL PRODUCTION DECLINE

Year	Month	8.0% decline rate Monthly Production (m3)
1996	July	6409.40
	August	6366.81
	September	6324.51
	October	6282.49
	November	6240.74
	December	6199.28
1997	January	6158.09
	February	6117.17
	March	6076.52 -
	April	6036.15
	May	5996.04
	June	5956.20
	July	5916.63
	August	5877.31
	September	5838.26
	October	5799.47
	November	5760.93
	December	5722.66
1998	January	5684.63 -
	February	5646.86
	March	5609.34
	April	5572.07
	May	5535.05
	June	5498.27
	July	5461.74
	August	5425.45
	September	5389.40
	October	5353.59
	November	5318.02
	December	5282.68

211.49

195.22

180.2 m<sup>3</sup>/d

1995 Ave. Prod. -

1995 DEC -

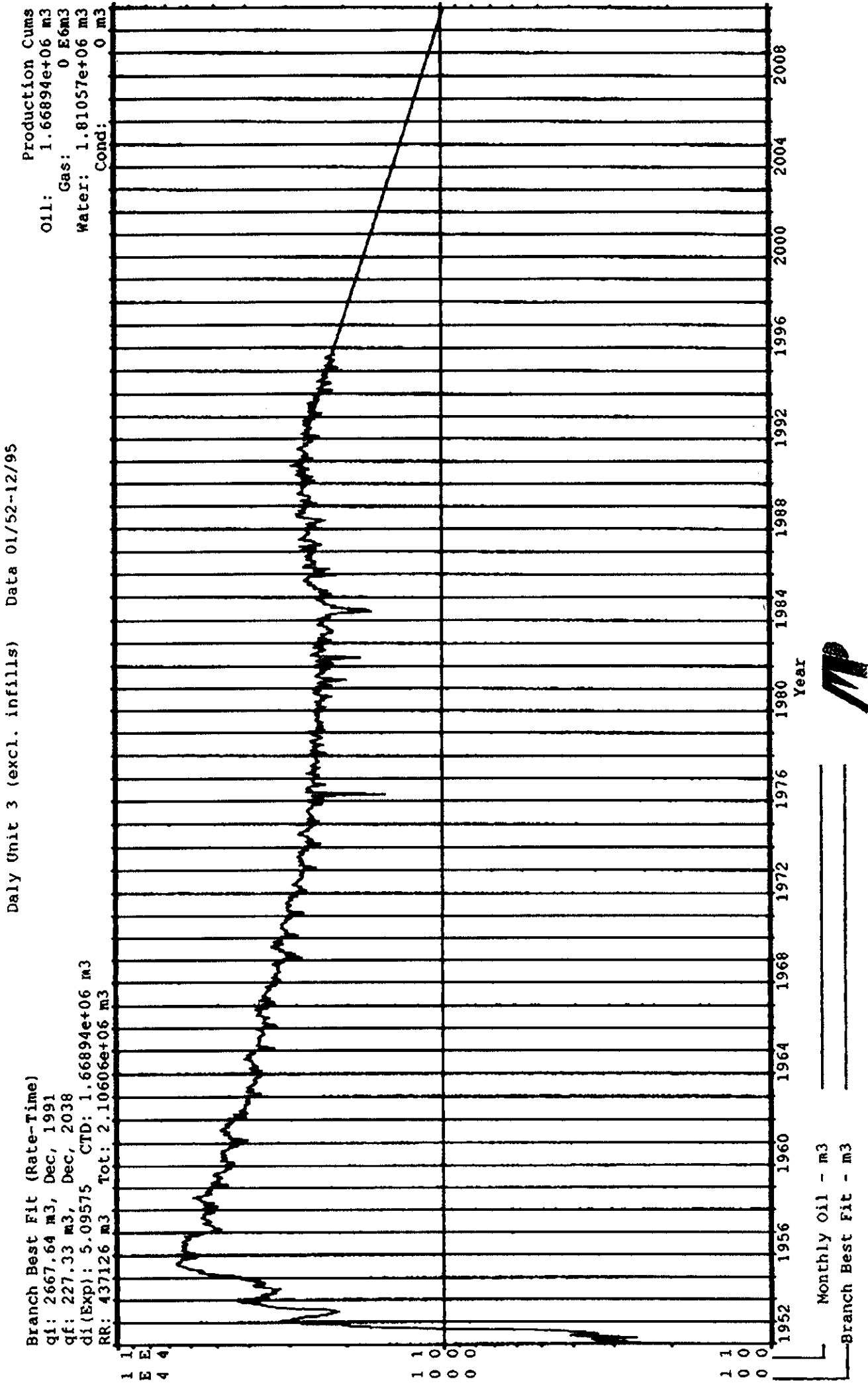
1995 4th Qu. -

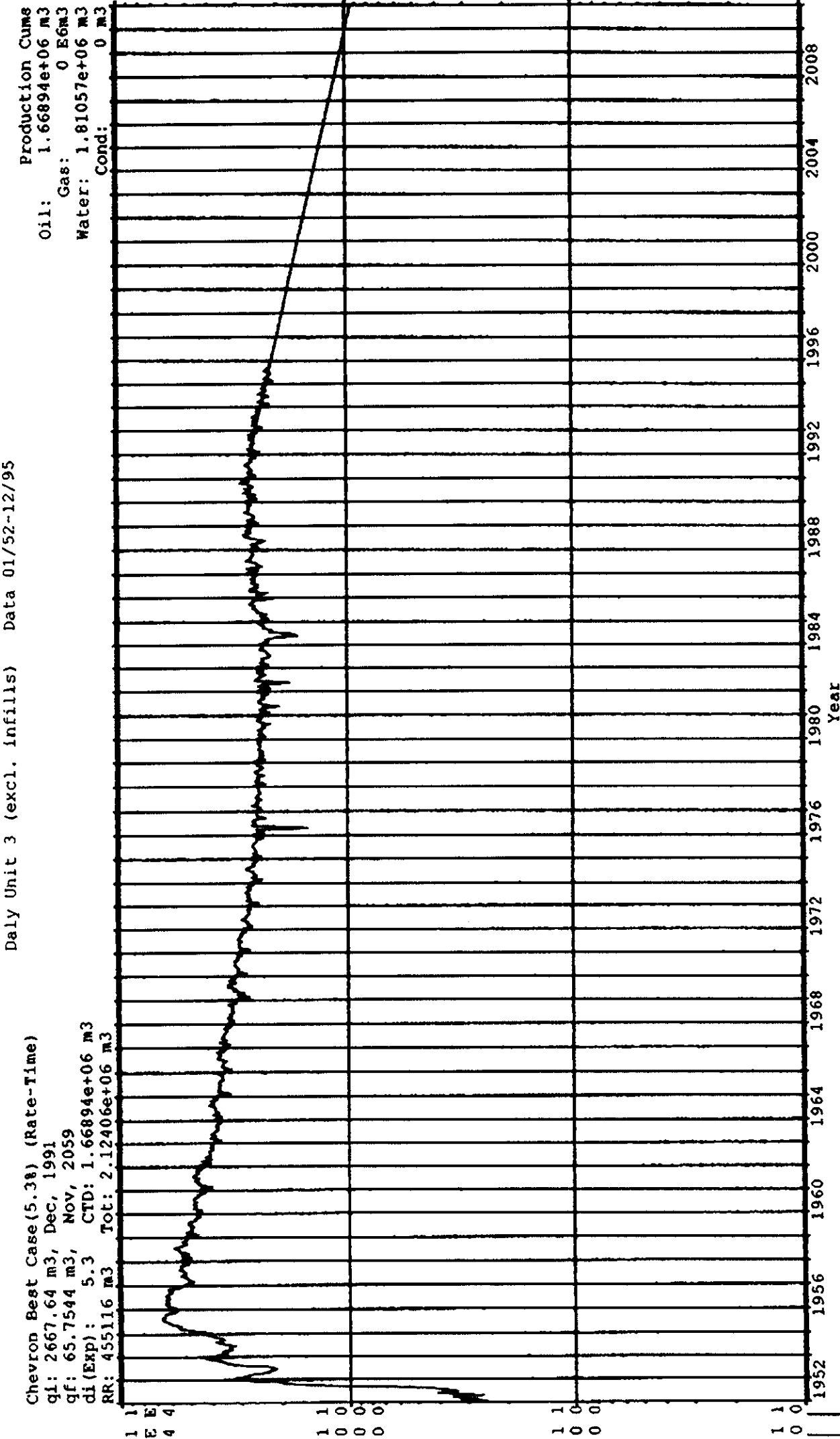
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1996 AVG

CHEVRON 210.19

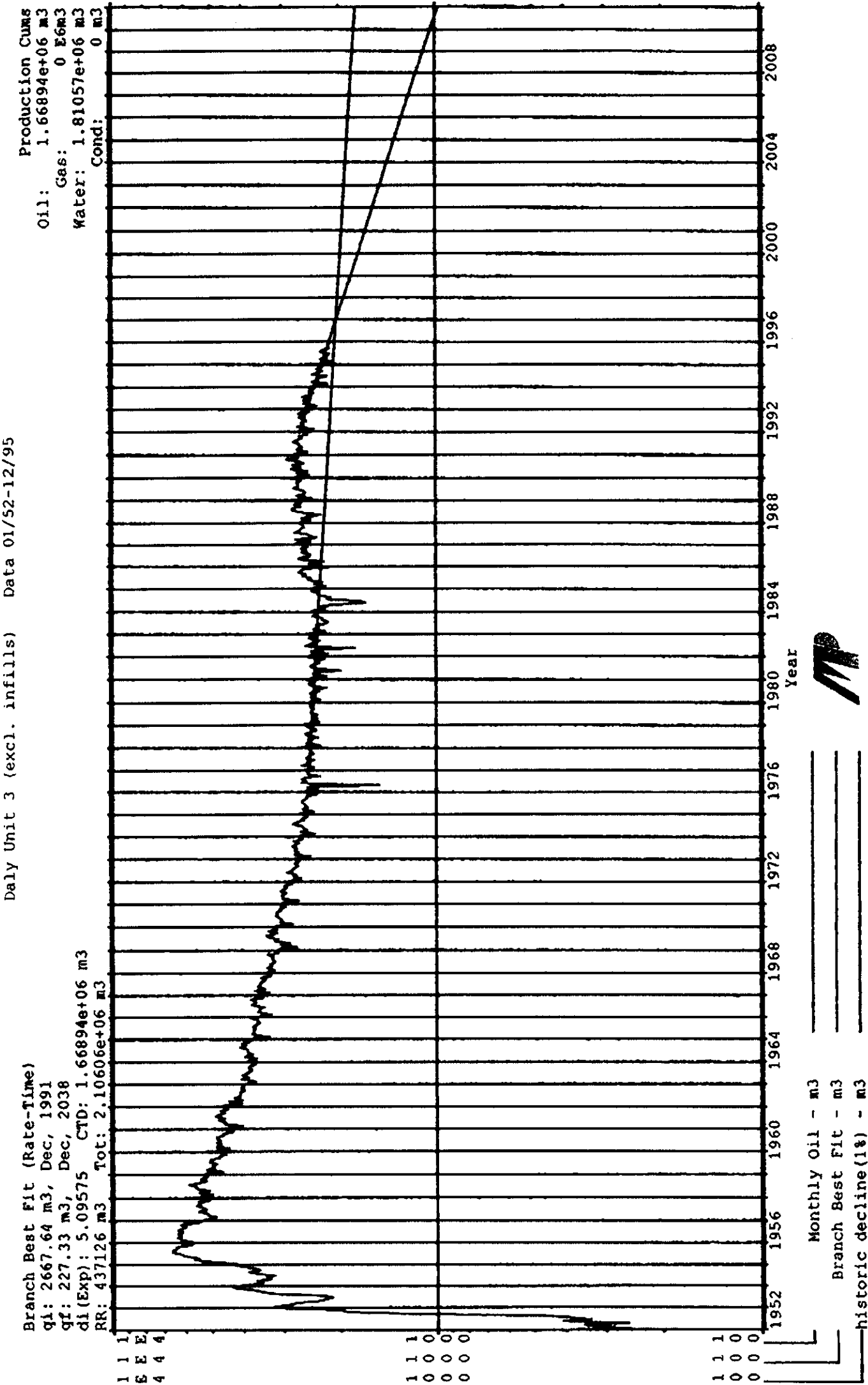
Fig. 1





Monthly Oil - m3  
Chevron Best Case(5.38) - m3

Figure 3





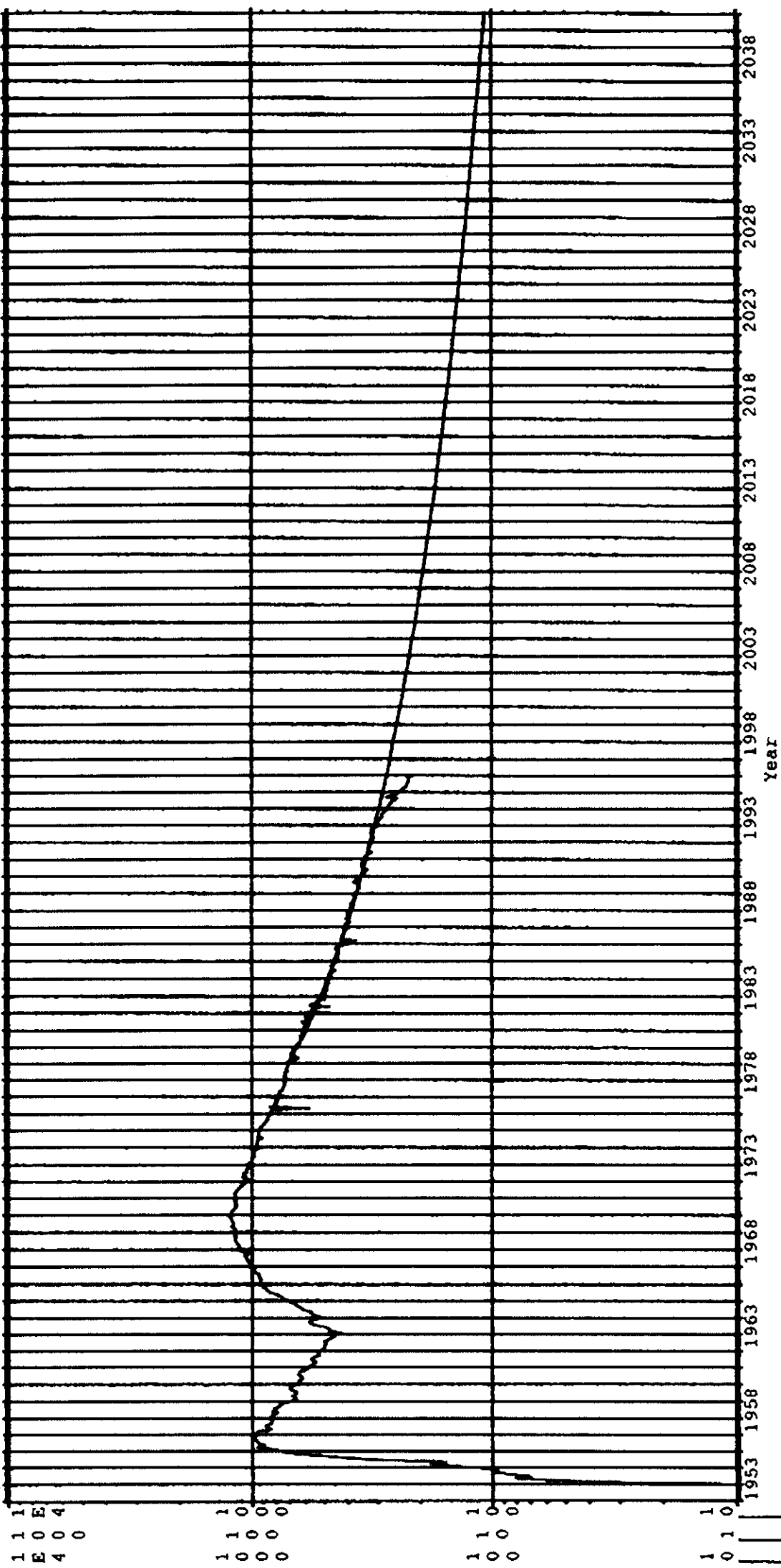
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Fig 4

NVSU nr 1 (excl. infill wells) Data 01/53-12/95

Decline Before Reduced Inj. (Rate-Time)  
qi: 713.625 m3/d, Jan, 1979  
qf: 99.1598 m3/d, Feb, 2047  
di(Hyp): 8.68318 CTD: 9.72627e+06 m3  
RR: 2.88791e+06 m3 Tot: 1.26142e+07 m3

Production Cum8  
Oil: 9.72627e+06 m3  
Gas: 0 E6m3  
Water: 2.12356e+07 m3  
Cond: 0 m3



Avg Daily Oil - m3/d  
Not Assigned  
Decline Before Reduced Inj. - m3/d



5  
8  
14

NVSU nr (injectio) Data 01/57-12/95

**Operator:**

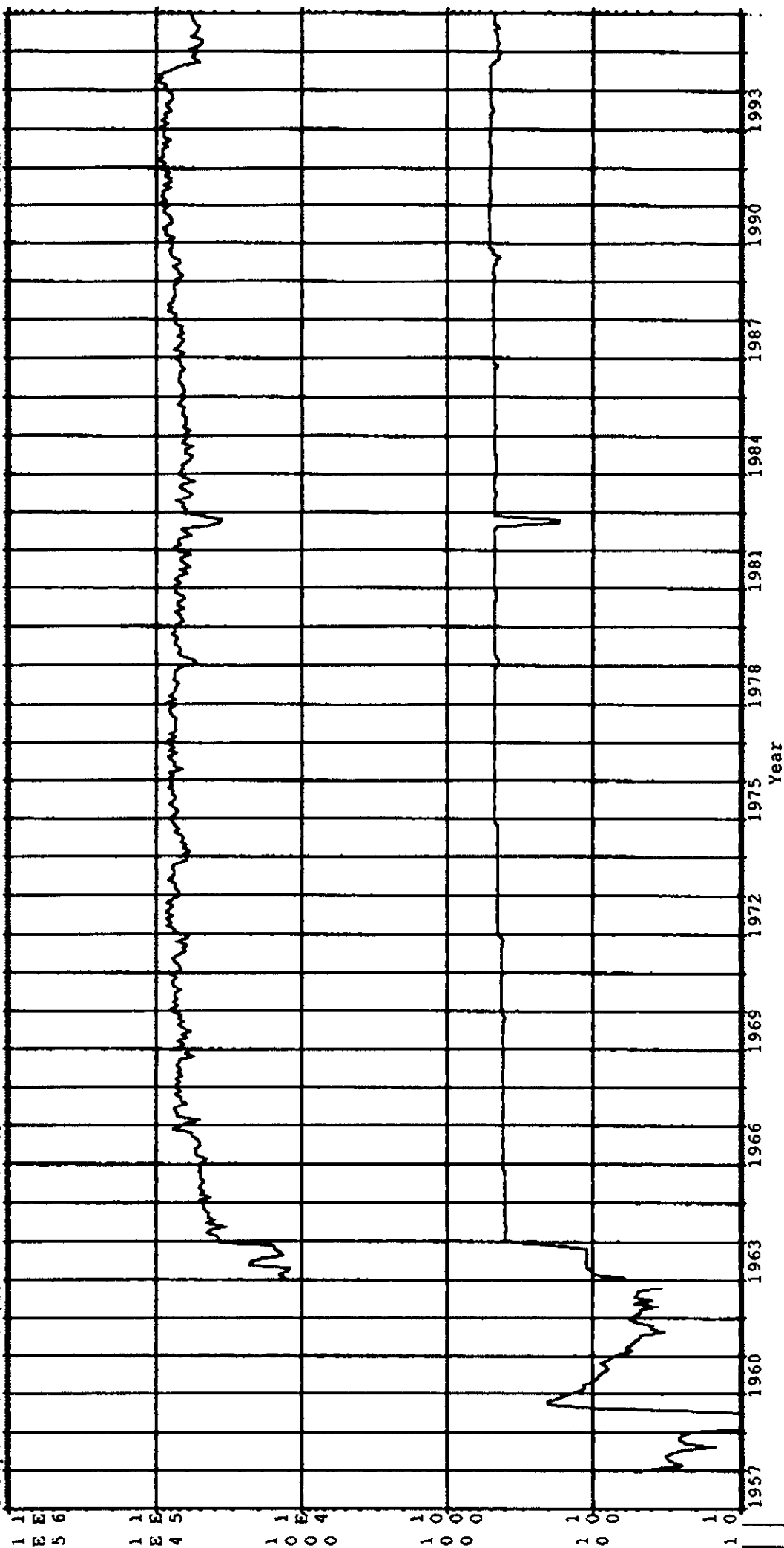
Field:

**Zone:**

**Type: Unknown**

Group: NVSU nr 1 (no infill wells)

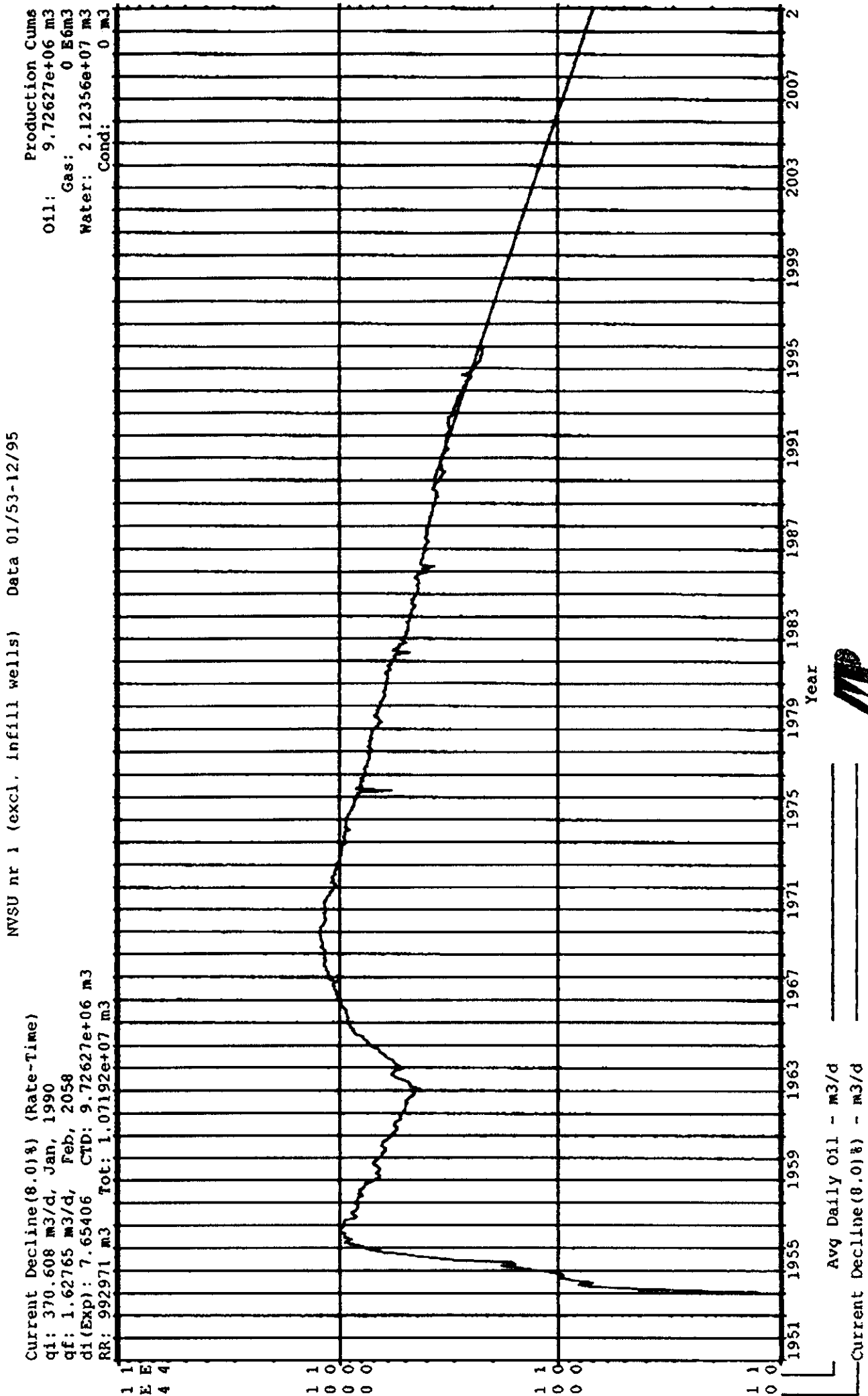
Production Cums	
Oil:	0 m3
Gas:	0 E6m3
Water:	0 m3
Cond:	0 m3



3-Month Water Inj - m3

**Num Wells**

Fig. 6



**Table 1**  
**New Oil Calculation for 1996-Waterflood Modification Daily Unit 3**  
**Infill wells excluded**

year	Waterflood Modification 1996		Waterflood Modification 1996		Waterflood Modification 1996	
	Current Decline(5.1%) excl. Infills	(b) Chevron 50% developed(excl. Infills) Qo	(b)-(a) Incremental Oil excl. infills	Qo	Incremental Oil excl. Infills	Total Qo
	(m <sup>3</sup> /day/year)	(m <sup>3</sup> /day/year)	(m <sup>3</sup> /day/year)	(m <sup>3</sup> /day/year)	(m <sup>3</sup> /day/year)	(m <sup>3</sup> /year)
1,995	72.37					
1,996	68.77	74.73	5.96			2,175
1,997	65.35	89.10	23.75			8,668
1,998	62.10	81.58	19.48			7,109
1,999	59.01	80.18	21.17			7,726
2,000	56.08	75.81	19.73			7,201
2,001	53.29	75.06	21.77			7,945
2,002	50.64	70.47	19.83			7,237
2,003	48.12	67.79	19.67			7,179
2,004	45.73	67.23	21.50			7,847
2,005	43.46	65.38	21.92			8,002
2,006	41.30	61.64	20.34			7,425
2,007	39.24	58.86	19.62			7,160
2,008	37.29	56.17	18.88			6,891
2,009	35.44	54.23	18.79			6,859
				<b>Total New Oil</b>		<b>99,426</b>

**Table 1A**

**Chevron's "most likely" case production decline rate**  
**Daly Unit 3**

year	Chevron revised 07/96	Exponential decline rate (%/year)
	most likely case excl infills (m3/d)	
1996	70.38	
1997	67.04	4.86
1998	63.48	5.46
1999	60.08	5.50
2000	56.88	5.47
2001	53.84	5.49
2002	50.9	5.62
2003	48.25	5.35
2004	45.87	5.06
2005	43.23	5.93
2006	40.93	5.47
2007	38.74	5.50
2008	36.68	5.46
2009	34.71	5.52

Table 2  
New Oil Calculation for 1996-Waterflood Modification NVSU #1(revised)  
Infill wells excluded

year	Waterflood Modification 1996		Waterflood Modification 1996		Waterflood Modification 1996	
	(a) Current decline (9.4%) excl. Infill wells Qo (m <sup>3</sup> /day/year)	(b) Chevron 50% developed Qo (m <sup>3</sup> /day/year)	(b)-(a) Incremental Oil excl. Infill wells Qo (m <sup>3</sup> /day/year)	Incremental Oil excl. Infill wells Total Qo (m <sup>3</sup> /year)	Incremental Oil excl. Infill wells Total Qo (m <sup>3</sup> /year)	Incremental Oil excl. Infill wells Total Qo (m <sup>3</sup> /year)
1996	215	218.4	3.40	1,241.00	1,241.00	
1997	195.71	228.4	32.69	11,931.56	11,931.56	
1998	178.15	223.7	45.55	16,624.96	16,624.96	
1999	162.17	196.8	34.63	12,640.37	12,640.37	
2000	147.62	178.5	30.88	11,271.38	11,271.38	
2001	134.38	157.9	23.52	8,586.45	8,586.45	
2002	122.32	136.5	14.18	5,175.81	5,175.81	
2003	111.35	125.3	13.95	5,093.39	5,093.39	
2004	101.36	110.2	8.84	3,228.10	3,228.10	
2005	92.26	90.1	-2.16			
2006	83.98	79.9	-4.08			
2007	76.45	68.5	-7.95			
2008	69.59	61.8	-7.79			
2009	63.35	65.7	2.35			
2010	57.66	49.8	-7.86			
2011	52.49	46.7	-5.79			
			Total "New Oil"		75,793.03	

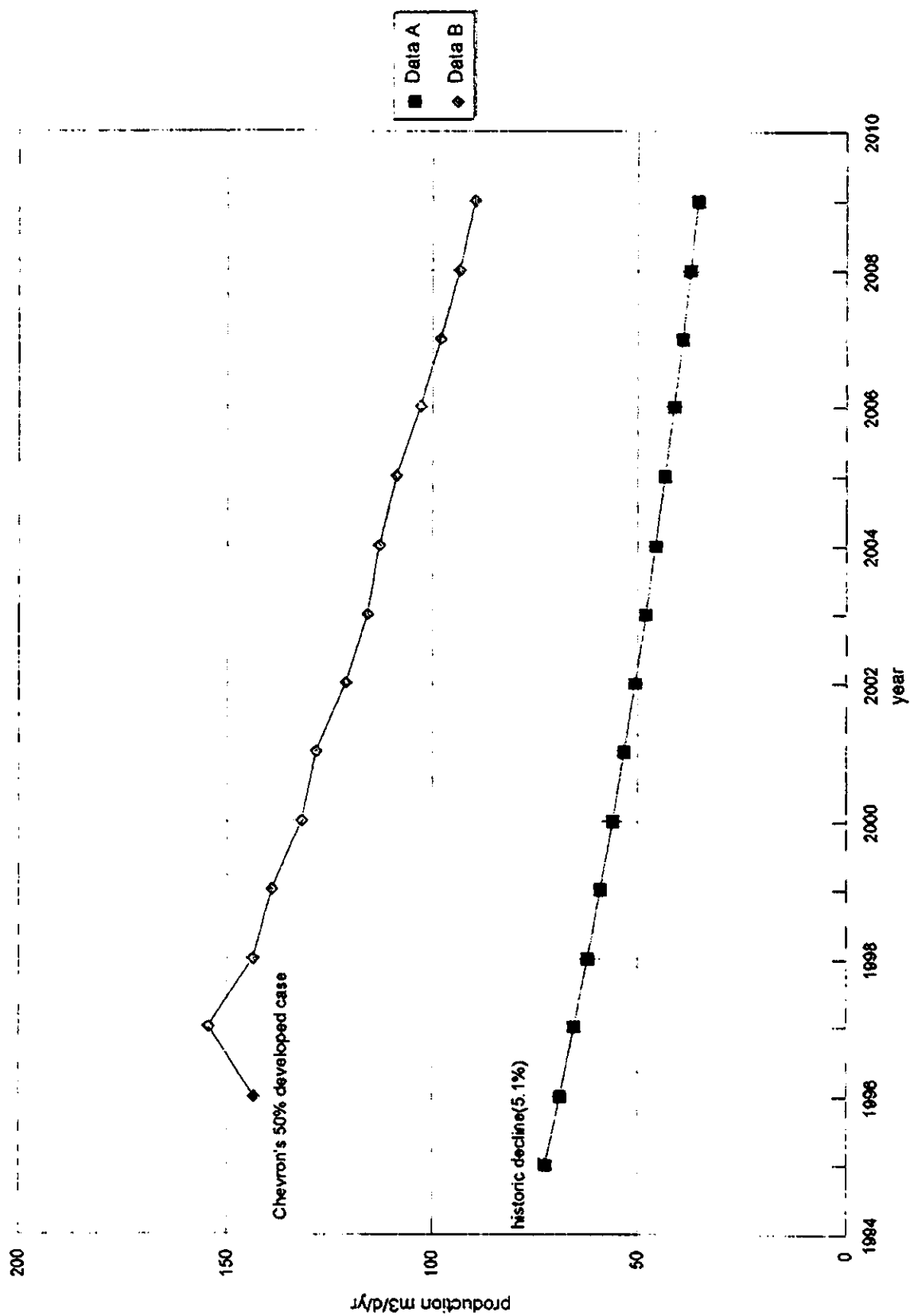
Table 2A

Chevron's "most likely" case production decline rate  
North Virden Scallion Unit 1

year	Chevron revised 07/96	
	most likely case	Exponential
	excl. infill wells (m3/d)	decline rate (%/year)
1996	210.19	
1997	189.4	10.42
1998	170.9	10.28
1999	154.13	10.33
2000	138.35	10.80
2001	125.35	9.87
2002	113.05	10.33
2003	101.96	10.32
2004	91.97	10.31
2005	84.08	8.97
2006	75.86	10.29
2007	68.44	10.29
2008	61.76	10.27
2009	55.68	10.36
2010	49.63	11.50
2011	46.7	6.09

# PRODUCTION PERFORMANCE

DALY UNIT 3 (excl. infill wells)

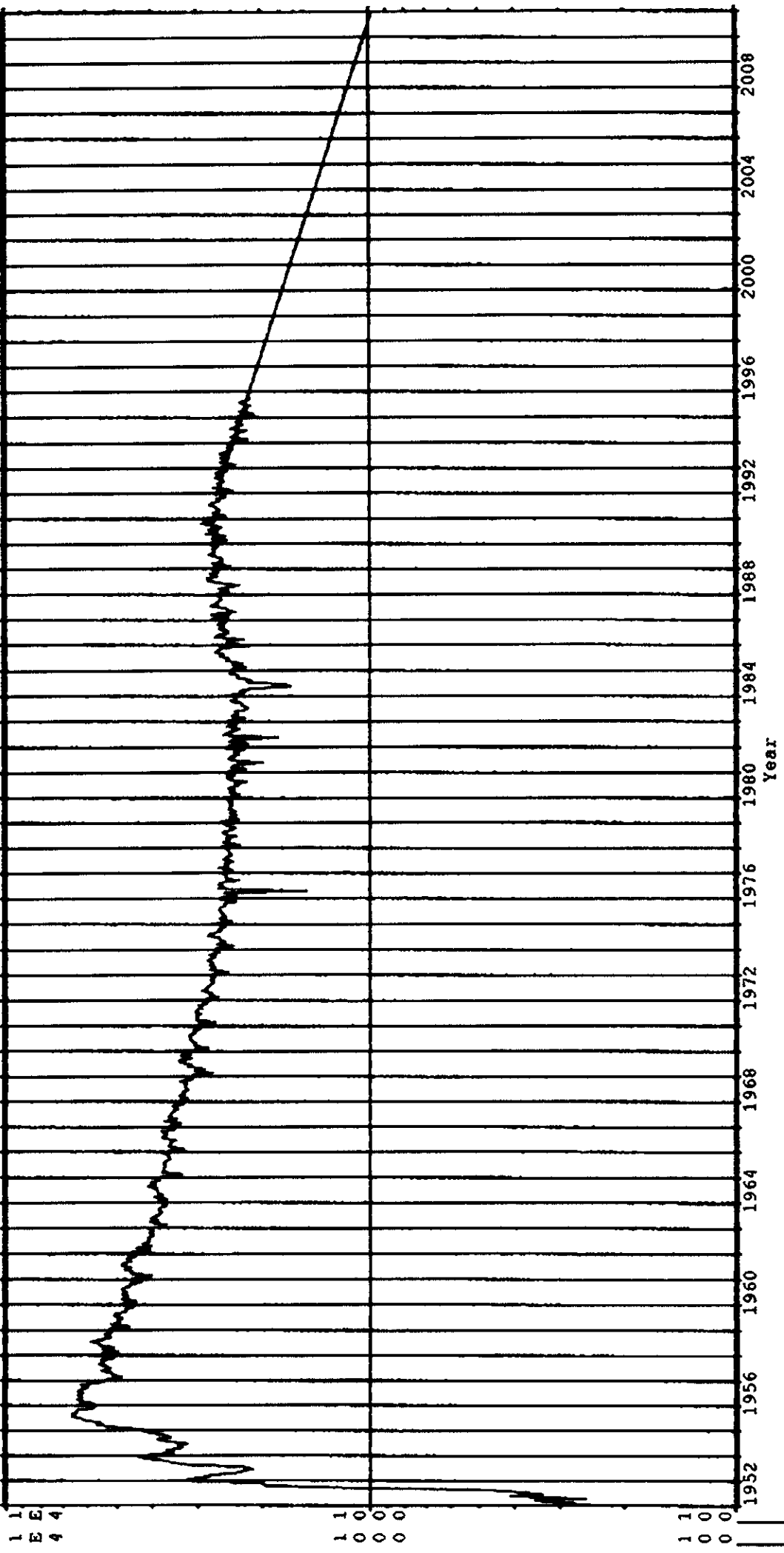




Daly Unit 3 (excl. infills) Data 01/52-12/95

Production Cums  
Oil: 1.66894e+06 m3  
Gas: 0 E6m3  
Water: 1.81057e+06 m3  
Cond: 0 m3

Branch Best Fit (Rate-Time)  
qi: 2667.64 m3, Dec, 1991  
qf: 227.33 m3, Dec, 2038  
di(Exp): 5.09575 CTD: 1.66894e+06 m3  
RR: 437126 m3 Tot: 2.10606e+06 m3



Monthly Oil - m3  
Branch Best Fit - m3



78

Daly Unit 3 (excl. infills) Data 01/52-12/95

Chevron Best Case(5.3%) (Rate-Time)

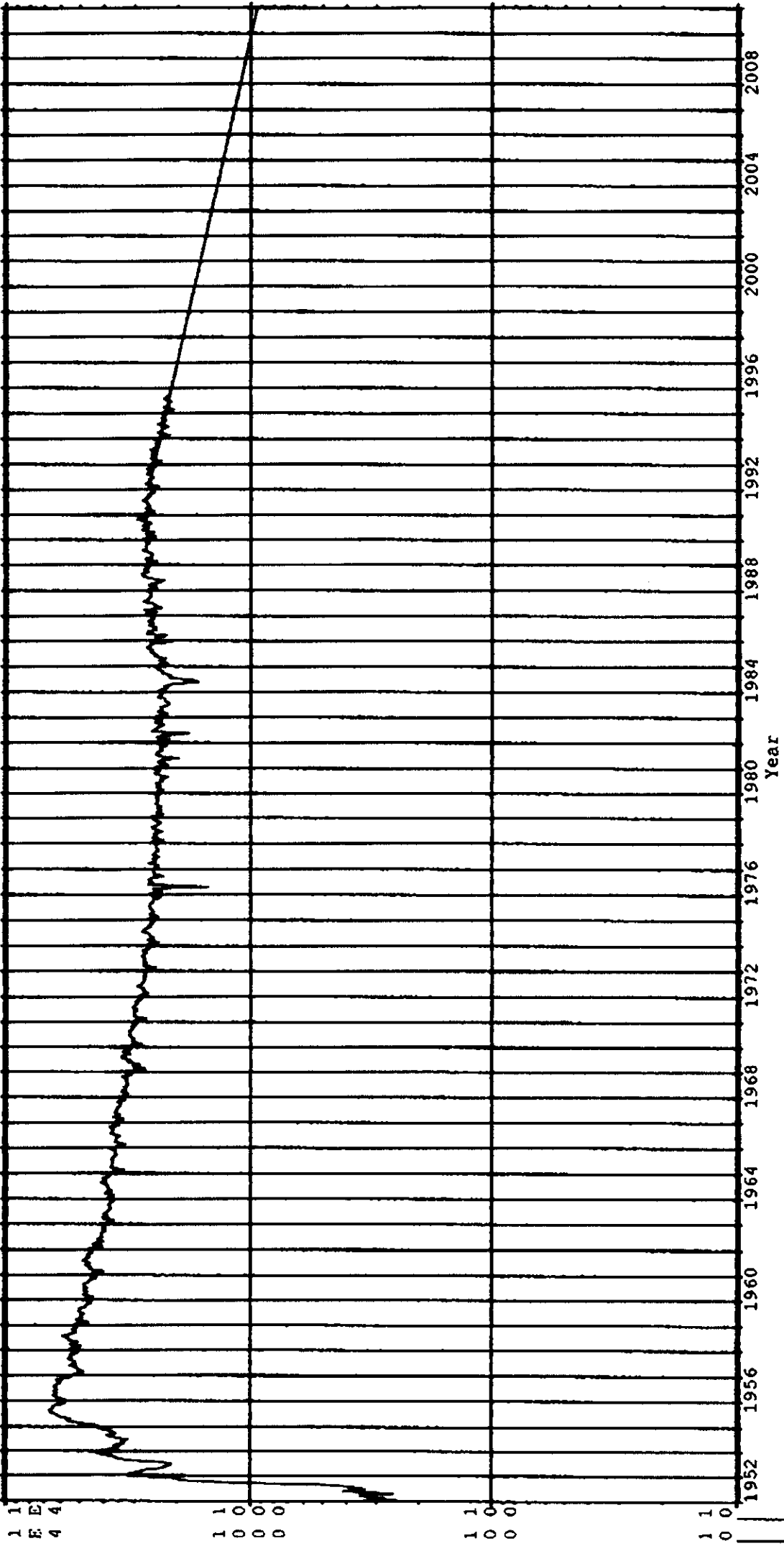
qi: 2667.64 m3, Dec, 1991

qf: 65.7544 m3, Nov, 2059

di(Exp): 5.3 CTD: 1.66894e+06 m3

RR: 455116 m3 Tot: 2.12406e+06 m3

Production Cums  
Oil: 1.66894e+06 m3  
Gas: 0 E6m3  
Water: 1.81057e+06 m3  
Cond: 0 m3



1-1-3

Daly Unit 3 (excl. infills) Data 01/52-12/95

Branch Best Fit (Rate-Time)

q1: 2667.64 m3, Dec, 1991

qf: 227.33 m3, Dec, 2038

dl (Exp): 5.09575 CTD: 1.66894e+06 m3

RR: 437126 m3 Tot: 2.10606e+06 m3

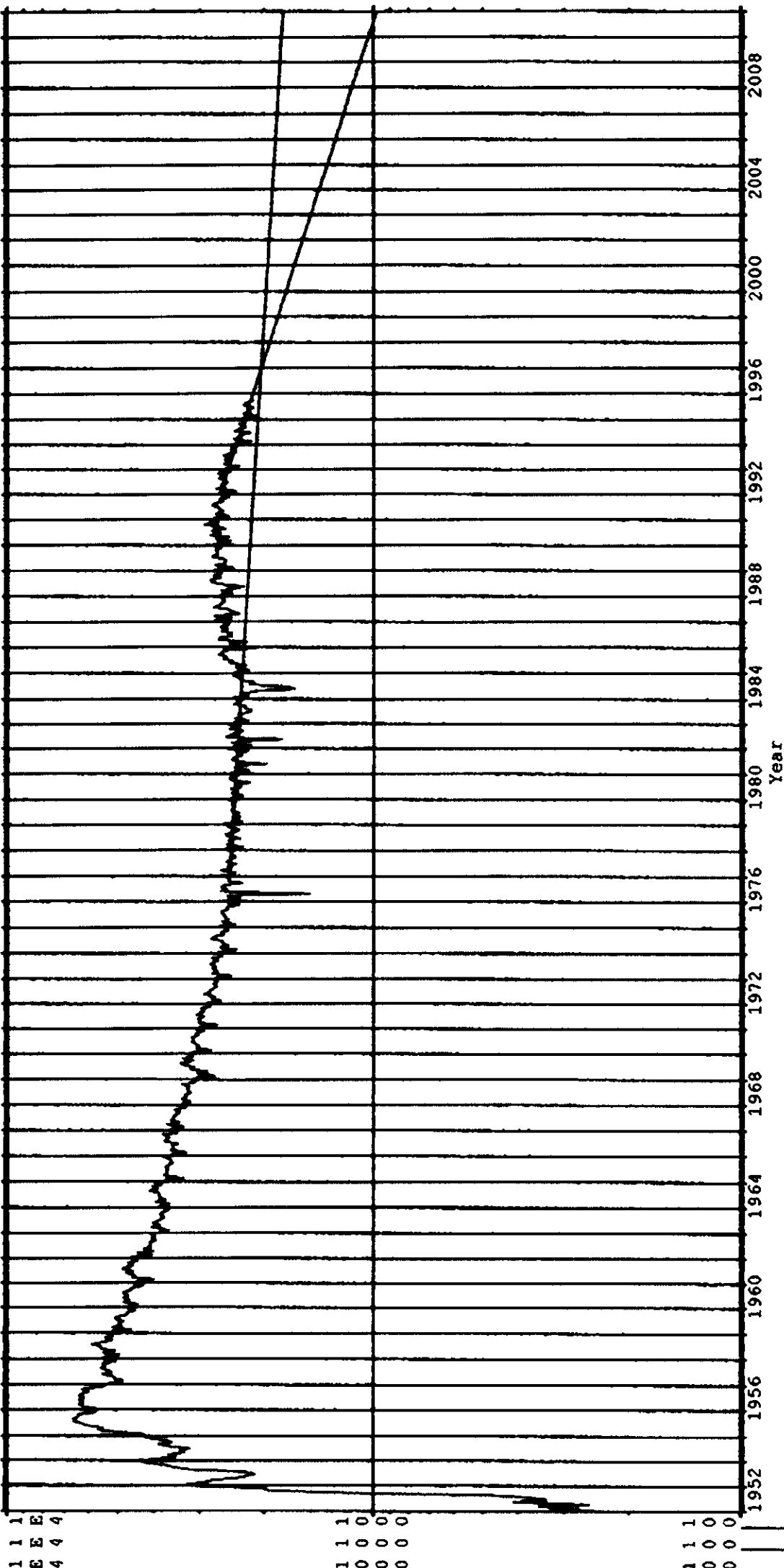
## Production Cums

Oil: 1.66894e+06 m3

Gas: 0 E6m3

**Water: 1.81057e+06 m3**

Cond: 0 m3



Monthly Oil - m3

Branch Best Fit - m3

### historic decline(18) - m3

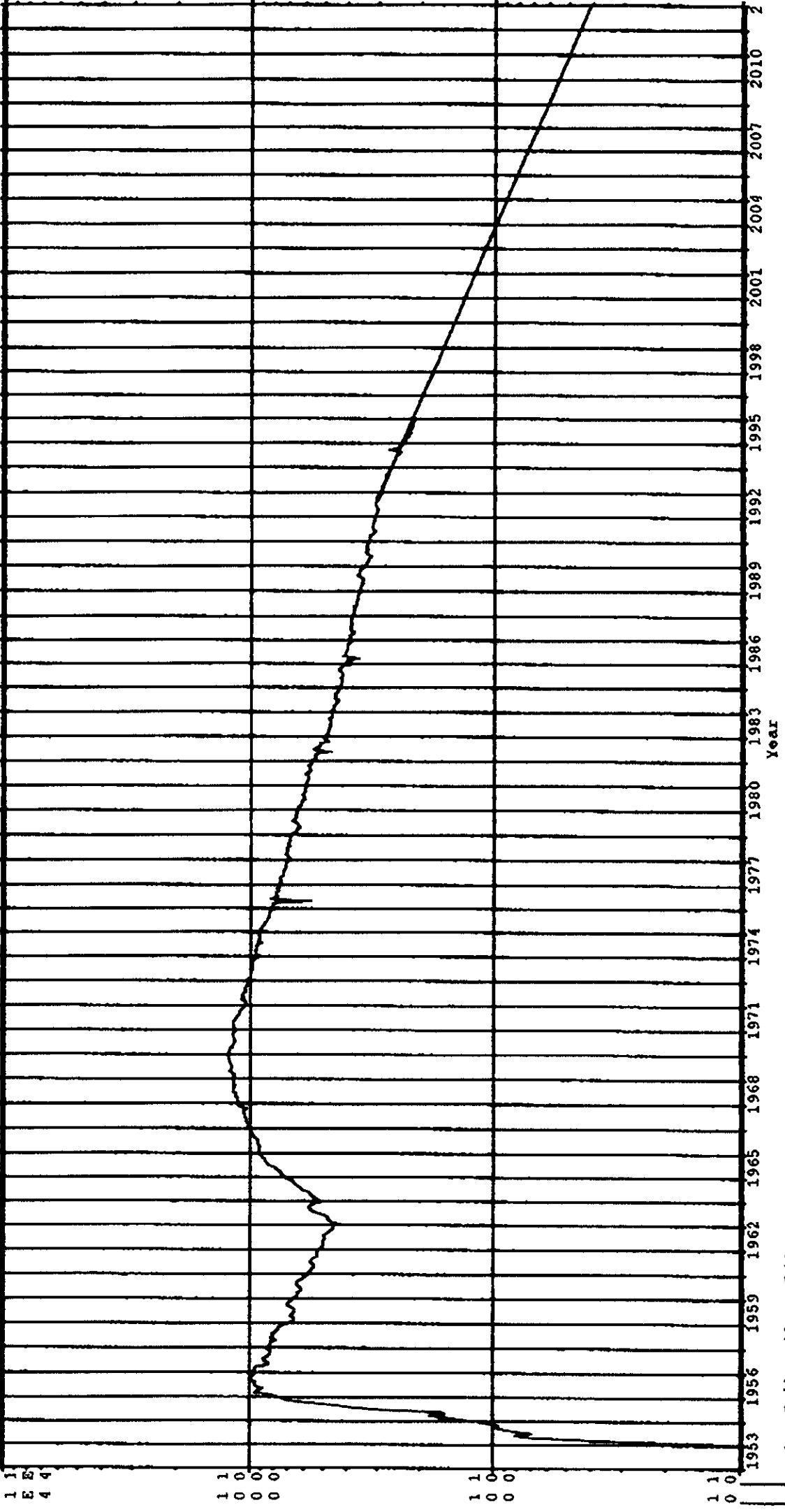


Fig 1

NVSU nr 1 (excl. Infill wells) Data 01/53-12/95

Production Cums  
Oil: 9.63223e+06 m3  
Gas: 0 E6m3  
Water: 2.27032e+07 m3  
Cond: 0 m3

Branch Best Fit (Rate-Time)  
q1: 306.458 m3/d, Aug, 1992  
qf: 0.375108 m3/d, Sep, 2060  
d1(Exp): 9.36874 CTD: 9.63222e+06 m3  
RR: 771432 m3 Tot: 1.04037e+07 m3

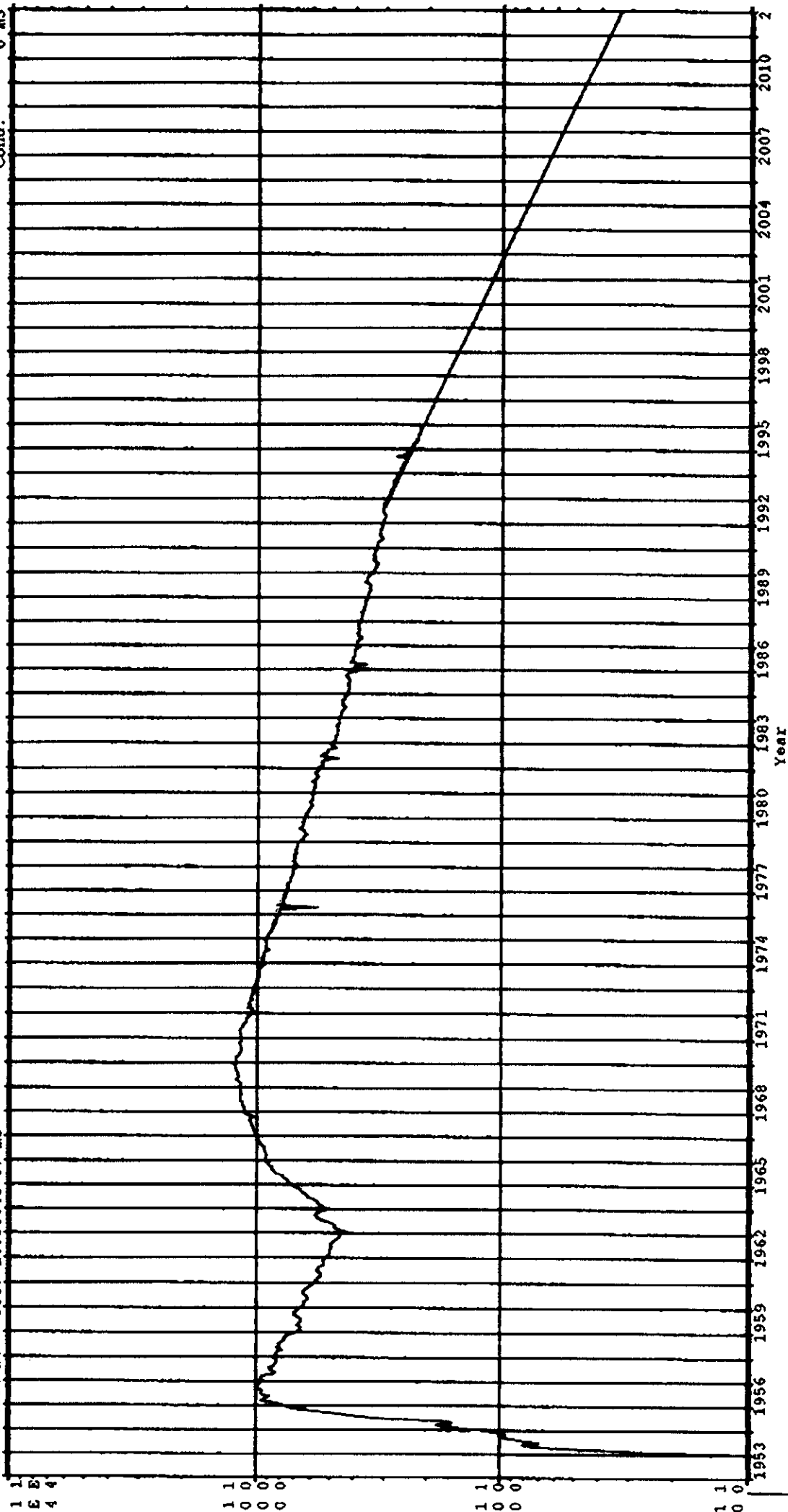


Avg Daily Oil - m3/d  
Branch Best Fit - m3/d

NVSU nr 1 (excl. infill wells) Data 01/53-12/95

Chevron Best Case (10.3%) (Rate-Time)  
 qi: 306.458 m3/d, Aug, 1992  
 qf: 0.18552 m3/d, Sep, 2060  
 di(Exp): 10.3 CTD: 9.63222e+06 m3  
 RR: 674184 m3 Tot: 1.03064e+07 m3

	Production Cums
Oil:	9.63223e+06 m3
Gas:	0 E6m3
Water:	2.27032e+07 m3
Cond:	0 m3



Avg Daily Oil - m3/d  
Chevron Best Case (10.3%) - m3/d





July 26, 1996

**Chevron Canada Resources**  
500 - Fifth Avenue S. W.  
Calgary, Alberta T2P 0L7  
Phone (403) 234-5000  
Fax (403) 234-5804

**Eastern Business Unit**

Attention: Mr. Bob Dubreuil  
Director, Petroleum Branch  
Manitoba Energy and Mines  
1395 Ellice Avenue, Suite 360  
Winnipeg, Manitoba R3G 3P2

Re: NVSU #1, Daly Unit #3, Daly Unit #1  
Waterflood Modification Application for  
New Oil Status for Royalty and Mineral Tax Calculations

Routledge Unit #1, Marginal Well Major Work-over Incentive Application

Dear Mr. Dubreuil:

The following is submitted as a follow up to your questions regarding the base case decline curves for new oil status in the Scallion and Daly fields and to apply for marginal well work-over incentives for possible work in Routledge Unit #1. Each unit will be addressed individually in the attached submission.

The only outstanding issue is the horizontal injector incentives for the proposed well at Chevron NVSU#1 Horizontal at 11-26-11-26 WIM. As we discussed, Chevron proposes a prolonged production test of the well to capture royalty incentives sooner, clean up any potential well bore damage, and collect reservoir/production data to compare to expected results based on reservoir simulation. Therefore, the application to get the royalty holiday applied to the offsetting producing wells will be forthcoming, but not in time for the August 14, 1996 Cabinet meeting (workload considerations). As discussed, Chevron proposes to apply the non-retired holiday volume to the offsetting producing wells, providing Cabinet and the Petroleum Branch approves such an action.

Please contact me at (403) 234-5834 if you have any questions or concerns. Chevron appreciates your consideration in these matters.

Sincerely,

Larry Skow  
Reservoir Engineer

Enclosures

## **LIST OF ATTACHMENTS**

<b>Figure #1</b>	<b>Revised Base Case and Developed Case Production Forecast NVSU #1 (without (9) 1989 infill wells).</b>
<b>Figure #2</b>	<b>Revised Base Case and Developed Case Production Forecast Daly #3 (without (6) 1991 infills).</b>
<b>Attachment #1</b>	<b>Proposed Calculation of Crown Royalty and Oil and Gas Production Tax.</b>
<b>Attachment #2</b>	<b>Routledge Unit #1 Base and Developed Case Production Forecast and Assumptions.</b>

### **North Virden Scallion Unit #1**

Attached in Figure #1 is the revised production decline of NVSU#1 excluding the (9) 1989 infill wells which have already qualified for new oil status. The same decline trends were observed without the (9) infill wells because most of these wells were shut in due to economics by late 1992, prior to experiencing the 10.3% per annum exponential decline.

### **Daly Unit #3**

Attached in Figure #2 is the revised production decline of Daly Unit #3 excluding the (6) infill wells drilled in 1991. The 50% (most likely) case is the only one presented here which indicates the average exponential decline rate after 1993 to be 5.3% per annum, down from 5.9% per annum using the (6) infill wells.

With regards to the method by which the decline trends would be incorporated, Chevron Canada Resources requests the method described in Option A, but will entertain Option B if it is deemed that Option A is not possible. Chevron Canada Resources does, however, request minor modifications to the Calculation of New Oil Crown Royalty and Oil and Gas Production Tax. The proposed formula is shown in Attachment #1. The formulas were designed with the following objectives in mind:

1. Royalties and Production Taxes associated with base case production volumes to be calculated using old oil formulas, and
2. Royalties and Production Taxes associated with incremental production, exclusive of holiday oil volumes, to be calculated based upon new oil formulas.

Chevron Canada Resources believes this methodology results in calculations that reflect the intended goal of both parties as discussed during our May 17 meeting in Virden.



### **Routledge Unit #1**

Chevron Canada Resources hereby applies for marginal well work-over incentives for potential optimization activities in Routledge Unit #1. The assumptions are outlined in Attachment #2 and indicates that by granting the 500 m<sup>3</sup>/well holiday, the 12-well program will generate an incremental NPV of \$19,000 to the Crown, \$57,000 to the freehold owners and \$337,000 to Chevron and its unit partners. The wells targeted for artificial lift upgrade/installation were determined by an engineering study which determined wells in Routledge Unit #1 that do not exhibit coning tendencies. Therefore, Chevron believes the risk of reducing ultimate recovery by increased drawdown is minimized.

FIGURE #1

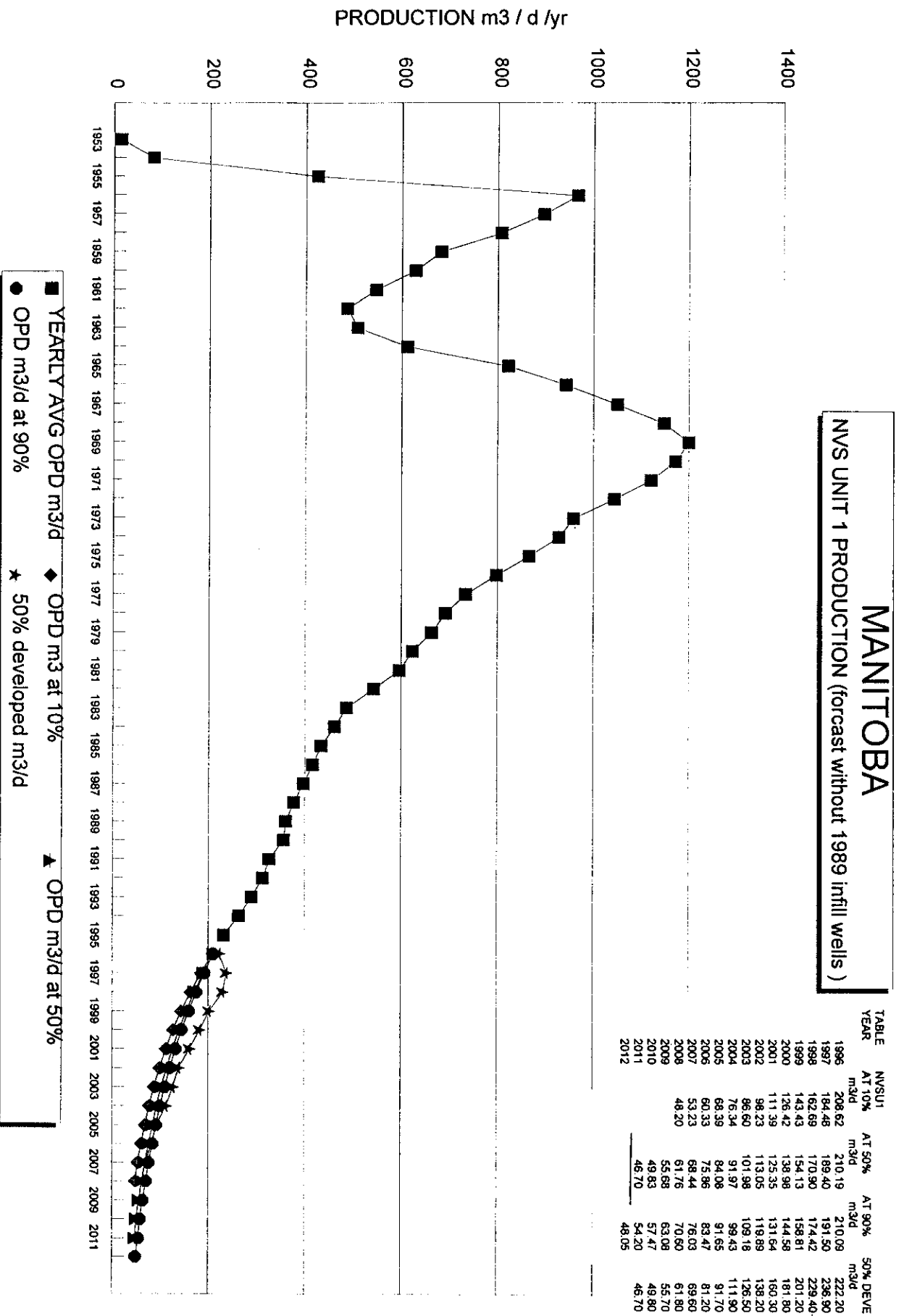
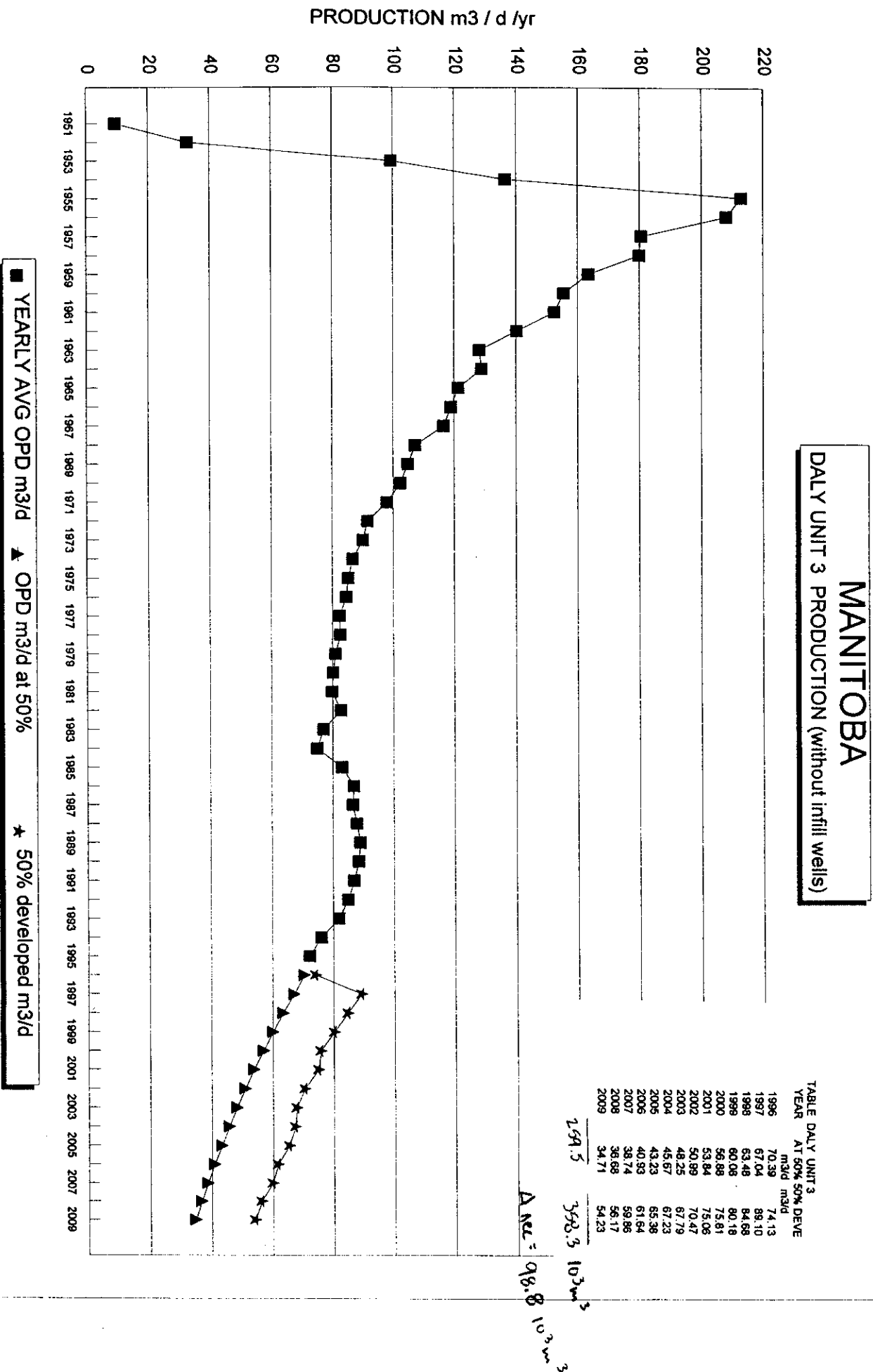


FIGURE #2



Abbreviations:

TUP	Total Unit Production
HOV	Holiday Oil Volumes
NUP	Net Unit Production
NOWP	New Oil Well Production
VNOWP	Vertical (infill) New Oil Well Production
HNOWP	Horizontal New Oil Well Production
UNO	Unit New Oil
BUP	Base Unit Production
UOO	Unit Old Oil
AWP	Allocated Well Production
ABP	Allocated Base Production
BRV	Base Royalty Volume
TRV	Total Royalty Volume
OORP	Old Oil Royalty Payable
NORP	New Oil Royalty Payable
TORP	Total Oil Royalty Payable
OOFTR	Old Oil Freehold Tax Rate
NOFTR1	New Oil Freehold Tax Rate (based upon ABP)
NOFTR2	New Oil Freehold Tax Rate (based upon AWP)
OOFTV	Old Oil Freehold Tax Payable
NOFTV	New Oil Freehold Tax Payable
TFTP	Total Freehold Tax Payable

ATTACHMENT #1

Production Calculations:

1. NUP = TUP - HOV

2. NOWP = VNOWP + HNOWP

3. UNO = NUP - BUP

UNO = NOWP

4. UOO = NUP - UNO
- where UNO >= NOWP or

where UNO < NOWP

Crown Royalty Calculations:

1. AWP = NUP \* Tract Factor

2. ABP = UOO \* Tract Factor

3. BRV = ABP^2 / 265

BRV = ((ABP - 50) \* 0.45) + 9.43

4. TRV = AWP^2 / 265

TRV = ((AWP - 50) \* 0.45) + 9.43

5. OORP = BRV \* Price

6. NORP = (TRV - BRV) \* 0.55 \* Price

7. TORP = OORP + NORP
- where ABP <= 50 or

where ABP > 50

where AWP <= 50 or

where AWP > 50

Freehold Oil Tax

1. AWP = NUP \* Tract Factor

2. ABP = UOO \* Tract Factor

3. OOFTR = 0

OOFTR = (0.43 \* ABP) - 8.24

OOFTR = 42.76 - (1500/ABP)

4. NOFTR1 = 0

NOFTR1 = (0.23 \* ABP) - 8.11

NOFTR1 = 19.59 - (1500/ABP)

5. NOFTR2 = 0

NOFTR2 = (0.23 \* AWP) - 8.11

NOFTR2 = 19.59 - (1500/AWP)

6. OOFTV = ABP \* OOFTR

7. NOFTV = (AWP \* NOFTR2) - (ABP \* NOFTR1)

8. TFTP = (OOFTV + NOFTV) \* Price
- where ABP <= 20 or

where 20 < ABP < 65 or

where ABP > 65

where ABP <= 36 or

where 36 < ABP < 65 or

where ABP >= 65

where AWP <= 36 or

where 36 < AWP < 65 or

where AWP >= 65

Attachment #2

Routledge Unit #1  
Base and Develop Production Wedges  
Total Unit

Year	Base	Production m3/d		Base Revenue	Base Crown Roy	Base FH Oil Tax	Base FH Roy	Net Base Revenue	Develop Revenue	Develop Crown Roy	Dev FH Oil Tax	Develop FH Roy	Net Dev Revenue	Total Revenue	Total Crown Roy	Total FH Oil Tax	Total FH Roy	Total Net Revenue
		Develop	Total															
1996			38.6	2,084,400	32,467	44,300	202,484	1,805,149	0	0	0	0	0	2,084,400	32,467	44,300	202,484	1,805,149
1997			48.4	1,952,532	28,207	34,414	189,674	1,700,237	687,204	(6,044)	(12,250)	66,757	638,741	2,639,736	22,163	22,164	256,431	2,338,978
1998			41.6	1,828,835	24,501	26,486	177,658	1,600,190	462,717	13,967	31,685	44,950	372,116	2,291,553	38,468	58,171	222,608	1,972,306
1999			35.0	1,713,597	21,298	20,501	166,464	1,505,334	233,672	6,204	11,849	22,700	192,919	1,947,269	27,502	32,350	189,163	1,698,254
2000			28.8	1,601,490	18,418	15,811	155,573	1,411,687	16,858	390	541	1,638	14,289	1,618,347	18,808	16,352	157,211	1,425,977
2001			25.5	1,503,995	16,083	12,527	146,102	1,329,283	(56,755)	(1,191)	(1,696)	(5,513)	(48,354)	1,447,241	14,892	10,831	140,589	1,280,929
2002			23.1	1,410,123	13,998	9,786	136,983	1,249,356	(85,983)	(1,655)	(1,797)	(8,353)	(74,179)	1,324,140	12,343	7,990	128,631	1,175,177
2003			20.8	1,320,013	12,145	7,725	128,230	1,171,913	(115,791)	(2,037)	(2,133)	(11,248)	(100,372)	1,204,222	10,107	5,593	116,982	1,071,541
2004			18.6	1,233,807	10,505	5,954	119,855	1,097,493	(146,186)	(2,342)	(2,348)	(14,201)	(127,295)	1,087,621	8,163	3,605	105,655	970,198
2005			16.7	1,163,462	9,249	4,630	113,022	1,036,561	(177,177)	(2,602)	(2,493)	(17,211)	(154,870)	986,285	6,646	2,137	95,811	881,691
2006			14.7	1,085,623	7,973	3,336	105,460	968,853	(208,774)	(2,772)	(2,431)	(20,281)	(183,290)	876,849	5,201	905	85,180	785,563
2007			12.9	1,018,159	6,943	2,329	98,907	909,979	(240,984)	(2,898)	(2,046)	(23,410)	(212,631)	777,175	4,046	284	75,497	697,348
2008			11.7	955,322	6,052	1,493	92,803	854,974	(243,394)	(2,691)	(1,493)	(23,644)	(215,566)	711,928	3,361	0	69,159	639,408
2009			10.6	897,273	5,286	893	87,164	803,930	(245,828)	(2,500)	(893)	(23,880)	(218,555)	651,445	2,786	0	63,283	585,375
Cum Total	347.0	0.0	347.0	19,768,631	213,126	190,186	1,920,380	17,444,940	(120,420)	(6,171)	14,495	(11,698)	(117,046)	19,648,211	206,954	204,681	1,908,682	17,327,894
NPV'10 @ Jan. 1, 1997				10,483,686	116,383	104,221	1,018,415	9,244,668	593,971	2,394	16,618	57,700	517,258	11,077,657	118,777	120,840	1,076,115	9,761,926
Well Workovers													180,000					
													337,258					

Assumptions:

- 1 Upgrade 12 wells Jan. 1, 1997
- 2 No incremental production, all acceleration
- 3 Production Acceleration  
Year 1 3 m3 / day 12,600  
Year 2 2 m3 / day 8,400  
Year 3 1 m3 / day 4,200
- 4 500 m3 / well holiday
- 5 1996 Price /m3 plus Annual Increase
- 6 Unit Crown % =
- 7 Unit Freehold % =
- 8 Freehold Royalty =
- 9 CCR Crown % =
- 10 CCR Freehold % =
- 11 Cost / Well \$15,000

June 24, 1996

Daly Unit no. 3.

1. Figure 1 to 4 show the production decline analysis of the Daly Unit 3 (excluding infill wells), using the exponential and the hyperbolic decline computation methods. The following information can be derived from these plot:

a) historic decline (before '84 water flood expansion) is approx 2.2% annually

b) the current decline (12/95): 3.9% / year

c) the production rate will drop below the historic decline (2.2%/year) in 2010.

$$d) \begin{aligned} q_i &= 1,903 \text{ m}^3/\text{mo} & (12/89) \\ q_f &= 1,903 * e^{-7 * 0.022} \end{aligned}$$

$$= 1,634 \text{ m}^3/\text{mo} \quad (12/95) \text{ based on } 2.2\%/\text{year decline}$$

$$Q_{\text{base}} = \frac{(1,903 - 1,634) * 7}{0.022} = 86,545 \text{ m}^3 \quad (a)$$

$$\begin{aligned} Q_{\text{actual}} &= 1.66894 * 10^6 - 1.49001 * 10^6 \\ &= 178,930 \text{ m}^3 \quad (b) \end{aligned}$$

$$\text{Incremental oil } (12/89 - 12/95) = 178,930^{(b)} - 86,545^{(a)} = 92,385 \text{ m}^3$$

- 3 -

2. Incremental Oil Using historic decline (1% / year)

$$q_i = 1,903 \text{ m}^3/\text{mo} \quad (12/89)$$

$$q_{ff} = 1,903 \cdot e^{-7 \times 0.01} = 1,774 \text{ m}^3/\text{mo} \quad (12/95)$$

$$Q_r = \frac{(1,903 - 1,774) \times 12}{0.01} =$$

$$= 154,800 \text{ m}^3 \quad (12/89 - 12/95)$$

$$\text{Incremental oil } (12/89 - 12/95) = 178,930 - 154,800 = \underline{\underline{24,130 \text{ m}^3}}$$

9. Figure 9 shows a second plot of the Branch historic production decline of 1% / year, using production data between 07/76 and 06/84.

10. Figure 8 shows a plot of Daily Unit 3 including the infill wells. Based on this plot the current production decline is 5.9% / year. (Manual)

Figure 10. also shows a plot of Daily Unit 3 (infill wells)

Annual production Decline: 6.2% / year (Manual)

Fig. 1

Daly Unit 3 (excl. infills) Data 01/52-12/95

Monthly Oil FC 1 (Rate-Time)

qi: 2804.99 m3, Dec, 1989

qf: 433.97 m3, Dec, 2036

di(Exp): 3.88604 CTD: 1.66894e+06 m3

RR: 530028 m3 Tot: 2.19897e+06 m3

Production Cums

Oil: 1.66894e+06 m3

Gas: 0 E6m3

Water: 1.81057e+06 m3

Cond: 0 m3

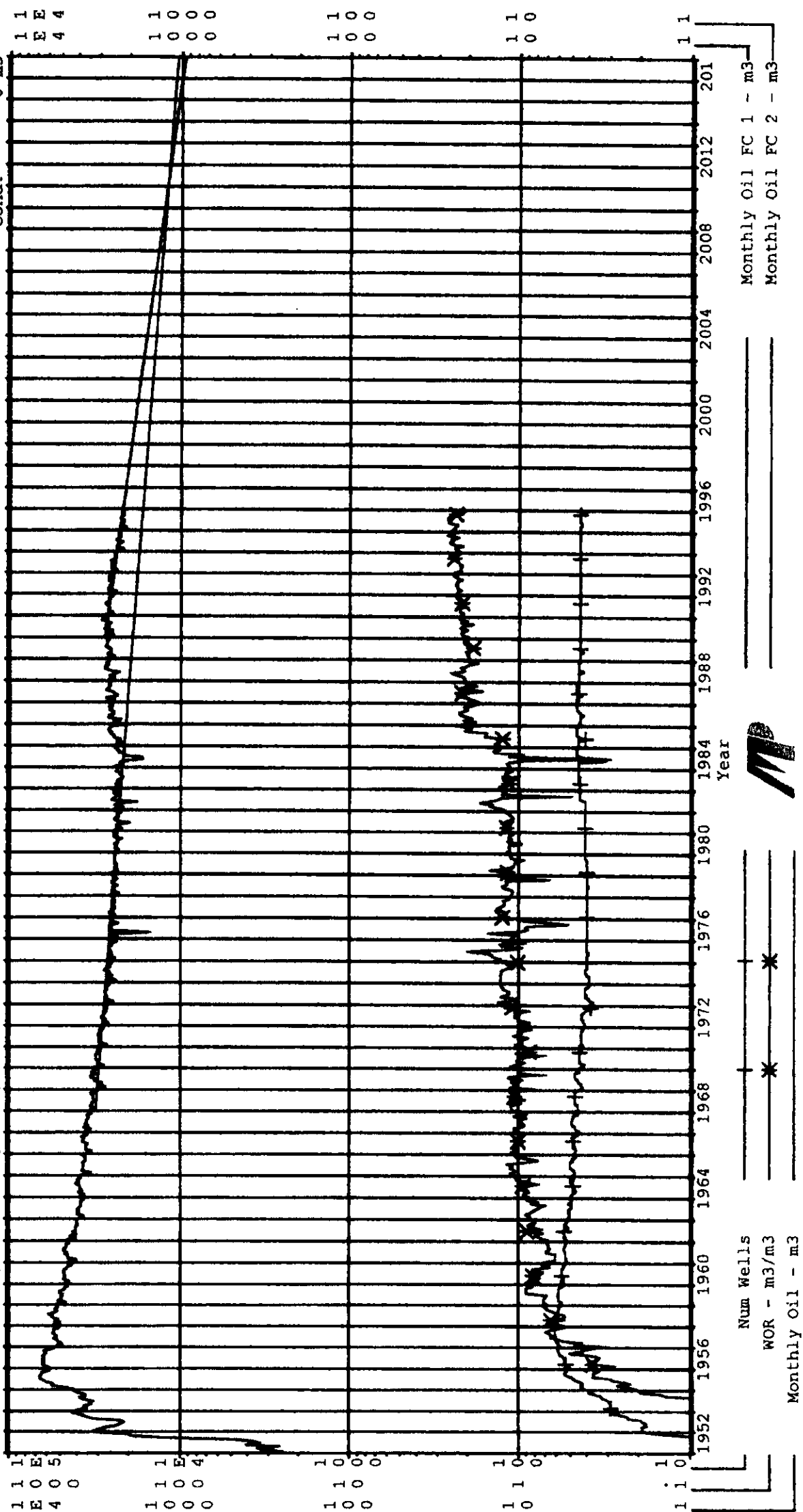




Fig. 2

Daly Unit 3 (excl. infills) Data 01/52-12/95

Monthly Oil FC 2 (Rate-Time)

qi: 3131.85 m3, Feb, 1968

qf: 679.425 m3, Dec, 2036

di(Exp): 2.19296 CTD: 1.66894e+06 m3

```
RR: 544467 m3      Tot: 2.21341e+06 m3
```

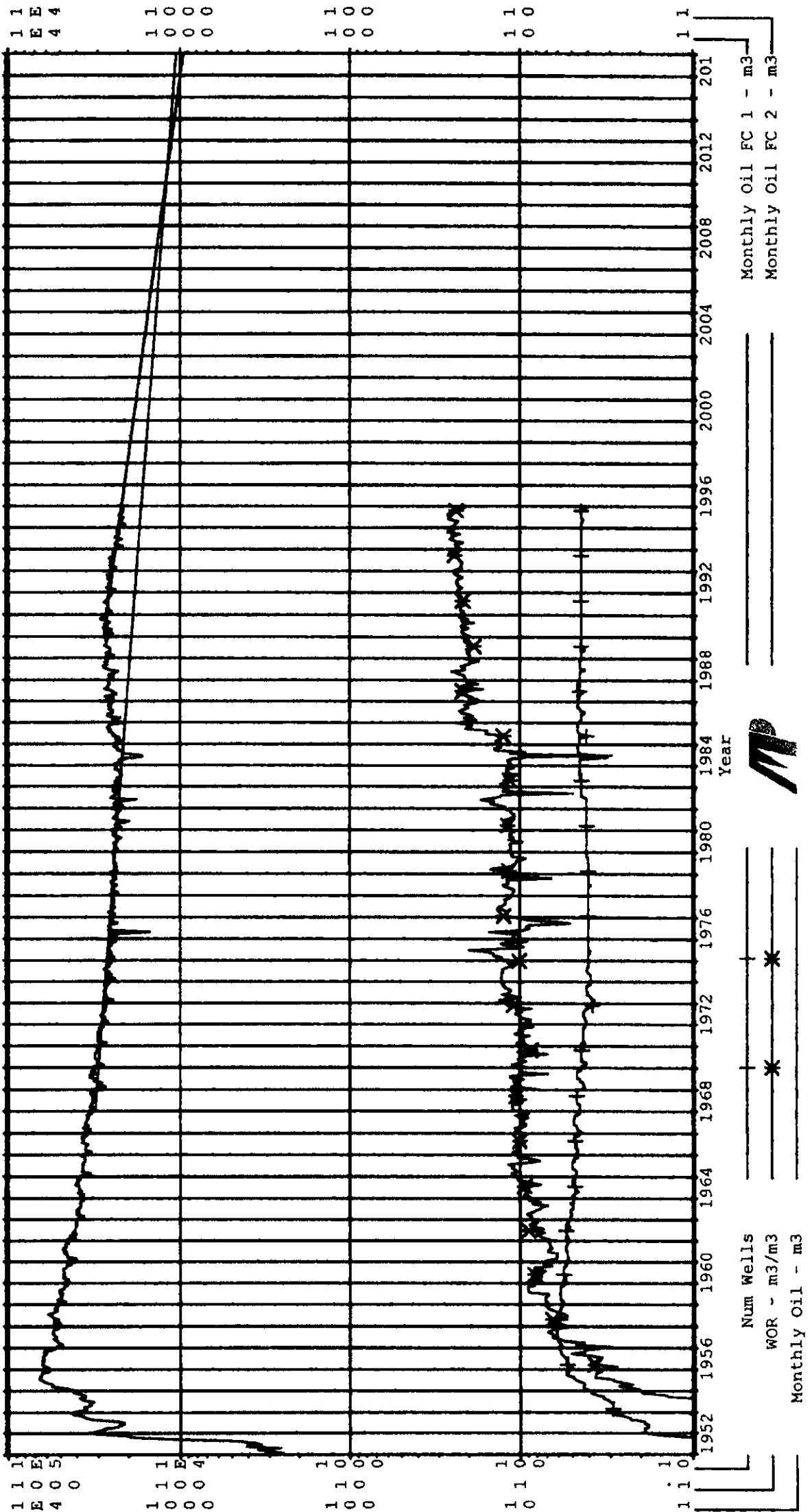
Production Cums

Oil: 1.66894e+06 m3

Gas: 0 E6m3

Water: 1.81057e+06 m3

Cond: 0 m3



78

Daly Unit 3 (excl. infills) Data 01/52-12/95

Monthly Oil FC 1 (Rate-Time)

qi: 2804.99 m3, Dec, 1989

qf: 743.457 m3, Dec, 2036

di(Hyp): 3.88604 CTD: 1.66894e+06 m3

RR: 626737 m3 Tot: 2.29568e+06 m3

Production Cums

Oil: 1.66894e+06 m3

Gas: 0 E6m3

Water: 1.81057e+06 m3

Cond: 0 m3

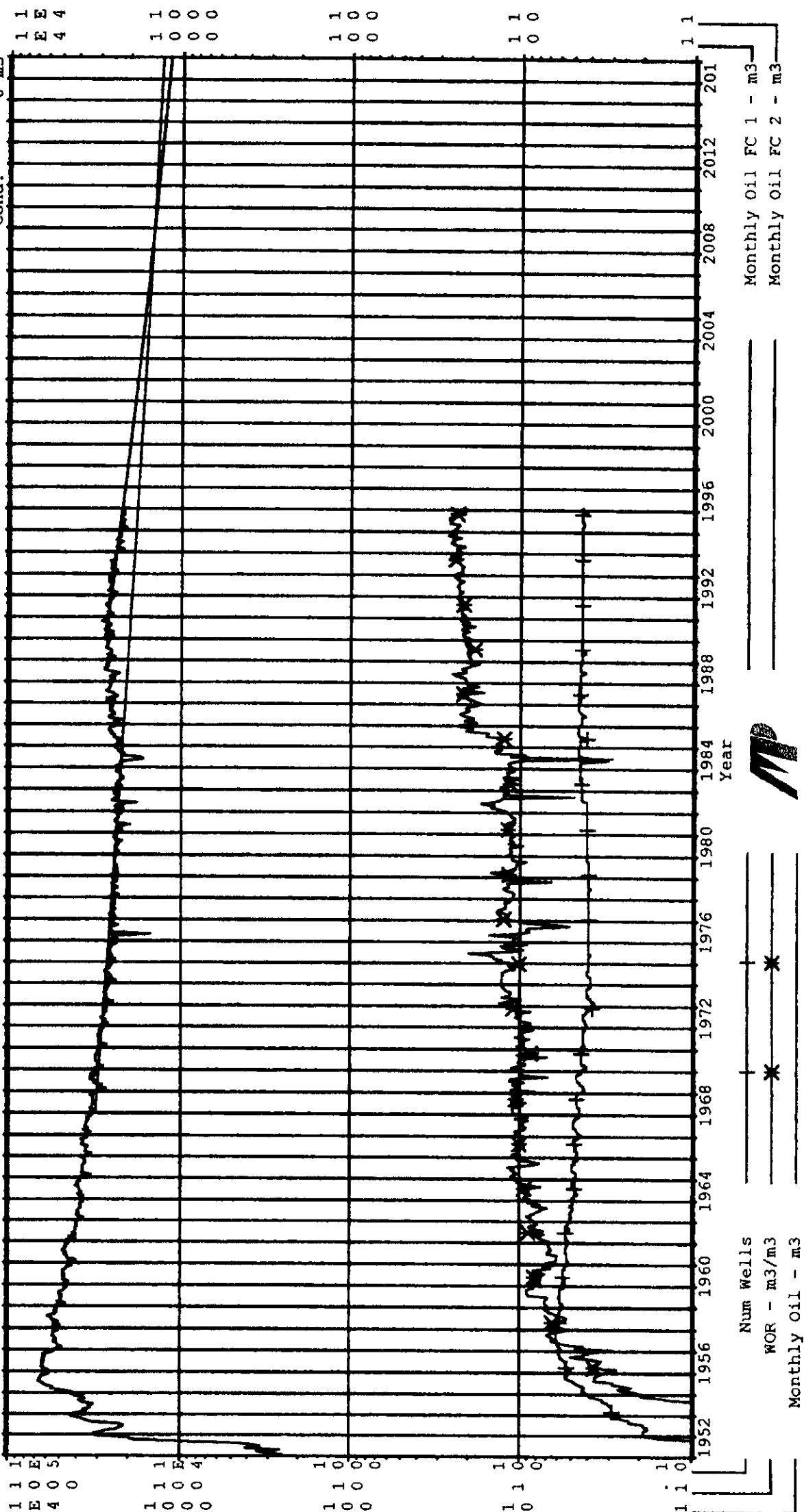
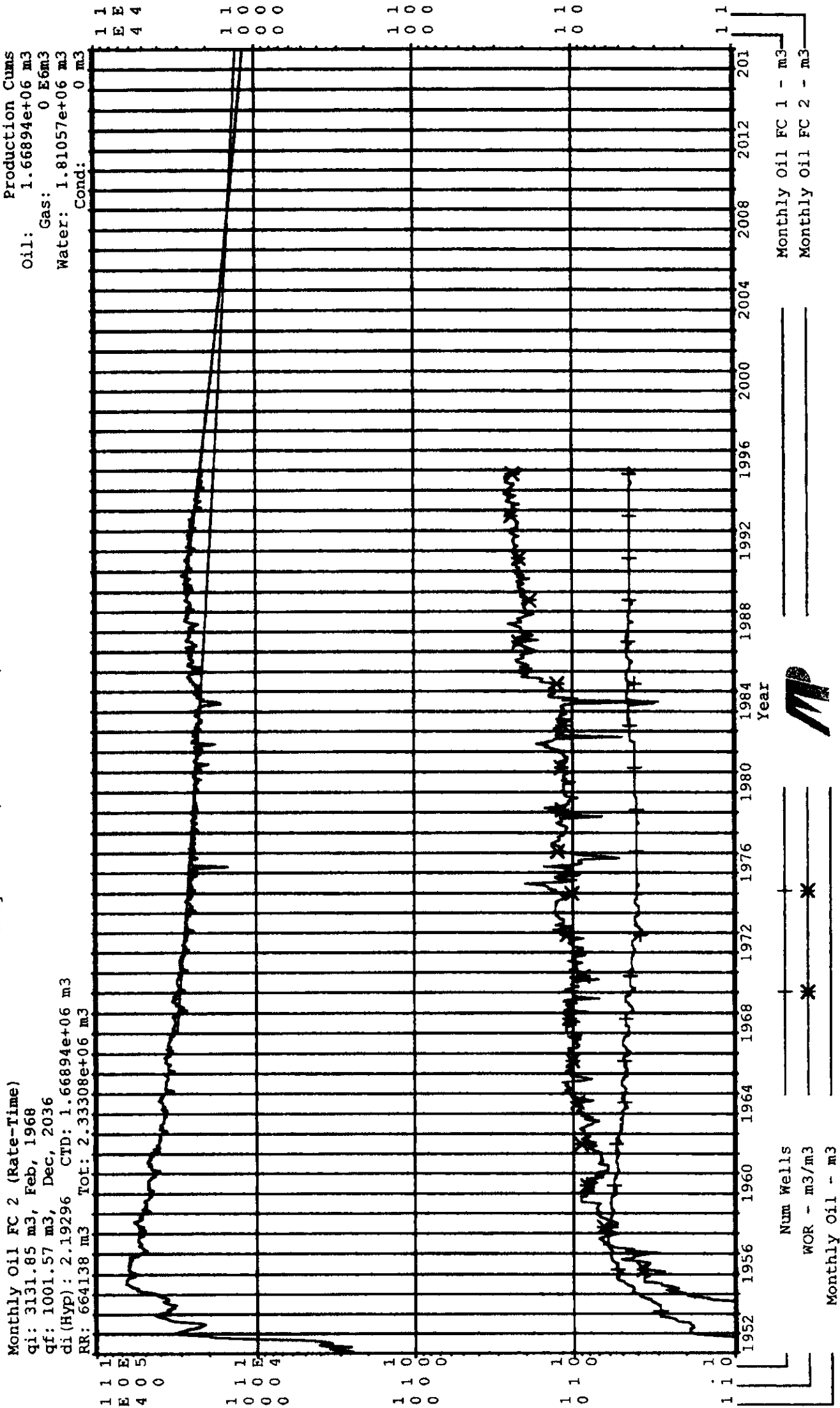


Fig. 4.

Daly Unit 3 (excl. infills) Data 01/52-12/95



$$\frac{F_{i,5}}{F_{i,5}}$$

Daly Unit 3 (excl. infills) Data 01/52-12/95

**Current Decline (Rate-Time)**

qi: 2804.99 m3, Dec, 1989

qf: 433.97 m3, Dec, 2036

di(Exp): 3.88604 CTD: 1.66894e+06 m3

RR: 530028 m3      Tot: 2.19897e+06 m3

## Production Cums

Oil: 1.66894e+06 m3

Gas: 0 E6m3

Water: 1.81057e+06 m3

**Cond:**

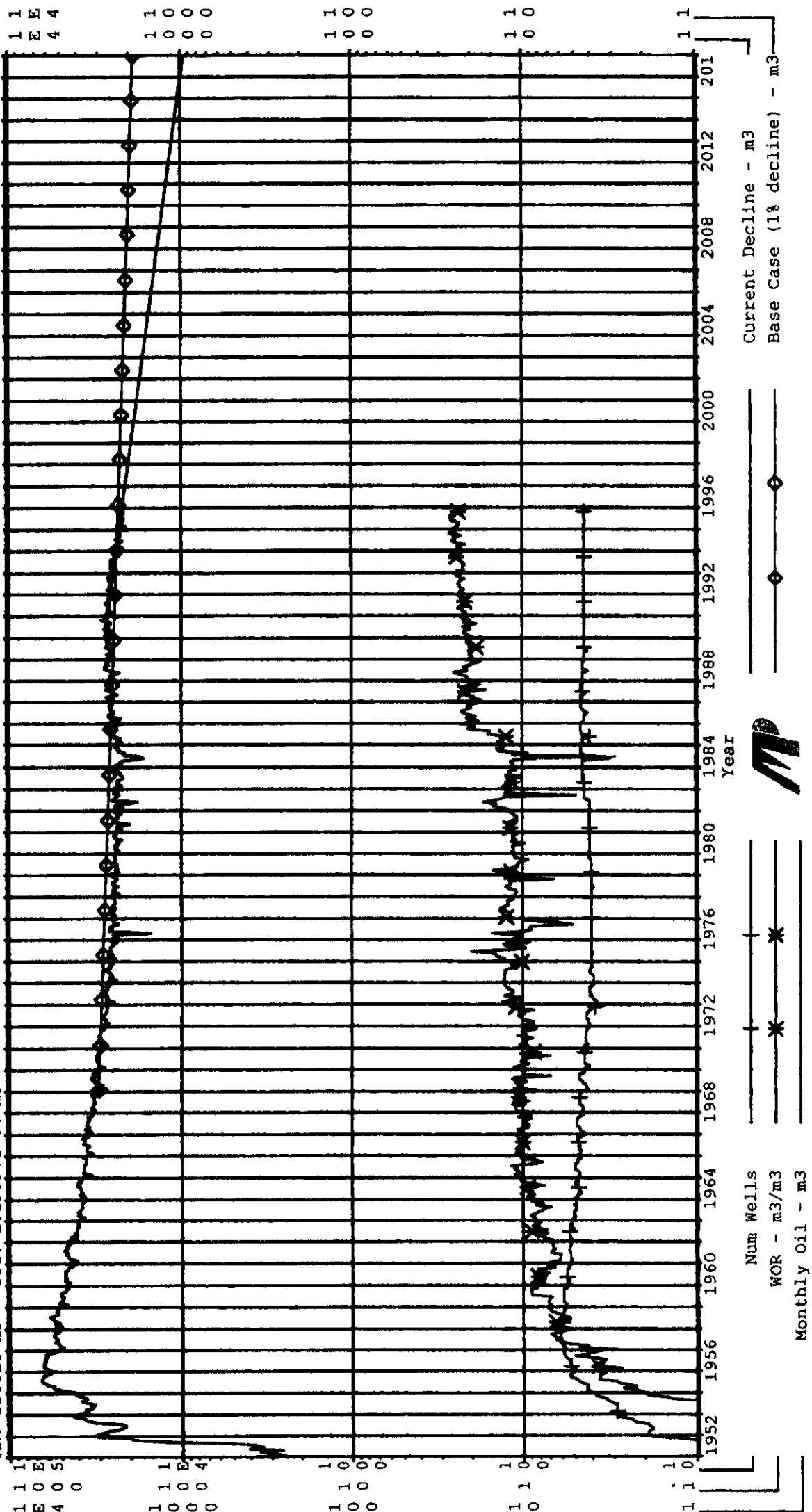
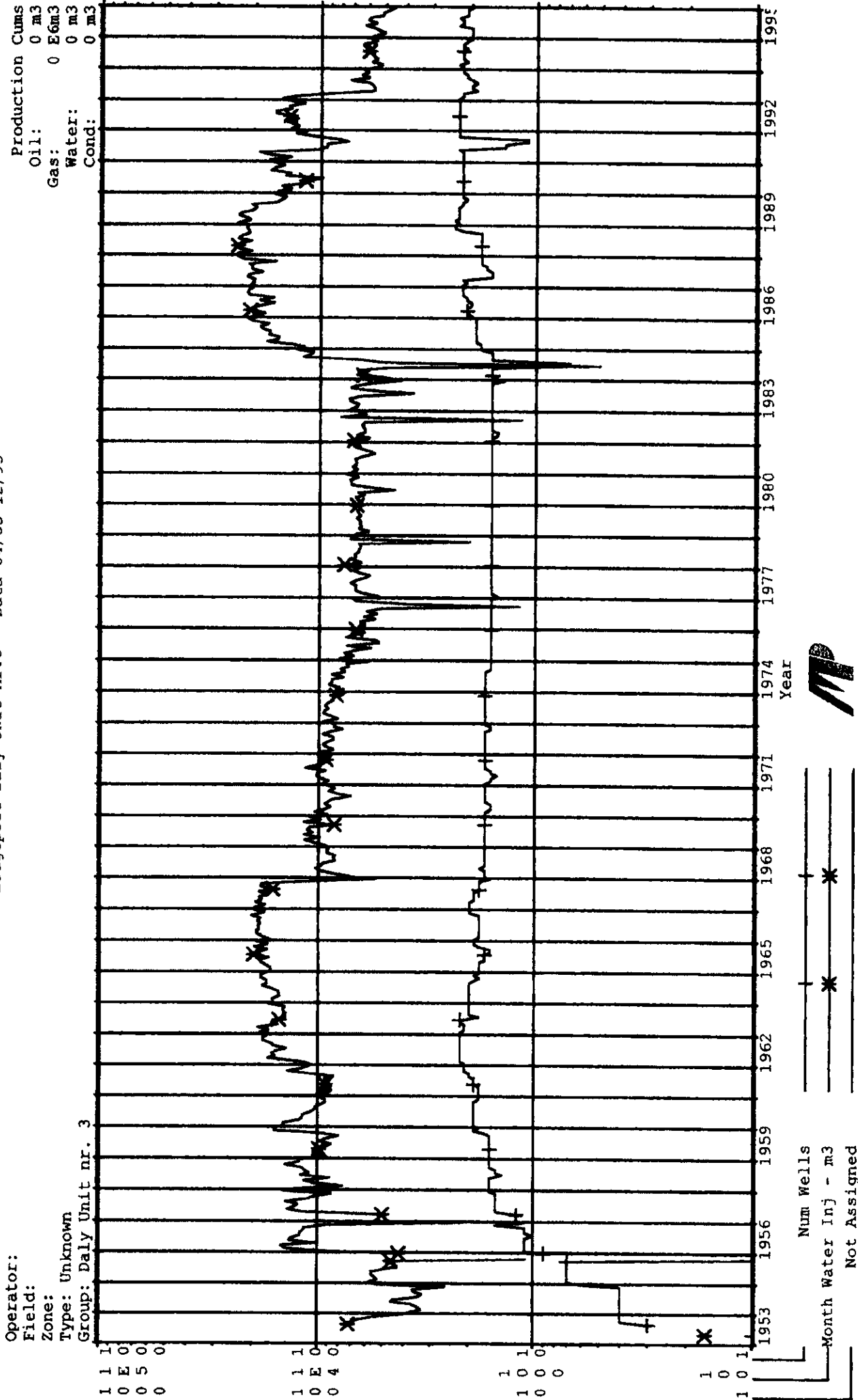


Fig. 6

Lodgepole Daly Unit nr.3 Data 04/53-12/95



7-1

Daily Unit 3 (excl. infills) Data, 01/52-12/95

Current :  $\Delta t = 49.5 \text{ years/cycle}$

$$D = 4.65 \% / \text{year.}$$

Oil:	1.66894e+06	m3
Gas:	0	E6m3
Water:	1.81057e+06	m3
Cond:	0	m3

**Operator:**

Field:

**Zone:**

Type: Unknown

Group: Dally Unit 3 (excl. infills)

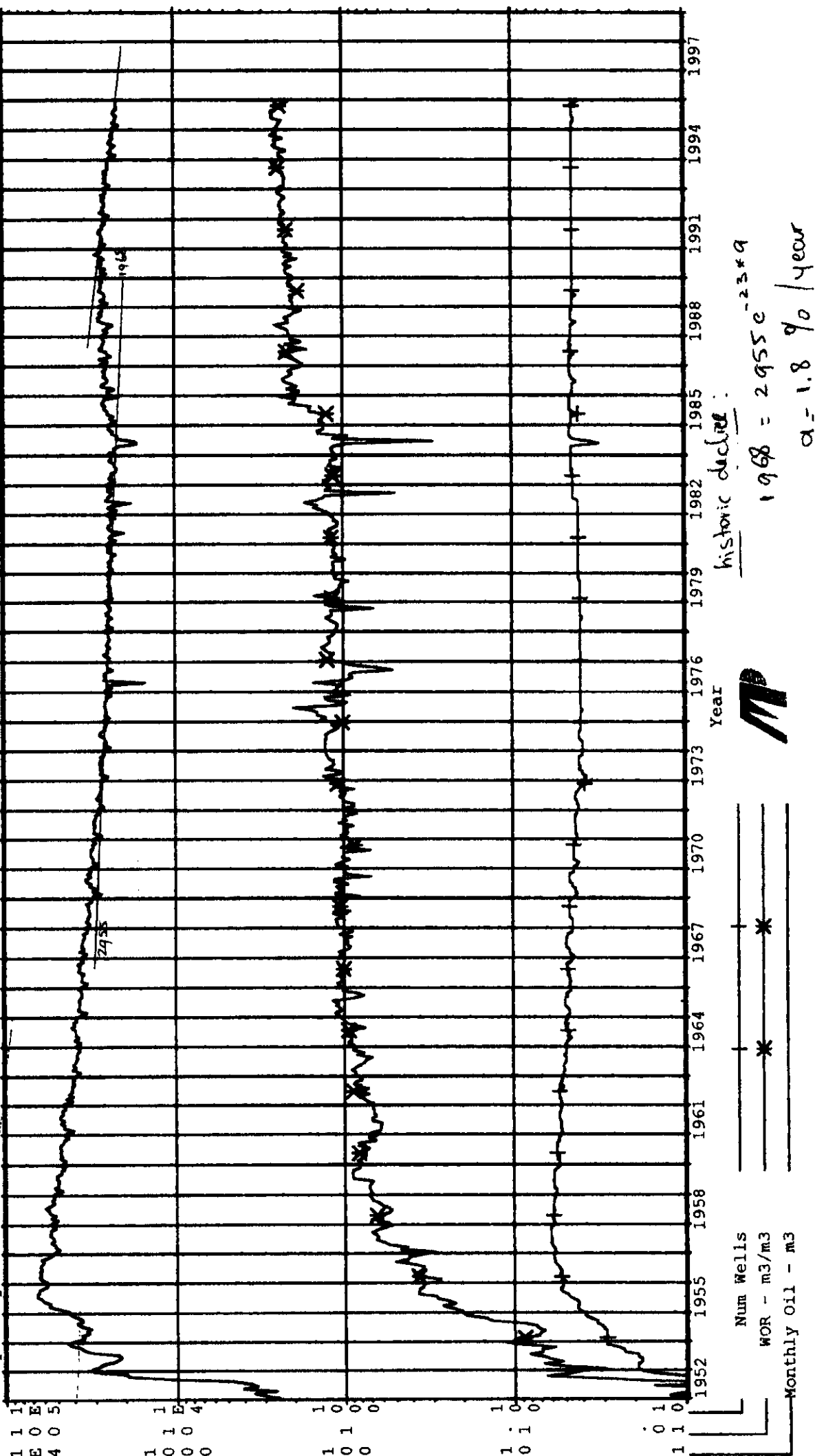


Fig. 8

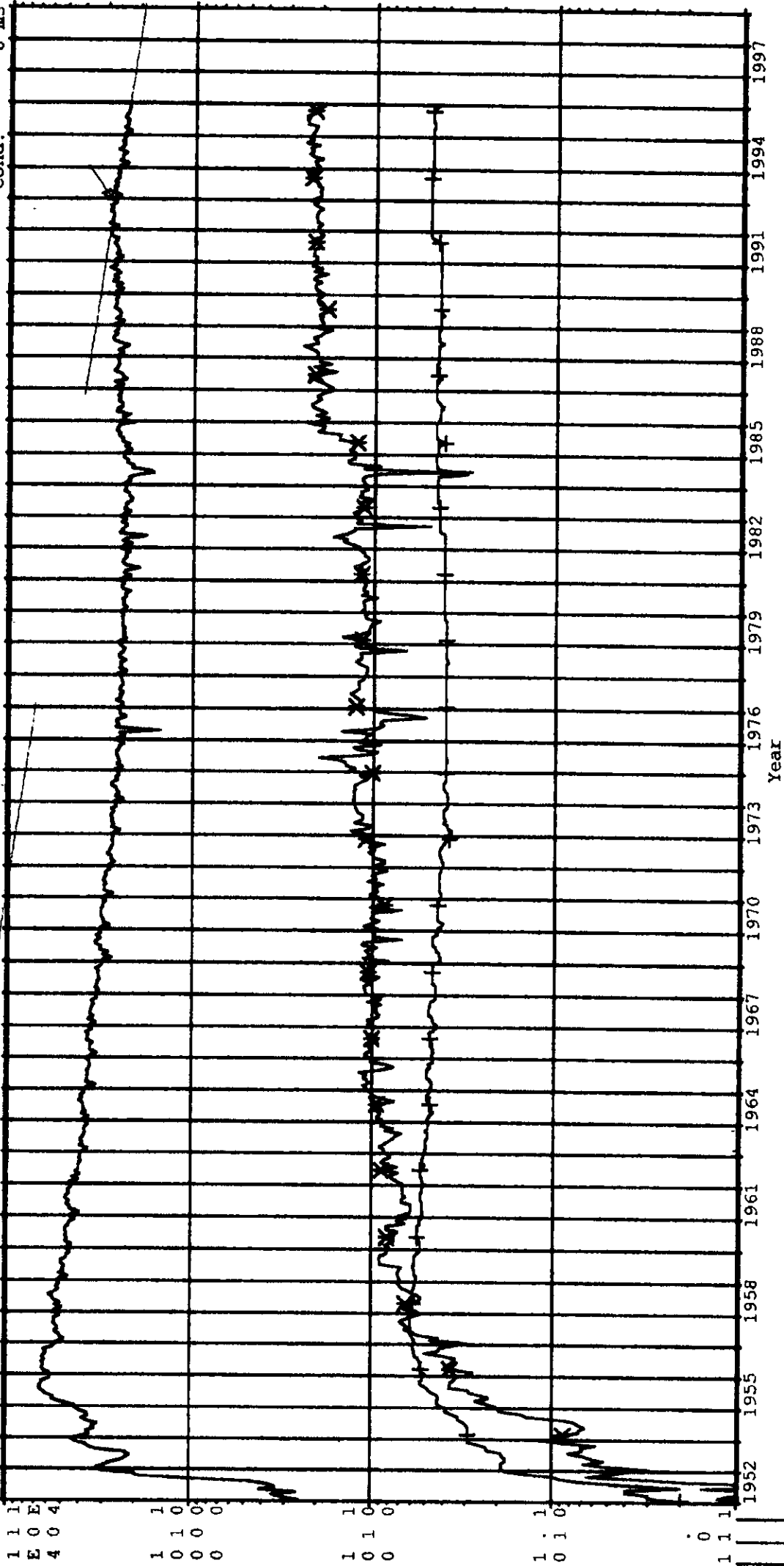
Lodgepole Daly Unit nr. 3 Data 01/52-12/95

$\Delta t = 388 \text{ years/cycle}$

$D = 5.9 \% / \text{year}$

Operator:  
Field:  
Zone:  
Type: Unknown  
Group: Daly Unit 3

Production Cums  
Oil: 1.67984e+06 m3  
Gas: 0 E6m3  
Water: 1.81241e+06 m3  
Cond: 0 m3



Num Wells  
WOR - m3/m3  
Monthly Oil - m3



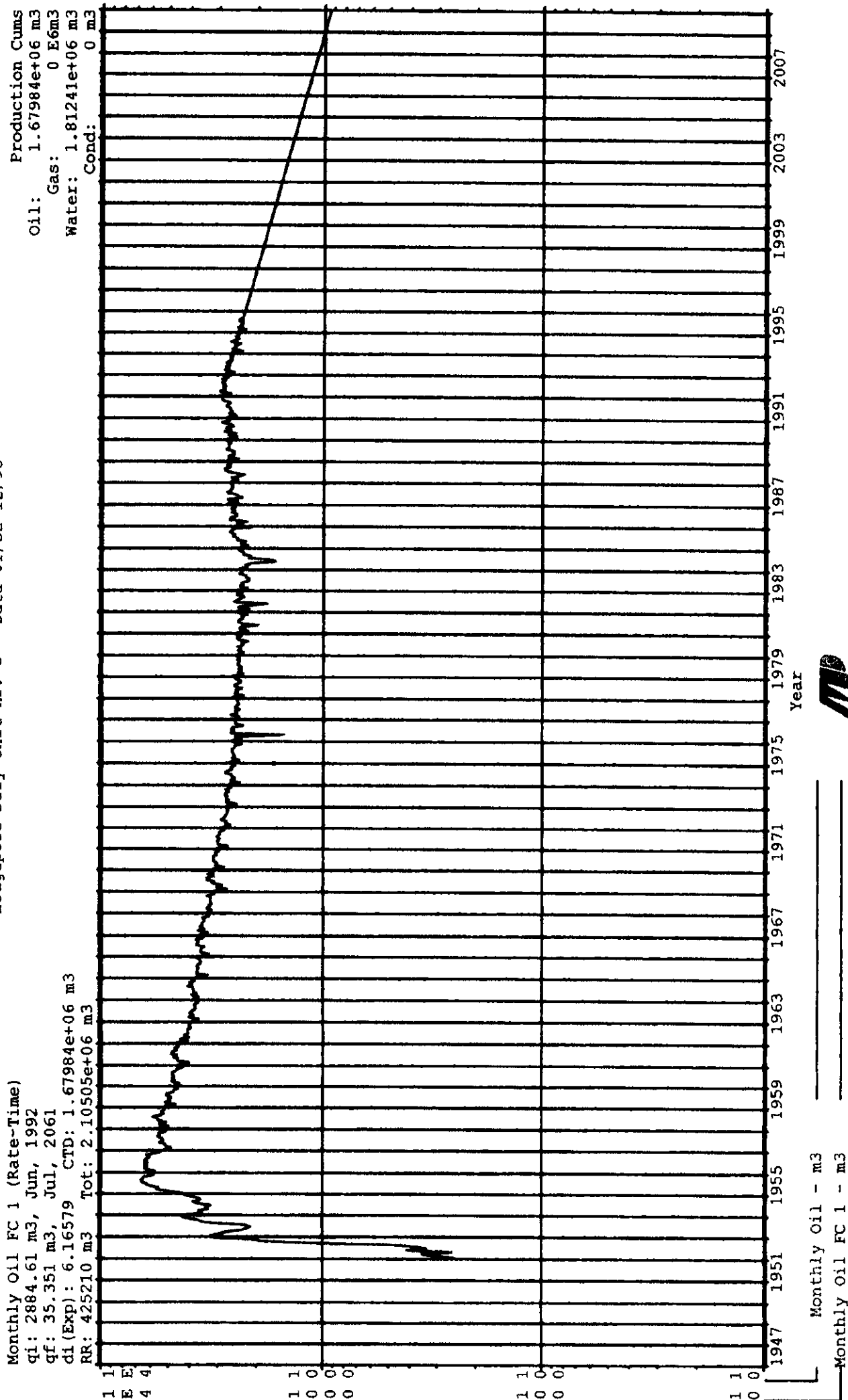
$q_{0t} = 2626.4 \text{ m}^3 / \text{mo}$  (07/96)





Fig. 10

Lodgepole Daily Unit nr. 3 Data 01/52-12/95





# Weatherford

LARRY SCOW - CHEVRON  
234-5834

- Chevron will remove '89 infills from analysis NVSU #1
- Rottledge h2 well will be covered by other incentives
- Chevron will consider forgiving current on oil, will crunch.

748-6345  
Joe Taylor - INACTIVE WORK LETTER  
middle / end of July

- OVER-INDUCTION IN DAILY #3  
CAUSING OUT OF UNIT MIGRATION  
16-3-10-28 (KIM)
- June 1 effective date preferred by Chevron.
- impact of reduced inj. slowed down WF

**Regional Offices**

Bakersfield CA  
TEL (805) 589-2511  
FAX (805) 589-2046

Denver CO  
TEL (303) 825-8558  
FAX (303) 825-2927

Houston TX  
TEL (713) 627-1300  
FAX (713) 621-3688

Lafayette LA  
TEL (318) 233-0222  
FAX (318) 234-4017

Midland TX  
TEL (915) 683-1604  
FAX (915) 683-2205

Yukon OK  
TEL (405) 354-7711  
FAX (405) 354-8450

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TEL (512) 664-5411  
FAX (512) 664-4358

Andrews TX  
TEL (915) 523-7961  
FAX (915) 523-3109

Bakersfield CA  
TEL (805) 589-2511  
FAX (805) 589-2046

Big Piney WY  
TEL (307) 276-5324  
FAX (307) 276-5385

Brawley CA  
TEL (619) 344-7550  
FAX (619) 344-6323

Broussard LA  
TEL (318) 232-7770  
FAX (318) 367-9974

Bryan TX  
TEL (409) 778-2799  
FAX (409) 778-1478

Casper WY  
TEL (307) 473-1250  
FAX (307) 473-1030

Corpus Christi TX  
TEL (512) 289-5111  
FAX (512) 289-2653

Dickinson ND  
TEL (701) 225-6891  
FAX (701) 225-3611

Edinburg TX  
TEL (210) 687-8536  
FAX (210) 381-6893

Elk City OK  
TEL (405) 225-4400  
FAX (405) 225-1281

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FAX (307) 789-0204

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FAX (505) 327-7503

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FAX (817) 665-0116

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FAX (813) 428-0477

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FAX (903) 984-2335

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FAX (210) 725-4853

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FAX (316) 624-6606

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FAX (405) 756-8268

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FAX (915) 550-9323

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FAX (903) 729-1241

Pearland TX  
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FAX (713) 485-4784

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FAX (307) 754-9695

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FAX (805) 525-5044

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TEL (915) 573-3563  
FAX (915) 573-7263

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TEL (405) 444-3345  
FAX (405) 444-3347

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TEL (504) 534-2348  
FAX (504) 534-2464

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TEL (801) 789-0445  
FAX (801) 789-3612

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TEL (512) 576-0156  
FAX (512) 576-0159

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FAX (817) 692-0669

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FAX (918) 465-2159

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TEL (701) 572-6714  
FAX (701) 572-0220

Woodward OK  
TEL (405) 256-7433  
FAX (405) 256-8635

Yukon OK  
TEL (405) 354-7711  
FAX (405) 354-4165

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**Tubular Services**

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TEL (405) 225-8888  
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TEL (817) 665-0378  
FAX (817) 665-0116

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TEL (318) 233-0222  
FAX (318) 234-4017

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FAX (405) 756-8350

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TEL (915) 550-9297  
FAX (915) 550-9323

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TEL (307) 362-1960  
FAX (307) 362-1964

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TEL (903) 984-5541  
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Odessa TX  
TEL (915) 550-9297  
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Pearland TX  
TEL (713) 485-1899  
FAX (713) 485-4784

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FAX (512) 664-4358

Farmington NM  
TEL (505) 327-6341  
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Houma LA  
TEL (504) 879-1546  
FAX (504) 873-8128

Kilgore TX  
TEL (903) 984-5541  
FAX (903) 984-2335

Lake Charles LA  
TEL (318) 436-3351  
FAX (903) 433-6532

Lafayette LA  
TEL (318) 233-0222  
FAX (318) 234-4017

Lindsay OK  
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FAX (405) 756-8268

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FAX (316) 624-6606

Palestine TX  
TEL (903) 729-2106  
FAX (903) 729-1241

Pearland TX  
TEL (713) 485-1899  
FAX (713) 485-4784

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TEL (801) 789-0445  
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FAX (713) 621-3688

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TEL (318) 233-0222  
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FAX (915) 683-2205

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FAX (504) 529-2957

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TEL (918) 592-1776  
FAX (918) 583-2014

Tyler TX  
TEL (903) 597-0340  
FAX (903) 597-0382



## Memorandum

Date June 26, 1996

To Bob Dubreuil  
Director  
Petroleum & Energy Branch

From John N. Fox  
Chief Petroleum Engineer  
Petroleum & Energy Branch

Subject **New Oil Status**

Telephone

Chevron Canada Resources has applied (June 18, 1996) for new oil status for NVSU No. 1, Routledge Unit No. 1 and Daly Unit No.'s 1 & 3 for incremental production expected to result from proposed 1996 waterflood modifications and production optimization. Chevron also plans to make application for special royalty/tax treatment for the drilling of horizontal injectors.

### Background

New oil status can be granted by the Director to oil that is produced from an old oil well that can be reasonably attributed to an increase in reserves as a result of a project of enhanced recovery. This definition of "new oil" under both the Crown Royalty and Incentives Regulation and the Oil and Gas Production Tax Regulation has been previously applied to incremental recoverable reserves resulting from waterflood modifications in Daly Unit No. 3.

The Branch has determined incremental recoverable reserves resulting from waterflood modifications by establishing a historical production decline for the unit. Upon completion of the waterflood modifications any production above the historical production decline is classified as new oil for royalty/tax purposes.

In it's application Chevron has determined three decline rates for each of the units covering a probability of occurrence ranging from 10% to 90%. Table 1 shows the range of decline rates for each unit, Chevron's proposed activities, the estimated expenditures and the estimated incremental recoverable reserves.

In addition to evaluating the appropriateness of the decline rates proposed by Chevron for the various units, there a number of issues unique to each unit. These issues are discussed in the following sections.

### NVSU No.1

Chevron has included the nine infill wells drilled in 1989 in it's decline curve analysis. Production from these wells is already classified as new oil and should be excluded from the decline curve analysis.

### Routledge Unit No. 1

Routledge Unit No.1 is under an active natural water drive. A pilot waterflood was implemented in Routledge Unit No.1 in 1974. The pilot consisted of a single inverted 9-spot injection pattern with injection at 13-22-9-25 and is still active.

Chevron's proposal for Routledge Unit No. 1 is to stimulate a number of producers, increase production capacity by upgrading artificial lift equipment on a number of wells and drill a horizontal well.

These activities are considered production optimization not waterflood modifications and it would be difficult to attribute any additional production resulting from these activities to a project of enhanced recovery. Therefore it is recommended that new oil status not be granted for Routledge Unit No.1 under the definition of "new oil".

It is suggested that Chevron be advised it could apply for special royalty/tax treatment under the Major Workover Incentive Program. With the approval of the Lieutenant Governor in Council, a 500 m<sup>3</sup> HOV could be granted to each well where production optimization work is completed.

#### **Daly Unit No. 1**

There are no special circumstances to be addressed when evaluating the decline rate in Daly Unit No. 1.

#### **Daly Unit No. 3**

In September 1984 The Oil and Natural Gas Conservation Board approved Chevron's application to modify and expand waterflood operations in Daly Unit No. 3. The waterflood expansion project involved conversion of five wells to injection, reactivation of three suspended injectors and an increase in injection pressure and volume.

The unit's historical production decline was estimated by the Branch at 1%/yr (exponential) based on unit performance from Jul/76 to Apr/84. Any unit production above the historical production decline qualifies for new oil status. The latest approval period for new oil status in Daly Unit No. 3 runs from Jun/94 to May/99.

The waterflood expansion project continues to have a significant impact on Unit production. From Sep/84 through Dec/95, 46,000 m<sup>3</sup> of new oil has been produced, excluding production from six infill wells drilled in the unit in 1991. Production from the infill wells automatically qualifies as holiday or new oil.

As a result of the waterflood expansion project, water injection into the unit was increased dramatically. In March 1993 Chevron significantly reduced injection from 445m<sup>3</sup>/d (1990 - 92) to an average of 192 m<sup>3</sup>/d over the past 3 years. Chevron indicated reduced injection is intended to improve the pattern production/injection balancing and reduce out of zone injection. This strategy has resulted in an increase in the production decline rate over the past 3 years. Chevron would like the historical production decline for Daly Unit No. 3 revised from 1%/yr to 5.9%/yr to reflect this current trend. Chevron has included the six infill wells drilled in 1991 in it's decline curve analysis. Production from these wells is already classified as new oil and should be excluded from the decline curve analysis.

This is not the first time Chevron has requested a change in the established historical decline rate for Daly Unit No. 3. It is suggested changing production trends will result in repeated requests for such modifications in the future. The Branch should establish a position on modifying historical decline rate established for new oil status. Three such options are:

- (a) No modifications to a historical production decline rate will be considered. Such a hard line position may discourage future investment and implies that production trends are not subject to changing economic and operational conditions, which is untrue.

- (b) Modification of the historical production decline rate will only be considered when unit production drops below or is predicted to drop below the historical production decline. When this occurs no unit production qualifies for new oil status. This option maintains the Crown's current cash flow from old oil until unit production drops below or is predicted to drop below the historical production decline. After that time Crown revenue from old oil will drop as oil previously classified as old oil under the original historical production decline is reclassified as new oil. It would be the expectation of the Branch that new oil revenue from incremental production would more than offset the drop in old oil revenue.
- (c) Modification of the historical production decline rate will be considered at any time when there is a change in production trends provided the applicant is prepared to forgo new oil status on any production under the previously established historical production decline rate. This option results in an initial increase in Crown revenue as new oil is reclassified to old oil. The long term costs and benefits to the Crown and the company under this option would have to be calculated on a case by case basis.

Option (b) & (c) are illustrated on Figure 1 in the context of Chevron's request to change the historic decline rate in Daly Unit No. 3 from 1%/yr to 5.9%/yr.

#### **New Oil Status Administrative Issues**

Chevron has requested varying start dates for new status for the units, June 1, 1996 for NVSU No. 1, July 1, 1996 for Daly Unit No. 3 and August 1, 1996 for Routledge Unit No. 1 and Daly Unit No. 1. It is recommended that a common starting date of July 1, 1996 be used. Though the final historical unit decline rates will not be selected before this date, I expect negotiations will have started.

Chevron should also be made aware of the method of calculating royalties and taxes when new oil status is approved. Attachment 1 is the proposed methodology and Chevron will be asked to comment.

#### **Recommendations**

It is recommended that Chevron be advised:

- (1) New oil status cannot be granted for Routledge Unit No. 1 as the production optimization activities do not represent an increase in reserves attributable to an enhanced recovery project. The company will also be advised of the option of applying for special royalty/ tax treatment.
- (2) Decline curve analysis for NVSU No. 1 should not include the 1989 infill wells.
- (3) New oil status for Daly Unit No. 3, using a decline rate of 1%/yr, has been approved for the period July 1, 1994 to June 30, 1999. The Branch is prepared to consider modifying the historical decline rate and present the options discussed.
- (4) How royalty and taxes are calculated after new oil status is approved.



John N. Fox

cc. Administration

**TABLE 1**  
**NEW OIL STATUS**

Unit	Chevron's Production Decline Probability of Occurrence			Proposed Waterflood Modifications	Estimated Expenditures (\$M)	Incremental Recoverable Reserves (10 <sup>3</sup> m <sup>3</sup> )
	10%	50%	90%			
NVSU #1	10.4%	8.5%	hyperbolic	<ul style="list-style-type: none"> <li>- injection profile modification (3)</li> <li>- well stimulations</li> <li>- injector conversions (3)</li> <li>- horizontal wells (4)</li> <li>producers/injectors</li> <li>- facility modifications</li> <li>- pattern balancing</li> </ul>	\$1651	178.1
Routledge Unit #1	13.1%	7.5%	5.2%	<ul style="list-style-type: none"> <li>- well stimulations</li> <li>- artificial lift upgrades</li> <li>- horizontal well (1)</li> </ul>	305	9.5
Daly Unit #1	7.7%	5.7%	hyperbolic	<ul style="list-style-type: none"> <li>- injector profile modification (2)</li> <li>- well stimulations</li> <li>- pattern balancing</li> </ul>	97	9.5
Daly Unit #3	8.9%	5.9%	5.2%	<ul style="list-style-type: none"> <li>- well stimulations</li> <li>- facility modifications</li> <li>- patter balancing</li> <li>- horizontal wells (3)</li> <li>producers/injectors</li> </ul>	915	41.5

## **Attachment 1**

### **New Oil Status Calculation of Crown Royalty and Oil and Gas Production Tax**

1. Total Unit Production ( $m^3$ )- Holiday Oil Volume ( $m^3$ ) = Net Unit Production (NUP)( $m^3$ )
2. NUP ( $m^3$ ) - Historical Unit Production ( $m^3$ ) = Unit New Oil (UNO) ( $m^3$ )
3. If UNO < Unit New Oil Well Production (NOWP) ( $m^3$ ), UNO = NOWP

Where, NOWP is production for infill wells or any other new oil wells in the unit

4. Unit Old Oil (UOO) ( $m^3$ ) = Net Unit Production - UNO
5. For individual unit tracts, the royalty and tax calculations are done as follows:
  - a. Assume all production allocated to the tract is new oil and calculate the new oil royalty or tax (NORT) payable. Where production allocated to the tract is equal to NUP \* unit tract participation factor.
  - b. Assume all production allocated to the tract is old oil and calculate the old oil royalty or tax (OORT) payable. Where production allocated to the tract is equal to NUP \* unit tract participation factor.
  - c. Calculate the actual royalty or tax owing for the unit tract

$$\text{Royalty/tax payable} = \text{NORT} * \frac{\text{UNO}}{\text{NUP}} + \text{OORT} * \frac{\text{UOO}}{\text{NUP}}$$

Note: Royalty is calculated in  $m^3$  and tax is calculated in %.



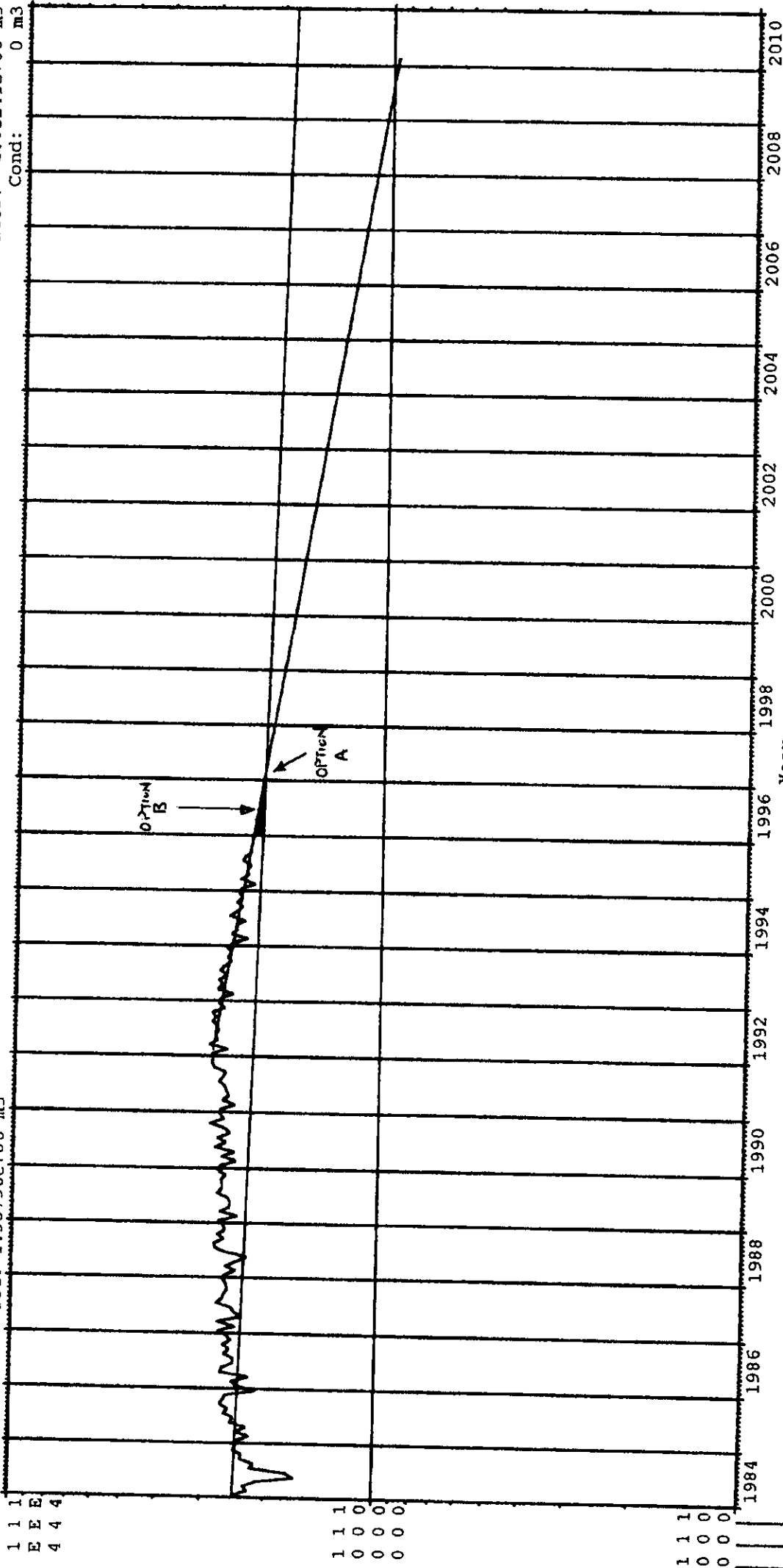
OPTION A - 5.9% DECLINE BECOMES HISTORICAL  
 PRODUCTION DECLINE ON THE DATE  
 THE 1% & 5.9% DECLINE CURVES  
 INTERSECT

Figure 1

Lodgepole Daly Unit nr. 3 Data 01/52-12/95

current decline (Rate-Time)  
 qi: 2914.31 m3, Feb, 1992  
 qf: 970.395 m3, Feb, 2010  
 di(Exp): 5.9 CTD: 1.67984e+06 m3  
 RR: 258119 m3 Tot: 1.93796e+06 m3

Production Cums  
 Oil: 1.67984e+06 m3  
 Gas: 0 E6m3  
 Water: 1.81241e+06 m3  
 Cond: 0 m3



1% DECLINE  
 APPROVED  
 01-JUL-94 TO  
 30-JUN-99

5.9% DECLINE  
 PROPOSED BY  
 CHEVRON

OPTION B - 5.9% DECLINE EFFECTIVE 01-JUL-96,  
 PRODUCTION WITHIN SHADED AREA  
 BETWEEN THE 1% & 5% DECLINE  
 CURVES IS OLD OIL



Monthly Oil - m3  
 current decline - m3  
 historic decline (1%) - m3



June 26, 1996

Mr. L. Skow, Reservoir Engineer  
Eastern Business Unit  
Chevron Canada Resources  
500 Fifth Avenue SW  
Calgary AB T2P 0L7

Dear Mr. Skow:

**Re: New Oil Status**

The Branch has completed a preliminary review of your application for new oil status in North Virden Scallion Unit No. 1 (NVSU No. 1), Routledge Unit No. 1 and Daly Unit No.'s 1 & 3. Evaluation of the appropriateness of the historical decline rates submitted by Chevron is ongoing. Chevron has requested varying start dates for new oil status for the units, June 1, 1996 for NVSU No. 1, July 1, 1996 for Daly Unit No. 3 and August 1, 1996 for Routledge Unit No. 1 and Daly Unit No. 1. For ease of administration the Branch suggests new oil status will be effective for each unit on July 1, 1996.

When reviewing Chevron's proposed waterflood modifications and historical unit production decline rates it became apparent that there are a number of issues unique to each unit. These issues are discussed below.

**NVSU No. 1**

Chevron has included the nine infill wells drilled in 1989 in its decline curve analysis. Production from these wells is already classified as new oil and should be excluded from the decline curve analysis.

**Routledge Unit No. 1**

With the exception of a pilot waterflood at 13-22-9-25 (WPM), Routledge Unit No.1 is under an active natural water drive. Chevron's proposal to stimulate a number of producers, increase production capacity by upgrading artificial lift equipment on a number of wells and to drill a horizontal well is considered production optimization as opposed to waterflood modifications. Under the definition of "new oil" in both the Crown Royalty and Incentives Regulation and the Oil and Gas Production Tax Regulation new oil status can only be granted by the Director to production from an old oil well that can be reasonably attributed to an increase in reserves as a result of a project of enhanced recovery. It would be difficult to attribute any additional production resulting from Chevron's proposed activities in Routledge Unit No. 1 to a project of enhanced recovery.

The Branch is currently looking at revising the Marginal Well Major Workover Incentive to include stimulations among other changes. The Branch suggests Chevron may wish to apply for a holiday oil volume of 500 m<sup>3</sup> for each well where production optimization activities are planned in Routledge Unit No. 1. Until changes to the Marginal Well Major Workover Incentive are approved such an application would have to be approved as a special incentive by the Lieutenant Governor in Council.

#### **Daly Unit No. 1**

There are no special circumstances to be addressed when evaluating the decline rate in Daly Unit No. 1.

#### **Daly Unit No. 3**

In September 1984 The Oil and Natural Gas Conservation Board approved Chevron's application to modify and expand waterflood operations in Daly Unit No. 3. The unit's historical production decline was estimated by the Branch at 1%/yr (exponential) based on unit performance from Jul/76 to Apr/84. Any unit production above the historical production decline qualifies for new oil status. The latest approval period for new oil status in Daly Unit No. 3 runs from Jun/94 to May/99.

The waterflood expansion project continues to have a significant impact on Unit production. From Sep/84 through Dec/95, 46,000 m<sup>3</sup> of new oil has been produced, excluding production from six infill wells drilled in the unit in 1991. Production from the infill wells automatically qualifies as holiday or new oil.

Chevron has requested the historical production decline be changed from 1%/yr to 5.9%/yr to reflect an increase in the decline rate over the past 3 years. The increasing decline rate appears to be coincident with Chevron's decision to reduce injection to improve injection pattern balancing and control out of zone injection. Please comment on the impact of Chevron's strategy to reduce injection into Daly Unit No. 3 from the perspective of the impact on recovery, operating cost and operational problems.

The Branch is prepared to consider modifying the historical production decline for Daly Unit No. 3. However any modification to the decline rate would have to be beneficial to both Chevron and the Crown. Possible options to consider for modifying the historical production decline include:

- (a) Modification of the historical production decline rate from 1%/yr to 5.9%/yr when unit production drops below or is predicted to drop below the historical production decline rate.
- (b) Modification of the historical production decline rate from 1%/yr to 5.9%/yr, effective July 1, 1996, on the condition Chevron forgoes new oil status on any production currently qualifying for new oil status under the 1%/yr historical production decline rate.

Options (a) & (b) are illustrated on Figure 1. The Branch has not completed its analysis on these options and may not be prepared to accept either one. However it would be beneficial, if at this time, Chevron provided its comments on these options including a summary of costs and benefits to Chevron and the Crown. Chevron may wish to propose other alternatives.

#### **New Oil Status Administrative Issues**

The proposed method of calculating royalties and taxes when new oil status is approved is shown on Attachment 1. Please provide your comments on the methodology.

If you have any questions in respect of this matter please contact the undersigned or John N. Fox, Chief Petroleum Engineer at 945-6573 and 945-6574, respectively.

Yours truly,

A handwritten signature in black ink, appearing to read "L.R. Dubreuil". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

L.R. Dubreuil  
Director

cc: Administration

## Attachment 1

### New Oil Status Calculation of Crown Royalty and Oil and Gas Production Tax

1. Total Unit Production ( $m^3$ )- Holiday Oil Volume ( $m^3$ ) = Net Unit Production (NUP)( $m^3$ )
2. NUP ( $m^3$ ) - Historical Unit Production ( $m^3$ ) = Unit New Oil (UNO) ( $m^3$ )
3. If UNO < Unit New Oil Well Production (NOWP) ( $m^3$ ), UNO = NOWP  
  
Where, NOWP is production for infill wells or any other new oil wells in the unit
4. Unit Old Oil (UOO) ( $m^3$ ) = Net Unit Production - UNO
5. For individual unit tracts, the royalty and tax calculations are done as follows:
  - a. Assume all production allocated to the tract is new oil and calculate the new oil royalty or tax (NORT) payable. Where production allocated to the tract is equal to NUP \* unit tract participation factor.
  - b. Assume all production allocated to the tract is old oil and calculate the old oil royalty or tax (OORT) payable. Where production allocated to the tract is equal to NUP \* unit tract participation factor.
  - c. Calculate the actual royalty or tax owing for the unit tract

$$\text{Royalty/tax payable} = \text{NORT} * \frac{\text{UNO}}{\text{NUP}} + \text{OORT} * \frac{\text{UOO}}{\text{NUP}}$$

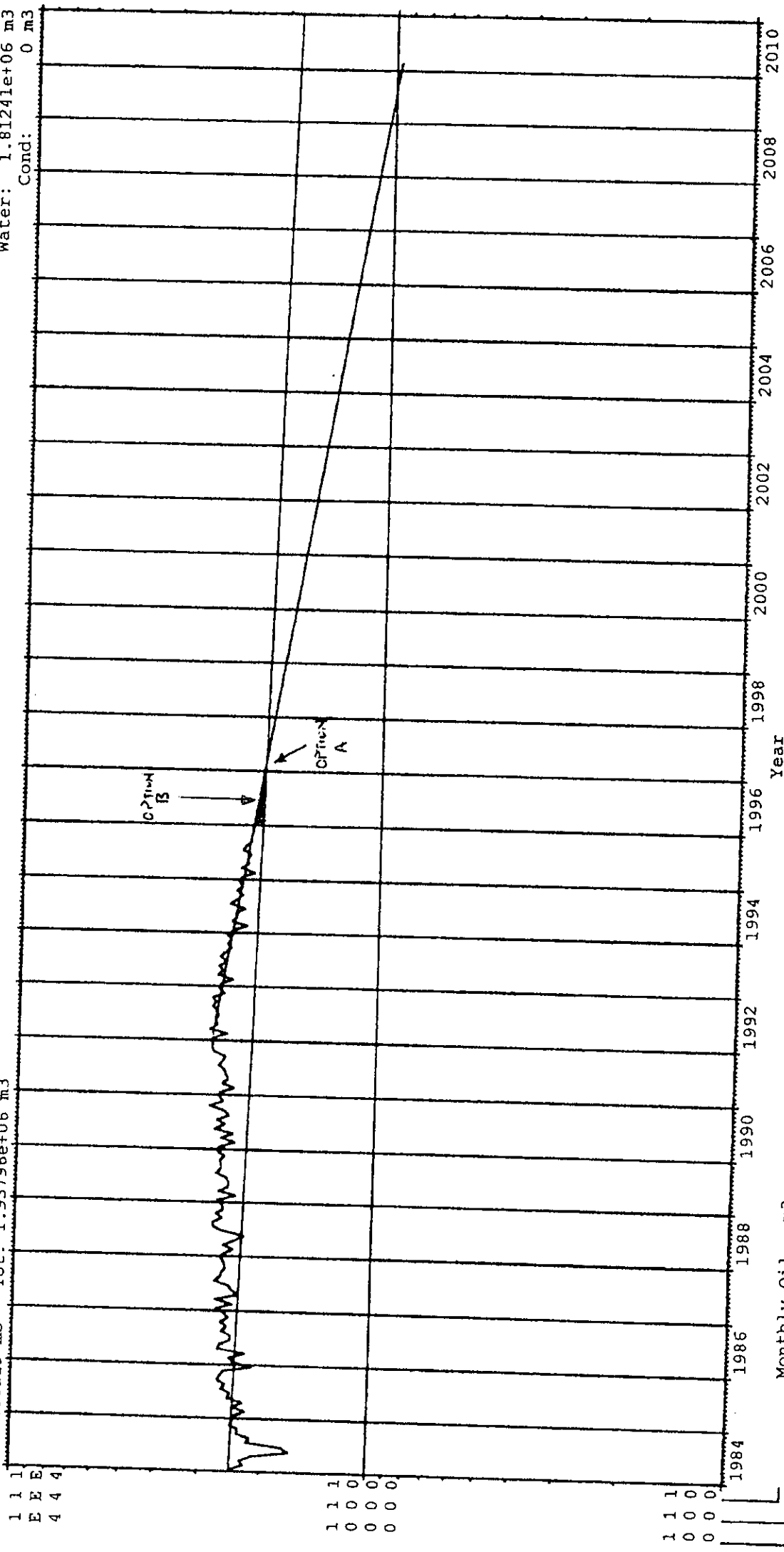
Note: Royalty is calculated in  $m^3$  and tax is calculated in %.

OPTION A - 5.9% DECLINE BECOMES HISTORICAL  
 PRODUCTION DECLINE ON THE DATE  
 THE 1% & 5.9% DECLINE CURVES  
 INTERSECT

Lodgepole Dally Unit nr. 3 Data 01/52-12/95

current decline (Rate-Time)  
 qi: 2914.31 m3, Feb, 1992  
 qf: 970.395 m3, Feb, 2010  
 di(Exp): 5.9 CTD: 1.67984e+06 m3  
 RR: 258119 m3 Tot: 1.93796e+06 m3

Production Cums  
 Oil: 1.67984e+06 m3  
 Gas: 0 E6m3  
 Water: 1.81241e+06 m3  
 Cond: 0 m3



1% DECLINE  
 APPROVED  
 01-JUL-94 TO  
 30-JUN-99

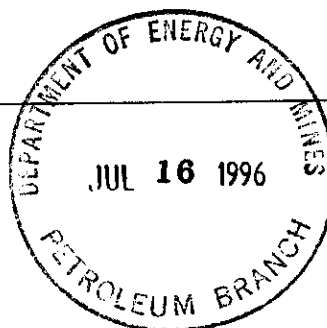
5.9% DECLINE  
 PROPOSED BY  
 CHEVRON

OPTION B - 5.9% DECLINE EFFECTIVE 01-JUL-96,  
 PRODUCTION WITHIN SHADED AREA  
 BETWEEN THE 1% & 5% DECLINE  
 CURVES IS OLD OIL



Monthly Oil - m3  
 current decline - m3  
 historic decline (1%) - m3

Figure 1



## Memorandum

Date June 10, 1996

To Bob Dubreuil  
Director

From Ulrich Oosthuizen  
Petroleum Engineer

Subject CHEVRON'S NEW OIL STATUS APPLICATION

Telephone

This report presents the results of the production decline analysis for the NVSU #1, Routledge Unit #1, and the Daly Unit #1 & 3. Chevron's proposed decline rate will also be compared and discussed. A preliminary study was also conducted to estimate the volume of "new oil" that can be contributed to Chevron's 1996-waterflood expansion program. The 3 options presented by John Fox (memo "New Oil Status " 06/26/96) for calculating "new oil" for the Daly Unit 3 will also be analyzed in this report.

### Daly Unit 3

The current exponential annual production decline rate is 5.9% based on production data from February 1992 to December 1995. Figure 1 is a graphical presentation of the production performance of Daly Unit 3 with decline parameters. - INCLUDES INFILL PRODUCTION

Chevron's proposed production decline for the "most likely" case is estimated at 5.9% p.a.. The Branch's estimated production decline and Chevron's proposed production decline are identical.

The effect of the 1996 Waterflood expansion on the calculated "new oil" for the following options will be examined:

- (a) no modification to the annual historic production decline rate of 1%.
- (b) annual production decline of 5.9% effective July 01, 1996; incremental oil production 06/96 to 07/96 will be considered "old oil". - infill well prod becomes old oil
- (c) annual production decline rate of 5.9% becomes historical production decline on 08/96 (1% and 5% decline curves intersect). does analysis include infill wells

### Option A.

Table 1 shows that Chevron's production forecast (50% developed) will drop in 2002 below the annual historic production decline curve of 1%. The total calculated "new oil" will be 25,383 m<sup>3</sup> from July 1996 to Dec. 2002.

- based on Chevron's prod. est. production will drop below historical prod decline in 1999. the same year as New Oil Status Application expires.

### Option C.

Chevron's production forecast(50% developed) will drop in 2009 below the proposed new annual production decline of 5.9%. The total calculated "new oil" will be 56,702 m<sup>3</sup> from 1996 to 2009. Table 2 is a summary of the calculated "new oil".

$$\Delta \text{NEW OIL (Option C)} = 31319 \text{ m}^3$$

First | Fold

### Option B.

This option is almost identical to option C in that the incremental oil from 06/96 to 08/96 will still be considered new oil. The incremental oil production during this period is approximately 700 m<sup>3</sup>.

### North Virden Scallion Unit #1

The current annual production decline for this Unit is calculated to be 9.4% using all the production data between October 1991 and December 1995. The exponential decline method is used to determine this decline trend. Figure 2 shows the production performance of the NVSU #1 with the Branch's best fit decline curve. - excludes '89 infill wells

- CHEVRON 26-5-96 revised decline (ex infills) 10.3%/p.a.

Chevron calculated an exponential decline rate of 8.5% using all the production data between 08/92 to 04/96 for the "most likely" case. Figure 3 shows Chevron's best fit decline curve. Chevron's calculated decline rate is slightly lower than the Branch and can therefore be used as the new annual production decline rate in any future references. Table 3 is a summary of the calculated "new oil" assuming that the annual production decline of 8.5% will be approved as the new historic decline rate for the NVSU #1.

### Daly Unit # 1

The current annual production decline for this Unit is calculated to be 4.7% using all the production data from 03/90 to 12/95. The exponential decline analysis method is also used to determine the current production decline trend. Figure 4 shows the result of the Branch's best fit that represents the current decline trend.

Chevron's has calculated an exponential decline of 5.7% p.a. for the "most likely" case based on all the production data between 1985 to 1993. This result does <sup>not</sup> reflect the current production decline trend, since the production data used for this analysis does not include the most recent production performance. Figure 5 is graphical representation of Chevron's determined decline curve.

more closely models Chevron 9.6%  
case

The Branch's calculated current annual production decline of 4.7% is a better representation of the current production trend and should therefore be used for any future references. Table 4 also shows a summary of the calculated "new oil" assuming the production rate of 4.7% will be approved for any future references for the Daly Unit 1.



### **Routledge Unit #1**

The current annual production decline for this Unit is calculated to be 6.4% using the production data between 03/88 to 12/95. The exponential decline analysis method is used to determine the current decline trend. Figure 6 represents the production performance of Routledge Unit 1 and the Branch best fit.

Chevron has calculated an exponential decline rate of 5.7% p.a. using the production data between 1989 to 04/96 for the "most likely" case. Chevron's proposed annual production decline of 5.7% rate is slightly lower than the Branch's best fit and can therefore be used in any future references.

### **Recommendation**

The following list is a summary of the recommended current production decline rates and "new oil" volume:

	<b>Daly Unit 1</b>	<b>Daly Unit 3</b>	<b>Routledge Unit 1</b>	<b>NVSU # 1</b>
<b>Decline rate(%/year)</b>	<b>4.7</b>	<b>5.9</b>	<b>5.7</b>	<b>8.5</b>
<b>New oil (m<sup>3</sup>)</b>	<b>4,990</b>	<b>56,702</b>	<b>-</b>	<b>60,036</b>
<b>Period</b>	<b>1996 - 2004</b>	<b>1996 - 2009</b>		<b>1996 - 2004</b>

The following data is a summary of the calculated "new oil" for the 3 options presented in this report:

<b>Option</b>	<b>New Oil(m<sup>3</sup>)</b>
<b>A</b>	<b>25,384</b>
<b>B</b>	<b>56,702</b>
<b>C</b>	<b>57,402</b>



**Ulrich Oosthuizen**  
**Petroleum Engineer**

UO/bj

Att: (6)

Table 1

Daly Unit nr 3

Option A

no modification to the annual historic production decline of 1%

modification to the annual historic production decline of 1%										
year	Waterflood Modification		Waterflood Modification		Waterflood Modification		Waterflood Modification		New Oil 1996	
	(a) Historic Decline (1.0%) incl. infills Qo (m^3/day/year)	(b) Chevron 50% developed Qo (m^3/day/year)	(b) Chevron 50% developed Qo (m^3/day/year)	(b)-(a) Incremental Oil incl. infills Qo (m^3/day/year)	(e) Incremental Oil incl. infills Total Qo (m^3/year)					
1,995	67.89	68.62	74.86	78.60	10.67	3,893.24				
1,996	67.22	67.93	70.94	87.94	20.68	7,549.06				
1,997		67.26	66.8	83.80	17.21	6,282.23				
1,998		66.59	62.9 *	76.90	10.97	4,005.57				
1,999		65.93	59.07	73.10	7.83	2,858.00				
2,000		65.27	55.78	66.80	2.18	795.54				
2,001		64.62	52.52	62.50						
2,002		63.98	49.46	58.50						
2,003		63.34	46.44	54.40						
2,004		62.71	43.85	46.90						
2,005		62.09	41.29	45.30						
2,006		61.47	38.66	39.90						
2,007		60.86	36.51	36.50						
2,008		60.25	34.46	34.50						
2,009		59.65								
Total New Oil									25,383.64	

NEW OIL  
STATUS: APPROVED 94-99CHEVRON  
CURRENT  
DECLINE 250%

67.89

67.22

74.86

70.94

66.8

62.9 \*

59.07

55.78

52.52

49.46

46.44

43.85

41.29

38.88

36.51

34.18

\* USING CHEVRON'S EST DECLINE  
DAILY UNIT #3 PRODUCTION WILL  
DROP BELOW APPROVED HISTORICAL  
DECLINE IN 1999

**Table 2**      **Daly Unit nr. 3**

**Option B**

**5.9% p.a. historic production decline effective July 01, 1996**

year	Waterflood Modification 1996		Waterflood Modification 1996		Waterflood Modification 1996	
	(a) Current Decline(5.9%) incl. infill wells Qo (m^3/day/year)	(b) Chevron 50% developed Qo (m^3/day/year)	(b)-(a) Incremental Oil incl. infill wells Qo (m^3/day/year)	New Oil incl. infill wells Total Qo (m^3/year)		
1,995	74.62					
1,996	70.35	78.60	8.25		3,012	
1,997	66.32	87.94	21.62		7,892	
1,998	62.52	83.80	21.28		7,768	
1,999	58.94	76.90	17.96		6,557	
2,000	55.56	73.10	17.54		6,403	
2,001	52.38	66.80	14.42		5,265	
2,002	49.37	62.50	13.13		4,791	
2,003	46.55	58.50	11.95		4,363	
2,004	43.88	54.40	10.52		3,840	
2,005	41.36	46.90	5.54		2,021	
2,006	38.99	45.30	6.31		2,302	
2,007	36.76	39.90	3.14		1,146	
2,008	34.65	36.50	1.85		674	
2,009	32.67	34.50	1.83		669	
				Total New Oil	56,702	

Table 3

## New Oil Calculation for 1996-Waterflood Modification NVSU #1

year	(a)		(b)		Waterflood Modification 1996	Waterflood Modification (b)-(a)	Waterflood Modification 1996
	Current decline (8.5%) excl. Infill wells	Qo (m <sup>3</sup> /day/year)	50% developed	Chevron Qo (m <sup>3</sup> /day/year)		Incremental Oil excl. Infill wells Qo (m <sup>3</sup> /day/year)	New Oil excl. Infill wells Qo (m <sup>3</sup> /year)
1996	BRANCH DECLINE (9.47%) 215	215		CHEVRON'S MOST LIKELY 210.19	218.4	3.40	1241
1997	195.7	197.57		189.4	220.4	30.83	11252.91
1998	178.2	181.47		170.9	223.7	42.23	15413.91
1999	162.2	166.68		154.12	196.8	30.12	10993.03
2000	147.6	153.10		138.98	178.5	25.40	9271.29
2001	134.4	140.62		125.36	157.9	17.28	6306.05
2002	122.3	129.16		113.05	136.5	7.34	2677.73
2003	111.3	118.64		101.98	125.3	6.66	2431.55
2004	101.4	108.97		91.97	110.2	1.23	448.81
2005	92.3	100.09		84.08	90.1		
2006	84.0	91.93		75.80	79.9		
2007	76.5	84.44		68.40	68.5		
2008	69.0	77.56		61.76	61.8		
2009	63.3	71.24		55.68	55.7		
2010	57.7	65.44		49.83	49.8		
2011	52.5	60.10		46.70	46.7		
						total "new oil"	60,036.28

Table 4

## New Oil Calculation for 1996-Waterflood Modification Daily #1

year	(a) Current decline (4.7%) Qo (m <sup>3</sup> /day/year)	Waterflood Modification 1996 (b) Chevron 50% developed Qo (m <sup>3</sup> /day/year)	Waterflood Modification 1996 (b)-(a) Incremental Oil Qo (m <sup>3</sup> /day/year)	Waterflood Modification 1996 excl. Infill wells New Oil Qo (m <sup>3</sup> /year)
1996	34.42	33.92		
1997	32.72	32.16	2.88	1,052.68
1998	31.21	30.92	2.79	1,016.78
1999	29.78	29.77	2.62	955.73
2000	28.41	28.62	2.39	870.68
2001	27.11	27.69	2.49	908.72
2002	25.87	26.75	0.23	85.41
2003	24.68	25.85	0.22	80.76
2004	23.55	24.96	0.05	19.71
2005	22.47	24.22		
2006	21.43	23.50		
2007	20.45	22.80		
2008	19.51	22.07		
2009	18.62	21.51		
<b>total "new oil"</b>				<b>4,990.47</b>

NEW OIL

BASED ON CHEVRON'S

ESTIMATES

50% DEVELOPED - 20% CASE

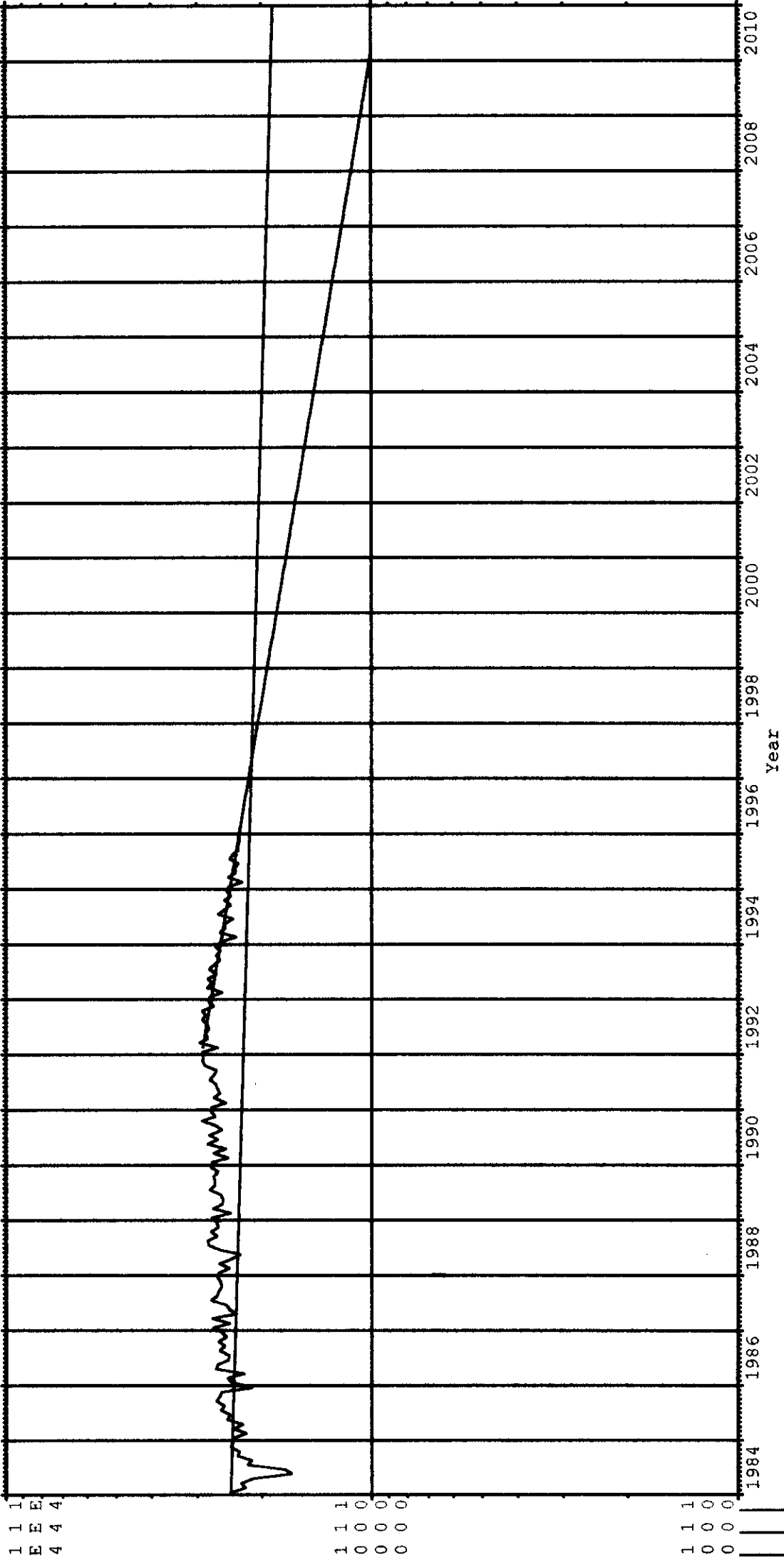
9537.5 m<sup>3</sup>

Figure 1

Lodgepole Daly Unit nr. 3 Data 01/52-12/95

current decline (Rate-Time)  
qi: 2914.31 m3, Feb, 1992  
qf: 1002.72 m3, Feb, 2010  
di (Exp): 5.72932 CTD: 1.67984e+06 m3  
RR: 262864 m3 Tot: 1.94271e+06 m3

Production Cums  
Oil: 1.67984e+06 m3  
Gas: 0 E6m3  
Water: 1.81241e+06 m3  
Cond: 0 m3



Monthly Oil - m3  
current decline - m3  
historic decline (1%) - m3



FIGURE 2

NVSU nr 1 (no infill wells) Data 01/53-12/95

Oil:	9.63223e+06	m3
Gas:	0	E6m3
Water:	2.27032e+07	m3
Cond:	0	m3

Branch Best Fit (Rate-Time)  
 qi: 330.541 m3/d, Oct, 1991  
 qf: 0.404585 m3/d, Nov, 2059  
 di (Exp): 9.36874 CTD: 9.63222e+06 m3  
 RR: 764358 m3 Tot: 1.03966e+07 m3

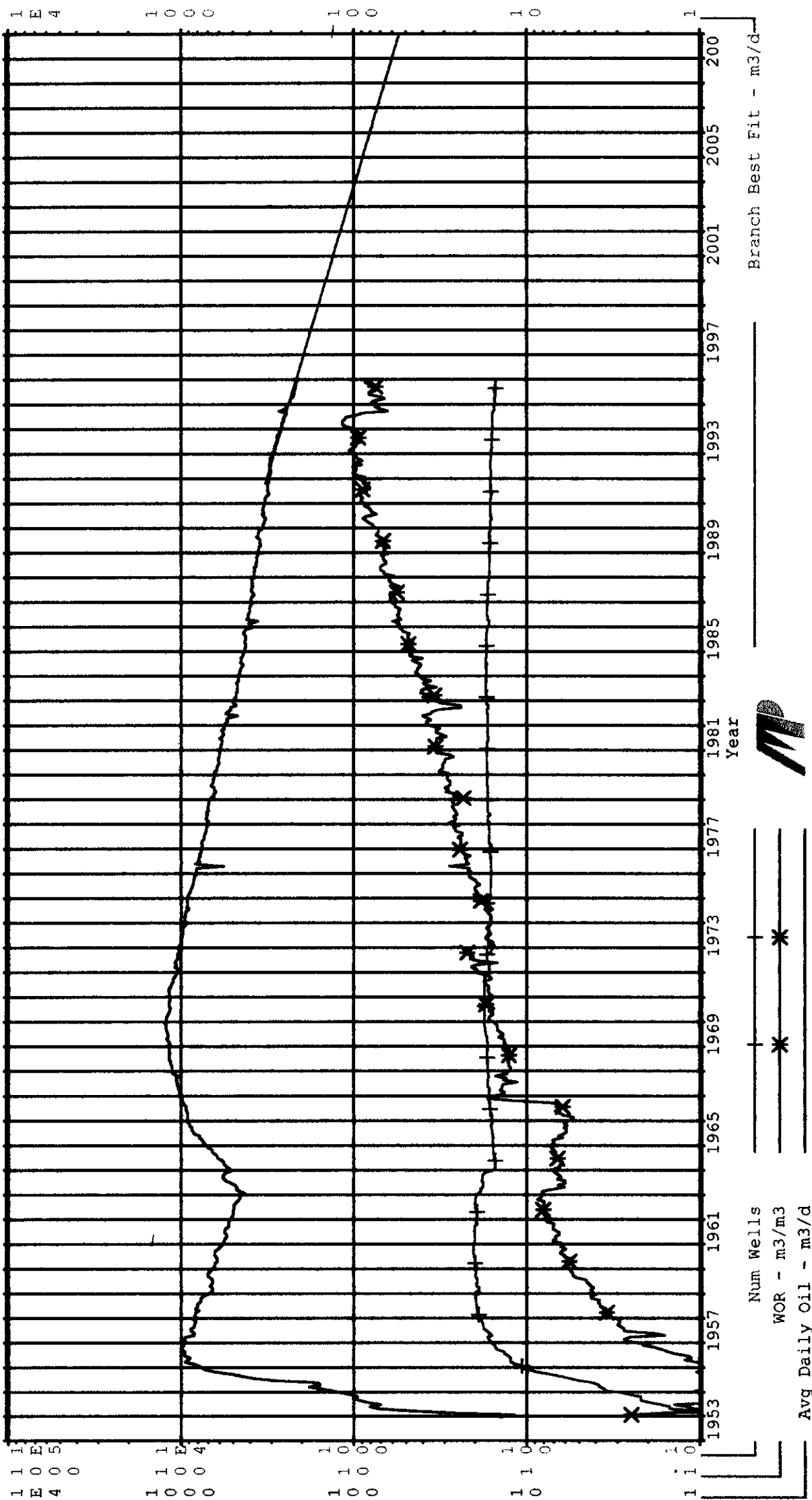
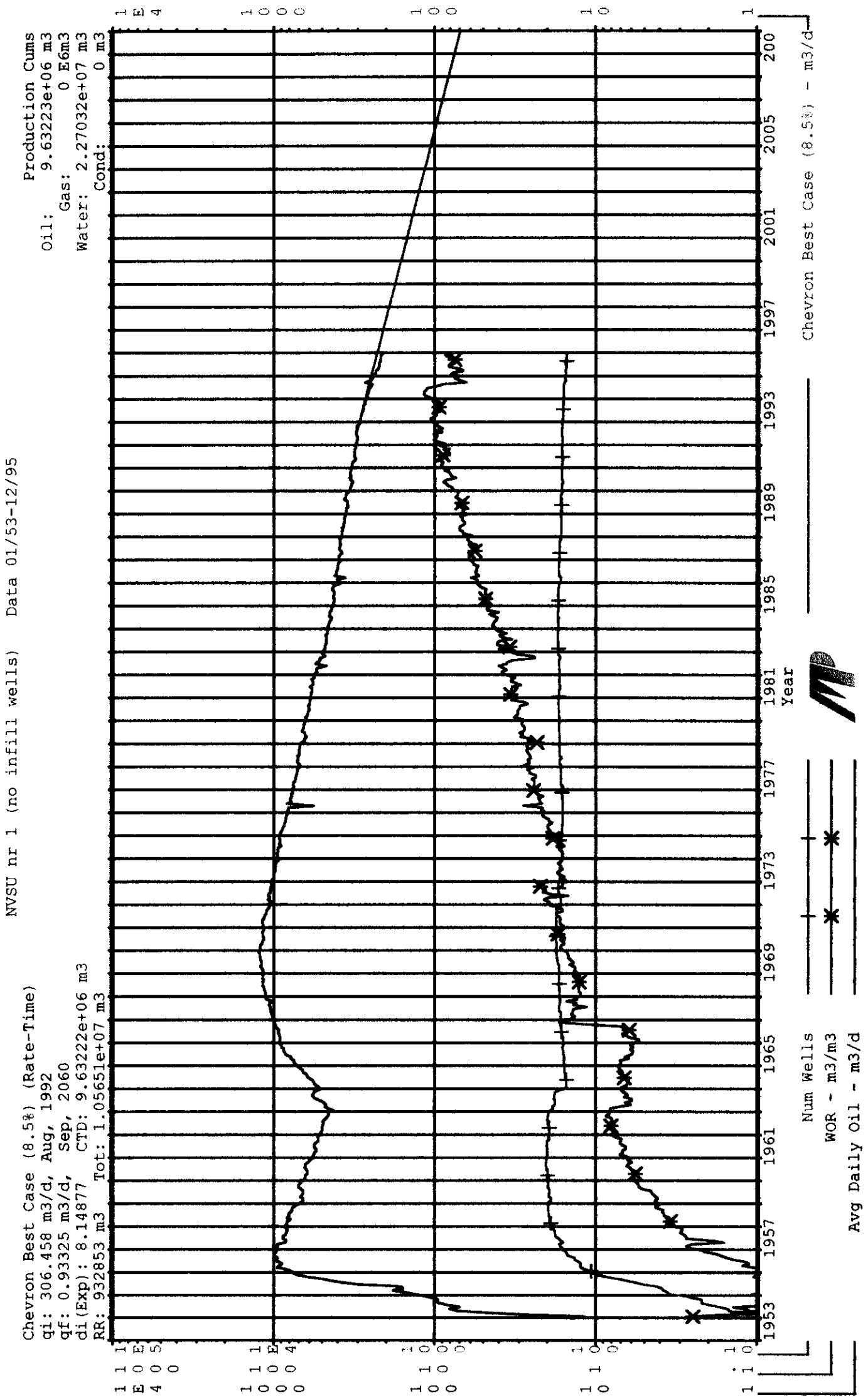


FIGURE 3





Daly Unit no. 1 Data 05/52-12/95

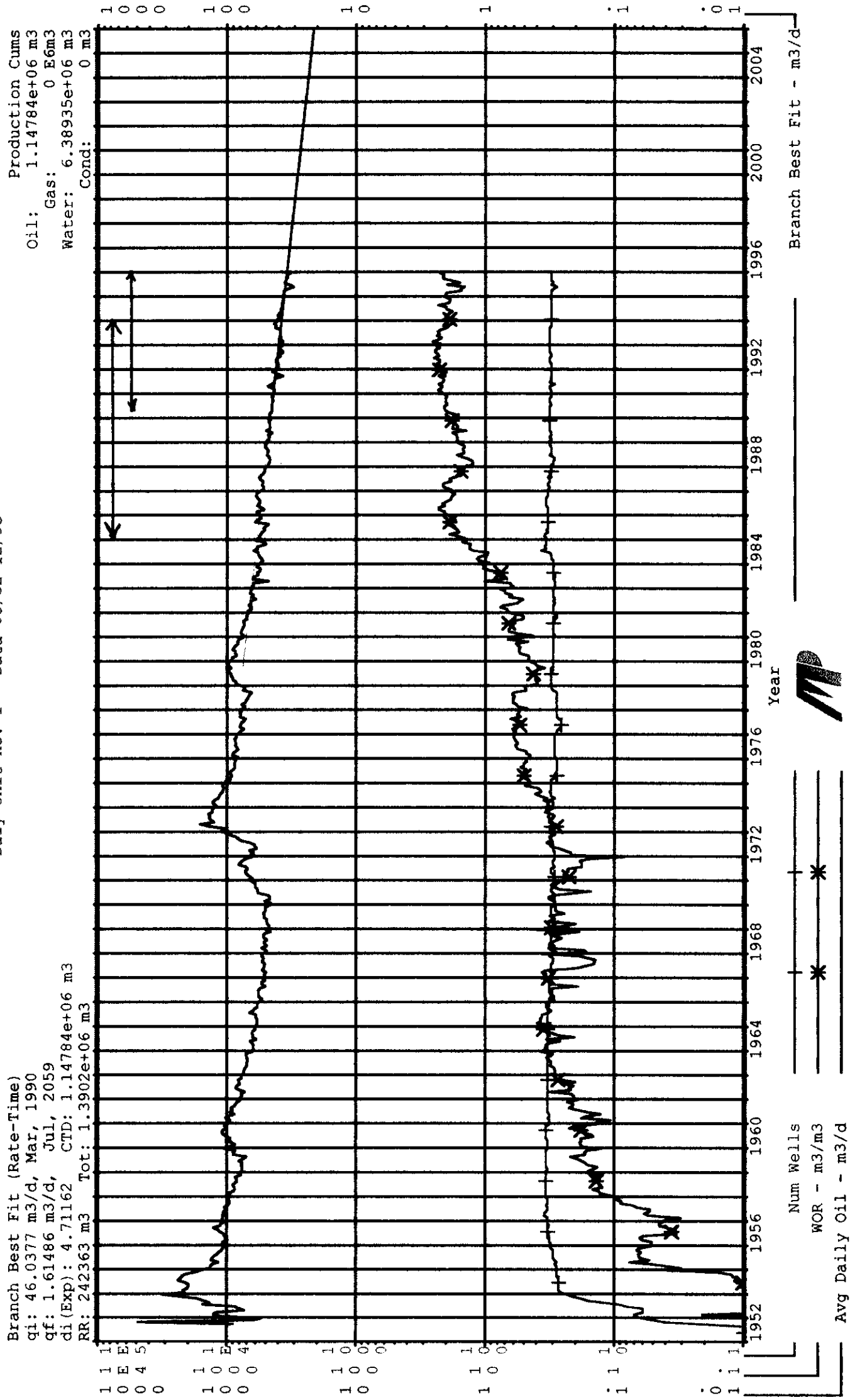
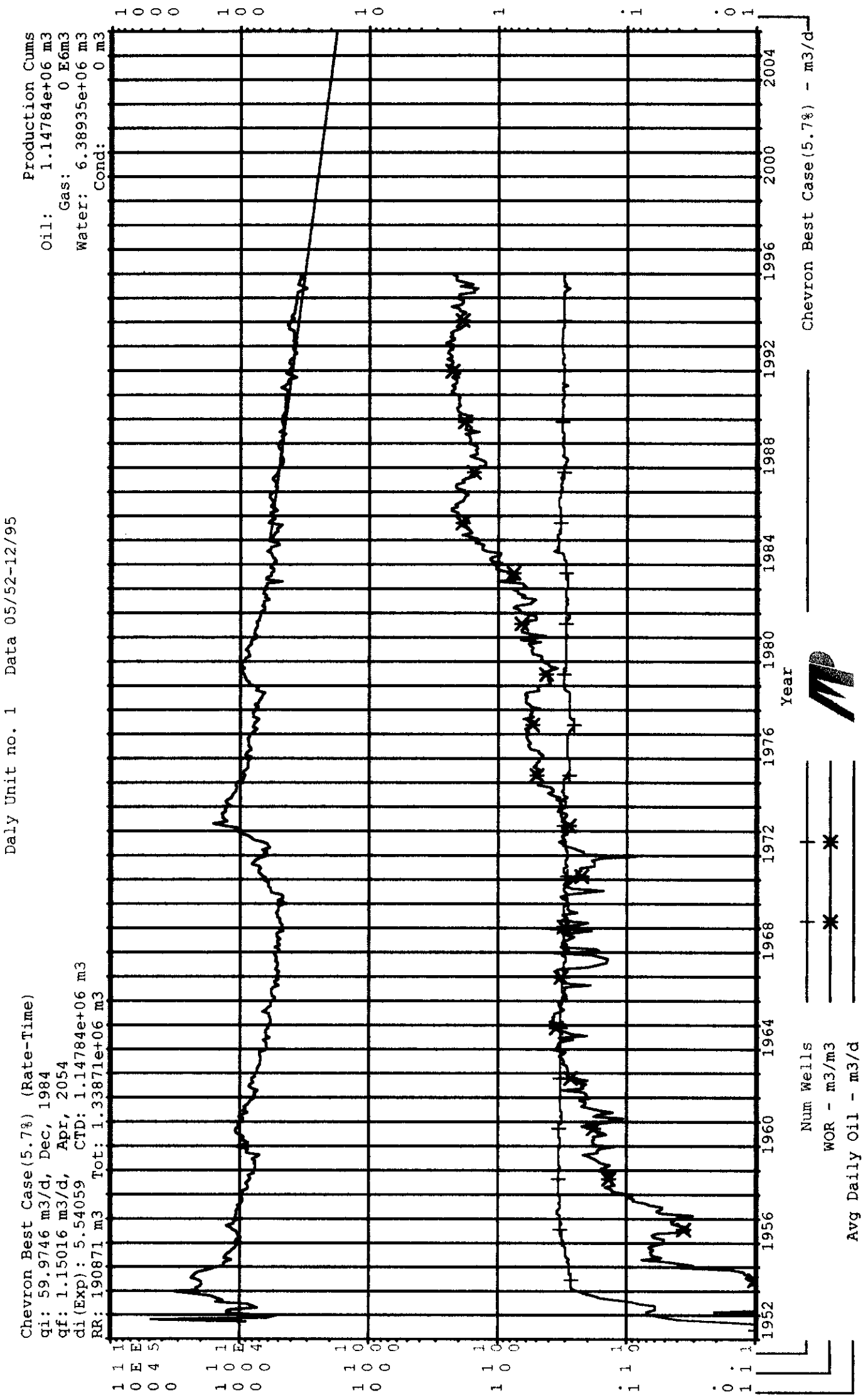


FIGURE 5



Routledge Unit 1 Data 06/55-12/95

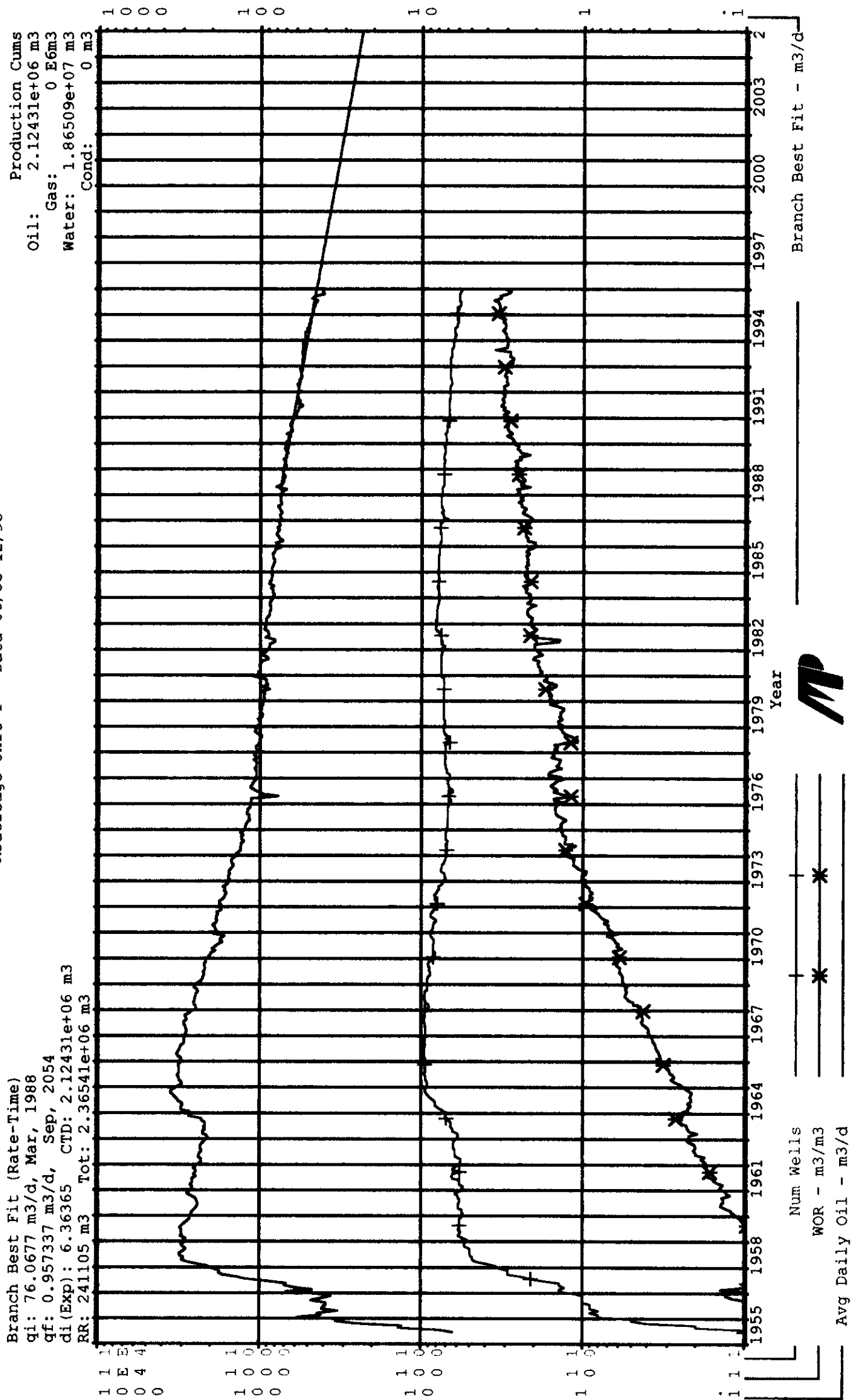
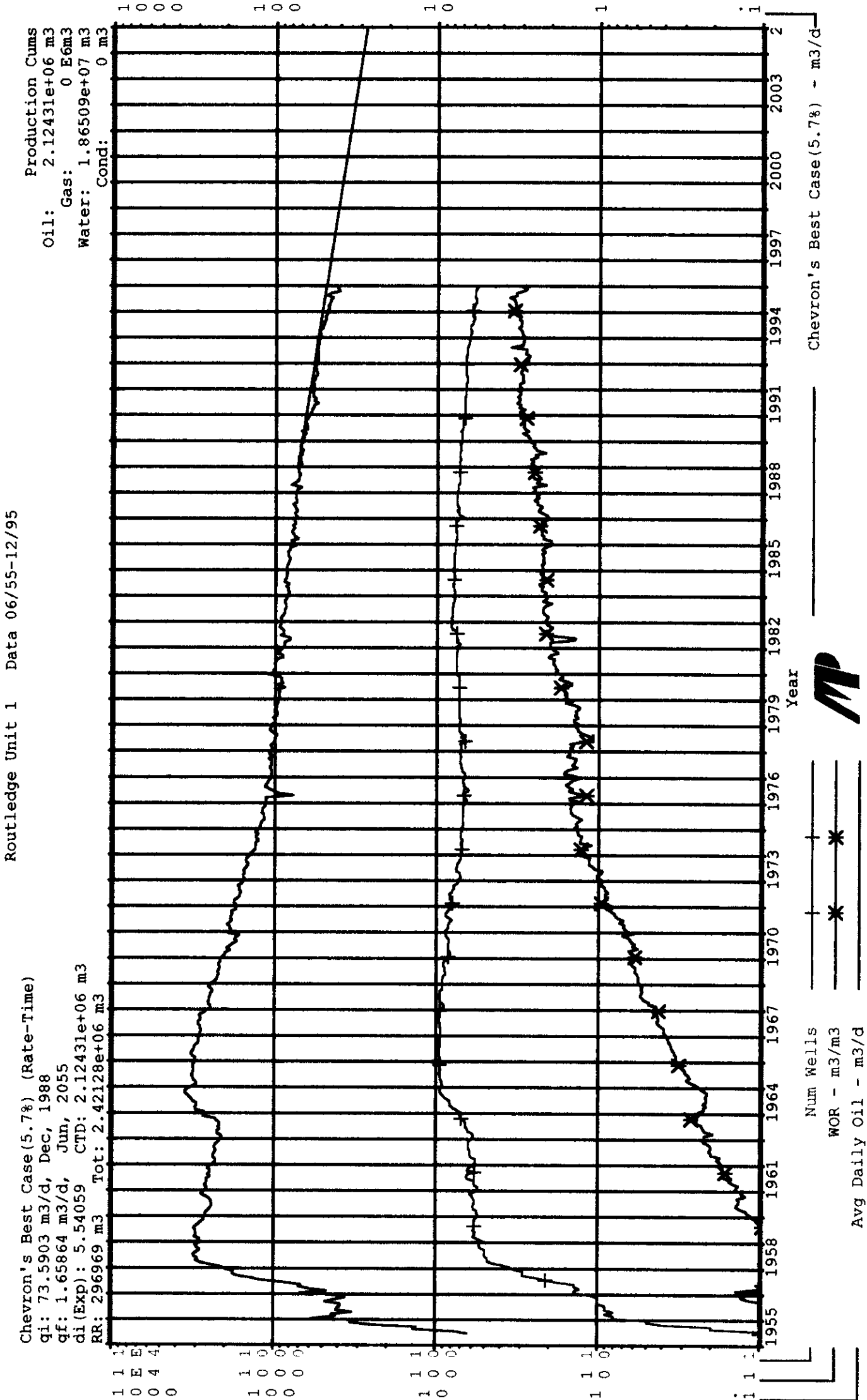


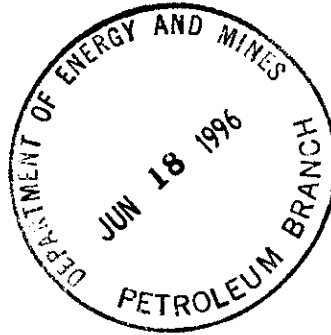
FIGURE 7





June 5, 1996

Manitoba Energy and Mines  
Attention: Mr. Bob Dubreuil  
Director - Petroleum Branch  
1395 Ellice Avenue, Suite 360  
Winnipeg, Manitoba R3G 3P2



**Chevron Canada Resources**

500 Fifth Avenue S.W.  
Calgary, Alberta  
T2P 0L7  
Phone No. (403) 234-5000  
Fax No. (403) 234-5124

**Eastern Business Unit**

**NVSU#1, Daly Unit #3, Daly Unit #1, Routledge Unit #1  
Waterflood Modification Application for New Oil Status  
for Royalty and Mineral Tax Calculations**

Dear Mr. Dubreuil:

The following is submitted as follow up to our meeting of May 16, 1996 in Virden, Manitoba. Chevron Canada Resources as operator of the above four units hereby formally applies for new oil status for the calculation of Crown royalty and incremental freehold mineral tax on the production above the projected present decline rate as shown in the described attachments. As discussed, Chevron Canada Resources is attempting to maximize recovery from the subject waterfloods. However, due to limited funds currently being allocated to our Manitoba assets, we require strong economic justification to proceed, and government assistance would be appreciated. We anticipate that both CCR and the Manitoba government will benefit with incremental cash flow from these proposed plans. The following text describes each unit base case decline assumptions, approximate plans, timing and expected results. We would like to stress that we consider the 1996 development items as a pilot project, with numerous upside development opportunities dependent on the pilot's success.

As discussed in our May 16, 1996 meeting, CCR would like to have an effective data retroactive to before these modifications are to be conducted in each unit. Also, CCR is aware that some items such as horizontal drilling, qualify for other incentives and will be treated separately. Chevron Canada Resources will be following up in the next few weeks with regard to our discussions of royalty holiday incentive treatment for horizontal injectors. If you have any questions or concerns about this submission, please contact Larry Skow at (403) 234-5834 or John Falck at (204) 748-6337. Chevron appreciates your consideration in these matters.

Sincerely,

L. SKOW

Reservoir Engineer

\\EASTERN\ADMIN\CURRIE\SKOW\JUNE121.DOC

## LIST OF ATTACHMENTS

Figure #1	Base case and developed case production forecast NVSU #1
Table #1	Development plans and timing for NVSU #1
Figure #2	Base case and developed case production forecast Daly Unit #3
Table #2	Development plans and timing for Daly Unit #3
Figure #3	Base case and developed case production forecast Daly Unit #1
Table #3	Development plans and timing for Daly Unit #1
Figure #4	Base case and developed case production forecast Routledge Unit #1
Table #4	Development plans and timing for Routledge Unit #1

### Viriden Scallion Unit #1

Since the beginning of 1993 the oil production decline has been exhibiting an exponential decline of approximately 10.3% p.a. as determined by type curve analysis. The conservative case (10% case) utilizes oil production data from 92-08 to 94-08 at an exponential decline of 10.4%. The most likely case (50% case) utilizes all data between 92-08 to 96-04 (8.5%). The optimistic case (90% case) utilizes data of the same time frame but assumes a hyperbolic decline. The reason is that between 1972 and 1991 the oil production decline followed a hyperbolic decline with a decline exponent of  $b=0.5$ . These cases represented in Figure 1 are what we believe to be a do nothing case with the best guess being the 50% case.

Table 1 represents the proposed activities and timing of which aimed at increasing waterflood performance in NVSU #1. Figure 1 also represents the expected results of these modifications. As discussed in our May 16 meeting, some of these items were planned/conducted prior to concluding these base case decline curves with you on the assumption that the effective date will be June 1, 1996 for calculation purposes. Also some described items will qualify for royalty holiday treatment only such as horizontal producers and horizontal injectors (with our negotiations over the next several weeks) and will be treated separately in a method described in our May 16 meeting.

### Daly Unit #3

There have been significant waterflood changes to Daly #3 since CCR and the Manitoba government last evaluated the unit's base case production decline. Early in 1993, injection was cut back in an effort to control the allocation of injection on a pattern basis as well as to reduce the negative impact as a result of 8 years of over injection. The over injection had resulted in overpressuring of the overlying Red Beds, which created problems while infill drilling. As well, a water transfer line was suspended to eliminate the possibility of a line leak. Since 1993, the oil production decline has followed a hyperbolic decline with an exponent  $b=0.3$ . Due to the short duration of this data an accurate hyperbolic forecast was not possible and since the decline exponent is very close to  $b=0$  (exponential), an exponential decline was assumed at varying slopes. The conservative case assumes 8.9% p.a., the most likely case assumes 5.9% p.a. and the optimistic case assumes a 5.2% p.a. decline. These are represented by Figure 2.

Table 2 represents the proposed activities and timing of which, aimed at increasing waterflood performance in Daly #3. Figure 2 also represent the expected results of these modifications.

### Daly Unit #1

Oil production decline has followed many types in the past. Recent data (1993 to present) has followed an exponential decline which had superseded a hyperbolic decline trend with exponent

$b=0.5$  from 1986 to 1992. The conservative forecast utilizes oil production data from 1994 to 1996-04 and assumes a 7.7% p.a. decline, the most likely case utilizes data from 1985 to 1993 and assumes an exponential decline of 5.7% p.a. and the optimistic case utilizes data from 1985 to 1993 and assumes a hyperbolic decline.

Table 3 represents the proposed activities, and timing of which, aimed at increasing waterflood performance in Daly #1. Figure 3 also represents the expected results of these modifications.

#### Routledge Unit #1

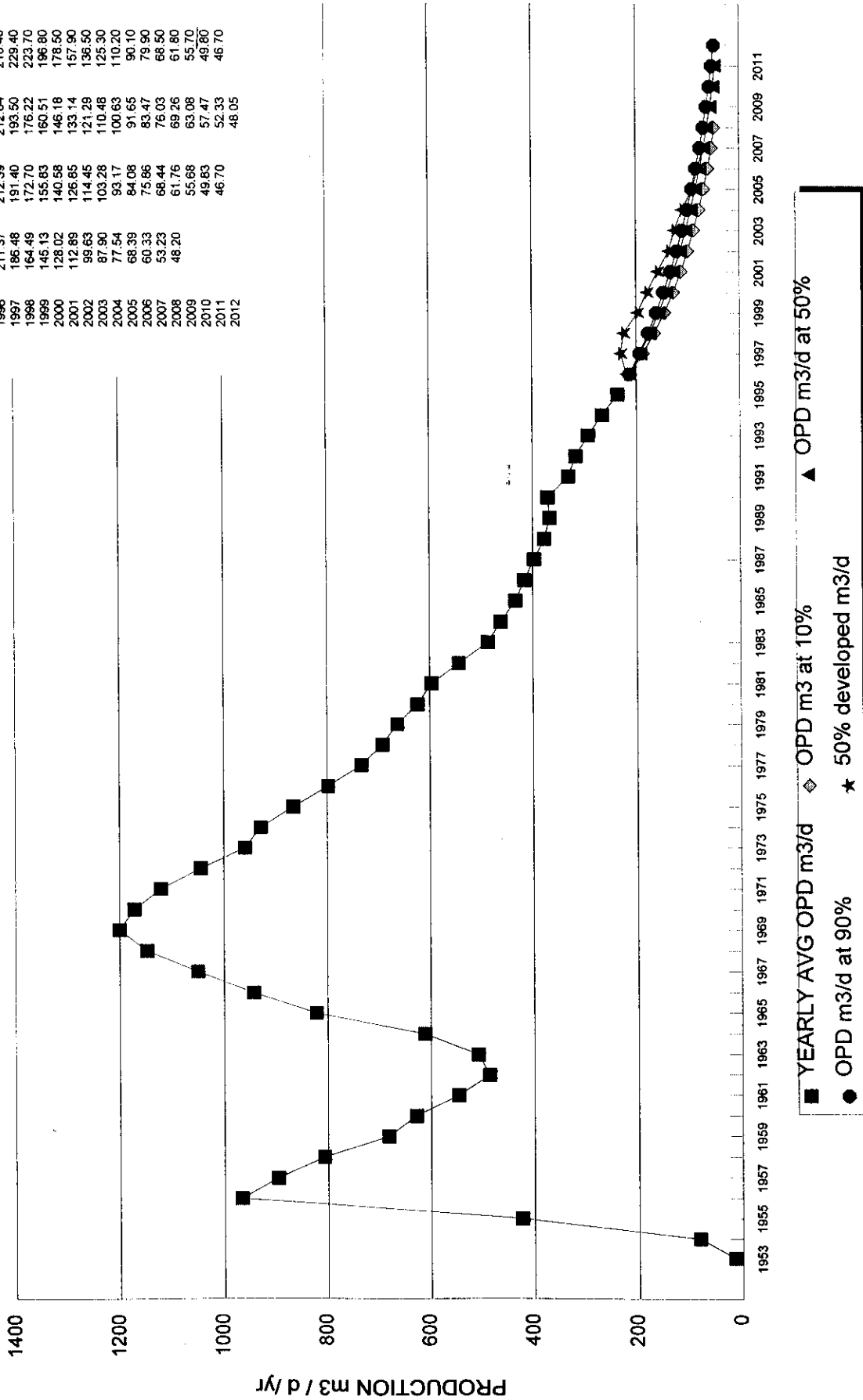
Oil production decline has followed an exponential trend since 1989. the conservative forecast utilizes data from 1993 to 1996-04 and assumes a 13.1% p.a. exponential decline, the most likely case forecast utilizes data from 1989 to 1996-04 and assumes a 7.5% p.a. exponential decline and the optimistic case forecast utilizes data from 1990 to 1994 which assumes a 5.2% p.a. exponential decline.

Table 4 and Figure 4 represent the proposed activities, timing of which and expected results of these modifications aimed at increasing waterflood performance.



# MANITOBA NVS UNIT 1 PRODUCTION

TABLE YEAR	NVSU1 m3/d	AT 10% m3/d	AT 50% m3/d	AT 90% m3/d	50% DEVELOPED m3/d
1996	211.37	212.39	212.84	218.40	218.40
1997	186.48	191.40	193.50	229.40	229.40
1998	164.49	172.70	176.22	223.70	223.70
1999	145.13	155.83	160.51	196.80	196.80
2000	128.02	140.58	146.18	178.50	178.50
2001	112.89	126.85	133.14	157.90	157.90
2002	99.63	114.45	121.29	136.50	136.50
2003	87.90	103.26	110.48	125.30	125.30
2004	77.54	93.17	100.63	110.20	110.20
2005	68.39	84.08	91.65	90.10	90.10
2006	60.33	75.86	83.47	79.90	79.90
2007	53.23	68.44	76.03	68.50	68.50
2008	46.20	61.76	69.26	61.80	61.80
2009		55.68	63.08	55.70	55.70
2010		49.83	57.47	49.80	49.80
2011		46.70	52.33	46.70	46.70
2012			48.05		



**TABLE 1 - WATERFLOOD MODIFICATIONS NVSU #1**

<b>ITEM</b>		<b>APPROXIMATE TIMING</b>
*Polymer to injector:	10-15-11-25	June 24
	12-13-11-26	June 29
	8-33-11-26	July 5
Fix Transit Line 9-16 to 4-22		June 3-8
2-21 Artificial Lift Upgrade		June 4-5
8-16 Reactivation/New Flowline		June 10-19
Bleach Treatments to Polymered Producing Wells		August
Strategic Stimulations and Rate Changes in Key Injector/Producers		Sept/Oct
*Conversions to Injection:	1-28-11-26	June 26 (proposed)
	4-27-11-26	June 29 (proposed)
	4-25-11-26	July 15 (proposed)
*Horizontal Producers:	Sec 33	August 1
	Sec 34	August 12
*Horizontal Injectors	Sec 33	August 22
	Sec 26	September 1

Desired start date of new oil calculation - June 1, 1996

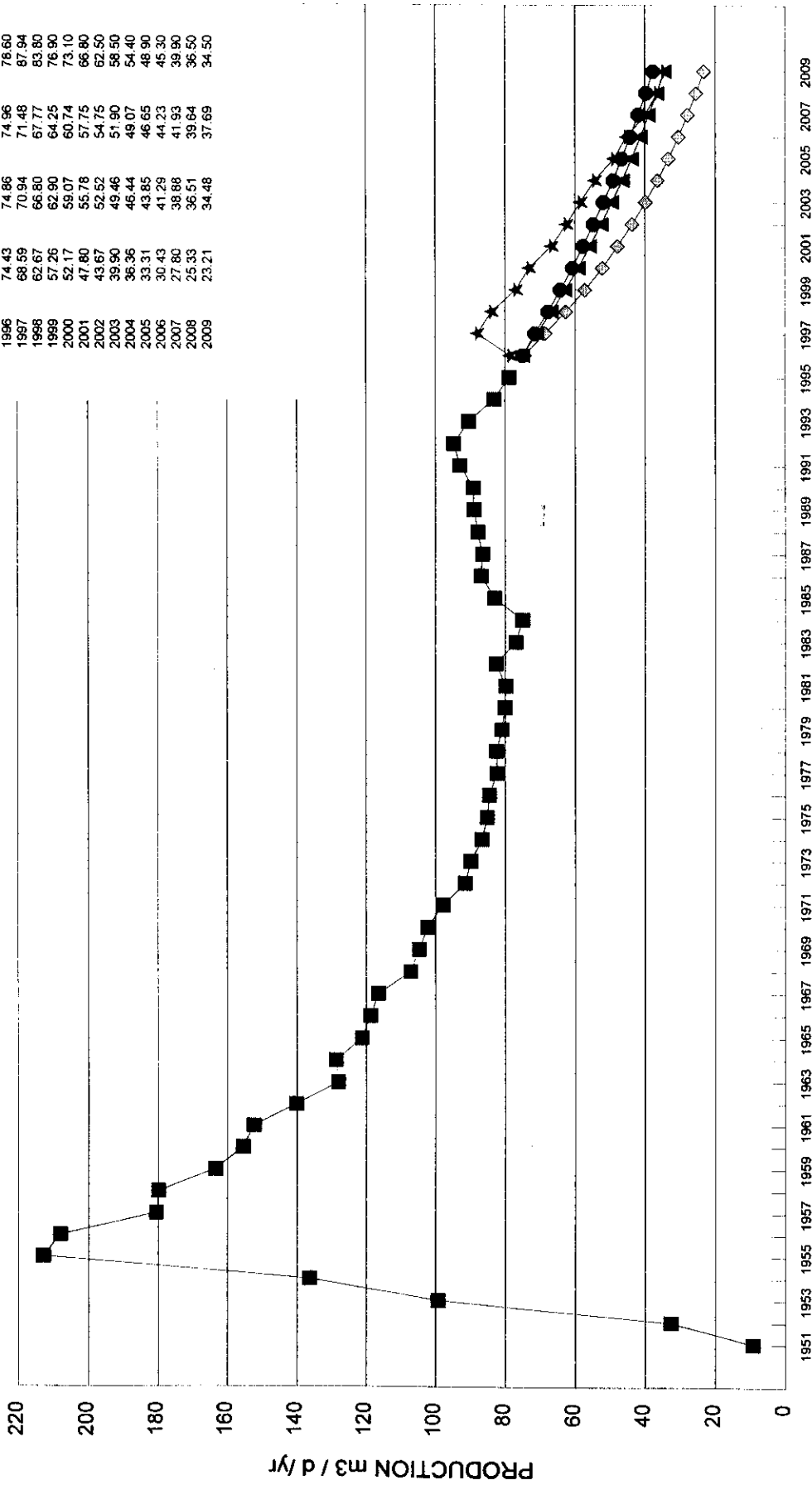
\* Denotes activities included in developed case forecast

FIGURE 2

# MANITOBA DALY UNIT 3 PRODUCTION

TABLE DALY UNIT 3

YEAR	AT 10% m3/d	AT 50% m3/d	AT 90% 50% DEVELOPED m3/d
1996	74.43	74.86	78.60
1997	68.59	70.94	87.94
1998	62.67	66.80	83.80
1999	57.26	62.90	76.90
2000	52.17	59.07	73.10
2001	47.80	55.78	68.90
2002	43.67	52.52	62.50
2003	39.90	49.46	58.50
2004	36.36	46.44	54.40
2005	33.31	43.85	48.90
2006	30.43	41.28	45.30
2007	27.80	38.86	41.93
2008	25.33	36.51	38.50
2009	23.21	34.48	37.69



**TABLE 2 - WATERFLOOD MODIFICATIONS DALY #3**

<b>ITEM</b>		<b>APPROXIMATE TIMING</b>
Reactivate Water Transfer Line		July 1
Acid Frac 5a-12		August 26
Strategic Stimulations and Rate Changes in Key Injectors /Producers		Sept/Oct
*Horizontal Producers:	Sec 12	September 12
	Sec 14	September 22
*Horizontal Injectors :	Sec 11	October 2

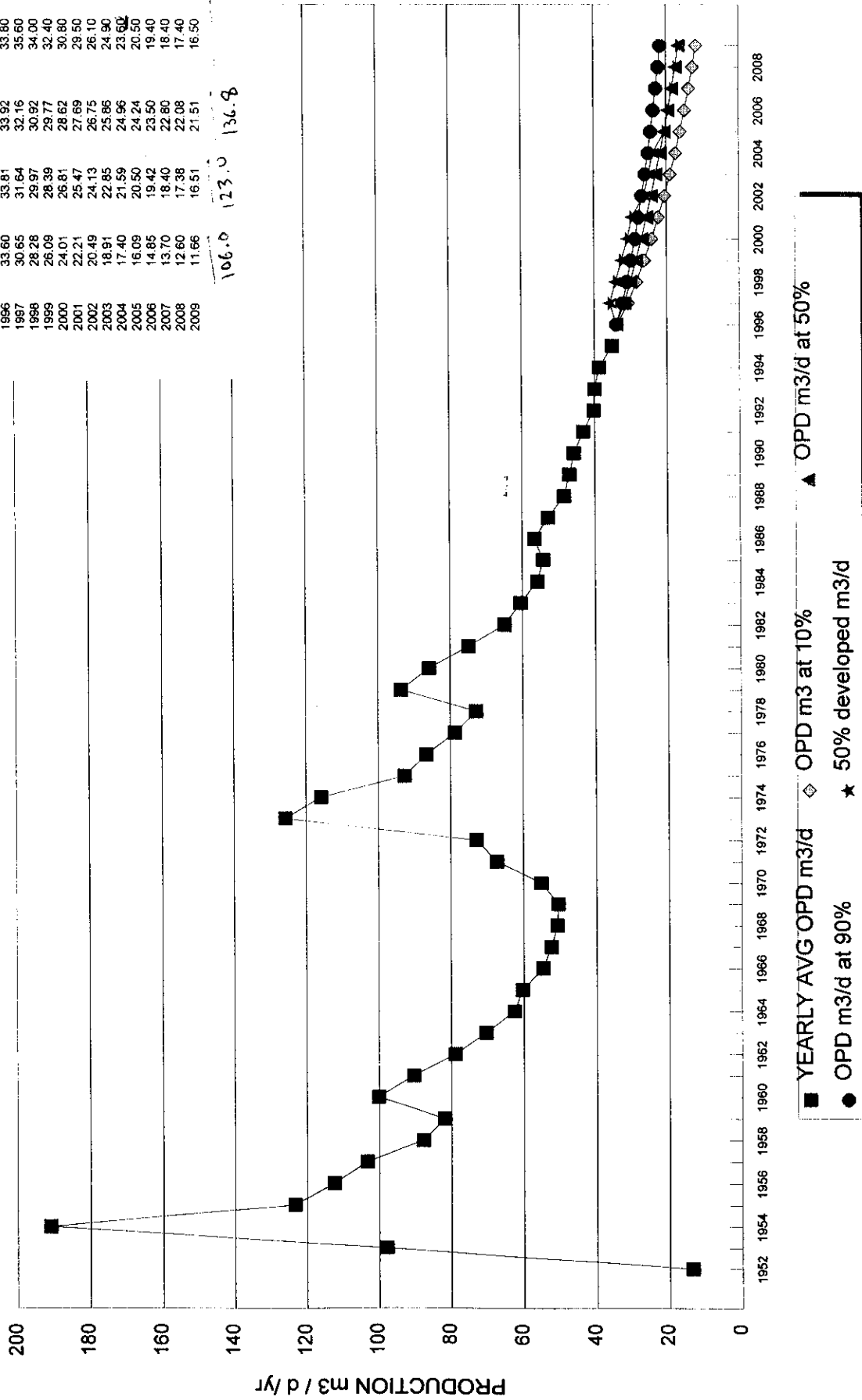
Desired start date of new oil calculation - July 1, 1996

\* Denotes activities included in developed case forecast

FIGURE 3

# MANITOBA DALY UNIT 1 PRODUCTION

TABLE YEAR	DALY UNIT 1 AT 10% m3/d	AT 50% m3/d	AT 90% m3/d	50% DEVELOPED m3/d
1996	33.60	33.81	33.92	33.80
1997	30.65	31.64	32.16	35.60
1998	28.28	29.97	30.92	34.00
1999	26.09	28.39	29.77	32.40
2000	24.01	26.81	28.62	30.80
2001	22.21	25.47	27.69	29.50
2002	20.49	24.13	26.75	28.10
2003	18.91	22.85	25.86	24.90
2004	17.40	21.59	24.96	23.60
2005	16.09	20.50	24.24	20.50
2006	14.85	19.42	23.50	19.40
2007	13.70	18.40	22.80	18.40
2008	12.60	17.38	22.08	17.40
2009	11.66	16.51	21.51	16.50



**TABLE 3 - WATERFLOOD MODIFICATIONS DALY #1**

ITEM		APPROXIMATE TIMING
*Polymer to injector:	12a-4-10-28	August 12
	15a-5-10-28	August 17
Strategic Stimulations and Rate Changes in Key Injector/Producers		Sept/Oct

Desired start date of new oil calculation - August 1, 1996

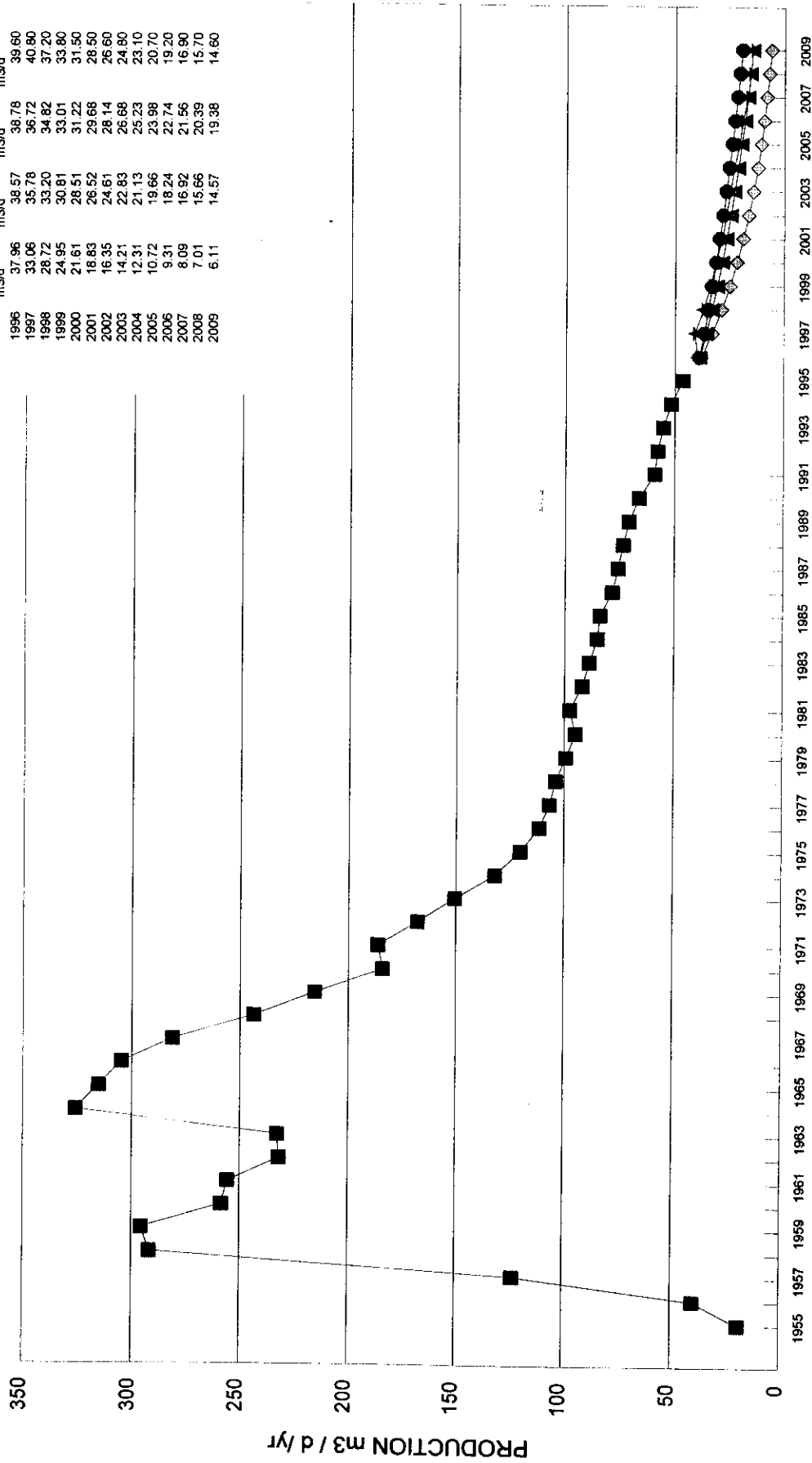
NOTE: Other development items may be attempted upon further engineering analysis and results from NVSU #1 and Daly #3

\* Denotes activities included in developed case forecast

FIGURE 4

# MANITOBA ROUTLEDGE UNIT 1 PRODUCTION

TABLE YEAR	ROUTLEDGE UNIT 1 m3/d			50% DEVELOPED m3/d
1996	AT 10%	AT 50%	AT 90%	
1997	37.96	38.57	38.78	39.60
1998	33.06	35.78	36.72	40.80
1999	28.72	33.20	34.82	37.20
2000	24.95	30.81	33.01	33.80
2001	21.61	28.51	31.22	31.50
2002	18.83	26.52	29.68	28.50
2003	16.35	24.61	28.14	26.60
2004	14.21	22.83	26.68	24.80
2005	12.31	21.13	25.23	23.10
2006	10.72	19.66	23.98	20.70
2007	9.31	18.24	22.74	19.20
2008	8.09	16.92	21.56	16.90
2009	7.01	15.66	20.39	15.70
	6.11	14.57	19.38	14.60



**TABLE 4 - WATERFLOOD MODIFICATIONS ROUTLEDGE #1**

ITEM	APPROXIMATE TIMEING
Bleach Treatments to Polymered Producing Wells	August
Artificial Lift Upgrades to Pump Off Wells	September
*Horizontal Producers: 11-22-9-25	October 13
**Subsequent Horizontal Producers	1997

Desired start date of new oil calculation - August 1, 1996

**\*\*NOTE** Other development items may also be attempted upon further engineering analysis (well conversions to injection) but are not included in this forecast

**\*** Denotes activities included in developed case forecast





June 5, 1996

Manitoba Energy and Mines  
Attention: Mr. Bob Dubreuil  
Director - Petroleum Branch  
1395 Ellice Avenue, Suite 360  
Winnipeg, Manitoba R3G 3P2

**Chevron Canada Resources**  
500 Fifth Avenue S.W.  
Calgary, Alberta  
T2P 0L7  
Phone No. (403) 234-5000  
Fax No. (403) 234-5124

**Eastern Business Unit**

**NVSU#1, Daly Unit #3, Daly Unit #1, Routledge Unit #1  
Waterflood Modification Application for New Oil Status  
for Royalty and Mineral Tax Calculations**

Dear Mr. Dubreuil:

The following is submitted as follow up to our meeting of May 16, 1996 in Virden, Manitoba. Chevron Canada Resources as operator of the above four units hereby formally applies for new oil status for the calculation of Crown royalty and incremental freehold mineral tax on the production above the projected present decline rate as shown in the described attachments. As discussed, Chevron Canada Resources is attempting to maximize recovery from the subject waterfloods. However, due to limited funds currently being allocated to our Manitoba assets, we require strong economic justification to proceed, and government assistance would be appreciated. We anticipate that both CCR and the Manitoba government will benefit with incremental cash flow from these proposed plans. The following text describes each unit base case decline assumptions, approximate plans, timing and expected results. We would like to stress that we consider the 1996 development items as a pilot project, with numerous upside development opportunities dependent on the pilot's success.

As discussed in our May 16, 1996 meeting, CCR would like to have an effective data retroactive to before these modifications are to be conducted in each unit. Also, CCR is aware that some items such as horizontal drilling, qualify for other incentives and will be treated separately. Chevron Canada Resources will be following up in the next few weeks with regard to our discussions of royalty holiday incentive treatment for horizontal injectors. If you have any questions or concerns about this submission, please contact Larry Skow at (403) 234-5834 or John Falck at (204) 748-6337. Chevron appreciates your consideration in these matters.

Sincerely,



L. SKOW

Reservoir Engineer

\\EASTERN\ADMIN\CURRIE\SKOW\JUNE121.DOC

## LIST OF ATTACHMENTS

Figure #1	Base case and developed case production forecast NVSU #1
Table #1	Development plans and timing for NVSU #1
Figure #2	Base case and developed case production forecast Daly Unit #3
Table #2	Development plans and timing for Daly Unit #3
Figure #3	Base case and developed case production forecast Daly Unit #1
Table #3	Development plans and timing for Daly Unit #1
Figure #4	Base case and developed case production forecast Routledge Unit #1
Table #4	Development plans and timing for Routledge Unit #1

### Virden Scallion Unit #1

Since the beginning of 1993 the oil production decline has been exhibiting an exponential decline of approximately 10.3% p.a. as determined by type curve analysis. The conservative case (10% case) utilizes oil production data from 92-08 to 94-08 at an exponential decline of 10.4%. The most likely case (50% case) utilizes all data between 92-08 to 96-04 (8.5%). The optimistic case (90% case) utilizes data of the same time frame but assumes a hyperbolic decline. The reason is that between 1972 and 1991 the oil production decline followed a hyperbolic decline with a decline exponent of  $b=0.5$ . These cases represented in Figure 1 are what we believe to be a do nothing case with the best guess being the 50% case.

Table 1 represents the proposed activities and timing of which aimed at increasing waterflood performance in NVSU #1. Figure 1 also represents the expected results of these modifications. As discussed in our May 16 meeting, some of these items were planned/conducted prior to concluding these base case decline curves with you on the assumption that the effective date will be June 1, 1996 for calculation purposes. Also some described items will qualify for royalty holiday treatment only such as horizontal producers and horizontal injectors (with our negotiations over the next several weeks) and will be treated separately in a method described in our May 16 meeting.

### Daly Unit #3

There have been significant waterflood changes to Daly #3 since CCR and the Manitoba government last evaluated the unit's base case production decline. Early in 1993, injection was cut back in an effort to control the allocation of injection on a pattern basis as well as to reduce the negative impact as a result of 8 years of over injection. The over injection had resulted in overpressuring of the overlying Red Beds, which created problems while infill drilling. As well, a water transfer line was suspended to eliminate the possibility of a line leak. Since 1993, the oil production decline has followed a hyperbolic decline with an exponent  $b=0.3$ . Due to the short duration of this data an accurate hyperbolic forecast was not possible and since the decline exponent is very close to  $b=0$  (exponential), an exponential decline was assumed at varying slopes. The conservative case assumes 8.9% p.a., the most likely case assumes 5.9% p.a. and the optimistic case assumes a 5.2% p.a. decline. These are represented by Figure 2.

Table 2 represents the proposed activities and timing of which, aimed at increasing waterflood performance in Daly #3. Figure 2 also represent the expected results of these modifications.

### Daly Unit #1

Oil production decline has followed many types in the past. Recent data (1993 to present) has followed an exponential decline which had superseded a hyperbolic decline trend with exponent

$b=0.5$  from 1986 to 1992. The conservative forecast utilizes oil production data from 1994 to 1996-04 and assumes a 7.7% p.a. decline, the most likely case utilizes data from 1985 to 1993 and assumes an exponential decline of 5.7% p.a. and the optimistic case utilizes data from 1985 to 1993 and assumes a hyperbolic decline.

Table 3 represents the proposed activities, and timing of which, aimed at increasing waterflood performance in Daly #1. Figure 3 also represents the expected results of these modifications.

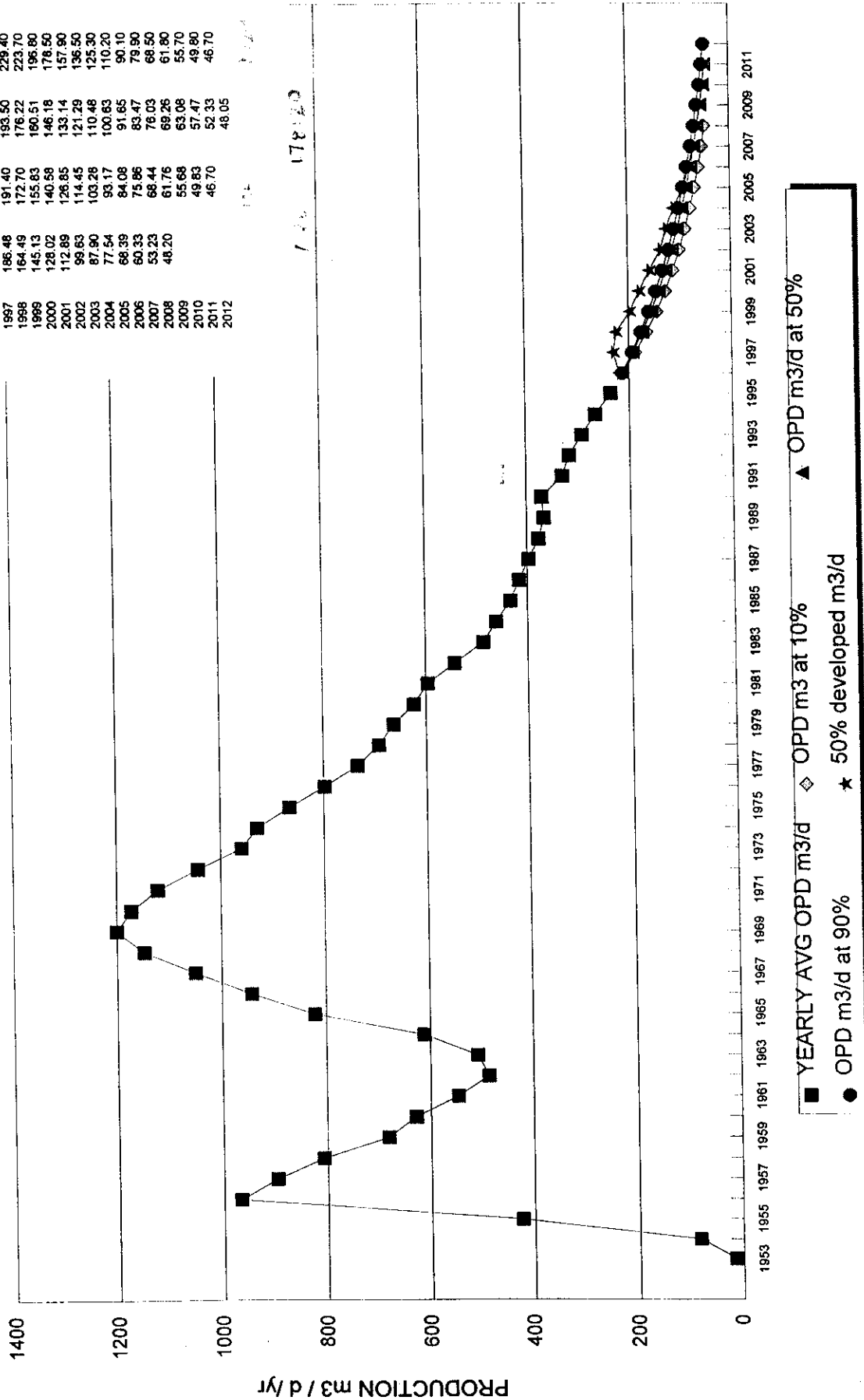
#### Routledge Unit #1

Oil production decline has followed an exponential trend since 1989. the conservative forecast utilizes data from 1993 to 1996-04 and assumes a 13.1% p.a. exponential decline, the most likely case forecast utilizes data from 1989 to 1996-04 and assumes a 7.5% p.a. exponential decline and the optimistic case forecast utilizes data from 1990 to 1994 which assumes a 5.2% p.a. exponential decline.

Table 4 and Figure 4 represent the proposed activities, timing of which and expected results of these modifications aimed at increasing waterflood performance.

# MANITOBA NVS UNIT 1 PRODUCTION

TABLE YEAR	NVSU1 AT 10% m3/d	AT 50% m3/d	AT 90% m3/d	50% DEVELOPED m3/d
1996	211.37	212.39	212.84	218.40
1997	186.48	191.40	193.50	229.40
1998	164.49	172.70	176.22	223.70
1999	145.13	155.63	160.51	198.80
2000	128.02	140.58	146.18	178.50
2001	112.89	126.85	133.14	157.90
2002	99.63	114.45	121.29	136.50
2003	87.90	103.28	110.48	125.30
2004	77.54	93.17	100.63	110.20
2005	68.39	84.08	91.65	90.10
2006	60.33	75.86	83.47	79.90
2007	53.23	68.44	76.03	68.50
2008	48.20	61.76	69.26	61.80
2009		55.68	63.08	55.70
2010		49.83	57.47	49.80
2011		46.70	52.33	46.70
2012			48.05	



**TABLE 1 - WATERFLOOD MODIFICATIONS NVSU #1**

<b>ITEM</b>		<b>APPROXIMATE TIMING</b>
*Polymer to injector:	10-15-11-25	June 24
	12-13-11-26	June 29
	8-33-11-26	July 5
Fix Transit Line 9-16 to 4-22		June 3-8
2-21 Artificial Lift Upgrade		June 4-5
8-16 Reactivation/New Flowline		June 10-19
Bleach Treatments to Polymered Producing Wells		August
Strategic Stimulations and Rate Changes in Key Injector/Producers		Sept/Oct
*Conversions to Injection:	1-28-11-26	June 26 (proposed)
	4-27-11-26	June 29 (proposed)
	4-25-11-26	July 15 (proposed)
*Horizontal Producers:	Sec 33	August 1
	Sec 34	August 12
*Horizontal Injectors	Sec 33	August 22
	Sec 26	September 1

Desired start date of new oil calculation - June 1, 1996

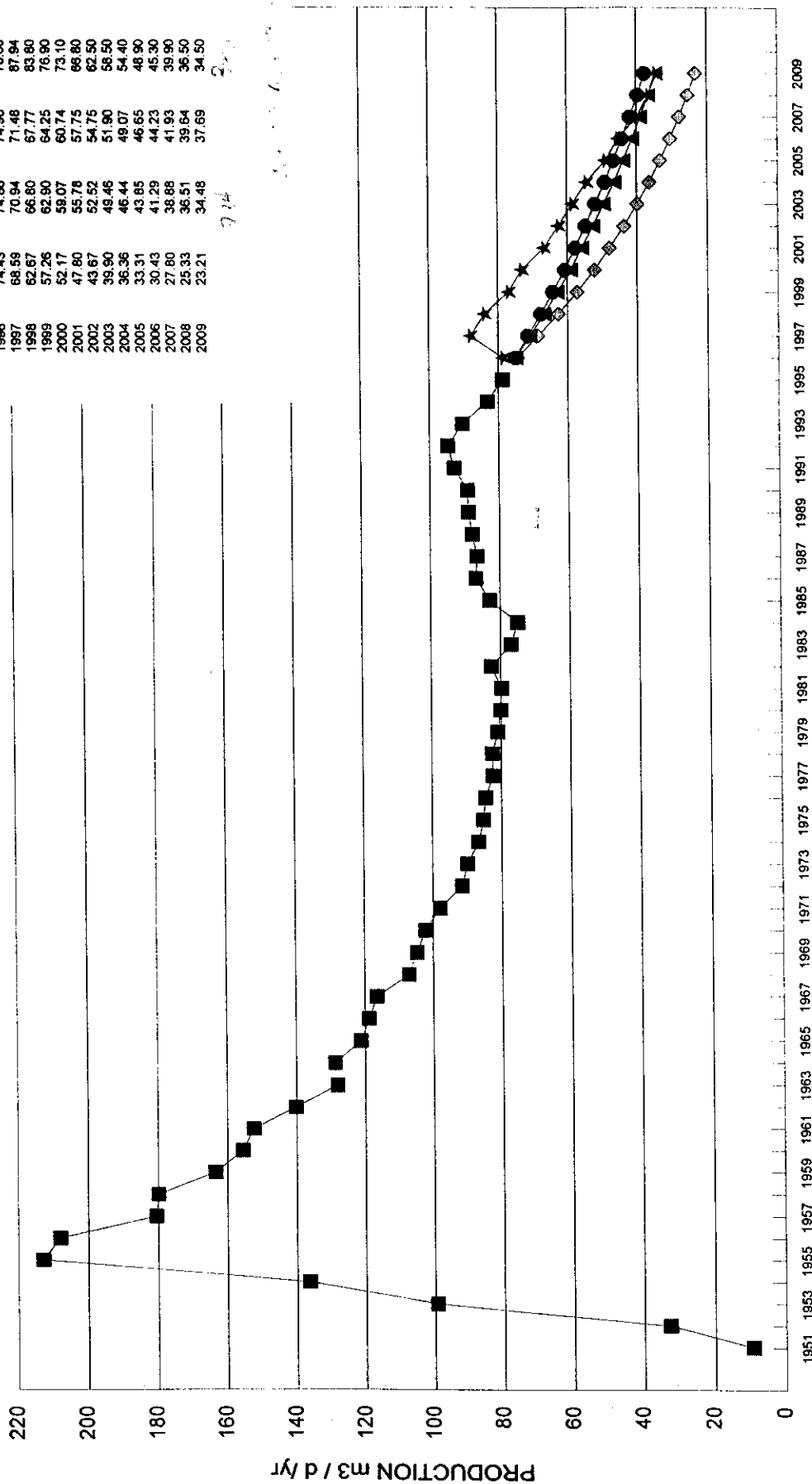
\* Denotes activities included in developed case forecast

FIGURE 2

# MANITOBA DAILY UNIT 3 PRODUCTION

TABLE DAILY UNIT 3

YEAR	AT 10% m3/d	AT 50% m3/d	AT 90% 50% DEVELOPED m3/d
1986	74.43	74.86	78.60
1987	68.59	70.94	71.48
1988	62.67	66.80	67.77
1989	57.26	62.90	64.25
1990	52.17	59.07	60.74
1991	47.80	55.78	57.75
1992	43.67	52.52	54.75
1993	39.90	49.46	51.90
1994	36.36	46.44	49.07
1995	33.31	43.85	46.65
1996	30.43	41.29	44.23
1997	27.80	38.88	41.93
1998	25.33	36.51	39.64
1999	23.21	34.48	37.69



**TABLE 2 - WATERFLOOD MODIFICATIONS DALY #3**

<b>ITEM</b>		<b>APPROXIMATE TIMING</b>
Reactivate Water Transfer Line		July 1
Acid Frac 5a-12		August 26
Strategic Stimulations and Rate Changes in Key Injectors /Producers		Sept/Oct
*Horizontal Producers:	Sec 12	September 12
	Sec 14	September 22
*Horizontal Injectors :	Sec 11	October 2

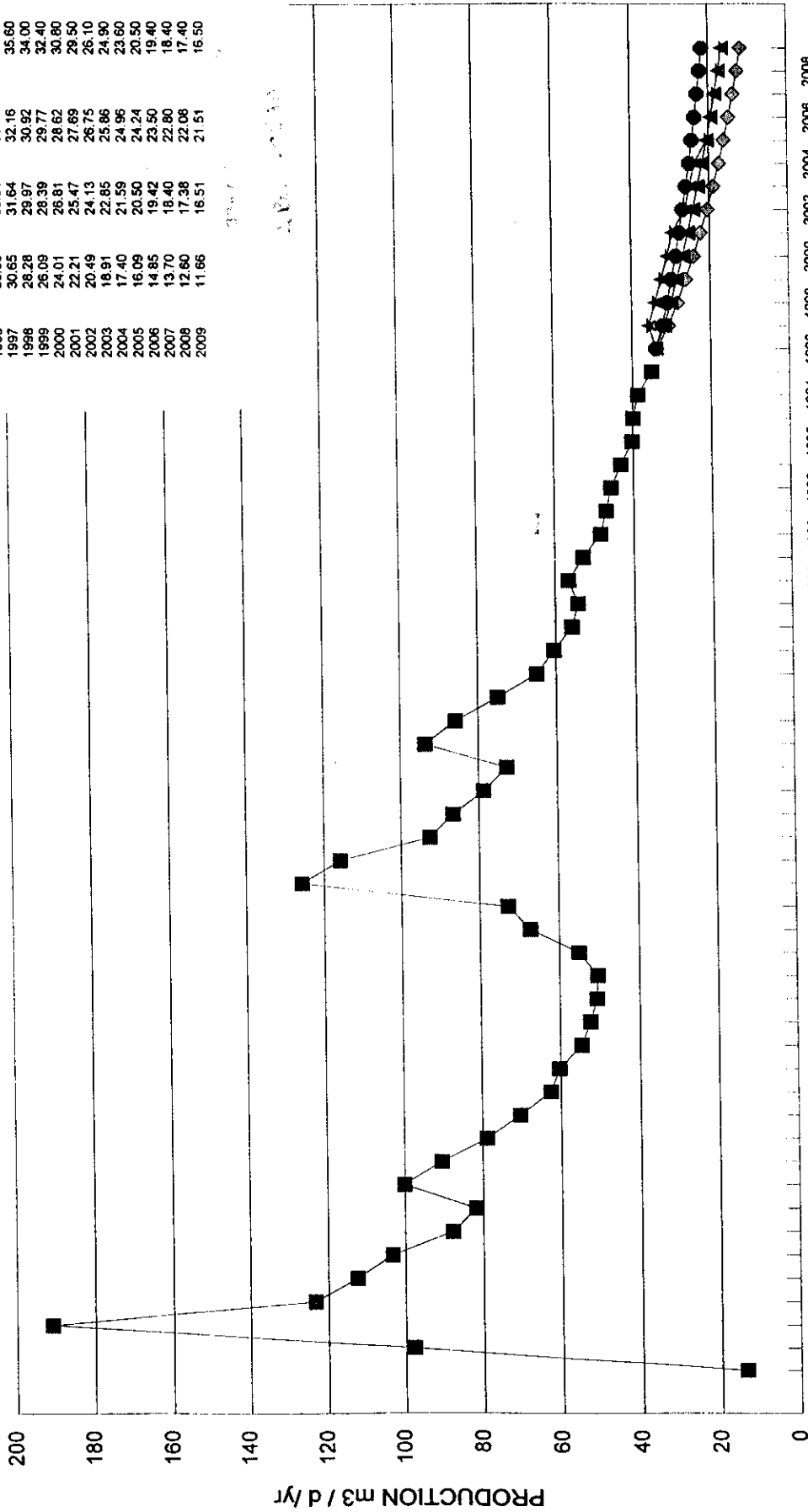
Desired start date of new oil calculation - July 1, 1996

\* Denotes activities included in developed case forecast



# MANITOBA DAILY UNIT 1 PRODUCTION

TABLE YEAR	DAILY UNIT 1 AT 10% m3/d	AT 50% m3/d	AT 90% m3/d	50% DEVELOPED m3/d
1996	33.60	33.81	33.92	33.80
1997	30.65	31.64	32.16	35.60
1998	28.28	29.97	30.92	34.00
1999	26.09	28.39	29.77	32.40
2000	24.01	26.81	28.62	30.80
2001	22.21	25.47	27.69	29.50
2002	20.49	24.13	26.75	26.10
2003	18.91	22.85	25.86	24.90
2004	17.40	21.59	24.96	23.60
2005	16.09	20.50	24.24	20.50
2006	14.85	19.42	23.50	19.40
2007	13.70	18.40	22.80	18.40
2008	12.60	17.38	22.08	17.40
2009	11.66	16.51	21.51	16.50



■ YEARLY AVG OPD m3/d    ◇ OPD m3 at 10%    ▲ OPD m3/d at 50%  
 ● OPD m3/d at 90%    ★ 50% developed m3/d

**TABLE 3 - WATERFLOOD MODIFICATIONS DALY #1**

<b>ITEM</b>		<b>APPROXIMATE TIMING</b>
*Polymer to injector:	12a-4-10-28	August 12
	15a-5-10-28	August 17
Strategic Stimulations and Rate Changes in Key Injector/Producers		Sept/Oct

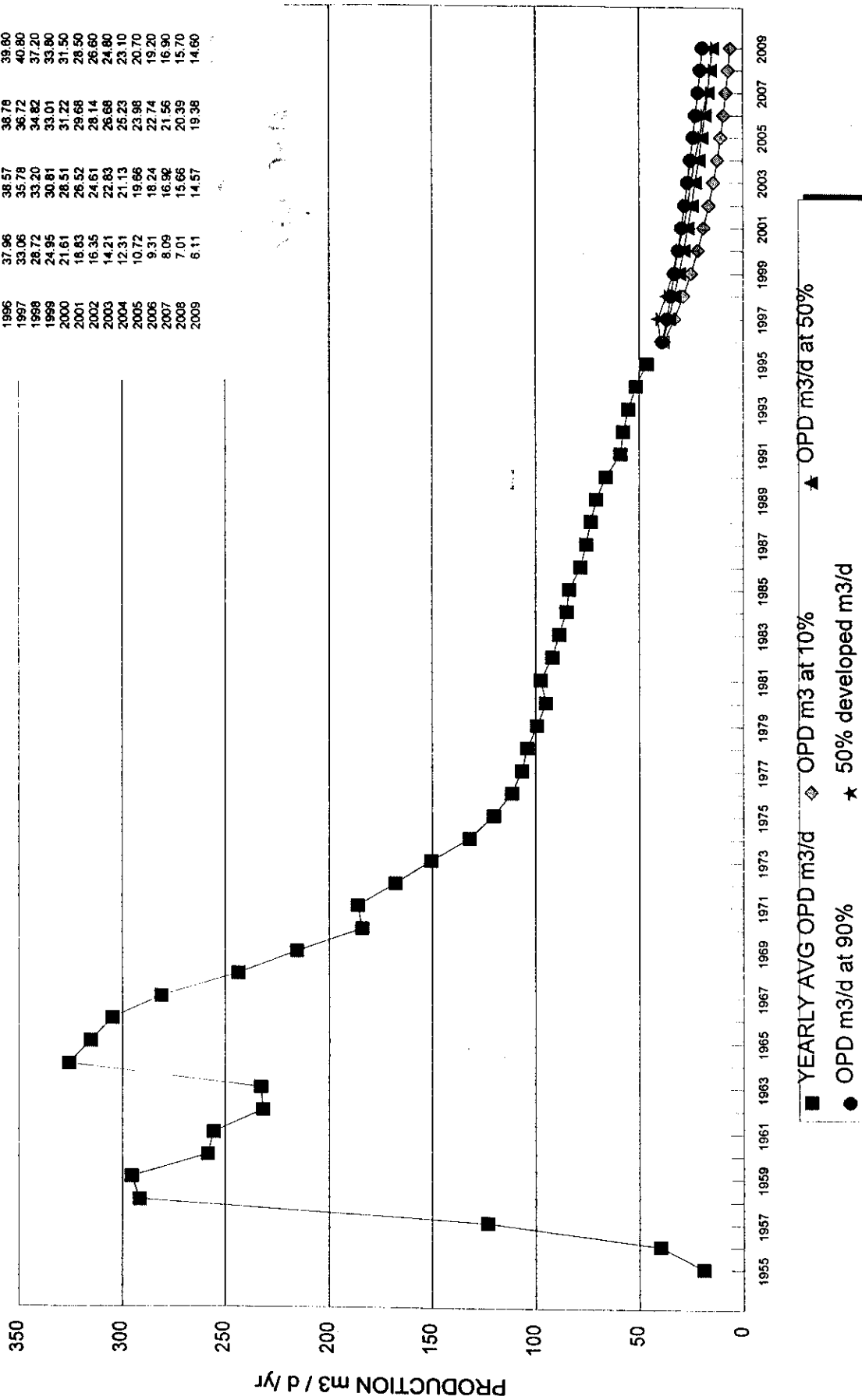
Desired start date of new oil calculation - August 1, 1996

NOTE: Other development items may be attempted upon further engineering analysis and results from NVSU #1 and Daly #3

\* Denotes activities included in developed case forecast

# MANITOBA ROUTLEDGE UNIT 1 PRODUCTION

TABLE YEAR	ROUTLEDGE UNIT 1		
	AT 10% m3/d	AT 50% m3/d	AT 90% m3/d
1996	37.96	38.57	38.78
1997	33.06	35.78	36.72
1998	28.72	33.20	34.82
1999	24.95	30.81	33.80
2000	21.61	28.51	31.22
2001	16.83	25.52	29.68
2002	16.35	24.51	28.14
2003	14.21	22.83	26.60
2004	12.31	21.13	25.23
2005	10.72	19.66	23.98
2006	9.31	18.24	22.74
2007	8.09	16.96	21.56
2008	7.01	15.66	20.39
2009	6.11	14.57	19.38



**TABLE 4 - WATERFLOOD MODIFICATIONS ROUTLEDGE #1**

ITEM	APPROXIMATE TIMEING
Bleach Treatments to Polymered Producing Wells	August
Artificial Lift Upgrades to Pump Off Wells	September
*Horizontal Producers: 11-22-9-25	October 13
**Subsequent Horizontal Producers	1997

Desired start date of new oil calculation - August 1, 1996

**\*\*NOTE** Other development items may also be attempted upon further engineering analysis (well conversions to injection) but are not included in this forecast

**\*** Denotes activities included in developed case forecast

The following is the proposed agenda for the meeting between Chevron Canada Resources and the Manitoba Energy and Mines, Petroleum Branch as we discussed in Bismarck.

8:30-11:45 am

Thursday, May 16, 1996

CCR Virden Office

## AGENDA

	PRESENTER	TIME
Introductions	D. Yellowlees	15 min
Chevron's Strategic Direction for Manitoba	D. Yellowlees	15 min.
CCR Plans for Development in 1996 (and beyond?)	B. Grant	60 min.
<ul style="list-style-type: none"> <li>-needs</li> <li>-symptoms</li> <li>-development items</li> <li>-capital</li> <li>-incremental reserves</li> <li>-economic/ financial impact</li> </ul>		
BREAK		15 min.
Impact of Manitoba Incentive Program and Royalty/ Tax	L. Skow	60 min.
<ul style="list-style-type: none"> <li>-old vs. new oil for incremental production above baseline</li> <li>-special incentives</li> </ul>		
Discussion/ Feedback	D. Yellowlees	30 min.

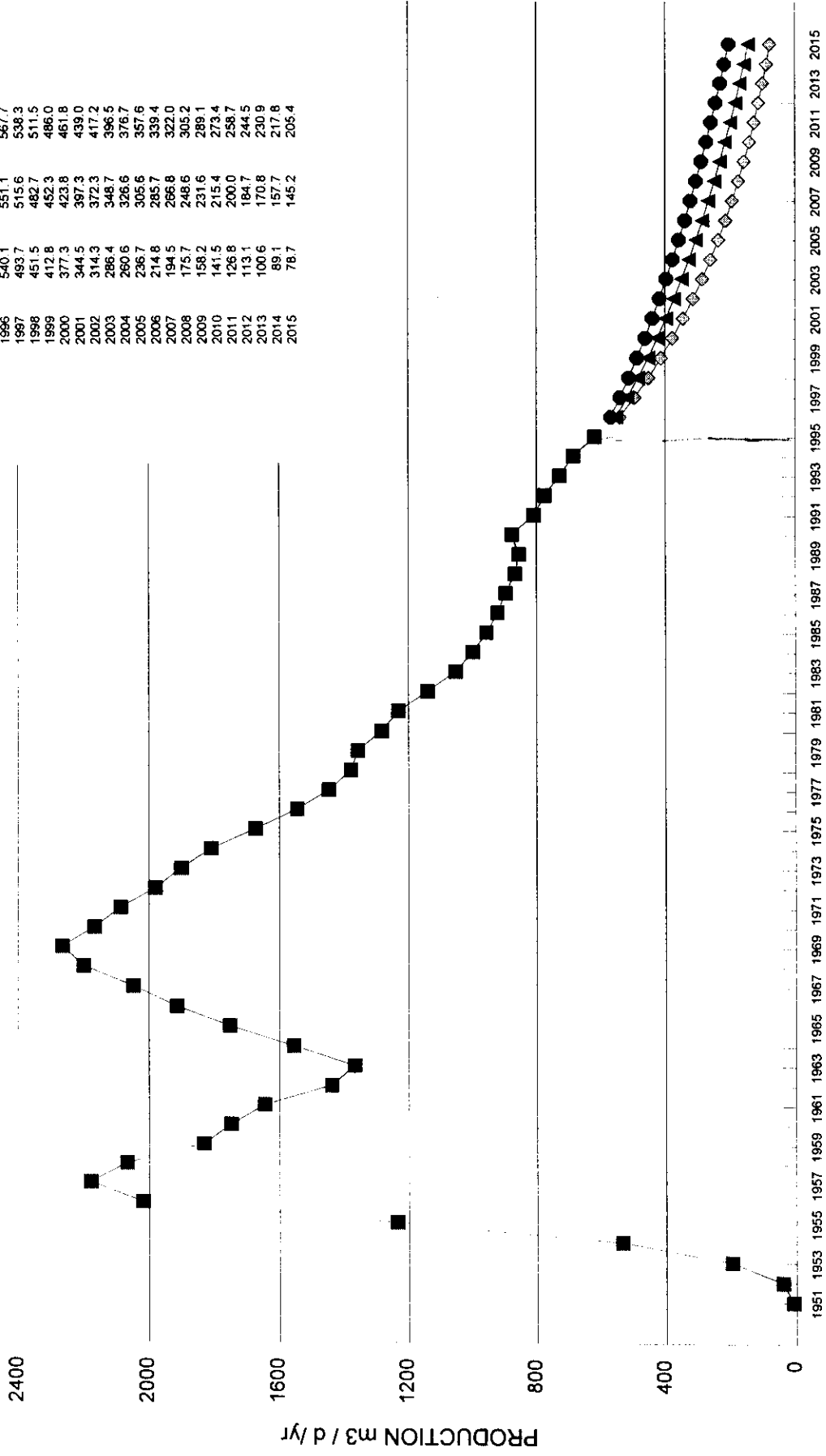
# Manitoba Strategic Direction

- ☐ Low Growth / Harvest Asset
- ☐ Focus on Financial Performance
- ☐ Maximize Value Over the Long Term
- ☐ Production Optimization
- ☐ Operating Cost Control
- ☐ Access Development Opportunities
- ☐ Build /Maintain Strong Relations
- ☐ Proactive Safety & Environmental Efforts

# MANITOBA TOTAL PRODUCTION

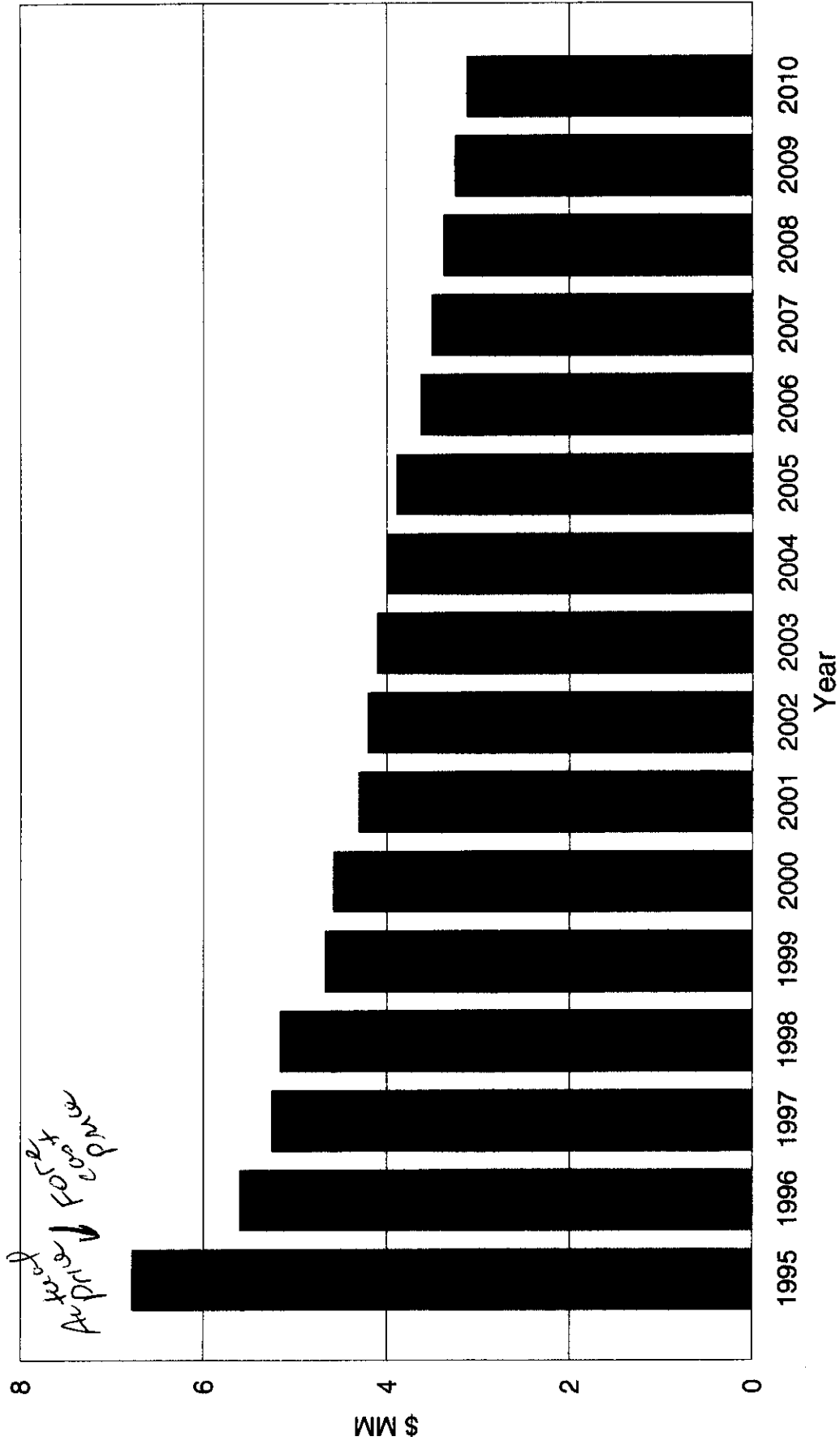
BASE CASE

YEAR	MANITOBA TOTAL m3/d	AT 10% m3/d	AT 50% m3/d	AT 90% m3/d
1996	540.1	551.1	515.6	587.7
1997	493.7	515.6	515.6	538.3
1998	451.5	482.7	511.5	511.5
1999	412.8	452.3	486.0	486.0
2000	377.3	423.8	461.8	461.8
2001	344.5	397.3	439.0	439.0
2002	314.3	372.3	417.2	417.2
2003	286.4	348.7	396.5	396.5
2004	260.6	326.6	376.7	376.7
2005	236.7	305.6	357.6	357.6
2006	214.8	285.7	339.4	339.4
2007	194.5	266.8	322.0	322.0
2008	175.7	248.6	305.2	305.2
2009	158.2	231.6	289.1	289.1
2010	141.5	215.4	273.4	273.4
2011	126.8	200.0	258.7	258.7
2012	113.1	184.7	244.5	244.5
2013	100.6	170.8	230.9	230.9
2014	89.1	157.7	217.8	217.8
2015	78.7	145.2	205.4	205.4



■ YEARLY AVG OPD m3/d    ◆ OPD m3 at 10%    ▲ OPD m3/d at 50%    ● OPD m3/d at 90%

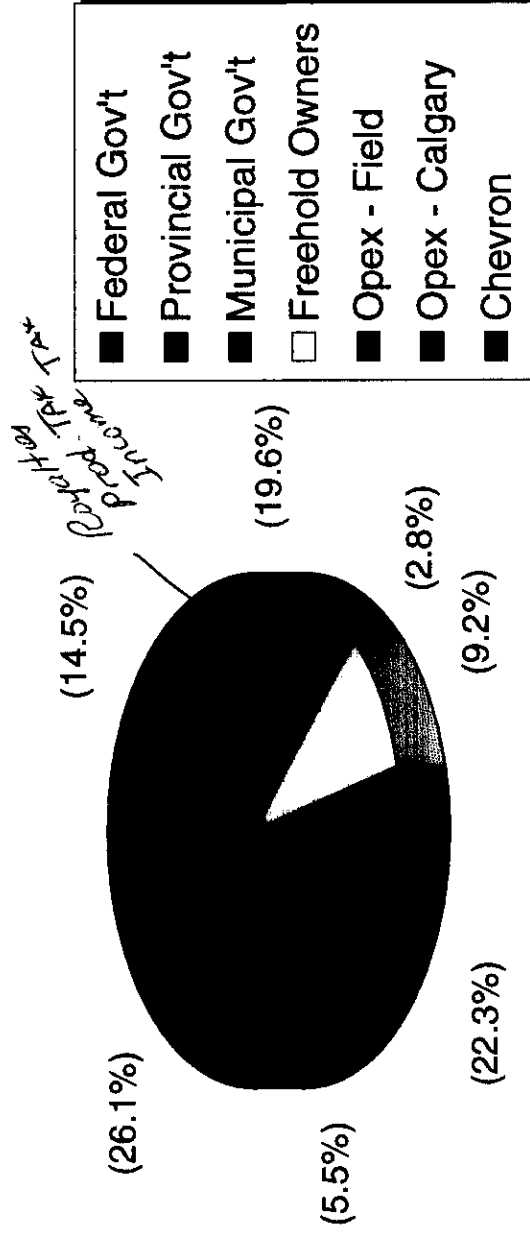
# After Tax Cash Flow Manitoba





# Manitoba Revenue Distribution

\$25,917,000



Federal Gov't	\$3,750,000
Provincial Gov't	\$5,072,000
Municipal Gov't	\$723,000
Freehold Owners	\$2,391,000
Opex - Field	\$5,771,000
Opex - Calgary	\$1,437,000
Chevron	\$6,773,000

# Manitoba Provincial Take

\$5,072,000

(21.4%)

(43.6%)

(35.1%)

- Crown Royalty
- Freehold Tax
- Income Tax

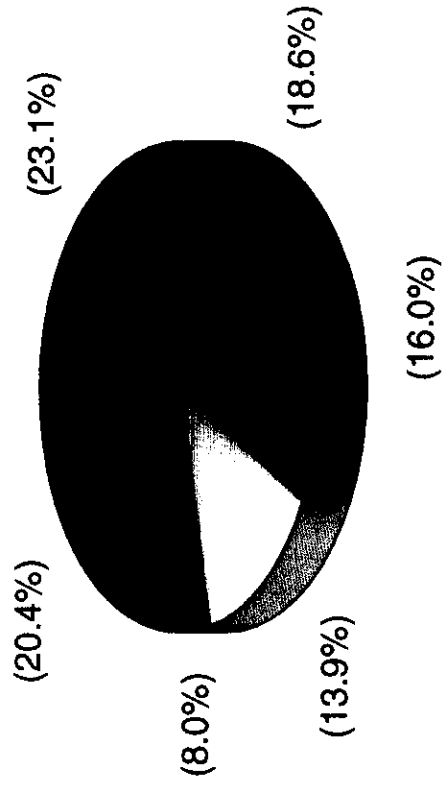
Crown Royalty \$1,083,000

Freehold Tax \$1,779,000

Income Tax \$2,210,000

# Field Operating Costs

\$5,771,000



Contract Services	\$1,332,000
Lease Obligations	\$1,073,000
Labor	\$924,000
Utilities	\$800,000
Chemicals	\$462,000
Other	\$1,180,000

# 1996 MANITOBA DEVELOPMENT / ITEMS

AREA	NEED	SYMPTOMS	DEVELOPMENT ITEM	COST (\$M)
				GROSS
NVSU #1 (87.37307%)	Reduce Water cycling and increase sweep efficiency	High WOR (>10) and fluid rates (>15 m <sup>3</sup> /d)	Polymer to injectors: 10-15-11-26W1 12-13-11-26W1 8-33-11-26W1 (possibly 12-24-11-26W1)	96.7 96.7 96.7  /290
	Increase injection for better sweep efficiency.	Corridors of unswept pay that are not receiving adequate waterflood support.	Conversion of producers to injection: 1-28-11-26W1 4-27-11-26W1 4-25-11-26W1.	44.1 58.6 38.6  /141
	Accelerate recovery and increase sweep efficiency.	Corridors of unswept pay that will not be recovered before 2030.  Low WOR (<5) and fluid rates (<15 m <sup>3</sup> /d).	Horizontal re-entries, parallel to fractures in producers: 13-15-11-26W1 12-34-11-26W1. In Injectors: 6-26-11-26W1 16-33-11-26W1.	305 305  305 305  /1220
Daly #3 (94.62117%)	Accelerate recovery and increase sweep efficiency.	Corridors of unswept pay that will not be recovered before 2030. Low WOR (<5) and fluid rates (<15 m <sup>3</sup> /d).	Horizontal re-entries, from producers perpendicular to fractures: 11-12-10-28W1 3-14-10-28W1.	305 305  /610
	Increase injection for better sweep efficiency.	Corridors of unswept pay that are not receiving adequate waterflood support. Very low pressures (near/below bubble pt. pressure).	Horizontal re-entry from injector perpendicular to fractures?:  2-11-10-28W1.	305
Daly #1 (91.83909%)	Reduce water cycling and increase sweep efficiency.	High WOR (>10) and fluid rates (>15 m <sup>3</sup> /d).	Polymer to injector: 12a-4-10-28W1.	96.7
Routledge (65.89543%)	Reduce water coning to increase sweep efficiency.	High WOR (>10) and lower recovery factors because of unswept pay between wells.	Horizontal re-entry from producer parallel to fractures: 11-22-9-25W1.	305

VIRXEN  
ROS ELEA  
IS NEXT  
PHASE

PLANS STILL  
SOMEWHAT  
TENTATIVE

21  
290  
141  
1220  
610  
305  
97  
305  
2468

DEVEL  
SCHEDULE

## 1996 Manitoba Develop Items

5 Horizontal Producers	50,000 m <sup>3</sup> incremental reserves	2- NVSU #1 2- Daly #3 1- Routledge #1
3 Horizontal Injectors	45,000 m <sup>3</sup> incremental reserves	2- NVSU #1 1- Daly #3
4 Polymer Squeezes	20,000 m <sup>3</sup> incremental reserves	3- NVSU #1 1- Daly #1
3 Conversions to Inj.	30,000 m <sup>3</sup> incremental reserves	3- NVSU #1

145,000 m<sup>3</sup> incremental

R.26

R.25W1M

T.12

# NORTH VIRDEN SCALLION UNIT 1

T.11

R.26

R.25W1M

LEVEL	LEVEL PLOTTED	DATA TYPE	REFERENCE TO COMMENT	DATA SET	DATE	DATE UPDATE
1		Topography	Topography from 1:50,000 map	1:50,000	1980	
2		Geology	Geology from 1:50,000 map	1:50,000	1980	
3		Soil	Soil from 1:50,000 map	1:50,000	1980	
4		Vegetation	Vegetation from 1:50,000 map	1:50,000	1980	
5		Water	Water from 1:50,000 map	1:50,000	1980	
6		Land Use	Land Use from 1:50,000 map	1:50,000	1980	
7		Population	Population from 1:50,000 map	1:50,000	1980	
8		Transportation	Transportation from 1:50,000 map	1:50,000	1980	
9		Other	Other from 1:50,000 map	1:50,000	1980	
10		Topography	Topography from 1:50,000 map	1:50,000	1980	
11		Geology	Geology from 1:50,000 map	1:50,000	1980	
12		Soil	Soil from 1:50,000 map	1:50,000	1980	
13		Vegetation	Vegetation from 1:50,000 map	1:50,000	1980	
14		Water	Water from 1:50,000 map	1:50,000	1980	
15		Land Use	Land Use from 1:50,000 map	1:50,000	1980	
16		Population	Population from 1:50,000 map	1:50,000	1980	
17		Transportation	Transportation from 1:50,000 map	1:50,000	1980	
18		Other	Other from 1:50,000 map	1:50,000	1980	

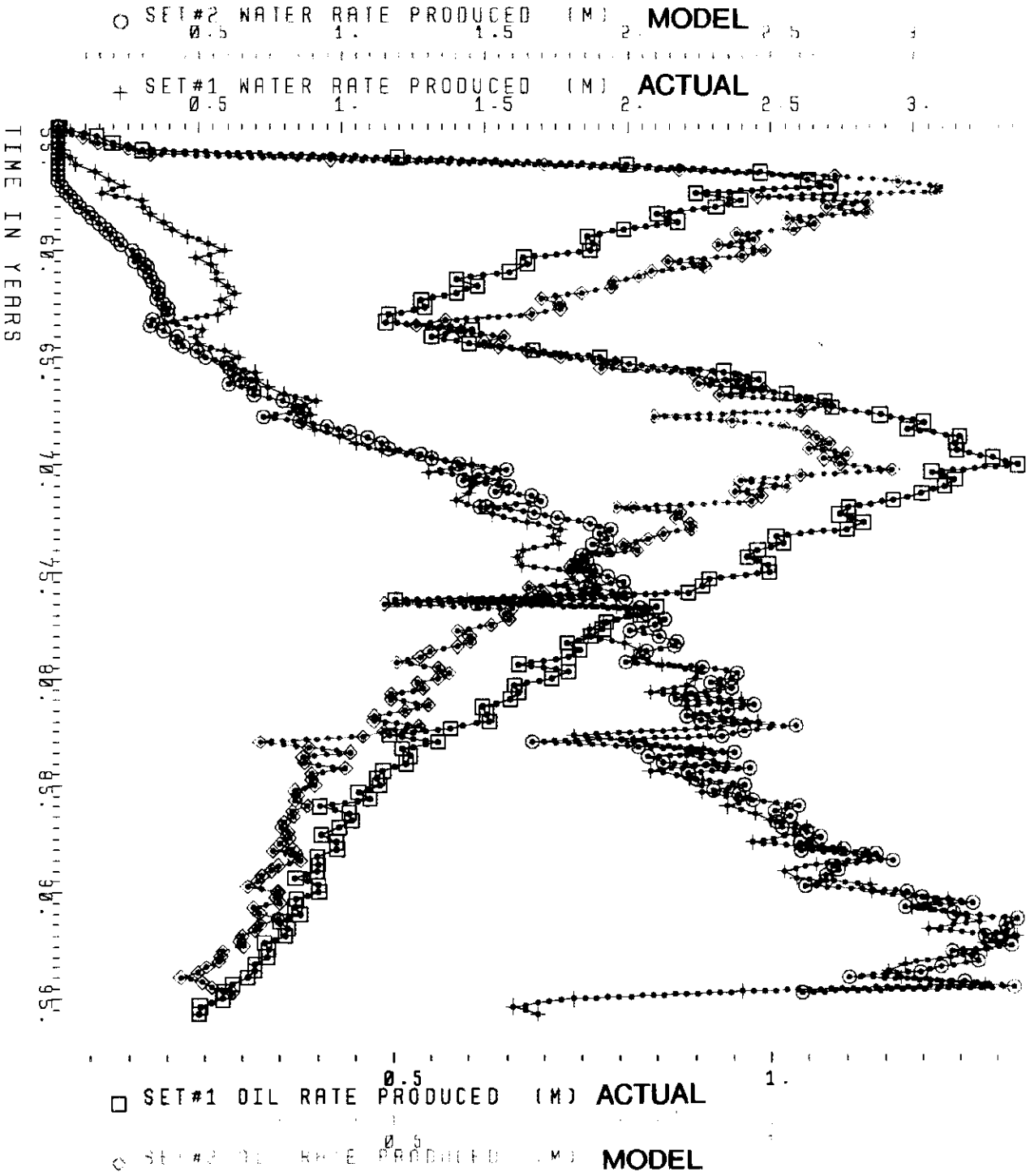
Chevron Canada Resources Limited

NORTH VIRDEN-SCALLION  
LODGEPOLE  
TOTAL NET PAY

PROJECT	UNIT	DATE	BY
SCALLION	1	1980	J. J. J.
REVISION			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

# N.V. SCALLION UNIT #1 PRODUCTION HISTORY MATCH

1 FIELD HISTORY FROM TOTAL 96-03 FROM 5812 TO 9508  
2 SCALLION HISTORY MATCH



# N.V. SCALLION UNIT #1 CURRENT STREAMTUBE ORIENTATION

SCALLION BASE CASE - USES 9506-9511 AV RATE - 96-02-15  
OPEN PRESSURE BOUNDARY = 900 PSI - PHIP# 159

FILE: SCL96BC

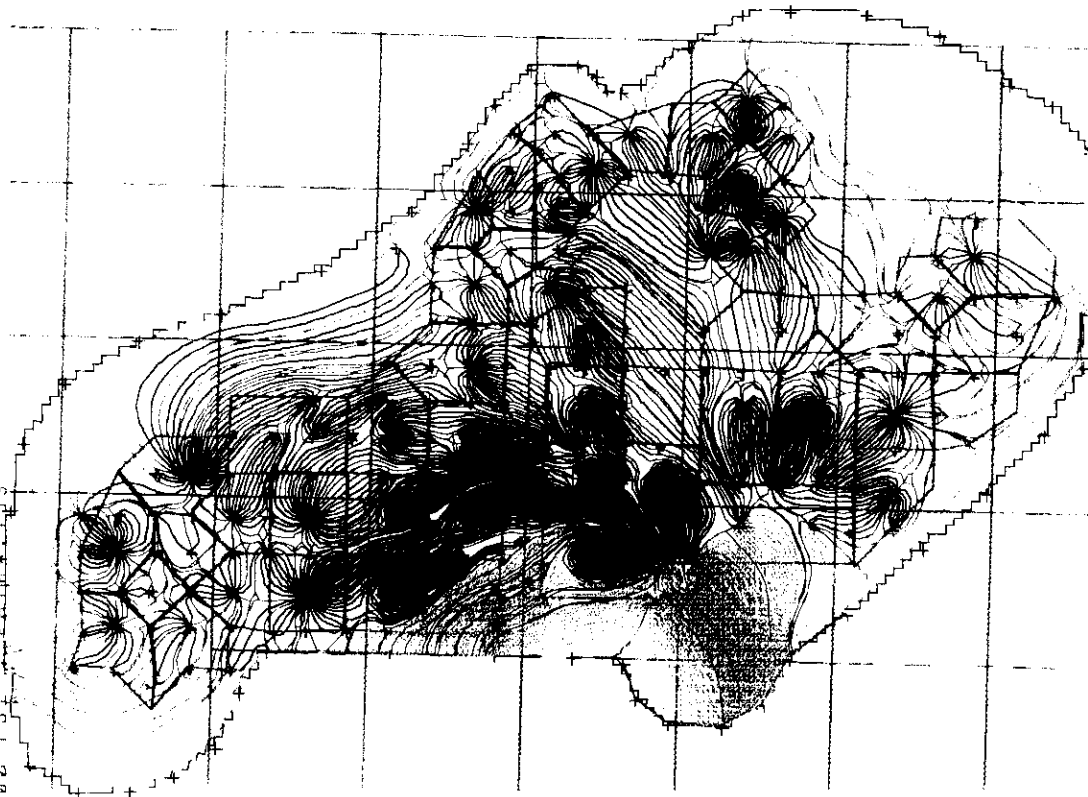
WELLS= 207

QSTEP= 2.00

TUBES= 1203

TPV= 49.478 MMRBBL TUBES.

TPV= 56.394 MMRBBL GRID

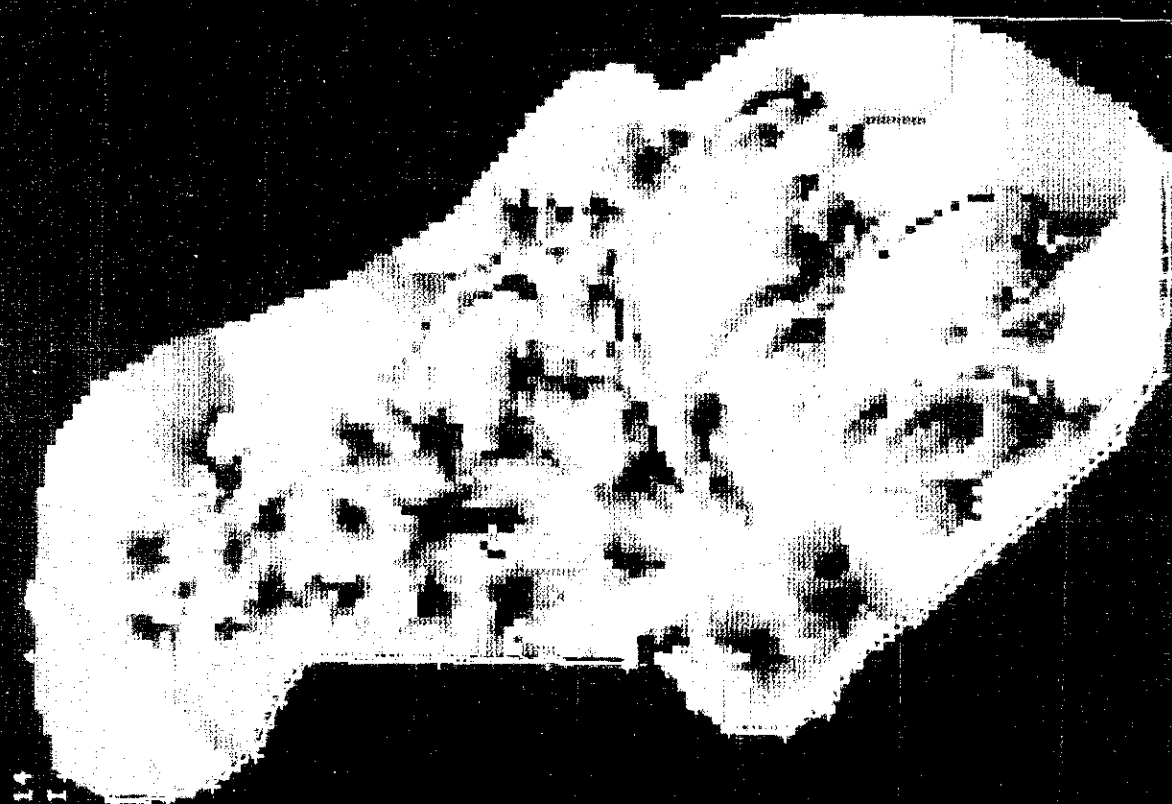


900.0  
900.0



# SCALION 93A 0311-3488 36-82-14 LAYER 5 SATURATION

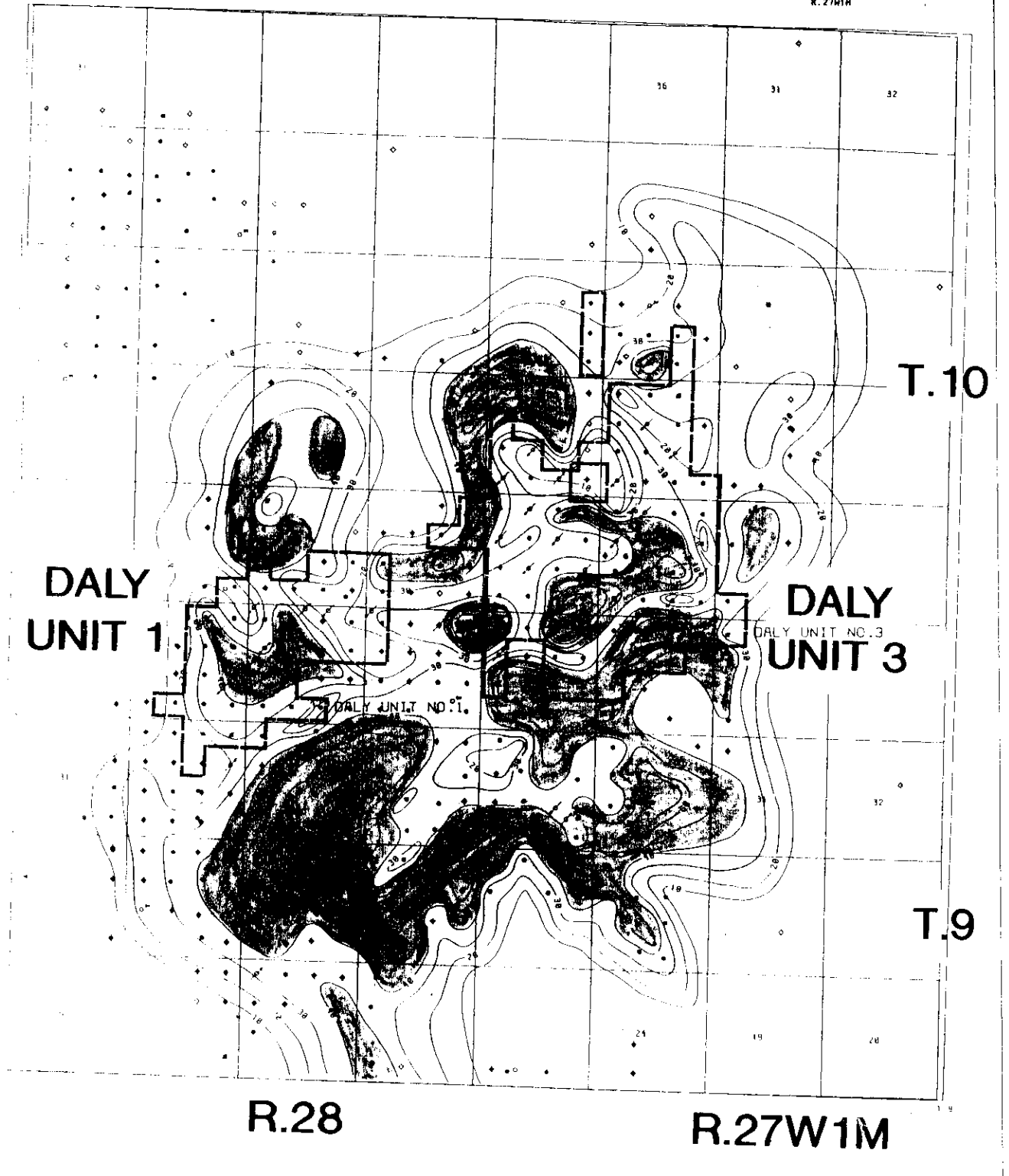
SCALION 93A 0311-3488 36-82-14  
 OPEN PRESSURE BOUNDARY = 980 PSI  
 FILE:SCALION  
 BELL= 237  
 BTYPE= 1.88  
 TUES= 3707  
 TPV= 49-146 MATHSOL TUESO.  
 TPV= 56.354 MATHSOL GRIO



980.0  
 980.0  
 980.0  
 980.0

R. 28W1M

R. 27W1M



STATUTE MILES 0 1 2  
KILOMETERS 0 1 2

CHEVRON CANADA RESOURCES  
DALY

LODGE POLE NETPAY

B. GRANT

JAN 36

R.26W1M

R.25W1M

1.11

T.11

9

4

12

1

6

9

**ROSELEA  
UNIT 2**

33

35

31

**ROSELEA  
UNIT 1**

12

**ROSELEA  
UNIT 3**

33

36

31

33

29

25

30

28

R.26W1M

R.25W1M

STATUTE MILES 0 1 2  
KILOMETERS 0 2

CHEVRON CANADA RESOURCES  
ROSELEA

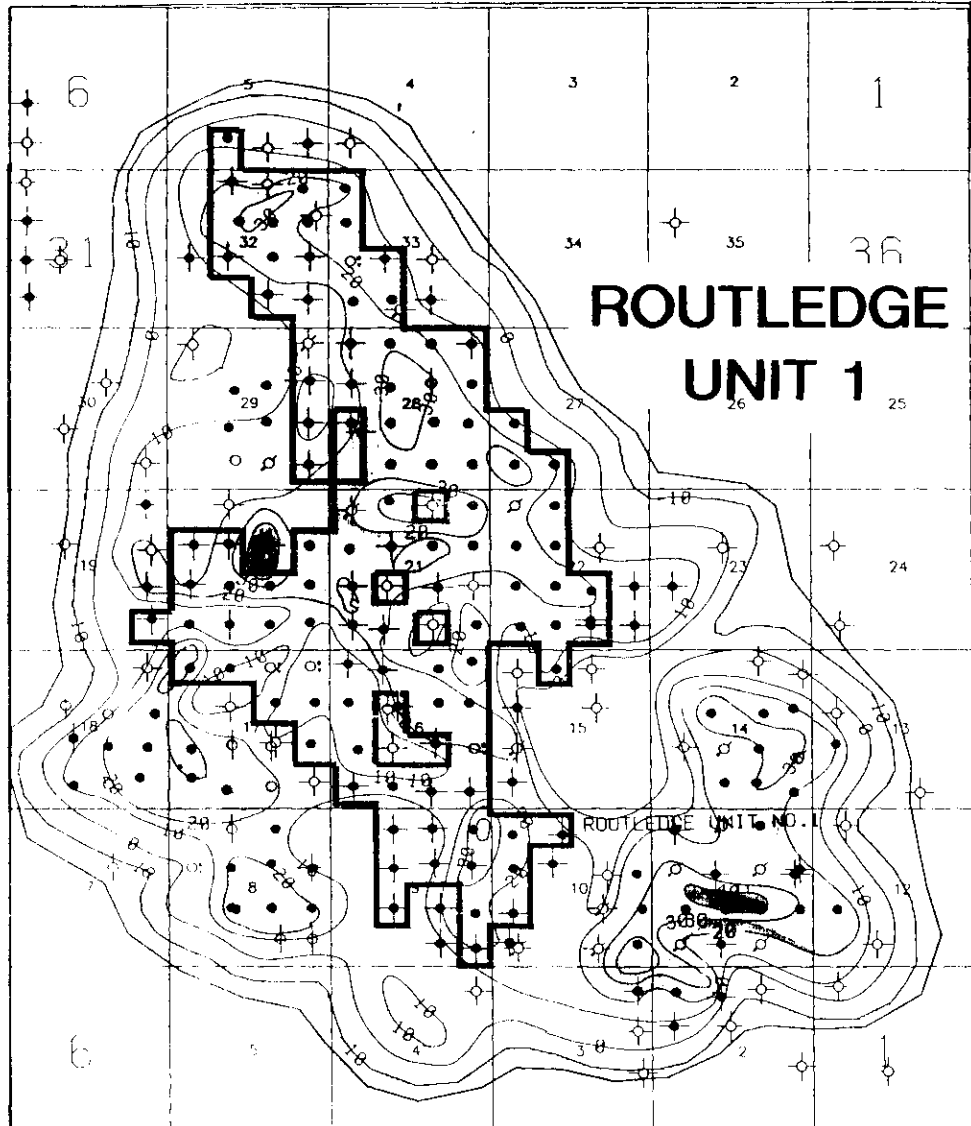
LODGEPOLE NL1P0Y

DATE: 13 JAN 96

R. 25W1M

T. 10

10



R. 25W1M

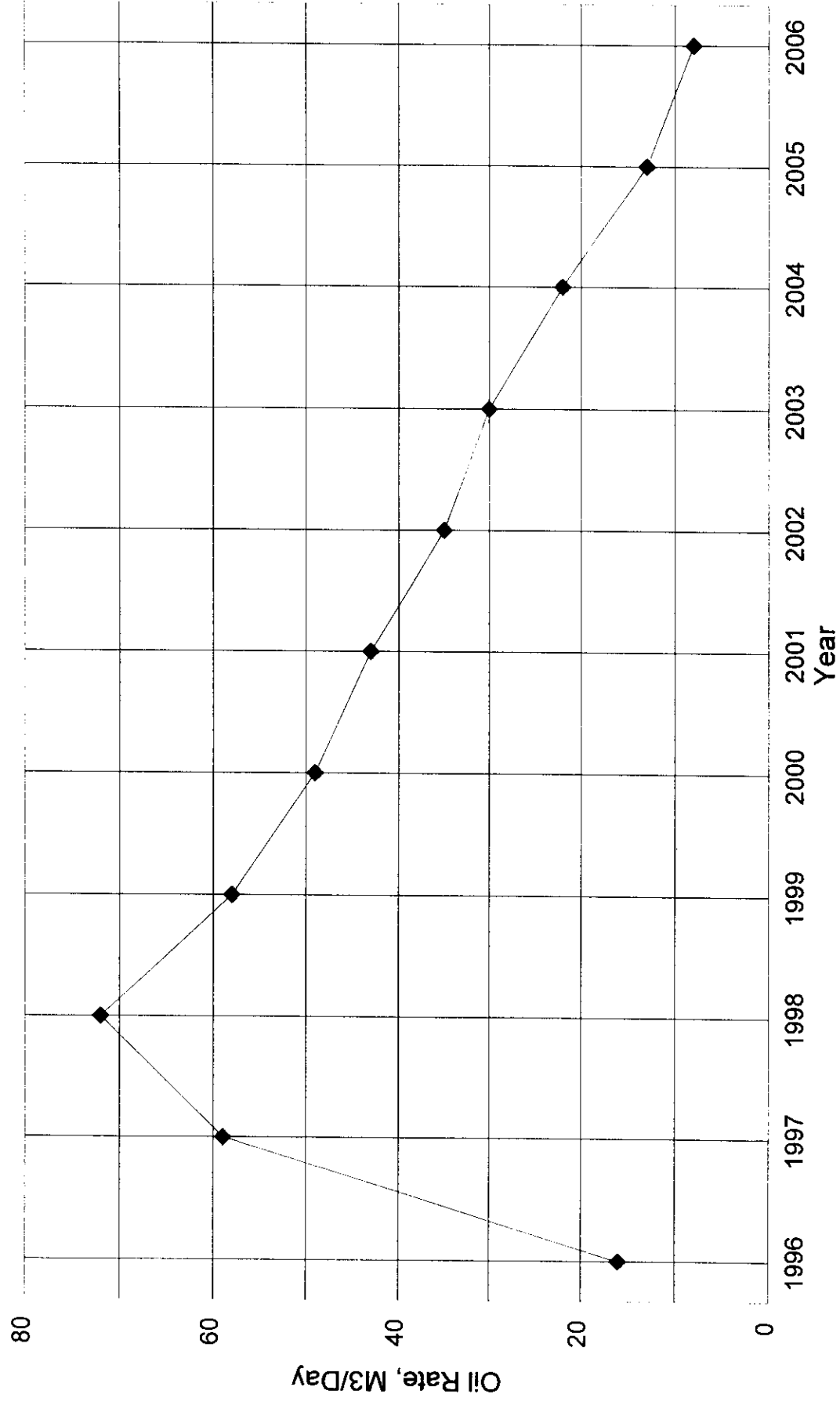
CHEVRON CANADA RESOURCES  
VIRIDEN ROUTLEDGE

LODGEPOLE MEMBERS  
NET PAY IN FEET

SCALE	DRAWN B. GRAN1	DATE 4 AUG-95
DATE		

# Manitoba Development Project

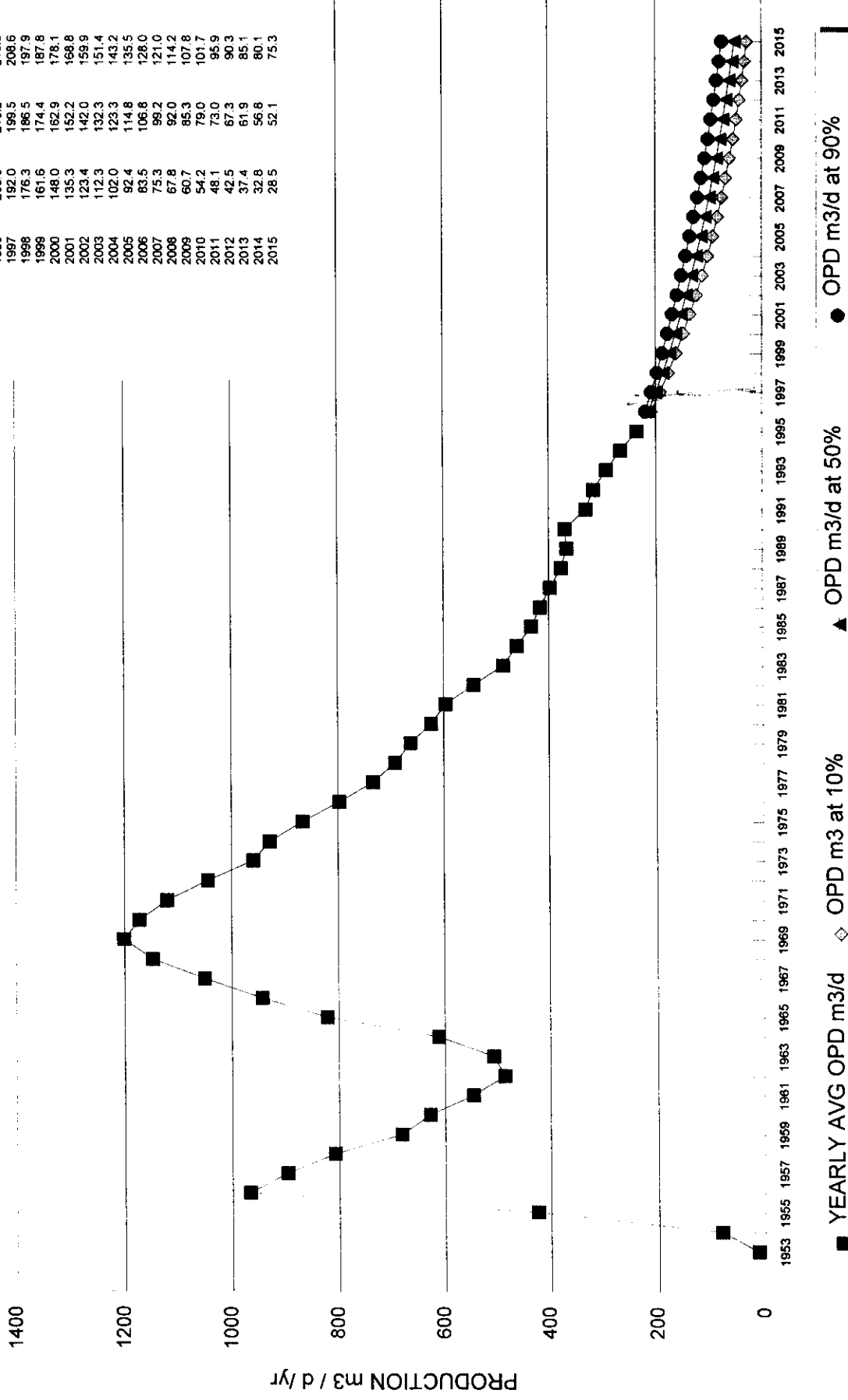
## Incremental Oil Production Profile



# MANITOBA

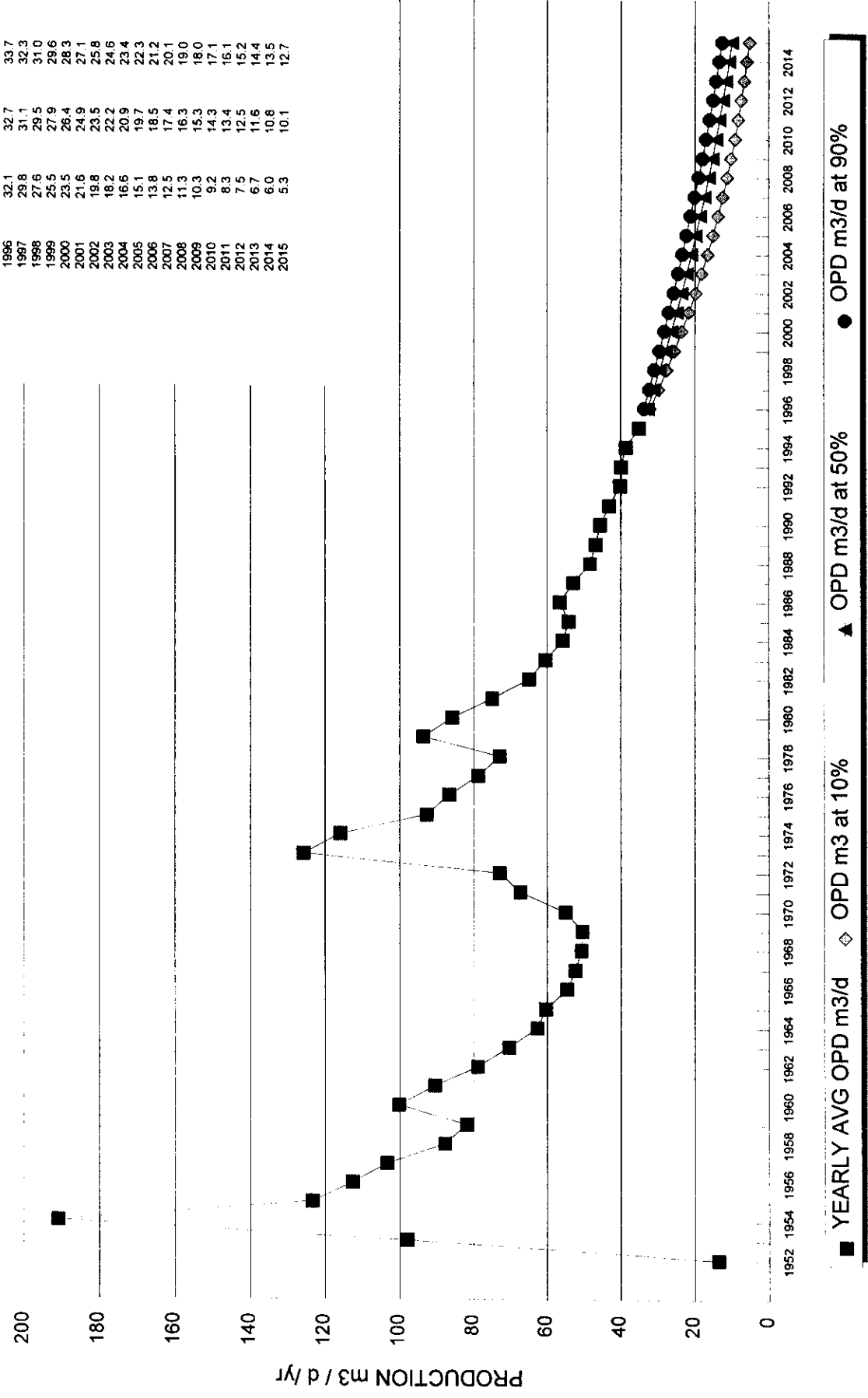
## NVS UNIT 1 PRODUCTION

TABLE YEAR	NVSU1 AT 10% m3/d	AT 50% m3/d	AT 90% m3/d
1996	208.9	213.2	219.5
1997	192.0	199.5	208.6
1998	176.3	186.5	197.9
1999	161.6	174.4	187.8
2000	148.0	162.9	178.1
2001	135.3	152.2	168.8
2002	123.4	142.0	159.9
2003	112.3	132.3	151.4
2004	102.0	123.3	143.2
2005	92.4	114.8	135.5
2006	83.5	106.8	128.0
2007	75.3	99.2	121.0
2008	67.8	92.0	114.2
2009	60.7	85.3	107.8
2010	54.2	79.0	101.7
2011	48.1	73.0	95.9
2012	42.5	67.3	90.3
2013	37.4	61.9	85.1
2014	32.8	56.8	80.1
2015	28.5	52.1	75.3



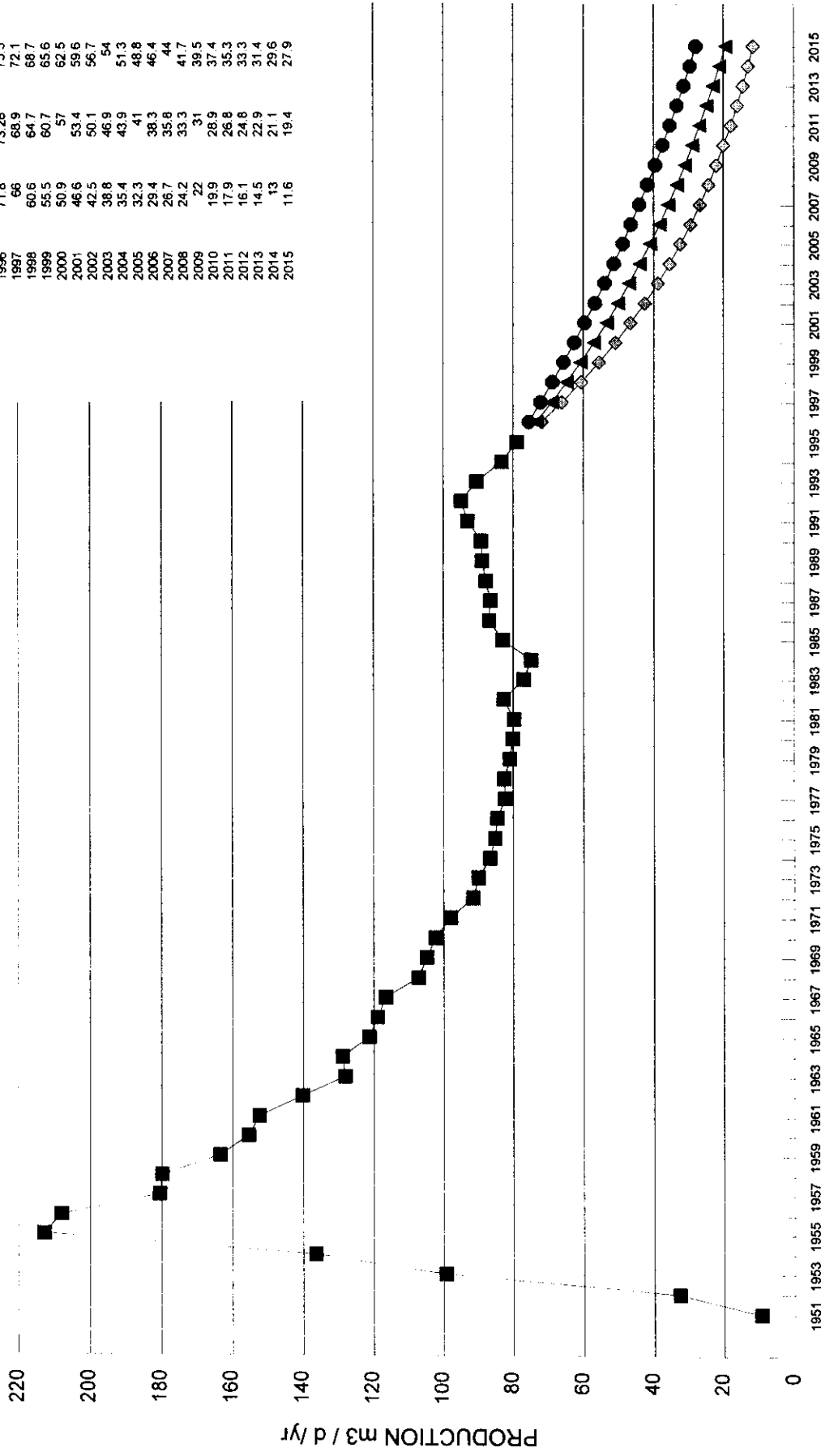
# MANITOBA DALY UNIT 1 PRODUCTION

TABLE YEAR	DALY UNIT 1 m3/d		
	AT 10%	AT 50%	AT 90%
1996	32.1	32.7	33.7
1997	29.8	31.1	32.3
1998	27.6	29.5	31.0
1999	25.5	27.9	29.6
2000	23.5	26.4	28.3
2001	21.6	24.9	27.1
2002	19.8	23.5	25.8
2003	18.2	22.2	24.6
2004	16.6	20.9	23.4
2005	15.1	19.7	22.3
2006	13.8	18.5	21.2
2007	12.5	17.4	20.1
2008	11.3	16.3	19.0
2009	10.3	15.3	18.0
2010	9.2	14.3	17.1
2011	8.3	13.4	16.1
2012	7.5	12.5	15.2
2013	6.7	11.6	14.4
2014	6.0	10.8	13.5
2015	5.3	10.1	12.7



# MANITOBA DALY UNIT 3 PRODUCTION

YEAR	AT 10% m3/d	AT 50% m3/d	AT 90% m3/d
1996	71.8	73.26	75.5
1997	68	68.9	72.1
1998	60.6	64.7	68.7
1999	55.5	60.7	65.6
2000	50.9	57	62.5
2001	46.6	53.4	59.6
2002	42.5	50.1	56.7
2003	38.8	46.9	54
2004	35.4	43.9	51.3
2005	32.3	41	48.8
2006	29.4	38.3	46.4
2007	26.7	35.8	44
2008	24.2	33.3	41.7
2009	22	31	39.5
2010	19.9	28.9	37.4
2011	17.9	26.8	35.3
2012	16.1	24.8	33.3
2013	14.5	22.9	31.4
2014	13	21.1	29.6
2015	11.6	19.4	27.9



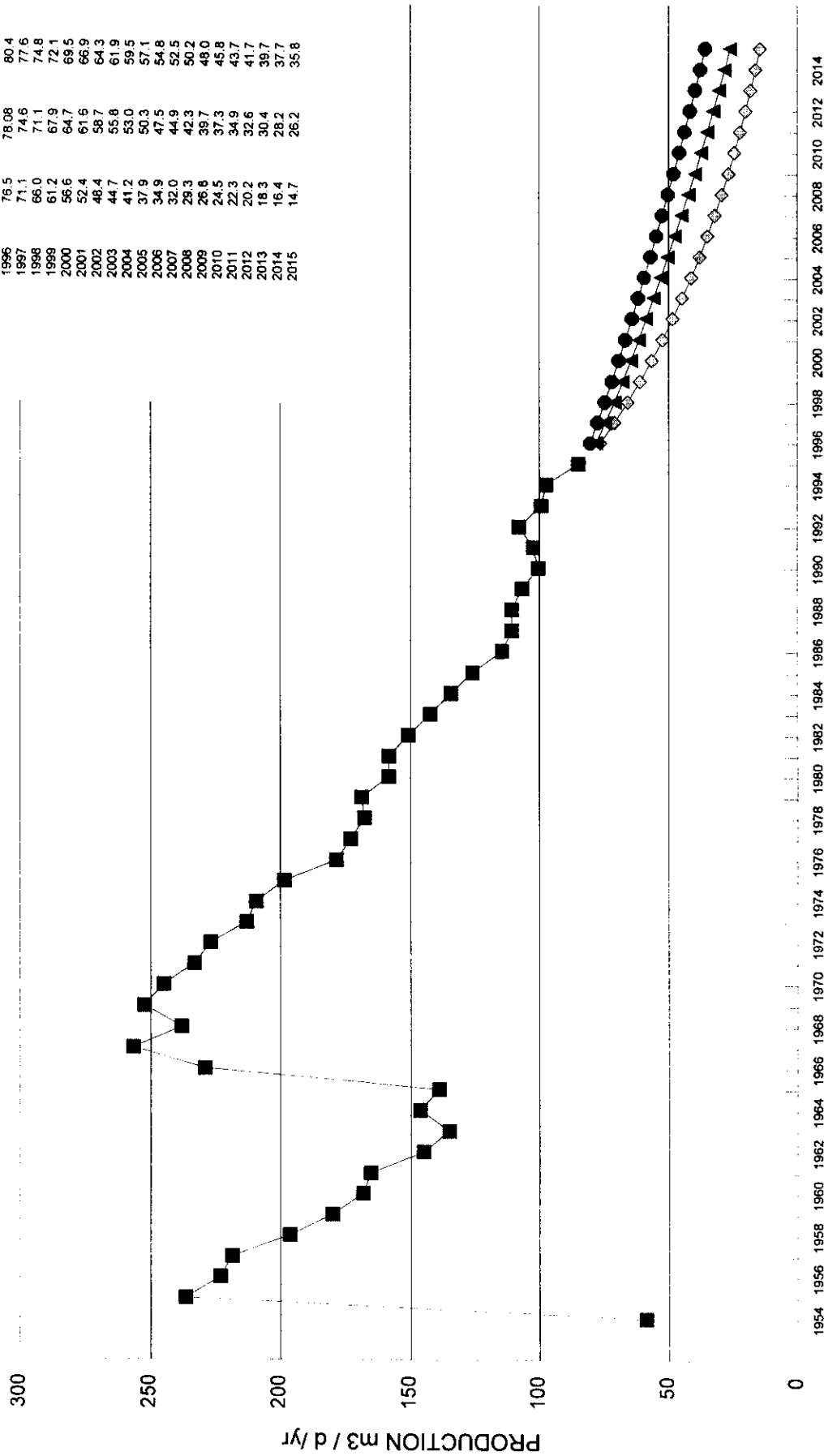
■ YEARLY AVG OPD m3/d    ◆ OPD m3 at 10%    ▲ OPD m3/d at 50%    ● OPD m3/d at 90%



# MANITOBA

## VIRDEN ROSELEA UNIT 1 PRODUCTION

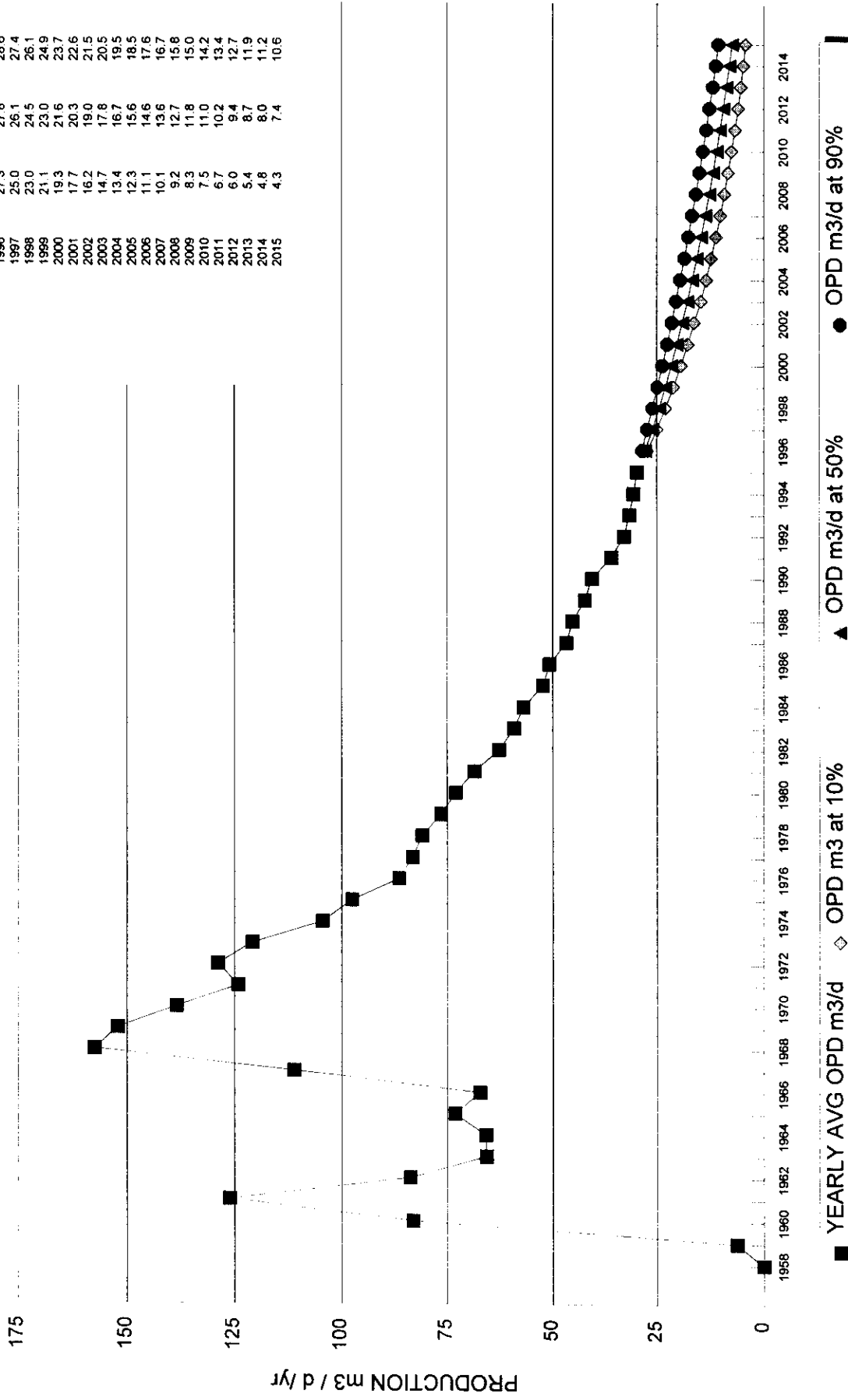
TABLE	VIRDEN ROSELEA UNIT 1			
YEAR	AT 10%	AT 50%	AT 90%	
	m3/d	m3/d	m3/d	m3/d
1996	75.5	78.08	80.4	
1997	71.1	74.6	77.6	
1998	66.0	71.1	74.8	
1999	61.2	67.9	72.1	
2000	56.6	64.7	69.5	
2001	52.4	61.5	66.9	
2002	48.4	58.7	64.3	
2003	44.7	55.8	61.9	
2004	41.2	53.0	59.5	
2005	37.9	50.3	57.1	
2006	34.9	47.5	54.8	
2007	32.0	44.9	52.5	
2008	29.3	42.3	50.2	
2009	26.8	39.7	48.0	
2010	24.5	37.3	45.8	
2011	22.3	34.9	43.7	
2012	20.2	32.6	41.7	
2013	18.3	30.4	39.7	
2014	16.4	28.2	37.7	
2015	14.7	26.2	35.8	



# MANITOBA

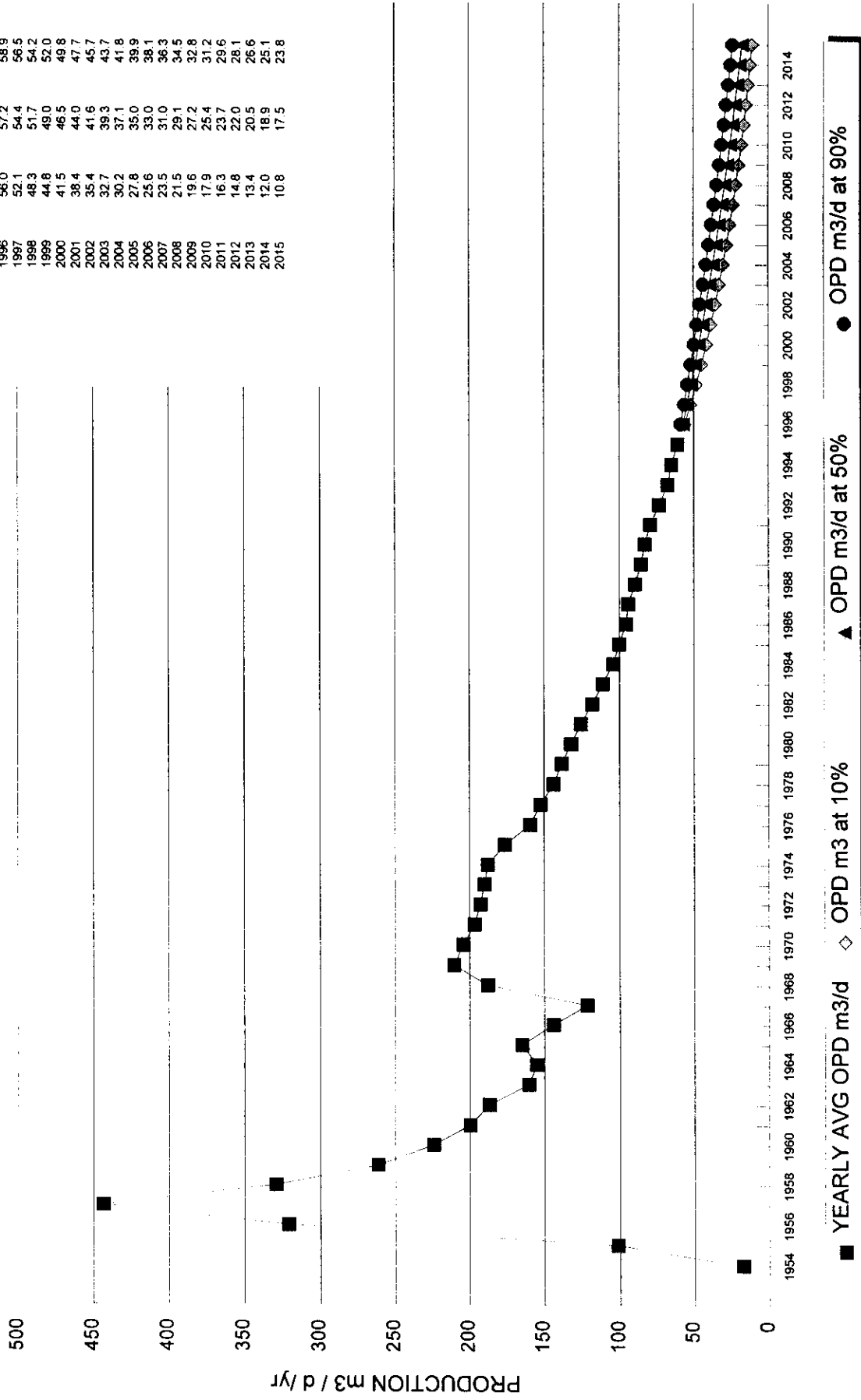
## VIRDEN ROSELEA UNIT 2 PRODUCTION

TABLE YEAR	VIRDEN ROSELEA UNIT 2		
	AT 10% m3/d	AT 50% m3/d	AT 90% m3/d
1996	27.3	27.8	28.6
1997	25.0	26.1	27.4
1998	23.0	24.5	26.1
1999	21.1	23.0	24.9
2000	19.3	21.6	23.7
2001	17.7	20.3	22.6
2002	16.2	19.0	21.5
2003	14.7	17.8	20.5
2004	13.4	16.7	19.5
2005	12.3	15.6	18.5
2006	11.1	14.6	17.6
2007	10.1	13.6	16.7
2008	9.2	12.7	15.8
2009	8.3	11.8	15.0
2010	7.5	11.0	14.2
2011	6.7	10.2	13.4
2012	6.0	9.4	12.7
2013	5.4	8.7	11.9
2014	4.8	8.0	11.2
2015	4.3	7.4	10.6



# MANITOBA VIRDEN ROSELEA UNIT 3 PRODUCTION

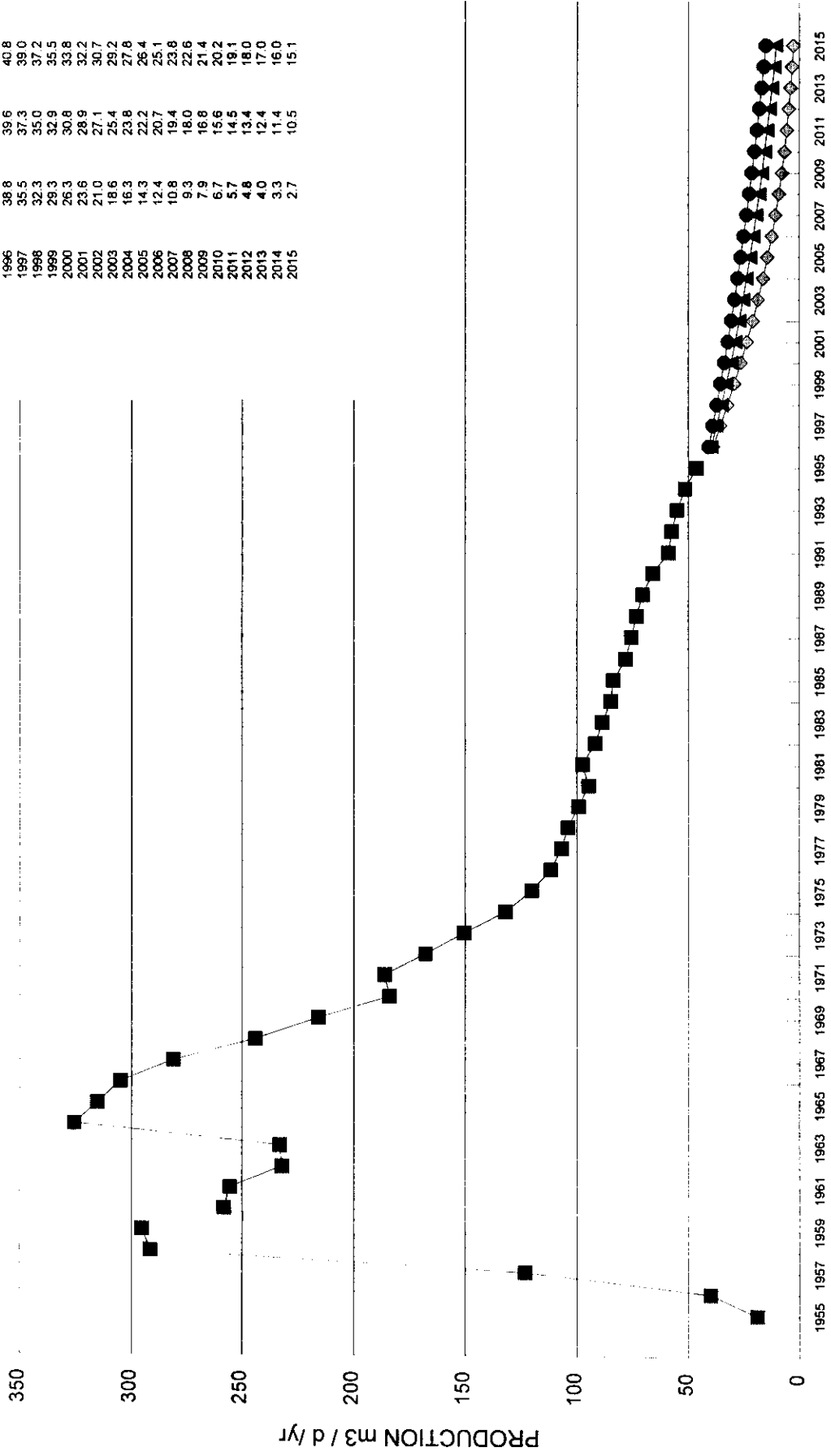
TABLE YEAR	VIRDEN ROSELEA UNIT 3 m3/d		
	AT 10%	AT 50%	AT 90%
1996	56.0	57.2	58.9
1997	52.1	54.4	56.5
1998	48.3	51.7	54.2
1999	44.8	49.0	52.0
2000	41.5	46.5	49.8
2001	38.4	44.0	47.7
2002	35.4	41.6	45.7
2003	32.7	39.3	43.7
2004	30.2	37.1	41.8
2005	27.8	35.0	39.9
2006	25.6	33.0	38.1
2007	23.5	31.0	36.3
2008	21.5	29.1	34.5
2009	19.6	27.2	32.8
2010	17.9	25.4	31.2
2011	16.3	23.7	29.6
2012	14.8	22.0	28.1
2013	13.4	20.5	26.6
2014	12.0	18.9	25.1
2015	10.8	17.5	23.8



# MANITOBA

## ROUTLEDGE UNIT 1 PRODUCTION

TABLE YEAR	ROUTLEDGE UNIT 1		
	AT 10% m3/d	AT 50% m3/d	AT 90% m3/d
1996	38.8	39.6	40.8
1997	35.5	37.3	39.0
1998	32.3	35.0	37.2
1999	29.3	32.9	35.5
2000	26.3	30.8	33.8
2001	23.6	28.9	32.2
2002	21.0	27.1	30.7
2003	18.6	25.4	29.2
2004	16.3	23.8	27.8
2005	14.3	22.2	26.4
2006	12.4	20.7	25.1
2007	10.8	19.4	23.8
2008	9.3	18.0	22.6
2009	7.9	16.8	21.4
2010	6.7	15.6	20.2
2011	5.7	14.5	19.1
2012	4.8	13.4	18.0
2013	4.0	12.4	17.0
2014	3.3	11.4	16.0
2015	2.7	10.5	15.1



■ YEARLY AVG OPD m3/d    ◇ OPD m3 at 10%    ▲ OPD m3/d at 50%    ● OPD m3/d at 90%

# Hwell Injector Response Tracking Proposal

- Agree on current injection well communication path of pressure support
- Agree on revised injection well communication path of pressure support
  - 1) Streamtube modelling
  - 2) Well response to injection
- Agree upon base case decline for affected wells
- Calculate incremental waterflood above base case due to Hwell injector



# Conclusions

- ☐ CCR will continue to harvest/develop Manitoba properties
- ☐ CCR would like to evaluate development opportunities with various pilot projects
- ☐ Work together to establish baseline declines for CCR Manitoba waterfloods
- ☐ Request Petroleum Branch to grant approval for new oil status above unit baseline production
- ☐ Request Petroleum Branch to help establish process to take advantage of horizontal injection well holiday

MEETING WITH CHEVRON - May 16/96

NVSU #1 & DALY #1

• profile modification, incremental recovery 5000 m<sup>3</sup> / job

• h2 well in Foutledge to evaluate this technology for use in developing Oak Lake property

- done some reservoir simulation - NVSU #1 (stream tube)  
- model not designed to handle primary depletion

- manpower Eastern Business Unit split between MB & SK

2 @ 250,000 US  
for study  
+ 1 @ 100,000  
in staff  
time (2 staffs)

NVSU #1 mass migration of fluid from north portion of unit to sweet spot (thicker net pay) to Sec 21 & 22 vs. pattern wf response.

- last reservoir pressure data 1990 will be implementing pressure surveying program '96

- plan to run injection-profile logs.

- conducted fracture orientation study - NVSU #1

- fractures - NVSU #1 now water-filled, ~~orientation~~ <sup>orientation</sup>  
NNE - SSW.

- more fractures in Daly, fractures so prevalent displacement piston-like, major orientation -  
NNW - SSE

→ have corrosion ~~control~~ problems associated with polymers under control

- comprehensive economic analysis

Darcy UNIT No. 3 Base Decline Revision

- currently facing higher than anticipated decline rate

- high injection capability but poor pressure support, plan to increase Lodgepole withdrawals

Review decline rate NVSU #1, Darcy #1 & 3

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- DAK LAKE on books for 15 yrs. & expiring 1998

- working on development plan.

- have not done full cycle economic, must be done prior to proceeding with environmental assessment

→ 2-3 vertical delineation wells followed by up to 7 h2 wells from a pad.



March 15, 1996

Mr. Larry Skow  
Reservoir Engineer  
Chevron Canada Resources  
500 Fifth Avenue SW  
Calgary, AB T2P 0L7

Dear Mr. Skow:

**Re: Incentives for Chevron's Proposed Waterflood Modification Program**

I have reviewed your letter dated February 27, 1996 which outlines Chevron's proposed waterflood modification program. As you are aware our petroleum incentive programs, PEAP and the Drilling Incentive Program are designed primarily for exploration and development activities, in particular the drilling of new wells. Chevron's proposed program of injector profile modifications, horizontal re-entries of both producers and injectors, injector conversions and producer recompletions will benefit to some extent from our incentive programs. The major benefit to Chevron from the proposed waterflood modifications is the qualification of incremental recoverable reserves for new oil status, as is the situation currently in Daly Unit No. 3.

**Drilling Incentive Program**

The following is an explanation of which of Chevron's proposed activities would qualify for a holiday oil volume under the Drilling Incentive Program.

1. Polymer diversion treatment of an injector does not qualify as a major workover and will not earn a holiday oil volume.
2. Horizontal re-entry of an injector earns a holiday oil volume of 10 000 m<sup>3</sup> provided the re-entry achieves an angle of at least 80° from the vertical for a minimum of 100 m. If the horizontal re-entry is used as an injector, the holiday oil volume would have to be transferred to Chevron's holiday oil volume account to be assigned to subsequently drilled wells in accordance with the regulations.
3. Horizontal re-entries of a producer earn a holiday oil volume of 10 000 m<sup>3</sup> provided the re-entry achieves an angle of at least 80° from the vertical for a minimum of 100 m. For royalty and tax purposes, production from a horizontal well is also considered new oil.

4. The conversion of a producer to injection does not qualify as a major workover and will not earn a holiday oil volume.
5. The recompletion of a producer in another member of the Lodgepole Formation does not qualify as a major workover and will not earn a holiday oil volume.

### **New Oil Status**

The major royalty/tax benefits for Chevron's proposed waterflood modifications is in the classification of incremental recoverable reserves from an enhanced recovery project as new oil. The definition of new oil under the Crown Royalty and Incentives Regulation and the Oil and Gas Production Tax Regulation allows the Director of Petroleum to determine if proposed waterflood modifications and improvements will result in incremental recovery. Incremental recoverable reserves are in turn granted new oil status, as is the case in Daly Unit No. 3. In Daly Unit No. 3, a historic unit production decline was determined by the Branch on application from Chevron. New oil status was then approved for all unit production in excess of the historic production decline. After a historic unit production decline is determined, any investment in the unit to maintain or increase production, including repairs and maintenance expenditures, will have more favourable economics.

To qualify for new oil status an application for approval of Chevron's proposed waterflood modifications would be required. The application should include the relevant parts of Section 71 of the Drilling and Production Regulation (application for approval of enhanced oil recovery).

I hope this letter clarifies the petroleum incentives and royalty/tax treatment Chevron would receive if the company proceeds with the proposed waterflood modifications. Any additional incentives/assistance from the province would require a special application under Section 7 of The Oil and Gas Act. In such an application Chevron would have to show why the proposed modifications needed additional incentives/assistance and what are the costs/benefits to the province. Chevron would have to support its position with detailed economics and any incentives/assistance would have to maintain or increase revenue to the province.

If you have any questions in respect of this matter please don't hesitate to call me at (204) 945-6574.

Yours truly,

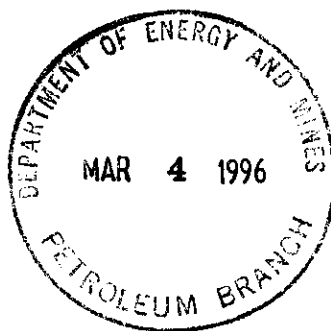


John N. Fox, P.Eng,  
Chief Petroleum Engineer

cc. L.R. Dubreuil, Director



February 27, 1996



**Chevron Canada Resources**  
500 Fifth Avenue S.W.  
Calgary, Alberta  
T2P 0L7

**Eastern Business Unit**

Manitoba Energy and Mines  
Attention: John Fox  
Petroleum Branch  
360 - 1395 Ellice Avenue  
Winnipeg, Manitoba  
R3G 3P2

Dear Mr. Fox:

This submission is with respect to our telephone conversation of approximately January 22, 1996 pertaining to the application of royalty holiday oil volume for:

1. Horizontally drilled injectors, and
2. Major workovers on injectors.

Our discussion centered around expanding the applicability of incentives to increasing pool recovery factors by investment in strategic injection increases using horizontal wells and injection conformance using large polymer diversion treatments.

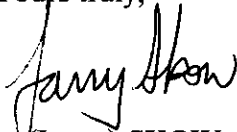
The current non exploration incentives apply to investments pertaining to increased pool recoveries by working over or drilling production wells. As a result of engineering studies conducted on several Chevron operated Lodgepole waterfloods, it is believed significant opportunity exists by enhancing waterflood efficiency in strategic areas of these waterfloods. It is planned to conduct a pilot program the first and second quarter of 1996 by the following:

1. Polymer diversion treatments applied to injectors in the Lodgepole - 9 wells, \$75,000/well, 5,000 m<sup>3</sup> incremental reserves/well.
2. Horizontal re-entries of injectors in the Lodgepole - 2 wells, \$150,000/well, 15,000 m<sup>3</sup> incremental reserves/well.
3. Horizontal re-entries of producers in the Lodgepole - 3 wells, \$150,000/well, 10,000 m<sup>3</sup> incremental reserves/well in addition,
4. Conversion from production to injection in the Lodgepole - 7 wells, \$50,000/well, 10,000 m<sup>3</sup> incremental reserves/well.
5. Recompletion of producers by polymer or mechanical means within the Lodgepole - 4 wells, \$20,000/well, 2,000 m<sup>3</sup> incremental reserves/well.

Manitoba Energy and Mines  
February 27, 1996  
Page 2

Chevron Canada Resources appreciates your consideration to clarify the incentives with respect to injection workovers/horizontal wells, as well as other planned work (items 4 and 5). Please direct questions to Larry Skow at (403) 234-5834.

Yours truly,

A handwritten signature in black ink, appearing to read "Larry Skow". The signature is fluid and cursive, with the first name "Larry" and last name "Skow" clearly distinguishable.

L. (Larry) SKOW  
Reservoir Engineer

(I:\eastern\admin\currie\skow\feb27.doc)

1996

96 day 3 wk3

1% Base, 50% Chevron  
Dev.DALY #3  
TAX  
(Chevron)  
Location

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

Stat	Tract Part	Well Prod	Freehold Interest	Working Factor	Unit Name	Tax Rate %	Price \$/m3	Tax Value
DALY #3								
05011028	6	0.02491	0.6	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
A10011028	6	0.48041	11.3	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12011028	6	0.92143	21.7	1.00000	1.000000	D3	0.97	\$166.25 \$34.99
13011028	6	2.57163	60.6	1.00000	1.000000	D3	16.47	\$166.25 \$1,659.31
14011028	6	1.70119	40.1	1.00000	1.000000	D3	8.12	\$166.25 \$541.33
15011028	6	1.92163	45.3	1.00000	1.000000	D3	10.23	\$166.25 \$770.43
16011028	6	0.82597	19.5	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
05021028	6	0.37064	8.7	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
07021028	6	0.02995	0.7	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
08021028	6	2.85886	67.3	1.00000	1.000000	D3	19.00	\$166.25 \$2,125.84
12021028	6	0.01922	0.5	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
13021028	6	1.01951	24.0	1.00000	1.000000	D3	1.85	\$166.25 \$73.82
14021028	6	1.71467	40.4	1.00000	1.000000	D3	8.23	\$166.25 \$552.77
15021028	6	1.11772	26.3	1.00000	1.000000	D3	2.72	\$166.25 \$118.93
16021028	6	1.69995	40.0	1.00000	1.000000	D3	8.07	\$166.25 \$536.66
09121028	6	0.61908	14.6	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
10121028	6	1.30168	30.7	1.00000	1.000000	D3	4.40	\$166.25 \$224.57
11121028	6	1.86136	43.8	1.00000	1.000000	D3	9.62	\$166.25 \$700.50
12121028	6	1.90923	45.0	1.00000	1.000000	D3	10.11	\$166.25 \$756.35
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
13121028	6	1.01301	23.9	1.00000	1.000000	D3	1.81	\$166.25 \$71.92
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
14121028	6	1.14384	26.9	1.00000	1.000000	D3	2.95	\$166.25 \$131.93
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
16121028	6	1.30274	30.7	1.00000	1.000000	D3	4.40	\$166.25 \$224.57
01131028	6	0.04914	1.2	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
02131028	6	2.50118	58.9	1.00000	1.000000	D3	15.77	\$166.25 \$1,544.22
03131028	6	0.04064	1.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
04131028	6	0.46601	11.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
05131028	6	1.19540	28.2	1.00000	1.000000	D3	3.45	\$166.25 \$161.74
06131028	6	4.08746	96.3	1.00000	1.000000	D3	25.37	\$166.25 \$4,061.71
07131028	6	0.03910	0.9	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
10131028	6	3.54386	83.5	1.00000	1.000000	D3	23.10	\$166.25 \$3,206.71
11131028	6	0.08105	1.9	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12131028	6	2.63477	62.1	1.00000	1.000000	D3	17.08	\$166.25 \$1,763.36
13131028	6	0.08499	2.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
14131028	6	2.12797	50.1	1.00000	1.000000	D3	12.19	\$166.25 \$1,015.32
15131028	6	1.74373	41.1	1.00000	1.000000	D3	8.52	\$166.25 \$582.16
02141028	6	0.79490	18.7	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
08141028	6	0.20142	4.7	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12141028	6	0.05596	1.3	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
01231028	6	1.93305	45.5	1.00000	1.000000	D3	10.32	\$166.25 \$780.64
08231028	6	2.23083	52.5	1.00000	1.000000	D3	13.17	\$166.25 \$1,149.49
09231028	6	1.32371	31.2	1.00000	1.000000	D3	4.59	\$166.25 \$238.08
02241028	6	0.03959	0.9	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
07241028	6	0.04449	1.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00

TOTAL

51.65258

\$23,027.35

CROWN  
(Chevron)

DALY #3

13061027	6	0.01618	0.4	1.00000	1.000000	DALY3	0.00	\$166.25 \$0.00
09101028	6	0.97997	23.1	1.00000	1.000000	DALY3	1.82	\$166.25 \$302.58
10101028	6	1.50200	35.4	1.00000	1.000000	DALY3	4.28	\$166.25 \$711.55
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25 \$0.00
01111028	6	2.45346	57.8	1.00000	1.000000	DALY3	11.63	\$166.25 \$1,933.49
02111028	6	1.14999	27.1	1.00000	1.000000	DALY3	2.50	\$166.25 \$415.63
03111028	6	0.60268	14.2	1.00000	1.000000	DALY3	0.69	\$166.25 \$114.71
04111028	6	1.89342	44.6	1.00000	1.000000	DALY3	6.79	\$166.25 \$1,128.84

DALY UNIT NO.3  
Royalty / Tax  
CALCULATIONS

## DALY #3

TAX

(Chevron)

Location	Stat	Tract Part	Well Prod	OLD = 1 Freehold Interest	NEW = 2 Working Factor	INCENTIVE = 3 Unit Name	HOLIDAY = 4 Tax Rate %	MIX = 5 Price \$/m3	N/O = 6 Tax Value
05111028	6	0.05433	1.3	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06111028	6	0.48240	11.4	1.00000	1.000000	DALY3	0.44	\$166.25	\$73.15
07111028	6	1.13485	26.7	1.00000	1.000000	DALY3	2.43	\$166.25	\$403.99
08111028	6	2.08095	49.0	1.00000	1.000000	DALY3	8.20	\$166.25	\$1,363.25
09111028	6	1.39662	32.9	1.00000	1.000000	DALY3	3.69	\$166.25	\$613.46
10111028	6	1.05654	24.9	1.00000	1.000000	DALY3	2.11	\$166.25	\$350.79
11111028	6	0.41786	9.8	1.00000	1.000000	DALY3	0.33	\$166.25	\$54.86
12111028	6	0.24683	5.8	1.00000	1.000000	DALY3	0.12	\$166.25	\$19.95
13111028	6	3.20655	75.5	1.00000	1.000000	DALY3	19.19	\$166.25	\$3,190.34
14111028	6	0.89668	21.1	1.00000	1.000000	DALY3	1.52	\$166.25	\$252.70
15111028	6	1.30393	30.7	1.00000	1.000000	DALY3	3.22	\$166.25	\$535.33
16111028	6	0.91258	21.5	1.00000	1.000000	DALY3	1.58	\$166.25	\$262.68
01121028	6	2.11323	49.8	1.00000	1.000000	DALY3	8.46	\$166.25	\$1,406.48
02121028	6	1.73832	40.9	1.00000	1.000000	DALY3	5.71	\$166.25	\$949.29
03121028	6	2.87039	67.6	1.00000	1.000000	DALY3	15.81	\$166.25	\$2,628.41
04121028	6	1.50999	35.6	1.00000	1.000000	DALY3	4.33	\$166.25	\$719.86
05121028	6	4.16933	98.2	1.00000	1.000000	DALY3	28.87	\$166.25	\$4,799.64
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	51.2	1.00000	1.000000	DALY3	8.98	\$166.25	\$1,492.93
07121028	6	1.23795	29.2	1.00000	1.000000	DALY3	2.91	\$166.25	\$483.79
08121028	6	0.41011	9.7	1.00000	1.000000	DALY3	0.32	\$166.25	\$53.20
03141028	6	2.82838	66.6	1.00000	1.000000	DALY3	15.38	\$166.25	\$2,556.93
04141028	6	0.11702	2.8	1.00000	1.000000	DALY3	0.03	\$166.25	\$4.99
05141028	6	0.06822	1.6	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	16.8	1.00000	1.000000	DALY3	0.97	\$166.25	\$161.26

TOTAL	41.74722	983.4							\$26,987.40
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TAX

(Corvair)

DALY #3

09021028	6	1.68366	39.7	1.00000	1.000000	D3	7.95	\$166.07	\$524.14
10021028	6	1.11117	26.2	1.00000	1.000000	D3	2.69	\$166.07	\$117.04
15121028	6	2.58400	60.9	1.00000	1.000000	D3	16.59	\$166.07	\$1,677.86

TOTAL	5.37883								\$2,319.04
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FEDERAL CROWN WELLS

04071027	1.22137	28.8							
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TOTAL \$ 52,333.74

1997

1% BASE. CHEVRON SOL DW

## 97DALY3

## TAX

(Chevron)  
Location

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

(Chevron) Location	Stat	Tract Part	Well Prod	Freehold Interest	Working Factor	Unit Name	Tax Rate %	Price \$/m3	Tax Value
DALY #3									
05011028	6	0.02491	0.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
A10011028	6	0.48041	13.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12011028	6	0.92143	25.0	1.00000	1.000000	D3	1.87	\$166.25	\$77.72
13011028	6	2.57163	69.7	1.00000	1.000000	D3	17.84	\$166.25	\$2,067.23
14011028	6	1.70119	46.1	1.00000	1.000000	D3	9.28	\$166.25	\$711.23
15011028	6	1.92163	52.1	1.00000	1.000000	D3	11.56	\$166.25	\$1,001.28
16011028	6	0.82597	22.4	1.00000	1.000000	D3	1.04	\$166.25	\$38.73
05021028	6	0.37064	10.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07021028	6	0.02995	0.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08021028	6	2.85886	77.5	1.00000	1.000000	D3	19.76	\$166.25	\$2,545.95
12021028	6	0.01922	0.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13021028	6	1.01951	27.6	1.00000	1.000000	D3	2.71	\$166.25	\$124.35
14021028	6	1.71467	46.5	1.00000	1.000000	D3	9.43	\$166.25	\$729.00
15021028	6	1.11772	30.3	1.00000	1.000000	D3	3.58	\$166.25	\$180.34
16021028	6	1.69995	46.1	1.00000	1.000000	D3	9.28	\$166.25	\$711.23
09121028	6	0.61908	16.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10121028	6	1.30168	35.3	1.00000	1.000000	D3	5.18	\$166.25	\$303.99
11121028	6	1.86136	50.4	1.00000	1.000000	D3	10.91	\$166.25	\$914.15
12121028	6	1.90923	51.7	1.00000	1.000000	D3	11.41	\$166.25	\$980.70
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13121028	6	1.01301	27.5	1.00000	1.000000	D3	2.68	\$166.25	\$122.53
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14121028	6	1.14384	31.0	1.00000	1.000000	D3	3.80	\$166.25	\$195.84
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
16121028	6	1.30274	35.3	1.00000	1.000000	D3	5.18	\$166.25	\$303.99
01131028	6	0.04914	1.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
02131028	6	2.50118	67.8	1.00000	1.000000	D3	17.31	\$166.25	\$1,951.14
03131028	6	0.04064	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
04131028	6	0.46601	12.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05131028	6	1.19540	32.4	1.00000	1.000000	D3	4.25	\$166.25	\$228.93
06131028	6	4.08746	110.8	1.00000	1.000000	D3	24.92	\$166.25	\$4,590.39
07131028	6	0.03910	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10131028	6	3.54386	96.0	1.00000	1.000000	D3	23.07	\$166.25	\$3,681.97
11131028	6	0.08105	2.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12131028	6	2.63477	71.4	1.00000	1.000000	D3	18.30	\$166.25	\$2,172.26
13131028	6	0.08499	2.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14131028	6	2.12797	57.7	1.00000	1.000000	D3	13.69	\$166.25	\$1,313.23
15131028	6	1.74373	47.3	1.00000	1.000000	D3	9.74	\$166.25	\$765.92
02141028	6	0.79490	21.5	1.00000	1.000000	D3	0.75	\$166.25	\$26.81
08141028	6	0.20142	5.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12141028	6	0.05596	1.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
01231028	6	1.93305	52.4	1.00000	1.000000	D3	11.67	\$166.25	\$1,016.63
08231028	6	2.23083	60.5	1.00000	1.000000	D3	14.75	\$166.25	\$1,483.57
09231028	6	1.32371	35.9	1.00000	1.000000	D3	5.38	\$166.25	\$321.10
02241028	6	0.03959	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07241028	6	0.04449	1.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00

TOTAL

51.65258

\$28,560.21

## CROWN

(Chevron)

## DALY #3

13061027	6	0.01618	0.4	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
09101028	6	0.97997	26.6	1.00000	1.000000	DALY3	2.13	\$166.25	\$354.11
10101028	6	1.50200	40.7	1.00000	1.000000	DALY3	5.01	\$166.25	\$832.91
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
01111028	6	2.45346	66.5	1.00000	1.000000	DALY3	13.47	\$166.25	\$2,239.39
02111028	6	1.14999	31.2	1.00000	1.000000	DALY3	2.94	\$166.25	\$488.78
03111028	6	0.60268	16.3	1.00000	1.000000	DALY3	0.80	\$166.25	\$133.00
04111028	6	1.89342	51.3	1.00000	1.000000	DALY3	8.00	\$166.25	\$1,330.00

**97DALY3**
**TAX**

(Chevron)

Location

Stat

 Tract  
Part

 Well  
Prod

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

 Freehold  
Interest

 Working  
Factor

 Unit  
Name

 Tax  
Rate %

 Price  
\$/m3

 Tax  
Value

05111028	6	0.05433	1.5	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06111028	6	0.48240	13.1	1.00000	1.000000	DALY3	0.52	\$166.25	\$86.45
07111028	6	1.13485	30.8	1.00000	1.000000	DALY3	2.87	\$166.25	\$477.14
08111028	6	2.08095	56.4	1.00000	1.000000	DALY3	9.78	\$166.25	\$1,625.93
09111028	6	1.39662	37.8	1.00000	1.000000	DALY3	4.32	\$166.25	\$718.20
10111028	6	1.05654	28.6	1.00000	1.000000	DALY3	2.48	\$166.25	\$412.30
11111028	6	0.41786	11.3	1.00000	1.000000	DALY3	0.39	\$166.25	\$64.84
12111028	6	0.24683	6.7	1.00000	1.000000	DALY3	0.13	\$166.25	\$21.61
13111028	6	3.20655	86.9	1.00000	1.000000	DALY3	21.59	\$166.25	\$3,589.34
14111028	6	0.89668	24.3	1.00000	1.000000	DALY3	1.79	\$166.25	\$297.59
15111028	6	1.30393	35.3	1.00000	1.000000	DALY3	3.77	\$166.25	\$626.76
16111028	6	0.91258	24.7	1.00000	1.000000	DALY3	1.85	\$166.25	\$307.56
01121028	6	2.11323	57.3	1.00000	1.000000	DALY3	10.11	\$166.25	\$1,680.79
02121028	6	1.73832	47.1	1.00000	1.000000	DALY3	6.71	\$166.25	\$1,115.54
03121028	6	2.87039	77.8	1.00000	1.000000	DALY3	17.95	\$166.25	\$2,984.19
04121028	6	1.50999	40.9	1.00000	1.000000	DALY3	5.06	\$166.25	\$841.23
05121028	6	4.16933	113.0	1.00000	1.000000	DALY3	31.99	\$166.25	\$5,318.34
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	58.9	1.00000	1.000000	DALY3	10.68	\$166.25	\$1,775.55
07121028	6	1.23795	33.5	1.00000	1.000000	DALY3	3.40	\$166.25	\$565.25
08121028	6	0.41011	11.1	1.00000	1.000000	DALY3	0.37	\$166.25	\$61.51
03141028	6	2.82838	76.7	1.00000	1.000000	DALY3	17.52	\$166.25	\$2,912.70
04141028	6	0.11702	3.2	1.00000	1.000000	DALY3	0.03	\$166.25	\$4.99
05141028	6	0.06822	1.8	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	19.3	1.00000	1.000000	DALY3	1.13	\$166.25	\$187.86

TOTAL	41.74722	1131.2							\$31,057.18
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**TAX**

(Corvair)

DALY #3

09021028	6	1.68366	45.6	1.00000	1.000000	D3	9.09	\$166.07	\$688.37
10021028	6	1.11117	30.1	1.00000	1.000000	D3	3.51	\$166.07	\$175.45
15121028	6	2.58400	70.0	1.00000	1.000000	D3	17.92	\$166.07	\$2,083.18

TOTAL	5.37883								\$2,947.00
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**FEDERAL CROWN WELLS**

04071027		1.22137	33.1						
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TOTAL \$ 62,564.39



1% BASE

CHEVRON 50% DIV.

1998

## 98DALY3

TAX

(Chevron)

Location

Stat

Tract  
PartWell  
Prod

OLD = 1 NEW = 2 INCENTIVE = 3

Freehold  
InterestWorking  
FactorUnit  
Name

HOLIDAY = 4

Tax  
Rate %

MIX = 5

Price  
\$/m3

N/O = 6

Tax  
Value

DALY #3

05011028	6	0.02491	0.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
A10011028	6	0.48041	12.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12011028	6	0.92143	23.7	1.00000	1.000000	D3	1.52	\$166.25	\$59.89
13011028	6	2.57163	66.2	1.00000	1.000000	D3	17.24	\$166.25	\$1,897.39
14011028	6	1.70119	43.8	1.00000	1.000000	D3	8.68	\$166.25	\$632.06
15011028	6	1.92163	49.5	1.00000	1.000000	D3	10.88	\$166.25	\$895.36
16011028	6	0.82597	21.3	1.00000	1.000000	D3	0.72	\$166.25	\$25.50
05021028	6	0.37064	9.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07021028	6	0.02995	0.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08021028	6	2.85886	73.6	1.00000	1.000000	D3	19.28	\$166.25	\$2,359.10
12021028	6	0.01922	0.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13021028	6	1.01951	26.3	1.00000	1.000000	D3	2.39	\$166.25	\$104.50
14021028	6	1.71467	44.2	1.00000	1.000000	D3	8.84	\$166.25	\$649.59
15021028	6	1.11772	28.8	1.00000	1.000000	D3	3.22	\$166.25	\$154.17
16021028	6	1.69995	43.8	1.00000	1.000000	D3	8.68	\$166.25	\$632.06
09121028	6	0.61908	15.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10121028	6	1.30168	33.5	1.00000	1.000000	D3	4.80	\$166.25	\$267.33
11121028	6	1.86136	47.9	1.00000	1.000000	D3	10.26	\$166.25	\$817.04
12121028	6	1.90923	49.2	1.00000	1.000000	D3	10.76	\$166.25	\$880.11
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13121028	6	1.01301	26.1	1.00000	1.000000	D3	2.32	\$166.25	\$100.67
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14121028	6	1.14384	29.5	1.00000	1.000000	D3	3.46	\$166.25	\$169.69
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
16121028	6	1.30274	33.6	1.00000	1.000000	D3	4.83	\$166.25	\$269.80
01131028	6	0.04914	1.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
02131028	6	2.50118	64.4	1.00000	1.000000	D3	16.63	\$166.25	\$1,780.49
03131028	6	0.04064	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
04131028	6	0.46601	12.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05131028	6	1.19540	30.8	1.00000	1.000000	D3	3.89	\$166.25	\$199.19
06131028	6	4.08746	105.3	1.00000	1.000000	D3	24.81	\$166.25	\$4,343.27
07131028	6	0.03910	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10131028	6	3.54386	91.3	1.00000	1.000000	D3	22.84	\$166.25	\$3,466.80
11131028	6	0.08105	2.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12131028	6	2.63477	67.9	1.00000	1.000000	D3	17.75	\$166.25	\$2,003.69
13131028	6	0.08499	2.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14131028	6	2.12797	54.8	1.00000	1.000000	D3	12.92	\$166.25	\$1,177.08
15131028	6	1.74373	44.9	1.00000	1.000000	D3	9.10	\$166.25	\$679.28
02141028	6	0.79490	20.5	1.00000	1.000000	D3	0.45	\$166.25	\$15.34
08141028	6	0.20142	5.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12141028	6	0.05596	1.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
01231028	6	1.93305	49.8	1.00000	1.000000	D3	10.99	\$166.25	\$909.89
08231028	6	2.23083	57.5	1.00000	1.000000	D3	13.97	\$166.25	\$1,335.44
09231028	6	1.32371	34.1	1.00000	1.000000	D3	5.00	\$166.25	\$283.46
02241028	6	0.03959	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07241028	6	0.04449	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00

TOTAL

51.65258

\$26,108.19

## CROWN

(Chevron)

DALY #3

13061027	6	0.01618	0.4	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
09101028	6	0.97997	25.2	1.00000	1.000000	DALY3	1.97	\$166.25	\$327.51
10101028	6	1.50200	38.7	1.00000	1.000000	DALY3	4.65	\$166.25	\$773.06
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
01111028	6	2.45346	63.2	1.00000	1.000000	DALY3	12.56	\$166.25	\$2,088.10
02111028	6	1.14999	29.6	1.00000	1.000000	DALY3	2.72	\$166.25	\$452.20
03111028	6	0.60268	15.5	1.00000	1.000000	DALY3	0.75	\$166.25	\$124.69
04111028	6	1.89342	48.8	1.00000	1.000000	DALY3	7.38	\$166.25	\$1,226.93

**98DALY3**
**TAX**

(Chevron)

Location	Stat	Tract Part	Well Prod	OLD = 1 Freehold Interest	NEW = 2 Working Factor	INCENTIVE = 3 Unit Name	HOLIDAY = 4 Tax Rate %	MIX = 5 Price \$/m3	N/O = 6 Tax Value
05111028	6	0.05433	1.4	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06111028	6	0.48240	12.4	1.00000	1.000000	DALY3	0.48	\$166.25	\$79.80
07111028	6	1.13485	29.2	1.00000	1.000000	DALY3	2.64	\$166.25	\$438.90
08111028	6	2.08095	53.6	1.00000	1.000000	DALY3	9.03	\$166.25	\$1,501.24
09111028	6	1.39662	36.0	1.00000	1.000000	DALY3	4.02	\$166.25	\$668.33
10111028	6	1.05654	27.2	1.00000	1.000000	DALY3	2.30	\$166.25	\$382.38
11111028	6	0.41786	10.8	1.00000	1.000000	DALY3	0.36	\$166.25	\$59.85
12111028	6	0.24683	6.4	1.00000	1.000000	DALY3	0.12	\$166.25	\$19.95
13111028	6	3.20655	82.6	1.00000	1.000000	DALY3	20.40	\$166.25	\$3,391.50
14111028	6	0.89668	23.1	1.00000	1.000000	DALY3	1.65	\$166.25	\$274.31
15111028	6	1.30393	33.6	1.00000	1.000000	DALY3	3.50	\$166.25	\$581.88
16111028	6	0.91258	23.5	1.00000	1.000000	DALY3	1.71	\$166.25	\$284.29
01121028	6	2.11323	54.4	1.00000	1.000000	DALY3	9.33	\$166.25	\$1,551.11
02121028	6	1.73832	44.8	1.00000	1.000000	DALY3	6.22	\$166.25	\$1,034.08
03121028	6	2.87039	73.9	1.00000	1.000000	DALY3	16.87	\$166.25	\$2,804.64
04121028	6	1.50999	38.9	1.00000	1.000000	DALY3	4.70	\$166.25	\$781.38
05121028	6	4.16933	107.4	1.00000	1.000000	DALY3	30.44	\$166.25	\$5,060.65
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	56.0	1.00000	1.000000	DALY3	9.90	\$166.25	\$1,645.88
07121028	6	1.23795	31.9	1.00000	1.000000	DALY3	3.16	\$166.25	\$525.35
08121028	6	0.41011	10.6	1.00000	1.000000	DALY3	0.34	\$166.25	\$56.53
03141028	6	2.82838	72.9	1.00000	1.000000	DALY3	16.46	\$166.25	\$2,736.48
04141028	6	0.11702	3.0	1.00000	1.000000	DALY3	0.03	\$166.25	\$4.99
05141028	6	0.06822	1.8	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	18.4	1.00000	1.000000	DALY3	1.05	\$166.25	\$174.56
TOTAL		41.74722	1075.4						\$29,053.89

**TAX**

(Corvair)

DALY #3

09021028	6	1.68366	43.4	1.00000	1.000000	D3	8.53	\$166.07	\$614.79
10021028	6	1.11117	28.6	1.00000	1.000000	D3	3.16	\$166.07	\$150.09
15121028	6	2.58400	66.6	1.00000	1.000000	D3	17.36	\$166.07	\$1,920.06
TOTAL		5.37883							\$2,684.94

**FEDERAL CROWN WELLS**

04071027	1.22137	31.5
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Total \$ 57,647.02

1999

1/1. BASE, CHEVRON 50% D&amp;V

## 99DALY3

TAX

(Chevron)

Location

Stat

Tract  
PartWell  
Prod

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

Freehold  
InterestWorking  
FactorUnit  
NameTax  
Rate %Price  
\$/m3Tax  
Value

DALY #3

05011028	6	0.02491	0.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
A10011028	6	0.48041	11.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12011028	6	0.92143	22.5	1.00000	1.000000	D3	1.16	\$166.25	\$43.39
13011028	6	2.57163	62.7	1.00000	1.000000	D3	16.35	\$166.25	\$1,704.30
14011028	6	1.70119	41.5	1.00000	1.000000	D3	8.04	\$166.25	\$554.71
15011028	6	1.92163	46.9	1.00000	1.000000	D3	10.16	\$166.25	\$792.19
16011028	6	0.82597	20.1	1.00000	1.000000	D3	0.33	\$166.25	\$11.03
05021028	6	0.37064	9.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07021028	6	0.02995	0.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08021028	6	2.85886	69.7	1.00000	1.000000	D3	18.68	\$166.25	\$2,164.57
12021028	6	0.01922	0.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13021028	6	1.01951	24.9	1.00000	1.000000	D3	2.00	\$166.25	\$82.79
14021028	6	1.71467	41.8	1.00000	1.000000	D3	8.16	\$166.25	\$567.06
15021028	6	1.11772	27.3	1.00000	1.000000	D3	2.83	\$166.25	\$128.44
16021028	6	1.69995	41.5	1.00000	1.000000	D3	8.04	\$166.25	\$554.71
09121028	6	0.61908	15.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10121028	6	1.30168	31.7	1.00000	1.000000	D3	4.36	\$166.25	\$229.78
11121028	6	1.86136	45.4	1.00000	1.000000	D3	9.58	\$166.25	\$723.07
12121028	6	1.90923	46.6	1.00000	1.000000	D3	10.04	\$166.25	\$777.82
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13121028	6	1.01301	24.7	1.00000	1.000000	D3	1.93	\$166.25	\$79.25
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14121028	6	1.14384	27.9	1.00000	1.000000	D3	3.04	\$166.25	\$141.01
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
16121028	6	1.30274	31.8	1.00000	1.000000	D3	4.40	\$166.25	\$232.62
01131028	6	0.04914	1.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
02131028	6	2.50118	61.0	1.00000	1.000000	D3	15.68	\$166.25	\$1,590.15
03131028	6	0.04064	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
04131028	6	0.46601	11.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05131028	6	1.19540	29.2	1.00000	1.000000	D3	3.49	\$166.25	\$169.42
06131028	6	4.08746	99.7	1.00000	1.000000	D3	24.59	\$166.25	\$4,075.82
07131028	6	0.03910	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10131028	6	3.54386	86.4	1.00000	1.000000	D3	22.48	\$166.25	\$3,229.03
11131028	6	0.08105	2.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12131028	6	2.63477	64.3	1.00000	1.000000	D3	16.98	\$166.25	\$1,815.14
13131028	6	0.08499	2.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14131028	6	2.12797	51.9	1.00000	1.000000	D3	12.12	\$166.25	\$1,045.76
15131028	6	1.74373	42.5	1.00000	1.000000	D3	8.44	\$166.25	\$596.34
02141028	6	0.79490	19.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08141028	6	0.20142	4.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12141028	6	0.05596	1.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
01231028	6	1.93305	47.1	1.00000	1.000000	D3	10.24	\$166.25	\$801.83
08231028	6	2.23083	54.4	1.00000	1.000000	D3	13.10	\$166.25	\$1,184.76
09231028	6	1.32371	32.3	1.00000	1.000000	D3	4.57	\$166.25	\$245.40
02241028	6	0.03959	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07241028	6	0.04449	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00

TOTAL

51.65258

\$23,540.39

CROWN

(Chevron)

DALY #3

13061027	6	0.01618	0.4	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
09101028	6	0.97997	23.9	1.00000	1.000000	DALY3	1.82	\$166.25	\$302.58
10101028	6	1.50200	36.6	1.00000	1.000000	DALY3	4.27	\$166.25	\$709.89
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
01111028	6	2.45346	59.8	1.00000	1.000000	DALY3	11.59	\$166.25	\$1,926.84
02111028	6	1.14999	28.0	1.00000	1.000000	DALY3	2.50	\$166.25	\$415.63
03111028	6	0.60268	14.7	1.00000	1.000000	DALY3	0.69	\$166.25	\$114.71
04111028	6	1.89342	46.2	1.00000	1.000000	DALY3	6.80	\$166.25	\$1,130.50

**99DALY3**
**TAX**

(Chevron)

Location	Stat	Tract Part	Well Prod	OLD = 1 Freshhold Interest	NEW = 2 Working Factor	INCENTIVE = 3 Unit Name	HOLIDAY = 4 Tax Rate %	MIX = 5 Price \$/m3	N/O = 6 Tax Value
05111028	6	0.05433	1.3	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06111028	6	0.48240	11.8	1.00000	1.000000	DALY3	0.44	\$166.25	\$73.15
07111028	6	1.13485	27.7	1.00000	1.000000	DALY3	2.45	\$166.25	\$407.31
08111028	6	2.08095	50.8	1.00000	1.000000	DALY3	8.25	\$166.25	\$1,371.56
09111028	6	1.39662	34.1	1.00000	1.000000	DALY3	3.71	\$166.25	\$616.79
10111028	6	1.05654	25.8	1.00000	1.000000	DALY3	2.11	\$166.25	\$350.79
11111028	6	0.41786	10.2	1.00000	1.000000	DALY3	0.33	\$166.25	\$54.86
12111028	6	0.24683	6.0	1.00000	1.000000	DALY3	0.12	\$166.25	\$19.95
13111028	6	3.20655	78.2	1.00000	1.000000	DALY3	19.11	\$166.25	\$3,177.04
14111028	6	0.89668	21.9	1.00000	1.000000	DALY3	1.53	\$166.25	\$254.36
15111028	6	1.30393	31.8	1.00000	1.000000	DALY3	3.22	\$166.25	\$535.33
16111028	6	0.91258	22.3	1.00000	1.000000	DALY3	1.58	\$166.25	\$262.68
01121028	6	2.11323	51.5	1.00000	1.000000	DALY3	8.51	\$166.25	\$1,414.79
02121028	6	1.73832	42.4	1.00000	1.000000	DALY3	5.73	\$166.25	\$952.61
03121028	6	2.87039	70.0	1.00000	1.000000	DALY3	15.72	\$166.25	\$2,613.45
04121028	6	1.50999	36.8	1.00000	1.000000	DALY3	4.32	\$166.25	\$718.20
05121028	6	4.16933	101.7	1.00000	1.000000	DALY3	28.77	\$166.25	\$4,783.01
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	53.0	1.00000	1.000000	DALY3	9.05	\$166.25	\$1,504.56
07121028	6	1.23795	30.2	1.00000	1.000000	DALY3	2.90	\$166.25	\$482.13
08121028	6	0.41011	10.0	1.00000	1.000000	DALY3	0.32	\$166.25	\$53.20
03141028	6	2.82838	69.0	1.00000	1.000000	DALY3	15.31	\$166.25	\$2,545.29
04141028	6	0.11702	2.9	1.00000	1.000000	DALY3	0.03	\$166.25	\$4.99
05141028	6	0.06822	1.7	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	17.4	1.00000	1.000000	DALY3	0.96	\$166.25	\$159.60
TOTAL		41.74722	1018.3						\$26,959.12

**TAX**

(Corvair)

DALY #3

09021028	6	1.68366	41.1	1.00000	1.000000	D3	7.89	\$166.07	\$538.53
10021028	6	1.11117	27.1	1.00000	1.000000	D3	2.76	\$166.07	\$124.21
15121028	6	2.58400	63.0	1.00000	1.000000	D3	16.47	\$166.07	\$1,723.16
TOTAL		5.37883							\$2,385.90

**FEDERAL CROWN WELLS**

04071027		1.22137	29.8						
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TOTAL \$52,795.41

1996 Base 1%, CHEV most likely

DALY #3

TAX

(Chevron)

Location

Stat

Tract  
Part

Well  
Prod

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

Freehold  
Interest

Working  
Factor

Unit  
Name

Tax  
Rate %

Price  
\$/m3

Tax  
Value

DALY #3

05011028	6	0.02491	0.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
A10011028	6	0.48041	10.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12011028	6	0.92143	19.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13011028	6	2.57163	55.1	1.00000	1.000000	D3	14.99	\$166.25	\$1,373.14
14011028	6	1.70119	36.4	1.00000	1.000000	D3	7.11	\$166.25	\$430.26
15011028	6	1.92163	41.1	1.00000	1.000000	D3	9.09	\$166.25	\$621.11
16011028	6	0.82597	17.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05021028	6	0.37064	7.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07021028	6	0.02995	0.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08021028	6	2.85886	61.2	1.00000	1.000000	D3	17.56	\$166.25	\$1,786.64
12021028	6	0.01922	0.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13021028	6	1.01951	21.8	1.00000	1.000000	D3	1.09	\$166.25	\$39.50
14021028	6	1.71467	36.7	1.00000	1.000000	D3	7.23	\$166.25	\$441.13
15021028	6	1.11772	23.9	1.00000	1.000000	D3	1.95	\$166.25	\$77.48
16021028	6	1.69995	36.4	1.00000	1.000000	D3	7.11	\$166.25	\$430.26
09121028	6	0.61908	13.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10121028	6	1.30168	27.9	1.00000	1.000000	D3	3.60	\$166.25	\$166.98
11121028	6	1.86136	39.9	1.00000	1.000000	D3	8.59	\$166.25	\$569.81
12121028	6	1.90923	40.9	1.00000	1.000000	D3	9.00	\$166.25	\$611.97
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13121028	6	1.01301	21.7	1.00000	1.000000	D3	1.04	\$166.25	\$37.52
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14121028	6	1.14384	24.5	1.00000	1.000000	D3	2.20	\$166.25	\$89.61
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
16121028	6	1.30274	27.9	1.00000	1.000000	D3	3.60	\$166.25	\$166.98
01131028	6	0.04914	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
02131028	6	2.50118	53.6	1.00000	1.000000	D3	14.36	\$166.25	\$1,279.62
03131028	6	0.04064	0.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
04131028	6	0.46601	10.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05131028	6	1.19540	25.6	1.00000	1.000000	D3	2.65	\$166.25	\$112.78
06131028	6	4.08746	87.5	1.00000	1.000000	D3	24.96	\$166.25	\$3,630.90
07131028	6	0.03910	0.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10131028	6	3.54386	75.9	1.00000	1.000000	D3	22.39	\$166.25	\$2,825.25
11131028	6	0.08105	1.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12131028	6	2.63477	56.4	1.00000	1.000000	D3	15.54	\$166.25	\$1,457.11
13131028	6	0.08499	1.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14131028	6	2.12797	45.6	1.00000	1.000000	D3	10.99	\$166.25	\$833.15
15131028	6	1.74373	37.3	1.00000	1.000000	D3	7.49	\$166.25	\$464.46
02141028	6	0.79490	17.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08141028	6	0.20142	4.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12141028	6	0.05596	1.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
01231028	6	1.93305	41.4	1.00000	1.000000	D3	9.22	\$166.25	\$634.59
08231028	6	2.23083	47.8	1.00000	1.000000	D3	11.91	\$166.25	\$946.46
09231028	6	1.32371	28.3	1.00000	1.000000	D3	3.76	\$166.25	\$176.90
02241028	6	0.03959	0.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07241028	6	0.04449	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00

TOTAL

51.65258

\$19,203.61

CROWN

(Chevron)

DALY #3

13061027	6	0.01618	0.3	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
09101028	6	0.97997	21.0	1.00000	1.000000	DALY3	1.60	\$166.25	\$266.00
10101028	6	1.50200	32.2	1.00000	1.000000	DALY3	3.76	\$166.25	\$625.10
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
01111028	6	2.45346	52.5	1.00000	1.000000	DALY3	10.11	\$166.25	\$1,680.79
02111028	6	1.14999	24.6	1.00000	1.000000	DALY3	2.20	\$166.25	\$365.75
03111028	6	0.60268	12.9	1.00000	1.000000	DALY3	0.61	\$166.25	\$101.41
04111028	6	1.89342	40.5	1.00000	1.000000	DALY3	5.96	\$166.25	\$990.85

A CROWN By + TAX (WHEN COMPARED WITH Base 1%, CHEV SWI. den) \$7280.52

## DALY #3

## TAX

(Chevron)

Location	Stat	Tract Part	Well Prod	Freehold Interest	NEW = 2 Working Factor	INCENTIVE = 3 Unit Name	HOLIDAY = 4 Tax Rate %	MIX = 5 Price \$/m3	N/O = 6 Tax Value
05111028	6	0.05433	1.2	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06111028	6	0.48240	10.3	1.00000	1.000000	DALY3	0.39	\$166.25	\$64.84
07111028	6	1.13485	24.3	1.00000	1.000000	DALY3	2.15	\$166.25	\$357.44
08111028	6	2.08095	44.6	1.00000	1.000000	DALY3	7.23	\$166.25	\$1,201.99
09111028	6	1.39662	29.9	1.00000	1.000000	DALY3	3.24	\$166.25	\$538.65
10111028	6	1.05654	22.6	1.00000	1.000000	DALY3	1.86	\$166.25	\$309.23
11111028	6	0.41786	8.9	1.00000	1.000000	DALY3	0.29	\$166.25	\$48.21
12111028	6	0.24683	5.3	1.00000	1.000000	DALY3	0.11	\$166.25	\$18.29
13111028	6	3.20655	68.7	1.00000	1.000000	DALY3	17.24	\$166.25	\$2,866.15
14111028	6	0.89668	19.2	1.00000	1.000000	DALY3	1.34	\$166.25	\$222.78
15111028	6	1.30393	27.9	1.00000	1.000000	DALY3	2.83	\$166.25	\$470.49
16111028	6	0.91258	19.5	1.00000	1.000000	DALY3	1.38	\$166.25	\$229.43
01121028	6	2.11323	45.2	1.00000	1.000000	DALY3	7.43	\$166.25	\$1,235.24
02121028	6	1.73832	37.2	1.00000	1.000000	DALY3	5.02	\$166.25	\$834.58
03121028	6	2.87039	61.5	1.00000	1.000000	DALY3	14.06	\$166.25	\$2,337.48
04121028	6	1.50999	32.3	1.00000	1.000000	DALY3	3.80	\$166.25	\$631.75
05121028	6	4.16933	89.3	1.00000	1.000000	DALY3	26.35	\$166.25	\$4,380.69
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	46.5	1.00000	1.000000	DALY3	7.87	\$166.25	\$1,308.39
07121028	6	1.23795	26.5	1.00000	1.000000	DALY3	2.55	\$166.25	\$423.94
08121028	6	0.41011	8.8	1.00000	1.000000	DALY3	0.28	\$166.25	\$46.55
03141028	6	2.82838	60.6	1.00000	1.000000	DALY3	13.67	\$166.25	\$2,272.64
04141028	6	0.11702	2.5	1.00000	1.000000	DALY3	0.02	\$166.25	\$3.33
05141028	6	0.06822	1.5	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	15.3	1.00000	1.000000	DALY3	0.84	\$166.25	\$139.65

TOTAL	41.74722	893.8							\$23,974.96
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## TAX

(Corvair)

## DALY #3

09021028	6	1.68366	36.0	1.00000	1.000000	D3	6.93	\$166.07	\$414.31
10021028	6	1.11117	23.8	1.00000	1.000000	D3	1.91	\$166.07	\$75.49
15121028	6	2.58400	55.3	1.00000	1.000000	D3	15.08	\$166.07	\$1,384.90

TOTAL	5.37883								\$1,874.70
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## FEDERAL CROWN WELLS

04071027	1.22137	26.1
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Total Tract Daly #3	100.00000
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Total 45053.27

1997 17. Base, Chev. must likely.

97DALY3

TAX

(Chevron)

Location

Stat	Tract Part	Well Prod	Freehold Interest	Working Factor	Unit Name	Tax Rate %	Price \$/m3	Tax Value
			OLD = 1	NEW = 2	INCENTIVE = 3	HOLIDAY = 4	MIX = 5	N/O = 6
DALY #3								
05011028	6	0.02491	0.5	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
A10011028	6	0.48041	9.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12011028	6	0.92143	18.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
13011028	6	2.57163	52.4	1.00000	1.000000	D3	14.22	\$166.25 \$1,238.78
14011028	6	1.70119	34.7	1.00000	1.000000	D3	6.63	\$166.25 \$382.48
15011028	6	1.92163	39.2	1.00000	1.000000	D3	8.56	\$166.25 \$557.86
16011028	6	0.82597	16.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
05021028	6	0.37064	7.6	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
07021028	6	0.02995	0.6	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
08021028	6	2.85886	58.3	1.00000	1.000000	D3	16.75	\$166.25 \$1,623.47
12021028	6	0.01922	0.4	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
13021028	6	1.01951	20.8	1.00000	1.000000	D3	0.70	\$166.25 \$24.21
14021028	6	1.71467	35.0	1.00000	1.000000	D3	6.76	\$166.25 \$393.35
15021028	6	1.11772	22.8	1.00000	1.000000	D3	1.55	\$166.25 \$58.75
16021028	6	1.69995	34.7	1.00000	1.000000	D3	6.63	\$166.25 \$382.48
09121028	6	0.61908	12.6	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
10121028	6	1.30168	26.5	1.00000	1.000000	D3	3.13	\$166.25 \$137.90
11121028	6	1.86136	38.0	1.00000	1.000000	D3	8.04	\$166.25 \$507.93
12121028	6	1.90923	38.9	1.00000	1.000000	D3	8.44	\$166.25 \$545.83
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
13121028	6	1.01301	20.7	1.00000	1.000000	D3	0.66	\$166.25 \$22.71
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
14121028	6	1.14384	23.3	1.00000	1.000000	D3	1.77	\$166.25 \$68.56
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
16121028	6	1.30274	26.6	1.00000	1.000000	D3	3.17	\$166.25 \$140.19
01131028	6	0.04914	1.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
02131028	6	2.50118	51.0	1.00000	1.000000	D3	13.62	\$166.25 \$1,154.81
03131028	6	0.04064	0.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
04131028	6	0.46601	9.5	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
05131028	6	1.19540	24.4	1.00000	1.000000	D3	2.24	\$166.25 \$90.87
06131028	6	4.08746	83.3	1.00000	1.000000	D3	24.64	\$166.25 \$3,412.30
07131028	6	0.03910	0.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
10131028	6	3.54386	72.3	1.00000	1.000000	D3	21.91	\$166.25 \$2,633.55
11131028	6	0.08105	1.7	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12131028	6	2.63477	53.7	1.00000	1.000000	D3	14.77	\$166.25 \$1,318.61
13131028	6	0.08499	1.7	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
14131028	6	2.12797	43.4	1.00000	1.000000	D3	10.36	\$166.25 \$747.50
15131028	6	1.74373	35.6	1.00000	1.000000	D3	7.02	\$166.25 \$415.48
02141028	6	0.79490	16.2	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
08141028	6	0.20142	4.1	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12141028	6	0.05596	1.1	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
01231028	6	1.93305	39.4	1.00000	1.000000	D3	8.65	\$166.25 \$566.60
08231028	6	2.23083	45.5	1.00000	1.000000	D3	11.26	\$166.25 \$851.75
09231028	6	1.32371	27.0	1.00000	1.000000	D3	3.35	\$166.25 \$150.37
02241028	6	0.03959	0.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
07241028	6	0.04449	0.9	1.00000	1.000000	D3	0.00	\$166.25 \$0.00

TOTAL

51.65258

\$17,426.34

CROWN

(Chevron)

DALY #3

13061027	6	0.01618	0.3	1.00000	1.000000	DALY3	0.00	\$166.25 \$0.00
09101028	6	0.97997	20.0	1.00000	1.000000	DALY3	1.50	\$166.25 \$249.38
10101028	6	1.50200	30.6	1.00000	1.000000	DALY3	3.51	\$166.25 \$583.54
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25 \$0.00
01111028	6	2.45346	50.0	1.00000	1.000000	DALY3	9.38	\$166.25 \$1,559.43
02111028	6	1.14999	23.4	1.00000	1.000000	DALY3	2.06	\$166.25 \$342.48
03111028	6	0.60268	12.3	1.00000	1.000000	DALY3	0.57	\$166.25 \$94.76
04111028	6	1.89342	38.6	1.00000	1.000000	DALY3	5.58	\$166.25 \$927.68

Δ CROWN Pay + Tax REV 26935.31

**97DALY3**

TAX (Chevron)									
Location	Stat	Tract Part	Well Prod	OLD = 1 Freehold Interest	NEW = 2 Working Factor	INCENTIVE = 3 Unit Name	HOLIDAY = 4 Tax Rate %	MIX = 5 Price \$/m3	N/O = 6 Tax Value
05111028	6	0.05433	1.1	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06111028	6	0.48240	9.8	1.00000	1.000000	DALY3	0.36	\$166.25	\$59.85
07111028	6	1.13485	23.1	1.00000	1.000000	DALY3	2.01	\$166.25	\$334.16
08111028	6	2.08095	42.4	1.00000	1.000000	DALY3	6.74	\$166.25	\$1,120.53
09111028	6	1.39662	28.5	1.00000	1.000000	DALY3	3.05	\$166.25	\$507.06
10111028	6	1.05654	21.5	1.00000	1.000000	DALY3	1.74	\$166.25	\$289.28
11111028	6	0.41786	8.5	1.00000	1.000000	DALY3	0.27	\$166.25	\$44.89
12111028	6	0.24683	5.0	1.00000	1.000000	DALY3	0.09	\$166.25	\$14.96
13111028	6	3.20655	65.4	1.00000	1.000000	DALY3	16.26	\$166.25	\$2,703.23
14111028	6	0.89668	18.3	1.00000	1.000000	DALY3	1.26	\$166.25	\$209.48
15111028	6	1.30393	26.6	1.00000	1.000000	DALY3	2.65	\$166.25	\$440.56
16111028	6	0.91258	18.6	1.00000	1.000000	DALY3	1.30	\$166.25	\$216.13
01121028	6	2.11323	43.1	1.00000	1.000000	DALY3	6.97	\$166.25	\$1,158.76
02121028	6	1.73832	35.4	1.00000	1.000000	DALY3	4.71	\$166.25	\$783.04
03121028	6	2.87039	58.5	1.00000	1.000000	DALY3	13.18	\$166.25	\$2,191.18
04121028	6	1.50999	30.8	1.00000	1.000000	DALY3	3.56	\$166.25	\$591.85
05121028	6	4.16933	85.0	1.00000	1.000000	DALY3	25.06	\$166.25	\$4,166.23
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	44.3	1.00000	1.000000	DALY3	7.36	\$166.25	\$1,223.60
07121028	6	1.23795	25.2	1.00000	1.000000	DALY3	2.39	\$166.25	\$397.34
08121028	6	0.41011	8.4	1.00000	1.000000	DALY3	0.27	\$166.25	\$44.89
03141028	6	2.82838	57.7	1.00000	1.000000	DALY3	12.82	\$166.25	\$2,131.33
04141028	6	0.11702	2.4	1.00000	1.000000	DALY3	0.02	\$166.25	\$3.33
05141028	6	0.06822	1.4	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	14.6	1.00000	1.000000	DALY3	0.79	\$166.25	\$131.34
TOTAL		41.74722	851						\$22,521.95

TAX (Corvair) DALY #3									
09021028	6	1.68366	34.3	1.00000	1.000000	D3	6.46	\$166.07	\$367.97
10021028	6	1.11117	22.7	1.00000	1.000000	D3	1.51	\$166.07	\$56.92
15121028	6	2.58400	52.7	1.00000	1.000000	D3	14.35	\$166.07	\$1,255.90
TOTAL		5.37883							\$1,680.79

**FEDERAL CROWN WELLS**

04071027	1.22137	24.9
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Total \$41629.08



1998 1/2 Base. CHOV must carry

98DALY3

TAX

(Chevron)

Location

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

Stat	Tract Part	Well Prod	Freehold Interest	Working Factor	Unit Name	Tax Rate %	Price \$/m3	Tax Value
DALY #3								
05011028	6	0.02491	0.5	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
A10011028	6	0.48041	9.3	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12011028	6	0.92143	17.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
13011028	6	2.57163	49.7	1.00000	1.000000	D3	13.50	\$166.25 \$1,115.45
14011028	6	1.70119	32.8	1.00000	1.000000	D3	6.09	\$166.25 \$332.09
15011028	6	1.92163	37.1	1.00000	1.000000	D3	7.99	\$166.25 \$492.81
16011028	6	0.82597	15.9	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
05021028	6	0.37064	7.2	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
07021028	6	0.02995	0.6	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
08021028	6	2.85886	55.2	1.00000	1.000000	D3	15.91	\$166.25 \$1,460.06
12021028	6	0.01922	0.4	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
13021028	6	1.01951	19.7	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
14021028	6	1.71467	33.1	1.00000	1.000000	D3	6.22	\$166.25 \$342.28
15021028	6	1.11772	21.6	1.00000	1.000000	D3	1.09	\$166.25 \$39.14
16021028	6	1.69995	32.8	1.00000	1.000000	D3	6.09	\$166.25 \$332.09
09121028	6	0.61908	12.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
10121028	6	1.30168	25.1	1.00000	1.000000	D3	2.65	\$166.25 \$110.58
11121028	6	1.86136	35.9	1.00000	1.000000	D3	7.47	\$166.25 \$445.84
12121028	6	1.90923	36.9	1.00000	1.000000	D3	7.91	\$166.25 \$485.25
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
13121028	6	1.01301	19.6	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
14121028	6	1.14384	22.1	1.00000	1.000000	D3	1.31	\$166.25 \$48.13
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
16121028	6	1.30274	25.2	1.00000	1.000000	D3	2.69	\$166.25 \$112.70
01131028	6	0.04914	0.9	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
02131028	6	2.50118	48.3	1.00000	1.000000	D3	12.89	\$166.25 \$1,035.05
03131028	6	0.04064	0.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
04131028	6	0.46601	9.0	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
05131028	6	1.19540	23.1	1.00000	1.000000	D3	1.76	\$166.25 \$67.59
06131028	6	4.08746	78.9	1.00000	1.000000	D3	24.30	\$166.25 \$3,187.46
07131028	6	0.03910	0.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
10131028	6	3.54386	68.4	1.00000	1.000000	D3	21.33	\$166.25 \$2,425.54
11131028	6	0.08105	1.6	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12131028	6	2.63477	50.9	1.00000	1.000000	D3	14.02	\$166.25 \$1,186.39
13131028	6	0.08499	1.6	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
14131028	6	2.12797	41.1	1.00000	1.000000	D3	9.74	\$166.25 \$665.52
15131028	6	1.74373	33.7	1.00000	1.000000	D3	6.49	\$166.25 \$363.61
02141028	6	0.79490	15.3	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
08141028	6	0.20142	3.9	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
12141028	6	0.05596	1.1	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
01231028	6	1.93305	37.3	1.00000	1.000000	D3	8.07	\$166.25 \$500.43
08231028	6	2.23083	43.1	1.00000	1.000000	D3	10.61	\$166.25 \$760.25
09231028	6	1.32371	25.6	1.00000	1.000000	D3	2.87	\$166.25 \$122.15
02241028	6	0.03959	0.8	1.00000	1.000000	D3	0.00	\$166.25 \$0.00
07241028	6	0.04449	0.9	1.00000	1.000000	D3	0.00	\$166.25 \$0.00

TOTAL

51.65258

\$15,630.41

CROWN

(Chevron)

DALY #3

13061027	6	0.01618	0.3	1.00000	1.000000	DALY3	0.00	\$166.25 \$0.00
09101028	6	0.97997	18.9	1.00000	1.000000	DALY3	1.39	\$166.25 \$231.09
10101028	6	1.50200	29.0	1.00000	1.000000	DALY3	3.28	\$166.25 \$545.30
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25 \$0.00
01111028	6	2.45346	47.4	1.00000	1.000000	DALY3	8.77	\$166.25 \$1,458.01
02111028	6	1.14999	22.2	1.00000	1.000000	DALY3	1.92	\$166.25 \$319.20
03111028	6	0.60268	11.6	1.00000	1.000000	DALY3	0.53	\$166.25 \$88.11
04111028	6	1.89342	36.6	1.00000	1.000000	DALY3	5.22	\$166.25 \$867.83

Δ CROWN Roy + Tax Revenue \$19625.03

98DALY3

TAX

(Chevron)

Location	Stat	Tract Part	Well Prod	OLD = 1 Freehold Interest	NEW = 2 Working Factor	INCENTIVE = 3 Unit Name	HOLIDAY = 4 Tax Rate %	MIX = 5 Price \$/m3	N/O = 6 Tax Value
05111028	6	0.05433	1.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06111028	6	0.48240	9.3	1.00000	1.000000	DALY3	0.34	\$166.25	\$56.53
07111028	6	1.13485	21.9	1.00000	1.000000	DALY3	1.87	\$166.25	\$310.89
08111028	6	2.08095	40.2	1.00000	1.000000	DALY3	6.31	\$166.25	\$1,049.04
09111028	6	1.39662	27.0	1.00000	1.000000	DALY3	2.84	\$166.25	\$472.15
10111028	6	1.05654	20.4	1.00000	1.000000	DALY3	1.63	\$166.25	\$270.99
11111028	6	0.41786	8.1	1.00000	1.000000	DALY3	0.26	\$166.25	\$43.23
12111028	6	0.24683	4.8	1.00000	1.000000	DALY3	0.09	\$166.25	\$14.96
13111028	6	3.20655	61.9	1.00000	1.000000	DALY3	15.28	\$166.25	\$2,540.30
14111028	6	0.89668	17.3	1.00000	1.000000	DALY3	1.17	\$166.25	\$194.51
15111028	6	1.30393	25.2	1.00000	1.000000	DALY3	2.48	\$166.25	\$412.30
16111028	6	0.91258	17.6	1.00000	1.000000	DALY3	1.21	\$166.25	\$201.16
01121028	6	2.11323	40.8	1.00000	1.000000	DALY3	6.50	\$166.25	\$1,080.63
02121028	6	1.73832	33.6	1.00000	1.000000	DALY3	4.40	\$166.25	\$731.50
03121028	6	2.87039	55.4	1.00000	1.000000	DALY3	12.29	\$166.25	\$2,043.21
04121028	6	1.50999	29.2	1.00000	1.000000	DALY3	3.33	\$166.25	\$553.61
05121028	6	4.16933	80.5	1.00000	1.000000	DALY3	23.79	\$166.25	\$3,955.09
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	42.0	1.00000	1.000000	DALY3	6.89	\$166.25	\$1,145.46
07121028	6	1.23795	23.9	1.00000	1.000000	DALY3	2.23	\$166.25	\$370.74
08121028	6	0.41011	7.9	1.00000	1.000000	DALY3	0.24	\$166.25	\$39.90
03141028	6	2.82838	54.6	1.00000	1.000000	DALY3	11.93	\$166.25	\$1,983.36
04141028	6	0.11702	2.3	1.00000	1.000000	DALY3	0.02	\$166.25	\$3.33
05141028	6	0.06822	1.3	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	13.8	1.00000	1.000000	DALY3	0.74	\$166.25	\$123.03

TOTAL	41.74722	806.2							\$21,107.12
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TAX

(Corvair)

DALY #3

09021028	6	1.68366	32.5	1.00000	1.000000	D3	5.95	\$166.07	\$321.14
10021028	6	1.11117	21.5	1.00000	1.000000	D3	1.04	\$166.07	\$37.13
15121028	6	2.58400	49.9	1.00000	1.000000	D3	13.59	\$166.07	\$1,126.19

TOTAL	5.37883								\$1,484.46
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FEDERAL CROWN WELLS

04071027	1.22137	23.6
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total \$ 38221.99

1999

1% BASE. CHEV MOST LIKELY

## 99DALY3

TAX

(Chevron)

Location

Stat

Tract  
PartWell  
Prod

OLD = 1

NEW = 2

INCENTIVE = 3

HOLIDAY = 4

MIX = 5

N/O = 6

Freehold  
InterestWorking  
FactorUnit  
NameTax  
Rate %Price  
\$/m3Tax  
Value

DALY #3

05011028	6	0.02491	0.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
A10011028	6	0.48041	8.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12011028	6	0.92143	16.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13011028	6	2.57163	47.0	1.00000	1.000000	D3	12.71	\$166.25	\$993.13
14011028	6	1.70119	31.1	1.00000	1.000000	D3	5.54	\$166.25	\$286.44
15011028	6	1.92163	35.1	1.00000	1.000000	D3	7.40	\$166.25	\$431.82
16011028	6	0.82597	15.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05021028	6	0.37064	6.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07021028	6	0.02995	0.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08021028	6	2.85886	52.2	1.00000	1.000000	D3	15.03	\$166.25	\$1,304.34
12021028	6	0.01922	0.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13021028	6	1.01951	18.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14021028	6	1.71467	31.3	1.00000	1.000000	D3	5.63	\$166.25	\$292.96
15021028	6	1.11772	20.4	1.00000	1.000000	D3	0.57	\$166.25	\$19.33
16021028	6	1.69995	31.1	1.00000	1.000000	D3	5.54	\$166.25	\$286.44
09121028	6	0.61908	11.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10121028	6	1.30168	23.8	1.00000	1.000000	D3	2.15	\$166.25	\$85.07
11121028	6	1.86136	34.0	1.00000	1.000000	D3	6.89	\$166.25	\$389.46
12121028	6	1.90923	34.9	1.00000	1.000000	D3	7.31	\$166.25	\$424.14
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13121028	6	1.01301	18.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14121028	6	1.14384	20.9	1.00000	1.000000	D3	0.81	\$166.25	\$28.14
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
16121028	6	1.30274	23.8	1.00000	1.000000	D3	2.15	\$166.25	\$85.07
01131028	6	0.04914	0.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
02131028	6	2.50118	45.7	1.00000	1.000000	D3	12.13	\$166.25	\$921.59
03131028	6	0.04064	0.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
04131028	6	0.46601	8.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05131028	6	1.19540	21.8	1.00000	1.000000	D3	1.22	\$166.25	\$44.22
06131028	6	4.08746	74.7	1.00000	1.000000	D3	23.79	\$166.25	\$2,954.45
07131028	6	0.03910	0.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10131028	6	3.54386	64.8	1.00000	1.000000	D3	20.65	\$166.25	\$2,224.62
11131028	6	0.08105	1.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12131028	6	2.63477	48.1	1.00000	1.000000	D3	13.19	\$166.25	\$1,054.75
13131028	6	0.08499	1.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14131028	6	2.12797	38.9	1.00000	1.000000	D3	9.09	\$166.25	\$587.86
15131028	6	1.74373	31.9	1.00000	1.000000	D3	5.91	\$166.25	\$313.43
02141028	6	0.79490	14.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08141028	6	0.20142	3.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12141028	6	0.05596	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
01231028	6	1.93305	35.3	1.00000	1.000000	D3	7.49	\$166.25	\$439.56
08231028	6	2.23083	40.8	1.00000	1.000000	D3	9.94	\$166.25	\$674.23
09231028	6	1.32371	24.2	1.00000	1.000000	D3	2.34	\$166.25	\$94.14
02241028	6	0.03959	0.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07241028	6	0.04449	0.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00

TOTAL

51.65258

\$13,935.19

CROWN

(Chevron)

DALY #3

13061027	6	0.01618	0.3	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
09101028	6	0.97997	17.9	1.00000	1.000000	DALY3	1.30	\$166.25	\$216.13
10101028	6	1.50200	27.4	1.00000	1.000000	DALY3	3.05	\$166.25	\$507.06
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
01111028	6	2.45346	44.8	1.00000	1.000000	DALY3	8.14	\$166.25	\$1,353.28
02111028	6	1.14999	21.0	1.00000	1.000000	DALY3	1.79	\$166.25	\$297.59
03111028	6	0.60268	11.0	1.00000	1.000000	DALY3	0.49	\$166.25	\$81.46
04111028	6	1.89342	34.6	1.00000	1.000000	DALY3	4.86	\$166.25	\$807.98

CROWN Royalty Low 17995.39

**99DALY3**

 TAX  
(Chevron)  
Location

				OLD = 1	NEW = 2	INCENTIVE = 3	HOLIDAY = 4	MIX = 5	N/O = 6
Stat	Tract Part	Well Prod	Freehold Interest	Working Factor	Unit Name	Tax Rate %	Price \$/m3	Tax Value	
05111028	6	0.05433	1.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06111028	6	0.48240	8.8	1.00000	1.000000	DALY3	0.31	\$166.25	\$51.54
07111028	6	1.13485	20.7	1.00000	1.000000	DALY3	1.74	\$166.25	\$289.28
08111028	6	2.08095	38.0	1.00000	1.000000	DALY3	5.86	\$166.25	\$974.23
09111028	6	1.39662	25.5	1.00000	1.000000	DALY3	2.64	\$166.25	\$438.90
10111028	6	1.05654	19.3	1.00000	1.000000	DALY3	1.51	\$166.25	\$251.04
11111028	6	0.41786	7.6	1.00000	1.000000	DALY3	0.23	\$166.25	\$38.24
12111028	6	0.24683	4.5	1.00000	1.000000	DALY3	0.08	\$166.25	\$13.30
13111028	6	3.20655	58.6	1.00000	1.000000	DALY3	14.25	\$166.25	\$2,369.06
14111028	6	0.89668	16.4	1.00000	1.000000	DALY3	1.09	\$166.25	\$181.21
15111028	6	1.30393	23.8	1.00000	1.000000	DALY3	2.30	\$166.25	\$382.38
16111028	6	0.91258	16.7	1.00000	1.000000	DALY3	1.13	\$166.25	\$187.86
01121028	6	2.11323	38.6	1.00000	1.000000	DALY3	6.04	\$166.25	\$1,004.15
02121028	6	1.73832	31.8	1.00000	1.000000	DALY3	4.10	\$166.25	\$681.63
03121028	6	2.87039	52.5	1.00000	1.000000	DALY3	11.39	\$166.25	\$1,893.59
04121028	6	1.50999	27.6	1.00000	1.000000	DALY3	3.09	\$166.25	\$513.71
05121028	6	4.16933	76.2	1.00000	1.000000	DALY3	22.46	\$166.25	\$3,733.98
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	39.7	1.00000	1.000000	DALY3	6.40	\$166.25	\$1,064.00
07121028	6	1.23795	22.6	1.00000	1.000000	DALY3	2.07	\$166.25	\$344.14
08121028	6	0.41011	7.5	1.00000	1.000000	DALY3	0.23	\$166.25	\$38.24
03141028	6	2.82838	51.7	1.00000	1.000000	DALY3	11.03	\$166.25	\$1,833.74
04141028	6	0.11702	2.1	1.00000	1.000000	DALY3	0.02	\$166.25	\$3.33
05141028	6	0.06822	1.2	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	13.0	1.00000	1.000000	DALY3	0.69	\$166.25	\$114.71
TOTAL	41.74722	762.6							\$19,667.42

 TAX  
(Corvair)  
DALY #3

09021028	6	1.68366	30.8	1.00000	1.000000	D3	5.40	\$166.07	\$276.21
10021028	6	1.11117	20.3	1.00000	1.000000	D3	0.53	\$166.07	\$17.87
15121028	6	2.58400	47.2	1.00000	1.000000	D3	12.80	\$166.07	\$1,003.33
TOTAL	5.37883								\$1,297.41

FEDERAL CROWN WELLS

04071027 1.22137 22.3

Total = 34900.02

1996 Bare 5.2%, *Chern* SOL due.

DALY #3  
TAX  
(Chevron)  
Location

DALY #3

Stat	Tract Part	Well Prod	Freehold Interest	NEW = 2 Working Factor	INCENTIVE = 3 Unit Name	HOLIDAY = 4 Tax Rate %	MIX = 5 Price \$/m3	N/O = 6 Tax Value
6	0.02491	0.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	0.48041	10.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	0.92143	20.8	1.00000	1.000000	D3	0.65	\$166.25	\$22.48
6	2.57163	58.0	1.00000	1.000000	D3	15.88	\$166.25	\$1,531.23
6	1.70119	38.4	1.00000	1.000000	D3	7.73	\$166.25	\$493.48
6	1.92163	43.3	1.00000	1.000000	D3	9.77	\$166.25	\$703.31
6	0.82597	18.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	0.37064	8.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	0.02995	0.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	2.85886	64.5	1.00000	1.000000	D3	18.59	\$166.25	\$1,993.43
6	0.01922	0.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	1.01951	23.0	1.00000	1.000000	D3	1.53	\$166.25	\$58.50
6	1.71467	38.7	1.00000	1.000000	D3	7.86	\$166.25	\$505.70
6	1.11772	25.2	1.00000	1.000000	D3	2.41	\$166.25	\$100.97
6	1.69995	38.3	1.00000	1.000000	D3	7.69	\$166.25	\$489.65
6	0.61908	14.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	1.30168	29.4	1.00000	1.000000	D3	4.09	\$166.25	\$199.91
6	1.86136	42.0	1.00000	1.000000	D3	9.23	\$166.25	\$644.48
6	1.90923	43.0	1.00000	1.000000	D3	9.65	\$166.25	\$689.85
2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	1.01301	22.8	1.00000	1.000000	D3	1.45	\$166.25	\$54.96
4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	1.14384	25.8	1.00000	1.000000	D3	2.65	\$166.25	\$113.67
4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	1.30274	29.4	1.00000	1.000000	D3	4.09	\$166.25	\$199.91
6	0.04914	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	2.50118	56.4	1.00000	1.000000	D3	15.23	\$166.25	\$1,428.04
6	0.04064	0.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	0.46601	10.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	1.19540	27.0	1.00000	1.000000	D3	3.13	\$166.25	\$140.50
6	4.08746	92.2	1.00000	1.000000	D3	25.37	\$166.25	\$3,888.78
6	0.03910	0.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	3.54386	79.9	1.00000	1.000000	D3	22.94	\$166.25	\$3,047.21
6	0.08105	1.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	2.63477	59.4	1.00000	1.000000	D3	16.46	\$166.25	\$1,625.47
6	0.08499	1.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	2.12797	48.0	1.00000	1.000000	D3	11.73	\$166.25	\$936.05
6	1.74373	39.3	1.00000	1.000000	D3	8.11	\$166.25	\$529.88
6	0.79490	17.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	0.20142	4.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	0.05596	1.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	1.93305	43.6	1.00000	1.000000	D3	9.90	\$166.25	\$717.60
6	2.23083	50.3	1.00000	1.000000	D3	12.69	\$166.25	\$1,061.19
6	1.32371	29.8	1.00000	1.000000	D3	4.25	\$166.25	\$210.56
6	0.03959	0.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
6	0.04449	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00

TOTAL

51.65258

\$21,386.81

CROWN  
(Chevron)

DALY #3

13061027	6	0.01618	0.4	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
09101028	6	0.97997	22.1	1.00000	1.000000	DALY3	1.73	\$166.25	\$287.61
10101028	6	1.50200	33.9	1.00000	1.000000	DALY3	4.07	\$166.25	\$676.64
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
01111028	6	2.45346	55.3	1.00000	1.000000	DALY3	11.03	\$166.25	\$1,833.74
02111028	6	1.14999	25.9	1.00000	1.000000	DALY3	2.38	\$166.25	\$395.68
03111028	6	0.60268	13.6	1.00000	1.000000	DALY3	0.65	\$166.25	\$108.06
04111028	6	1.89342	42.7	1.00000	1.000000	DALY3	6.46	\$166.25	\$1,073.98

*A SAVING CHEVRON (CONVERSELY COST CROWN) = \$3045.91*

## DALY #3

TAX

(Chevron)

Location	Stat	Tract Part	Well Prod	OLD = 1 Freehold Interest	NEW = 2 Working Factor	INCENTIVE = 3 Unit Name	HOLIDAY = 4 Tax Rate %	MIX = 5 Price \$/m3	N/O = 6 Tax Value
05111028	6	0.05433	1.2	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06111028	6	0.48240	10.9	1.00000	1.000000	DALY3	0.42	\$166.25	\$69.83
07111028	6	1.13485	25.6	1.00000	1.000000	DALY3	2.32	\$166.25	\$385.70
08111028	6	2.08095	46.9	1.00000	1.000000	DALY3	7.79	\$166.25	\$1,295.09
09111028	6	1.39662	31.5	1.00000	1.000000	DALY3	3.52	\$166.25	\$585.20
10111028	6	1.05654	23.8	1.00000	1.000000	DALY3	2.01	\$166.25	\$334.16
11111028	6	0.41786	9.4	1.00000	1.000000	DALY3	0.31	\$166.25	\$51.54
12111028	6	0.24683	5.6	1.00000	1.000000	DALY3	0.11	\$166.25	\$18.29
13111028	6	3.20655	72.3	1.00000	1.000000	DALY3	18.43	\$166.25	\$3,063.99
14111028	6	0.89668	20.2	1.00000	1.000000	DALY3	1.45	\$166.25	\$241.06
15111028	6	1.30393	29.4	1.00000	1.000000	DALY3	3.06	\$166.25	\$508.73
16111028	6	0.91258	20.6	1.00000	1.000000	DALY3	1.50	\$166.25	\$249.38
01121028	6	2.11323	47.6	1.00000	1.000000	DALY3	8.04	\$166.25	\$1,336.65
02121028	6	1.73832	39.2	1.00000	1.000000	DALY3	5.44	\$166.25	\$904.40
03121028	6	2.87039	64.7	1.00000	1.000000	DALY3	15.11	\$166.25	\$2,512.04
04121028	6	1.50999	34.0	1.00000	1.000000	DALY3	4.09	\$166.25	\$679.96
05121028	6	4.16933	94.0	1.00000	1.000000	DALY3	27.88	\$166.25	\$4,635.05
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	49.0	1.00000	1.000000	DALY3	8.50	\$166.25	\$1,413.13
07121028	6	1.23795	27.9	1.00000	1.000000	DALY3	2.76	\$166.25	\$458.85
08121028	6	0.41011	9.2	1.00000	1.000000	DALY3	0.30	\$166.25	\$49.88
03141028	6	2.82838	63.8	1.00000	1.000000	DALY3	14.71	\$166.25	\$2,445.54
04141028	6	0.11702	2.6	1.00000	1.000000	DALY3	0.03	\$166.25	\$4.99
05141028	6	0.06822	1.5	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	16.1	1.00000	1.000000	DALY3	0.92	\$166.25	\$152.95
TOTAL		41.74722	941.1						\$25,775.44

TAX

(Corvair)

DALY #3

09021028	6	1.68366	38.0	1.00000	1.000000	D3	7.56	\$166.07	\$477.09
10021028	6	1.11117	25.1	1.00000	1.000000	D3	2.37	\$166.07	\$98.79
15121028	6	2.58400	58.3	1.00000	1.000000	D3	16.01	\$166.07	\$1,550.07
TOTAL		5.37883							\$2,125.95

FEDERAL CROWN WELLS

04071027 1.22137 27.5

Total Tract Daly #3 100.00000

Total \$ 49,288.2

1997 Base 5.2%, CHEVRON 50% ADV.

97DALY3

TAX

(Chevron)

Location

Stat

Tract  
Part

Well  
Prod

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

Freehold  
Interest

Working  
Factor

Unit  
Name

Tax  
Rate %

Price  
\$/m3

Tax  
Value

DALY #3

05011028	6	0.02491	0.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
A10011028	6	0.48041	13.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12011028	6	0.92143	25.0	1.00000	1.000000	D3	1.84	\$166.25	\$76.48
13011028	6	2.57163	69.7	1.00000	1.000000	D3	17.67	\$166.25	\$2,047.53
14011028	6	1.70119	46.1	1.00000	1.000000	D3	9.16	\$166.25	\$702.03
15011028	6	1.92163	52.1	1.00000	1.000000	D3	11.42	\$166.25	\$989.16
16011028	6	0.82597	22.4	1.00000	1.000000	D3	1.02	\$166.25	\$37.98
05021028	6	0.37064	10.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07021028	6	0.02995	0.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08021028	6	2.85886	77.5	1.00000	1.000000	D3	19.57	\$166.25	\$2,521.47
12021028	6	0.01922	0.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13021028	6	1.01951	27.6	1.00000	1.000000	D3	2.66	\$166.25	\$122.05
14021028	6	1.71467	46.5	1.00000	1.000000	D3	9.32	\$166.25	\$720.49
15021028	6	1.11772	30.3	1.00000	1.000000	D3	3.51	\$166.25	\$176.81
16021028	6	1.69995	46.1	1.00000	1.000000	D3	9.16	\$166.25	\$702.03
09121028	6	0.61908	16.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10121028	6	1.30168	35.3	1.00000	1.000000	D3	5.09	\$166.25	\$298.71
11121028	6	1.86136	50.4	1.00000	1.000000	D3	10.79	\$166.25	\$904.09
12121028	6	1.90923	51.7	1.00000	1.000000	D3	11.28	\$166.25	\$969.53
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13121028	6	1.01301	27.5	1.00000	1.000000	D3	2.63	\$166.25	\$120.24
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14121028	6	1.14384	31.0	1.00000	1.000000	D3	3.74	\$166.25	\$192.75
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
16121028	6	1.30274	35.3	1.00000	1.000000	D3	5.09	\$166.25	\$298.71
01131028	6	0.04914	1.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
02131028	6	2.50118	67.8	1.00000	1.000000	D3	17.14	\$166.25	\$1,931.98
03131028	6	0.04064	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
04131028	6	0.46601	12.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05131028	6	1.19540	32.4	1.00000	1.000000	D3	4.18	\$166.25	\$225.16
06131028	6	4.08746	110.8	1.00000	1.000000	D3	24.68	\$166.25	\$4,546.18
07131028	6	0.03910	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10131028	6	3.54386	96.0	1.00000	1.000000	D3	22.85	\$166.25	\$3,646.86
11131028	6	0.08105	2.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12131028	6	2.63477	71.4	1.00000	1.000000	D3	18.12	\$166.25	\$2,150.89
13131028	6	0.08499	2.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14131028	6	2.12797	57.7	1.00000	1.000000	D3	13.53	\$166.25	\$1,297.88
15131028	6	1.74373	47.3	1.00000	1.000000	D3	9.62	\$166.25	\$756.48
02141028	6	0.79490	21.5	1.00000	1.000000	D3	0.74	\$166.25	\$26.45
08141028	6	0.20142	5.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12141028	6	0.05596	1.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
01231028	6	1.93305	52.4	1.00000	1.000000	D3	11.54	\$166.25	\$1,005.31
08231028	6	2.23083	60.5	1.00000	1.000000	D3	14.59	\$166.25	\$1,467.48
09231028	6	1.32371	35.9	1.00000	1.000000	D3	5.28	\$166.25	\$315.13
02241028	6	0.03959	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07241028	6	0.04449	1.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00

TOTAL

51.65258

\$28,249.86

CROWN

(Chevron)

DALY #3

13061027	6	0.01618	0.4	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
09101028	6	0.97997	26.6	1.00000	1.000000	DALY3	2.11	\$166.25	\$350.79
10101028	6	1.50200	40.7	1.00000	1.000000	DALY3	4.95	\$166.25	\$822.94
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
01111028	6	2.45346	66.5	1.00000	1.000000	DALY3	13.32	\$166.25	\$2,214.45
02111028	6	1.14999	31.2	1.00000	1.000000	DALY3	2.91	\$166.25	\$483.79
03111028	6	0.60268	16.3	1.00000	1.000000	DALY3	0.79	\$166.25	\$131.34
04111028	6	1.89342	51.3	1.00000	1.000000	DALY3	7.92	\$166.25	\$1,316.70

ACEST SAVING CHEVRON \$681.34

**97DALY3**

TAX

(Chevron)

Location	Stat	Tract Part	Well Prod	OLD = 1 Freehold Interest	NEW = 2 Working Factor	INCENTIVE = 3 Unit Name	HOLIDAY = 4 Tax Rate %	MIX = 5 Price \$/m3	N/O = 6 Tax Value
05111028	6	0.05433	1.5	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06111028	6	0.48240	13.1	1.00000	1.000000	DALY3	0.52	\$166.25	\$86.45
07111028	6	1.13485	30.8	1.00000	1.000000	DALY3	2.84	\$166.25	\$472.15
08111028	6	2.08095	56.4	1.00000	1.000000	DALY3	9.68	\$166.25	\$1,609.30
09111028	6	1.39662	37.8	1.00000	1.000000	DALY3	4.28	\$166.25	\$711.55
10111028	6	1.05654	28.6	1.00000	1.000000	DALY3	2.45	\$166.25	\$407.31
11111028	6	0.41786	11.3	1.00000	1.000000	DALY3	0.38	\$166.25	\$63.18
12111028	6	0.24683	6.7	1.00000	1.000000	DALY3	0.13	\$166.25	\$21.61
13111028	6	3.20655	86.9	1.00000	1.000000	DALY3	21.36	\$166.25	\$3,551.10
14111028	6	0.89668	24.3	1.00000	1.000000	DALY3	1.77	\$166.25	\$294.26
15111028	6	1.30393	35.3	1.00000	1.000000	DALY3	3.72	\$166.25	\$618.45
16111028	6	0.91258	24.7	1.00000	1.000000	DALY3	1.82	\$166.25	\$302.58
01121028	6	2.11323	57.3	1.00000	1.000000	DALY3	9.99	\$166.25	\$1,660.84
02121028	6	1.73832	47.1	1.00000	1.000000	DALY3	6.64	\$166.25	\$1,103.90
03121028	6	2.87039	77.8	1.00000	1.000000	DALY3	17.75	\$166.25	\$2,950.94
04121028	6	1.50999	40.9	1.00000	1.000000	DALY3	5.00	\$166.25	\$831.25
05121028	6	4.16933	113.0	1.00000	1.000000	DALY3	31.69	\$166.25	\$5,268.46
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	58.9	1.00000	1.000000	DALY3	10.56	\$166.25	\$1,755.60
07121028	6	1.23795	33.5	1.00000	1.000000	DALY3	3.35	\$166.25	\$556.94
08121028	6	0.41011	11.1	1.00000	1.000000	DALY3	0.37	\$166.25	\$61.51
03141028	6	2.82838	76.7	1.00000	1.000000	DALY3	17.30	\$166.25	\$2,876.13
04141028	6	0.11702	3.2	1.00000	1.000000	DALY3	0.03	\$166.25	\$4.99
05141028	6	0.06822	1.8	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	19.3	1.00000	1.000000	DALY3	1.12	\$166.25	\$186.20
TOTAL		41.74722	1131.2						\$30,718.03

TAX

(Corvair)

DALY #3

09021028	6	1.68366	45.6	1.00000	1.000000	D3	8.97	\$166.07	\$679.28
10021028	6	1.11117	30.1	1.00000	1.000000	D3	3.45	\$166.07	\$172.46
15121028	6	2.58400	70.0	1.00000	1.000000	D3	17.75	\$166.07	\$2,063.42
TOTAL		5.37883							\$2,915.16

FEDERAL CROWN WELLS

04071027		1.22137	33.1						
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Turn 461883.5



1998

Base 5.2%, Chw 50%, Dev.

## 98DALY3

TAX

(Chevron)  
Location

Stat

Tract  
PartWell  
Prod

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

Freehold  
InterestWorking  
FactorUnit  
NameTax  
Rate %Price  
\$/m3Tax  
Value

DALY #3

05011028	6	0.02491	0.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
A10011028	6	0.48041	12.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12011028	6	0.92143	23.7	1.00000	1.000000	D3	1.43	\$166.25	\$56.34
13011028	6	2.57163	66.2	1.00000	1.000000	D3	16.66	\$166.25	\$1,833.56
14011028	6	1.70119	43.8	1.00000	1.000000	D3	8.28	\$166.25	\$602.93
15011028	6	1.92163	49.5	1.00000	1.000000	D3	10.44	\$166.25	\$859.15
16011028	6	0.82597	21.3	1.00000	1.000000	D3	0.67	\$166.25	\$23.73
05021028	6	0.37064	9.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07021028	6	0.02995	0.8	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08021028	6	2.85886	73.6	1.00000	1.000000	D3	18.66	\$166.25	\$2,283.24
12021028	6	0.01922	0.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13021028	6	1.01951	26.3	1.00000	1.000000	D3	2.25	\$166.25	\$98.38
14021028	6	1.71467	44.2	1.00000	1.000000	D3	8.44	\$166.25	\$620.19
15021028	6	1.11772	28.8	1.00000	1.000000	D3	3.04	\$166.25	\$145.56
16021028	6	1.69995	43.8	1.00000	1.000000	D3	8.28	\$166.25	\$602.93
09121028	6	0.61908	15.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10121028	6	1.30168	33.5	1.00000	1.000000	D3	4.52	\$166.25	\$251.74
11121028	6	1.86136	47.9	1.00000	1.000000	D3	9.83	\$166.25	\$782.80
12121028	6	1.90923	49.2	1.00000	1.000000	D3	10.32	\$166.25	\$844.12
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13121028	6	1.01301	26.1	1.00000	1.000000	D3	2.19	\$166.25	\$95.03
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14121028	6	1.14384	29.5	1.00000	1.000000	D3	3.26	\$166.25	\$159.88
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
16121028	6	1.30274	33.6	1.00000	1.000000	D3	4.55	\$166.25	\$254.16
01131028	6	0.04914	1.3	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
02131028	6	2.50118	64.4	1.00000	1.000000	D3	16.04	\$166.25	\$1,717.32
03131028	6	0.04064	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
04131028	6	0.46601	12.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05131028	6	1.19540	30.8	1.00000	1.000000	D3	3.67	\$166.25	\$187.92
06131028	6	4.08746	105.3	1.00000	1.000000	D3	24.04	\$166.25	\$4,208.47
07131028	6	0.03910	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10131028	6	3.54386	91.3	1.00000	1.000000	D3	22.13	\$166.25	\$3,359.03
11131028	6	0.08105	2.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12131028	6	2.63477	67.9	1.00000	1.000000	D3	17.15	\$166.25	\$1,935.96
13131028	6	0.08499	2.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14131028	6	2.12797	54.8	1.00000	1.000000	D3	12.43	\$166.25	\$1,132.44
15131028	6	1.74373	44.9	1.00000	1.000000	D3	8.70	\$166.25	\$649.42
02141028	6	0.79490	20.5	1.00000	1.000000	D3	0.42	\$166.25	\$14.31
08141028	6	0.20142	5.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12141028	6	0.05596	1.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
01231028	6	1.93305	49.8	1.00000	1.000000	D3	10.54	\$166.25	\$872.63
08231028	6	2.23083	57.5	1.00000	1.000000	D3	13.45	\$166.25	\$1,285.74
09231028	6	1.32371	34.1	1.00000	1.000000	D3	4.71	\$166.25	\$267.02
02241028	6	0.03959	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07241028	6	0.04449	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00

TOTAL

51.65258

\$25,144.00

CROWN

(Chevron)

DALY #3

13061027	6	0.01618	0.4	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
09101028	6	0.97997	25.2	1.00000	1.000000	DALY3	1.90	\$166.25	\$315.88
10101028	6	1.50200	38.7	1.00000	1.000000	DALY3	4.47	\$166.25	\$743.14
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
01111028	6	2.45346	63.2	1.00000	1.000000	DALY3	12.09	\$166.25	\$2,009.96
02111028	6	1.14999	29.6	1.00000	1.000000	DALY3	2.62	\$166.25	\$435.58
03111028	6	0.60268	15.5	1.00000	1.000000	DALY3	0.72	\$166.25	\$119.70
04111028	6	1.89342	48.8	1.00000	1.000000	DALY3	7.11	\$166.25	\$1,182.04

A SAVING crown 2141.12

## 98DALY3

## TAX

(Chevron)

Location

Stat

Tract  
PartWell  
Prod

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

Freehold  
InterestWorking  
FactorUnit  
NameTax  
Rate %Price  
\$/m3Tax  
Value

05111028	6	0.05433	1.4	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06111028	6	0.48240	12.4	1.00000	1.000000	DALY3	0.46	\$166.25	\$76.48
07111028	6	1.13485	29.2	1.00000	1.000000	DALY3	2.55	\$166.25	\$423.94
08111028	6	2.08095	53.6	1.00000	1.000000	DALY3	8.70	\$166.25	\$1,446.38
09111028	6	1.39662	36.0	1.00000	1.000000	DALY3	3.87	\$166.25	\$643.39
10111028	6	1.05654	27.2	1.00000	1.000000	DALY3	2.21	\$166.25	\$367.41
11111028	6	0.41786	10.8	1.00000	1.000000	DALY3	0.35	\$166.25	\$58.19
12111028	6	0.24683	6.4	1.00000	1.000000	DALY3	0.12	\$166.25	\$19.95
13111028	6	3.20655	82.6	1.00000	1.000000	DALY3	19.63	\$166.25	\$3,263.49
14111028	6	0.89668	23.1	1.00000	1.000000	DALY3	1.59	\$166.25	\$264.34
15111028	6	1.30393	33.6	1.00000	1.000000	DALY3	3.37	\$166.25	\$560.26
16111028	6	0.91258	23.5	1.00000	1.000000	DALY3	1.65	\$166.25	\$274.31
01121028	6	2.11323	54.4	1.00000	1.000000	DALY3	8.98	\$166.25	\$1,492.93
02121028	6	1.73832	44.8	1.00000	1.000000	DALY3	5.99	\$166.25	\$995.84
03121028	6	2.87039	73.9	1.00000	1.000000	DALY3	16.20	\$166.25	\$2,693.25
04121028	6	1.50999	38.9	1.00000	1.000000	DALY3	4.52	\$166.25	\$751.45
05121028	6	4.16933	107.4	1.00000	1.000000	DALY3	29.45	\$166.25	\$4,896.06
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	56.0	1.00000	1.000000	DALY3	9.52	\$166.25	\$1,582.70
07121028	6	1.23795	31.9	1.00000	1.000000	DALY3	3.04	\$166.25	\$505.40
08121028	6	0.41011	10.6	1.00000	1.000000	DALY3	0.33	\$166.25	\$54.86
03141028	6	2.82838	72.9	1.00000	1.000000	DALY3	15.79	\$166.25	\$2,625.09
04141028	6	0.11702	3.0	1.00000	1.000000	DALY3	0.03	\$166.25	\$4.99
05141028	6	0.06822	1.8	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	18.4	1.00000	1.000000	DALY3	1.01	\$166.25	\$167.91

TOTAL	41.74722	1075.4							\$27,978.24
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## TAX

(Corvair)

DALY #3

09021028	6	1.68366	43.4	1.00000	1.000000	D3	8.14	\$166.07	\$586.69
10021028	6	1.11117	28.6	1.00000	1.000000	D3	2.97	\$166.07	\$141.06
15121028	6	2.58400	66.6	1.00000	1.000000	D3	16.78	\$166.07	\$1,855.91

TOTAL	5.37883								\$2,583.66
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## FEDERAL CROWN WELLS

04071027	1.22137	31.5							
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TOTAL \$55,705.90

1994

Base 5.2%, Chev 50% dev.

## 99DALY3

## TAX

(Chevron)

Location

Stat

Tract  
PartWell  
Prod

OLD = 1 NEW = 2 INCENTIVE = 3 HOLIDAY = 4 MIX = 5 N/O = 6

Freehold  
InterestWorking  
FactorUnit  
NameTax  
Rate %Price  
\$/m3Tax  
Value

## DALY #3

05011028	6	0.02491	0.6	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
A10011028	6	0.48041	11.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
11011028	6	0.00470	0.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12011028	6	0.92143	22.5	1.00000	1.000000	D3	1.05	\$166.25	\$39.28
13011028	6	2.57163	62.7	1.00000	1.000000	D3	15.42	\$166.25	\$1,607.36
14011028	6	1.70119	41.5	1.00000	1.000000	D3	7.44	\$166.25	\$513.31
15011028	6	1.92163	46.9	1.00000	1.000000	D3	9.47	\$166.25	\$738.39
16011028	6	0.82597	20.1	1.00000	1.000000	D3	0.30	\$166.25	\$10.02
05021028	6	0.37064	9.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07021028	6	0.02995	0.7	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08021028	6	2.85886	69.7	1.00000	1.000000	D3	17.68	\$166.25	\$2,048.69
12021028	6	0.01922	0.5	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13021028	6	1.01951	24.9	1.00000	1.000000	D3	1.81	\$166.25	\$74.93
14021028	6	1.71467	41.8	1.00000	1.000000	D3	7.55	\$166.25	\$524.67
15021028	6	1.11772	27.3	1.00000	1.000000	D3	2.57	\$166.25	\$116.64
16021028	6	1.69995	41.5	1.00000	1.000000	D3	7.44	\$166.25	\$513.31
09121028	6	0.61908	15.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10121028	6	1.30168	31.7	1.00000	1.000000	D3	3.96	\$166.25	\$208.70
11121028	6	1.86136	45.4	1.00000	1.000000	D3	8.91	\$166.25	\$672.50
12121028	6	1.90923	46.6	1.00000	1.000000	D3	9.36	\$166.25	\$725.14
12A121028	2	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
13121028	6	1.01301	24.7	1.00000	1.000000	D3	1.75	\$166.25	\$71.86
13B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14121028	6	1.14384	27.9	1.00000	1.000000	D3	2.76	\$166.25	\$128.02
14B121028	4	0.00000	0.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
16121028	6	1.30274	31.8	1.00000	1.000000	D3	3.99	\$166.25	\$210.94
01131028	6	0.04914	1.2	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
02131028	6	2.50118	61.0	1.00000	1.000000	D3	14.79	\$166.25	\$1,499.89
03131028	6	0.04064	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
04131028	6	0.46601	11.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
05131028	6	1.19540	29.2	1.00000	1.000000	D3	3.17	\$166.25	\$153.89
06131028	6	4.08746	99.7	1.00000	1.000000	D3	23.38	\$166.25	\$3,875.26
07131028	6	0.03910	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
10131028	6	3.54386	86.4	1.00000	1.000000	D3	21.34	\$166.25	\$3,065.28
11131028	6	0.08105	2.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12131028	6	2.63477	64.3	1.00000	1.000000	D3	16.03	\$166.25	\$1,713.59
13131028	6	0.08499	2.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
14131028	6	2.12797	51.9	1.00000	1.000000	D3	11.36	\$166.25	\$980.18
15131028	6	1.74373	42.5	1.00000	1.000000	D3	7.81	\$166.25	\$551.83
02141028	6	0.79490	19.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
08141028	6	0.20142	4.9	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
12141028	6	0.05596	1.4	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
01231028	6	1.93305	47.1	1.00000	1.000000	D3	9.54	\$166.25	\$747.02
08231028	6	2.23083	54.4	1.00000	1.000000	D3	12.30	\$166.25	\$1,112.41
09231028	6	1.32371	32.3	1.00000	1.000000	D3	4.15	\$166.25	\$222.85
02241028	6	0.03959	1.0	1.00000	1.000000	D3	0.00	\$166.25	\$0.00
07241028	6	0.04449	1.1	1.00000	1.000000	D3	0.00	\$166.25	\$0.00

TOTAL

51.65258

\$22,125.96

## CROWN

(Chevron)

## DALY #3

13061027	6	0.01618	0.4	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
09101028	6	0.97997	23.9	1.00000	1.000000	DALY3	1.71	\$166.25	\$284.29
10101028	6	1.50200	36.6	1.00000	1.000000	DALY3	4.01	\$166.25	\$666.66
16101028	6	0.00864	0.2	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
01111028	6	2.45346	59.8	1.00000	1.000000	DALY3	10.90	\$166.25	\$1,812.13
02111028	6	1.14999	28.0	1.00000	1.000000	DALY3	2.35	\$166.25	\$390.69
03111028	6	0.60268	14.7	1.00000	1.000000	DALY3	0.65	\$166.25	\$108.06
04111028	6	1.89342	46.2	1.00000	1.000000	DALY3	6.38	\$166.25	\$1,060.68

Δ CROWN CHEV 3111.46

**99DALY3**
**TAX**
**(Chevron)**

Location	Stat	Tract Part	Well Prod	Freehold Interest	Working Factor	Unit Name	Tax Rate %	Price \$/m3	Tax Value
05111028	6	0.05433	1.3	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06111028	6	0.48240	11.8	1.00000	1.000000	DALY3	0.42	\$166.25	\$69.83
07111028	6	1.13485	27.7	1.00000	1.000000	DALY3	2.30	\$166.25	\$382.38
08111028	6	2.08095	50.8	1.00000	1.000000	DALY3	7.75	\$166.25	\$1,288.44
09111028	6	1.39662	34.1	1.00000	1.000000	DALY3	3.48	\$166.25	\$578.55
10111028	6	1.05654	25.8	1.00000	1.000000	DALY3	1.99	\$166.25	\$330.84
11111028	6	0.41786	10.2	1.00000	1.000000	DALY3	0.31	\$166.25	\$51.54
12111028	6	0.24683	6.0	1.00000	1.000000	DALY3	0.11	\$166.25	\$18.29
13111028	6	3.20655	78.2	1.00000	1.000000	DALY3	17.91	\$166.25	\$2,977.54
14111028	6	0.89668	21.9	1.00000	1.000000	DALY3	1.44	\$166.25	\$239.40
15111028	6	1.30393	31.8	1.00000	1.000000	DALY3	3.03	\$166.25	\$503.74
16111028	6	0.91258	22.3	1.00000	1.000000	DALY3	1.48	\$166.25	\$246.05
01121028	6	2.11323	51.5	1.00000	1.000000	DALY3	8.00	\$166.25	\$1,330.00
02121028	6	1.73832	42.4	1.00000	1.000000	DALY3	5.37	\$166.25	\$892.76
03121028	6	2.87039	70.0	1.00000	1.000000	DALY3	14.66	\$166.25	\$2,437.23
04121028	6	1.50999	36.8	1.00000	1.000000	DALY3	4.06	\$166.25	\$674.98
05121028	6	4.16933	101.7	1.00000	1.000000	DALY3	27.23	\$166.25	\$4,526.99
05A121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
05B121028	6	0.00000	0.0	1.00000	1.000000	DALY3	0.00	\$166.25	\$0.00
06121028	6	2.17411	53.0	1.00000	1.000000	DALY3	8.50	\$166.25	\$1,413.13
07121028	6	1.23795	30.2	1.00000	1.000000	DALY3	2.73	\$166.25	\$453.86
08121028	6	0.41011	10.0	1.00000	1.000000	DALY3	0.30	\$166.25	\$49.88
03141028	6	2.82838	69.0	1.00000	1.000000	DALY3	14.28	\$166.25	\$2,374.05
04141028	6	0.11702	2.9	1.00000	1.000000	DALY3	0.03	\$166.25	\$4.99
05141028	6	0.06822	1.7	1.00000	1.000000	DALY3	0.01	\$166.25	\$1.66
06141028	6	0.71371	17.4	1.00000	1.000000	DALY3	0.91	\$166.25	\$151.29
TOTAL		41.74722	1018.3						\$25,321.59

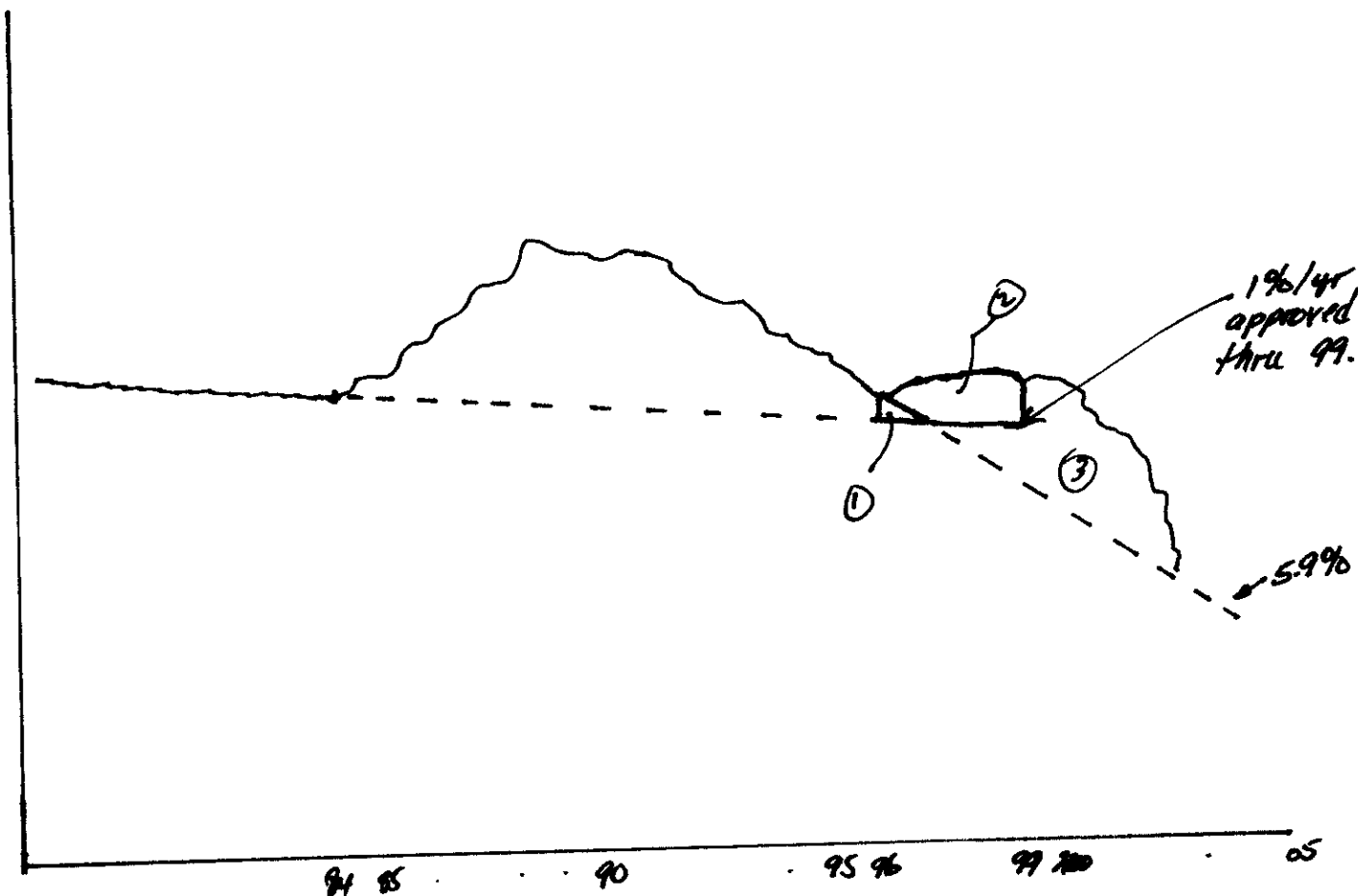
**TAX**
**(Corvair)**
**DALY #3**

09021028	6	1.68366	41.1	1.00000	1.000000	D3	7.29	\$166.07	\$497.58
10021028	6	1.11117	27.1	1.00000	1.000000	D3	2.51	\$166.07	\$112.96
15121028	6	2.58400	63.0	1.00000	1.000000	D3	15.54	\$166.07	\$1,625.86
TOTAL		5.37883							\$2,236.40

**FEDERAL CROWN WELLS**

04071027		1.22137	29.8						
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TOTAL \$ 49683.95



OPTION A

Area ① & ② New Oil  
Rest of Unit Prod = Old Oil  
Re Evaluate in 99 when  
Current Approval Expires

OPTION B.

Areas ② & ③ New Oil  
Area ① Old Oil

OPTION C

I DON'T LIKE

NEW WELLS

- SHOULD BE REMOVED FROM DECLINE ANALYSIS.

- SUGGESTION THAT THE CURRENT DECLINE OF 5.9% HAS RESULTED IN PART FROM DRAMATIC REDUCTION IN INJECTION WOULD

SUGGEST EXTRAPOLATION OF THAT TREND WOULD NOT BE APPROPRIATE.

- PRESUMABLY WITH CURRENT DECLINE, RATE WILL SOON FALL BELOW THE 1% LINE AND IF NO NEW INVESTMENTS ARE MADE, ALL PROD, EXCEPT FOR NEW WELLS WILL BE OLD.

- I THINK WE NEED A BETTER COMFORT LEVEL ON THE DECLINE (REMOVE NEW WELLS + ADDRESS REDUCED INJECTION.) BEFORE WE COULD MOVE FROM OUR CURRENTLY APPROX DECLINE

- I DON'T THINK ULRICH'S ANALYSIS REMOVES INFILL WELLS OR ADDRESSES THE REDUCED INJECTION ISSUE.

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NYS # 1

- I BELIEVE ULRICH'S ANALYSIS INCLUDES THE INFILL WELLS, THESE WILL HAVE TO BE REMOVED.

## PHONE CALLS FROM LARRY SNOW

1 - July 2 provided clarification on our approval process

- a) - base decline - Brand book
- b) - horizontal injectors  
Approval by cabinet of a method to utilize holiday volumes. Subsequently approved by Director
- c) - Approval by Cabinet of any major workovers

He asked whether ~~the~~ c) would be retroactive to July 1. I advised I couldn't guarantee but would be prepared to recommend any "major workover" initiated after the application was received for approval of an HOV of 500 m<sup>3</sup>.

2 July 3

Working on decline for Day 3. Wanted clarification that infill wells be removed before decline. I confirmed they should be removed

3. Joe Taylor
- status of approval to convert three wells to injection in NVS #1.
  - Have Ensign #1 Aug 4 to drill 4 new horizontals
- 11-15-11-26  
2-26-11-26 (injector)  
15-33-11-26  
13-34-11-26

Polymer jobs

10-15-11-26 done  
2nd well today  
3rd well by weekend



08-AUG-96.

ULRICH

## DAILY UNIT #1

(1) ALL WE HAVE TO DO IS FINALIZE THE FOLLOWING

(a) the initial rate to use for the 4.7% p.a. decline

'95 AVERAGE - 34.2 m<sup>3</sup>/d (calendar days)  
 '95 4TH QUARTER - 33.5 m<sup>3</sup>/d  
 DEC/95 - 32.3 m<sup>3</sup>/d  
 '96 1ST QUARTER - 33.9 m<sup>3</sup>/d  
 '96 JAN-MAY - 33.6 m<sup>3</sup>/d  
 4.7% p.a. decline from 90-03 35.4 m<sup>3</sup>/d to 95-12

I SUGGEST WE USE 33.5 m<sup>3</sup>/d (DEC/95) AS OUR INITIAL <sup>PRODUCTION</sup> ~~PERCENTAGE~~ RATE TO COMMENCE THE FORECAST. GENERATE A NEW OIL CALCULATION TABLE TO PASS ALONG TO CHEVRON (SYR. APPROVAL FROM 01-JUL-96)

NVSU #1

(1) VERIFY YOUR MORAK DATA SO WE MATCH. RE-EVALUATE THE DECLINE RATE. ESTABLISH THE INITIAL PRODUCTION RATE (REVIEW THIS WITH ME, I WOULD LIKE TO SEE A RANGE OF RATES AS WITH DAILY UNIT NO. 1). GENERATE THE NEW OIL CALCULATION TABLE.

## DALY UNIT #3

- ① DETERMINE INITIAL RATE FOR USE WITH 5.1% p.a. decline
- ② DETERMINE WHEN (WHICH MONTH) THE 1% p.a. APPROVED HISTORICAL DECLINE MEETS THE 5.1% p.a. decline.
- ③ REVIEW COSTS TO THE CROWN OF CHANGING THE HISTORICAL DECLINE. CAROL ISFOLD HAS A PROGRAM THAT CALCULATES ROYALTIES + TAXES.  $\phi$  THE FOLLOWING INPUTS ARE REQUIRED; UNIT PRODUCTION + ~~NEW~~ OLD OIL VOLUME (AS DETERMINED BY HISTORICAL DECLINE RATE)

ASSUMING, AS WE DISCUSSED, THE 1% & 5.1% DECLINE RATES INTERSECTION ABOUT DEC/96. LET'S USE JAN '98 AS THE MONTH FOR THIS REVIEW. PLEASE PROVIDE ME WITH THE NUMBERS BELOW FOR ENTRY INTO CAROL'S PROGRAM.

## OPTION (A) &lt; LETTER - TO CHEVRON &gt;

- a. UNIT PRODUCTION (EXCLUDING INFILLS) FROM CHEVRON'S 50% DEVELOPED CASE JAN/98 -
- b. 1% HISTORICAL PRODUCTION DECLINE JAN/98  $2031,9m^3$
- c. 5.1% HISTORICAL PRODUCTION DECLINE JAN/98 -

## OPTION (B)

FOR THIS OPTION WE WILL HAVE TO EVALUATE THE DECLINE IN THE UNIT INCLUDING THE ENELL WELLS AND DETERMINE WHEN THIS DECLINE INTERSECTS THE 1% PA. DECLINE. ALSO HAVE TO DETERMINE THE INITIAL PRODUCTION RATE FOR THIS SCENARIO.

FROM THE ABOVE I WILL CALCULATE THE ADDITIONAL CROWN ROYALTY + TAX REVENUE EARNED FROM MOVING ON 01-JUL-96 FROM THE 1% DECLINE TO THE DECLINE YOU CALCULATE. I WILL ALSO HAVE TO CALCULATE THE COST TO THE CROWN FROM THE DATE THE 1% DECLINE INTERSECTS THE CALCULATED DECLINE TO THE END OF THE 1% ANNUAL 90-06.

ULRICH

PAULETTE IS  
WORKING ON  
THE VERIFICATION  
OF UNIT  
PRODUCTION DATA.

## CHEVRON'S NEW OIL STATUS APPLICATION

- REVIEW MY MEMO TO BOB, NOTE CONSTRAINTS
- CONDUCT ANALYSIS (MANUAL + PERAK AUTOMATED) TO DETERMINE THE BRANCH'S PROPOSED HISTORICAL DECLINE
- COMMENT ON THE DIFFERENCE BETWEEN THE BRANCH'S & CHEVRON'S "MOST LIKELY" DECLINE RATE.
- IN TABULAR FORM COMPARE NEW OIL VOLUMES FOR CHEVRON'S 50% DEVELOPED FORECAST UNDER THE BRANCH'S & CHEVRON'S "MOST LIKELY" DECLINE RATE
- COMPLETE INTERNAL ANALYSIS OF OPTIONS PRESENTED FOR OALY UNIT NO. 3
  - when does the 1% & 5.5% decline rates meet
  - when does the 1% & the Branch's most likely decline rate meet
  - calculate the volume of new oil using Chevron's "50% DEVELOPED" forecast & OPTIONS (A), (B) & (C).
- SUBMIT ABOVE IN MEMO FORM TO BOB  
By JUL 15/96

# ISSUES RE: NEW OIL APPROVAL

Dec 194

1/ ULTIMATE RECOVERABLE RESERVES - CHEVRON VS BRANCH

NVSU #1  
CUM - 9651.1  
ULT 90610  
DAILY 1

2/ RECOVERABLE RESERVES 10 yrs

DIFFERENT  
VOLUMES  
OF NEW  
OIL

DAILY 3

BENEFITS

3/ COST TO THE CROWN - NEW OIL

4/ PROBABLY BALANCE HISTORICAL PERFORMANCE WITH RECENT PERFORMANCE

5/ OPERATIONAL CHANGES @ CHEVRON

ROYALTY TAX  
- DECLINING REVENUES

NVSU #1  
Daily #1 & 3 N/A

6/ ROUTLEDGE - commits NO program (copy of package to industry)

## PRODUCTION

	1992	1993	1994	1995
Daily 1	14435.5	14.4	13944.2	12.5
Daily 3	33990.4	32.4	30057	28.4
NVSU #1	113231.1	104.7	95560.8	84.1
Routeledge	20906.1	19.9	18370.5	16.3
MB	656.4	634.6	657.9	642.6
	(27.8)	27.0	(24%)	22.1

PERCENTAGE DECLINE 8.5%

## ADMINISTRATIVE ISSUES

① EFFECTIVE DATE CHEVRON REQUESTED JUN 1

- .. EXCEPT FOR FACILITY MODIFICATIONS  
THE MAJORITY OF WORK CONVERSION / DRILLING  
WILL OCCUR IN JUNE - JUNE THROUGH SEPTEMBER
- JUL 1/96 MAY BE MORE APPROPRIATE DATE

② METHODOLOGY OF CALCULATING ROYALTIES / TAXES

(a) TOTAL UNIT PROD. - NOV, IF APPLICATION  $\neq$  NET UNIT PRODUCTION

(b) NET UNIT PRODUCTION - BASE PRODUCTION = NEW OIL VOLUME

IF NEW OIL VOLUME <  $\left( \begin{array}{l} \text{PROD VOL FROM} \\ \text{1989 INFILL WELLS} \end{array} \right)$ , USE

NEW OIL = 1989 INFILL WELL  
VOLUME PRODUCTION

(c) FOR INDIVIDUAL TRACTS IN THE UNIT ROYALTY / TAX  
CALCULATIONS ARE DONE IN  
THE FOLLOWING MANNER

① ASSUME ALL PRODUCTION ALLOCATED TO TRACT  
IS NEW OIL & CALCULATE ROYALTY / TAX

② MULTIPLE ROYALTY / TAX PAYMENT BY NEW OIL  
VOLUME FRACTION

$$\text{NEW OIL VOLUME FRACTION (NOV}_{FR}) = \frac{\text{NEW OIL VOLUME}}{\text{NET UNIT PROD.}}$$

③ REPEAT FOR OLD OIL VOLUME

③ CHEVRON IS TO ADVISE UNIT WHO'S WHO PAY THEIR  
OWN ROYALTIES / TAXES DIRECTLY TO THE BRANCH  
OF THIS METHODOLOGY

DALY UNIT NO. 3 EXCLUDING INFILLS

OPTION (A) MONTHLY PRODUCTION FOR Royalty / Tax (calculation)

Year	NEW OIL il	BRANCH 5.2%	CHEVRON 5.3% (most likely)	CHEVRON 50% developed.
1996	2050.2	2094.7	2141.0	2254.8
97	2024.2	1988.6	2039.1	2710.1
98	2004.1	1887.1	1930.9	2575.7
99	1972.8	1791.5	1827.4	2438.8

NOTE: OPTION (B) IDENTICAL 5.2% + 1%.  
decline rates - 1996 - 08

### Daly Unit No. 3

Chevron currently has new oil status approved in Daly Unit No. 3 until 30-JUN-99 based on a historical production decline of 1.0% p.a. The 1% p.a. decline was determined from unit performance between 197- - 198- - .

Chevron has proposed modifying the historical production decline to reflect the current production performance. Chevron proposes a most likely decline of 5.3% p.a. based on unit production between 1993-1996 (excluding the 1991 infill wells). The company estimates production from the unit from 1996-2009 will total 259.5  $10^3 m^3$ . Chevron estimates production from the unit will average 70.4  $m^3/c$  in 1996 (excluding the '91 infill wells).

Figure \* is a plot of the production history from Daly Unit No. 3. The plot shows between 1984-1992 a modest annual increase in production from the unit. This increase in production can be attributed to the waterflood modification made by Chevron in 1984 - injector conversions and reactivations and a significant increase in the volume of water injected into the unit. In March 1993 Chevron significantly reduced Daly Unit No. 3 injection from 459  $m^3/c$  in 1992 to an average of 207  $m^3/c$  from 1993-95. Since 1992 the Branch estimates unit production has declined at 5.2% p.a., closely matching Chevron's prediction.

There is no doubt the reduction in injection has had a negative impact on unit production. At issue is whether the Branch should modify the historical production decline from the current approved 1.0% p.a. Arguments in favour of modifying the historical decline rate include:



- (a) recognition that the high injection pressure associated with the high injection rate were responsible for a number of operational and environmental problems - out of zone injection
- (b) incremental revenues associated with the 1984 waterflood modifications have been recovered
- (c) increasing the historical decline rate will improve economics of waterflood modifications and encourage additional capital investment in the unit
- (d) in order to maximize the recovery of oil from Dady Unit No. 3, the waterflood has to be accelerated

(e)

Arguments against modifying the historical decline rate include:

- (a) the recent decline has been precipitated by reduced injection
- (b) drop in Gross revenue

forecast under the proposed 10.3% p.a. decline rate. The Branch believes the difference in recovery of 151.3  $10^3 m^3$  can partly be attributed to reduced unit injection volumes. It should also be recognized that operating costs, oil prices and other variables have an impact on the ultimate recovery from the unit.

The Branch is proposing blending the current and previously observed decline trends to yield a more representative historical production decline for determination of new oil. An exponential decline of 8% p.a. (Fig. \*), which roughly models unit performance between 1990-1995, is proposed for the NVSU No. 1 historical production decline. The Branch's decline more closely follows Chevron's optimistic production forecast (hyperbolic decline 1992-96). Using the Branch's 8.0% p.a. decline, production from the unit will average 211.5  $m^3/d$  in 1996 and production from the unit from 1996-2011 will total 724.8  $10^3 m^3$ . The Branch's decline estimate reduces Chevron's new oil volume by 40%, from 119.2  $10^3 m^3$  to 71.8  $10^3 m^3$ . Table \* shows a comparison between Chevron's AND THE BRANCH'S HISTORICAL PRODUCTION DECLINE ESTIMATES.

	EXPONENTIAL DECLINE RATE	1996 AVERAGE PRODUCTION	CUMULATIVE UNIT PRODUCTION 1996 - 2011	ESTIMATED VOLUME OF NEW OIL
CHEVRON	10.3 %	210.2 $m^3/d$	634.5 $10^3 m^3$	119.2 $10^3 m^3$
BRANCH	8.0 %	211.5 $m^3/d$	724.8 $10^3 m^3$	71.8 $10^3 m^3$

DAILY UNIT NO. 3

CROWN ROYALTY + PRODUCTION TAX JULY /96 to JUN /99

YEAR	BASE CASE REVENUE	WATERFLOOD MODIFICATIONS NEW OIL BASED 1% DECLINE	WATERFLOOD MODIFICATIONS NEW OIL BASED 5.2% DECLINE
1996	270.3	314.0	295.7
1997	499.5	150.8	742.6
1998	458.7	694.2	668.5
1999	418.8	633.5	596.2
TOTAL	1647.3	2392.5	2303.0

DALY UNIT NO. 3

MEERAK CUM PROD 1,679,844

ACTUAL CUM PROD 1,626,912.7

- 1990-95 production data in a watch

INFILL WELL PRODUCTION 95-12-31 10904.5

# DALY UNIT #3

THE CURRENT APPROVAL FOR NEW OIL STATUS WAS GRANTED \_\_\_\_\_ AND COVERS A FIVE YEAR PERIOD ENDING IN 1999

DURING THE 1ST QU/96 DALY UNIT #3 PRODUCTION HAS REMAINED ABOVE THE APPROVED BASE HISTORICAL PRODUCTION DECLINE OF 1%

1996	BASE PRODUCTION	UNIT PRODUCTION	INFILL WELL NEW OIL PROD	INCREMENTAL NEW OIL PROD.
JAN	2093.3	2363.7	137.5	132.9 (5.6)
FEB	1956.7	2161.5	130.1	74.7 (3.8%)
MAR.	2089.8	2361.9	139.0	133.1 (5.6%)

## OTHER ISSUES.

- ONE OF THE ORIGINAL WF MODIFICATION FOR WHICH NEW OIL STATUS WAS APPROVED WAS HIGH VOLUME, HIGH PRESSURE INJECTION
- THE OBVIOUS EFFECT OF CUTTING BACK INJECTION HAS BEEN A DROP IN PRODUCTION, WHAT IS THE IMPACT ON ULTIMATE RECOVERY FROM THE UNIT AND CROWN ROYALTY/TAX REVENUES.

- THE HISTORIC PROD. DECLINE WAS ESTABLISHED TO REPRESENT EXPECTED PERFORMANCE OF THE WATERFLOOD, ASSUMING NO INVESTMENT WAS MADE IN WF MODIFICATIONS

- INVESTMENTS IN 198\_\_ IN WF MODIFICATIONS RESULTED IN AN INCREASE IN PRODUCTION ABOVE THE BASE DECLINE

- THIS PRODUCTION WAS RECOGNIZED AS INCREMENTAL RECOVERABLE RESERVES AND BY DGM RECEIVED NEW OIL STATUS

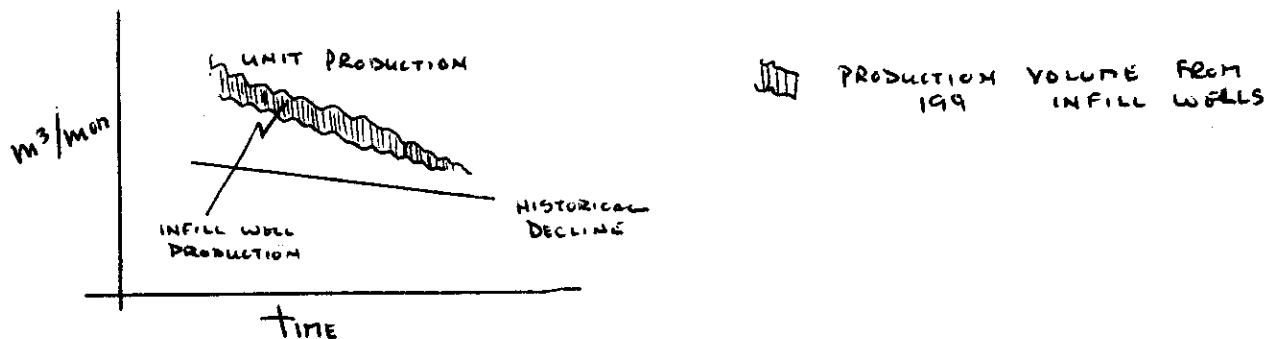
- IT CAN BE ARGUED THAT THE INCREASE IN DECLINE RATE IS PARTIALLY A RESULT OF THE ACCELERATION COMPONENT RESULTING FROM THE WF MODIFICATIONS.

ULRICH

Daly UNIT NO. 3

THE ISSUES INVOLVED IN ANALYZING THE PRODUCTION DECLINE IN DALY UNIT #3 ARE QUITE DIFFERENT FROM NVSU #1.

- ① DETERMINE THE IMPACT OF REDUCED INJECTION ON PRODUCTION RATES & ULTIMATE RECOVERY. INCLUDE PLOT OF PRODUCTION, WOR & INJECTION RATE
- ② EVALUATE THE CURRENT PRODUCTION PERFORMANCE VERSUS THE APPROVED HISTORICAL PRODUCTION DECLINE. UNDER CURRENT CONDITIONS WHEN WILL THE PRODUCTION FROM THE UNIT DROP BELOW THE HISTORIC PRODUCTION FORECAST. GRAPHICAL FORM



- ③ ESTIMATE THE <sup>INCREMENTAL</sup> <sup>ACTUAL</sup> RECOVERY TO DATE SINCE '89 EQUAL TO UNIT PRODUCTION - HISTORIC PRODUCTION FORECAST.

DALY #1 & ROUTLEDGE #1 - ANALYSIS START FORWARDED

I'VE ATTACHED A FORECAST FOR DALY UNIT #1 FROM A 1989 STUDY DONE BY A CONSULTANT

TABLE 1

DALY UNIT NO. 3 - NEW OIL STATUS  
HISTORICAL PRODUCTION DECLINE

Year	Month	Daily Rate (m3/d)	Monthly Production (m3)	
				$\Delta Rec = 43514 \text{ m}^3 \text{ (APR/94)}$
	may		2128.5	/ 358.9
1994	June	68.605	2058.1✓	
	July	68.548	2125.0✓	
	August	68.491	2123.2✓	
	September	68.434	2053.0✓	
	October	68.377	2119.7✓	
	November	68.320	2049.6✓	
	December	68.263	2116.1✓	
1995	January	68.206	2114.4✓	
	February	68.149	1908.2✓	
	March	68.092	2110.9✓	
	April	68.036	2041.1✓	
	May	67.979	2107.3✓	
	June	67.922	2037.7✓	
	July	67.866	2103.8✓	
	August	67.809	2102.1✓	
	September	67.753	2032.6✓	
	October	67.696	2098.6✓	
	November	67.640	2029.2✓	
	December	67.584	2095.1✓	
1996	January	67.527	2093.3✓	
	February	67.471	1956.7	
	March	67.415	2089.9	
	April	67.359	2020.8	
	May	67.303	2086.4	
	June	67.247	2017.4	
	July	67.191	2082.9	
	August	67.135	2081.2	
	September	67.079	2012.4	
	October	67.023	2077.7	
	November	66.967	2009.0	
	December	66.911	2074.2	

Base case

14644.7

Actual  
prod.

17465

24721.0

/ 28372.2

 $\Delta Rec = 50314.0$ 

- INFILL WELL

PROD. SINCE  
MAY 194(4078.5 m<sup>3</sup>) $\Delta \text{NEW OIL (EXCLUDING INFILL WELLS)}$ 46,236 m<sup>3</sup>



July 14, 1994

Bob Dubreuil  
Director  
Petroleum Branch

John N. Fox,  
Chief Petroleum Engineer  
Petroleum Branch

### **Daly Unit No. 3 - New Oil Status**

Chevron Canada Resources has applied (May 10, 1994) for continuation of new oil status for incremental production resulting from their 1984 waterflood expansion project.

#### **Recommendations**

It is recommended that:

- (1) Incremental production resulting from the waterflood expansion project, be recognized by the Director as representing an increase in recovery.
- (2) New oil status be granted for the incremental production. Approval by the Director for the Crown portion of the incremental production is provided for in the definition of new oil under The Crown Royalty and Incentives Regulation. The mechanism for approval for the freehold portion is currently under review by Legal Services. A copy of the proposed letter of approval is attached.
- (3) A historical production decline of 1%/year (exponential) be used to determine incremental production.

#### **Background**

In September 1984 the Board approved Chevron's application to modify and expand waterflood operations in Daly Unit No. 3. The waterflood expansion project involved conversion of five wells to injection, reactivation of three suspended injectors and an increase in injection pressure and volume (see Fig.1).

The Board also approved, on an interim basis, classification of incremental production resulting from the waterflood expansion project as new oil. The last interim approval of new oil status expired June 30, 1994.

#### **Waterflood Expansion Project Review**

Daly Unit No. 3 performance from 1984-94 has been reviewed in an attempt to determine, once and for all, if increased Unit production resulting from the waterflood expansion project represents an increase in recovery.

### Production History

The waterflood expansion project continues to have a significant impact on Unit production. From Sep/84 through Apr/94 an additional 43 514 m<sup>3</sup>, in excess of the Unit's historical production decline has been produced. This production, which represents 14.6% of the total Unit production during this period, has been classified as new oil. The Unit's historical production decline has been estimated by the Branch at 1%/yr (exponential) based on unit performance from Jul/76 to Apr/84. In 1991, six infill wells were drilled in the Unit. Production from these wells (6633 m<sup>3</sup> to Apr/94), which automatically qualifies as holiday or new oil, has been excluded from this analysis.

A plot of the production history for Daly Unit No. 3 is shown in Figure 2. The plots shows; a) the 1%/yr historical production decline; b) Unit production with and without the 1991 infill wells; and c) the estimated 1.46%/yr production decline from 1987 to 1994. Chevron estimates incremental recoverable reserves associated with the waterflood expansion project will total 103 000 m<sup>3</sup> or 1.9% OOIP. Figure 3 shows; a) Unit production forecast 1994 to 2035 with and without the infill wells; b) historical production decline; and c) the percentage of new oil.

### Injection History

As a result of the waterflood expansion project, water injection into the unit increased from 200 m<sup>3</sup>/d to a maximum of 740 m<sup>3</sup>/d (1988). Between 1990 - 92 injection rates averaged 445m<sup>3</sup>/d. Since March 1993 injection rates have averaged 234 m<sup>3</sup>/d. Though the 1993 Unit VRR was only 0.87 and the cumulative VRR is 1.61. Chevron indicates it's current strategy is to improve the production/injection balance for individual unit patterns with a target VRR of 1.0. This strategy should improve overall sweep efficiency and reduce reservoir pressure in portions of the Unit that are over-pressured.

Chevron indicated in the application it is reviewing the feasibility of converting two additional wells to injection; 13-1-10-28 and 15-13-10-28.

## Increased Recovery

Under The Crown Royalty and Incentives Regulation new oil is defined as

(b) oil that is produced from an old oil well that can, in the opinion of the director, be reasonably attributed to an increase in reserves as a result of a project of enhanced recovery implemented under the Act or The Mines Act, R.S.M. 1987, chapter M160.

The Oil and Gas Production Tax Regulation has the same definition with slightly different wording. A legal opinion on the approval process under The Oil and Gas Production Tax Regulation is being sought (see attached memo to D. Blevins).

A number of analysts, myself included, have attempted to separate the production response resulting from the waterflood expansion project into two categories; accelerated production and incremental production. Concerns regarding the magnitude of the acceleration component of the production response are what prompted the Board to grant an interim approval of new oil status. I believe two factors tip the scales in favour of incremental vs. accelerated production - (1) improved volumetric sweep efficiency resulting from the injector conversions and reactivations and (2) the Unit's long production life.

Perhaps the best illustration of the potential for improved sweep efficiency in the Unit is the results of the 1991 infill drilling project. The five infill wells (one well is shut-in) produce at an average water-cut of 6.9%, compared to an average water-cut of 34.6% at offsetting producers and a Unit water-cut of 67.7%. Chevron estimates the infill wells will recovery 85 328 m<sup>3</sup> (14 220 m<sup>3</sup>/well) or 1.5% OOIP. In comparison there are 22 producers offsetting the eight injectors converted or reactivated as part of the waterflood expansion project. Dividing the estimated incremental recoverable reserves of 103 000 m<sup>3</sup> among the 22 wells yields an average incremental recovery of 4681 m<sup>3</sup>/well. A further division shows an average incremental recovery of only 1807 m<sup>3</sup>/producer in the Unit.

The majority of the wells in the Unit were drilled in 1952-56. At a production decline of between 1-1.5%/year, the economic limit of 0.4 m<sup>3</sup>/d/well will be reached between 2088-2115. Experience indicates most of the wells will have casing or equipment failures before they reach their economic limit and due to low productivity it is unlikely that economics for well replacement or repair will be favourable. In a situation like this any acceleration of production will therefore be incremental

production. Chevron has assumed production from the Unit will terminate in 2035.

I believe production in Day Unit No. 3 in excess of the historical production decline of 1%/yr should be considered to be an increase in reserves reasonably attributable to the waterflood expansion project, in satisfaction of the definition of new oil.

#### Cost and Benefits of New Oil Status

Chevron has calculated the cost and benefits to working interest owners, the Crown and freehold mineral owners of new oil status to date and over the remainder of the Unit's production life. The costs and benefits are listed in Table 1 and assume Chevron would not have proceeded with the waterflood expansion project without approval of new oil status.

John N. Fox

Approved: \_\_\_\_\_  
L.R.Dubreuil, Director

Date: \_\_\_\_\_

October 14, 1994

Mr. J. E. Causgrove, P.Eng.  
Virden Business Unit Manager  
Chevron Canada Resources  
P.O. Box 100  
Virden MB R0M 2C0

Dear Mr. Causgrove:

**Re: Daly Unit No. 3 - New Oil Status**

Your application for continuation of new oil status for incremental production from Daly Unit No. 3 has been reviewed.

The Branch recognizes that a significant portion of the incremental production resulting from the 1984 waterflood expansion project can reasonably be attributed to an increase in recovery. New oil status for all production from Daly Unit No. 3 exceeding the historical production decline is approved for an additional five (5) year period, July 1, 1994 to June 30, 1999. A historical production decline of 1%/year (exponential) will continue to be used to determine the incremental production. Table 1 lists the historical production rate to be used to determine the volume of new oil for each month of the approval period. Production from infill wells drilled on 8 ha spacing qualifies as holiday or new oil and is not governed by this approval. Chevron may apply prior May 1, 1999 for extension of this approval.

If you have any questions in respect of this matter please contact the undersigned or John N. Fox, Chief Petroleum Engineer at 945-6573 and 945-6574, respectively.

Yours truly,

L.R. Dubreuil  
Director of Petroleum

**Subject:**

New oil status for incremental freehold oil production from Daly Unit No. 3.

**Background:**

Since July 1984, Chevron Canada Resources and other Unit owners have received new oil status for incremental Crown and freehold oil production resulting from improvements to and expansion of the waterflood enhanced recovery project in Daly Unit No. 3. The approval of new oil status by The Oil and Natural Gas Conservation Board (July 1, 1989) expired June 30, 1994. Chevron, as Unit Operator, has applied for an extension of new oil status for incremental Crown and freehold oil production from the Unit.

**Discussion:**

The definition of new oil for freehold oil production under Subsection 1(1) of The Oil and Gas Production Tax Regulation includes that portion of oil produced from a well not classified as a new oil well that can, in the opinion of The Oil and Natural Gas Conservation Board, be reasonably attributed to an increase in reserves as a result of an enhanced recovery project. With the coming into force of The Oil and Gas Act, July 1, 1994, The Mines Act which established The Oil and Natural Gas Conservation Board was repealed and in the opinion of Legal Services Subsection 1(1) of The Oil and Gas Production Tax Regulation became inoperable. Therefore new oil status can only be granted by the Lieutenant Governor in Council in accordance with Section 5 of The Oil and Gas Production Tax Regulation which provides for a temporary or permanent reduction or exemption of production tax for freehold oil production.

The authority to approve new oil status for incremental Crown oil production resulting from an enhanced recovery project is provided to the Director of Petroleum under Section 1(1) of The Crown Royalty and Incentives Regulation.

Since 1984 Chevron has invested \$4.2 million in Daly Unit No. 3 in additional wells and improvements to and expansion of the waterflood enhanced recovery project. The investment has resulted in incremental Crown and freehold oil production, above the Unit's historical production decline, of 41 800 m<sup>3</sup>, or 12% of the Unit's production since 1984.

The incremental production resulting from modifications to the enhanced recovery project, has yielded additional Crown revenues (royalties and freehold production taxes) of approximately \$830,000 over the last 10 years. Over the same period saving to Chevron and the other Unit owners resulting from lower new oil royalty and production tax rates (versus old oil rates) was approximately \$953,000.

Incremental production from Daly Unit No. 3 to date has not met Chevron's original expectations. Economics were marginal when the initial modifications to the enhanced recovery project were undertaken in 1984 - anticipated pay-out of more than 10 years. Chevron has indicated continuation of new oil status is needed to make any future investment in Daly Unit No. 3 economically attractive.

The intent of the "new oil" provisions of The Oil and Gas Production Tax Regulation is to encourage oil companies to implement enhanced recovery projects to maximize the recovery of oil. It is recommended that new oil status for incremental freehold oil production from Daly Unit No. 3 be extended for a period of five years. The proposed extension of new oil status is consistent with the legislation.

#### **Financial Implications:**

Additional revenues to the Crown over the five year extension are estimated at \$520 000. Savings to Chevron and the other Unit owners are estimated at \$625 000.

#### **Communication Strategy:**

Letter to Chevron as Unit Operator outlining the terms of the extension of new oil status for incremental oil production from Daly Unit No. 3.

#### **Recommendations:**

Incremental freehold oil production from Daly Unit No. 3 resulting from improvements to and expansion of the waterflood enhanced recovery project be subject to new oil taxation rates for the period July 1, 1994 to June 30, 1999.

# Production Report

Group : Daly Unit #3 Infill wells  
Well : Infill summary  
: 000000180

Date : August 7, 1996 3:10:21 pm  
User : DAN

## Production Data from August, 1991 to December, 1995 (cont.)

Year	Avg Daily Oil m3/d	Monthly Oil m3	Monthly Water m3	Cum Oil m3	Days On days	Num Wells
Apr., 1995	5.92563	175.3	14.5	9602.9	29.5833	5
May., 1995	5.73842	175.5	16.2	9778.4	30.5833	5
Jun., 1995	5.81333	174.4	15.9	9952.8	30	5
Jul., 1995	5.50954	168.5	20	10121.3	30.5833	5
Aug., 1995	5.53548	171.6	20.5	10292.9	31	5
Sep., 1995	5.58	167.4	18	10460.3	30	5
Oct., 1995	4.82258	149.5	17.5	10609.8	31	5
Nov., 1995	4.70333	141.1	18	10750.9	30	5
Dec., 1995	4.95484	153.6	17.3	10904.5	31	5

- infill well

SA-12-10-24

5B-12

12A-12

12B-12

13B-12

14B-12

JAN

MAY

	SA-12-10-24	5B-12	12A-12	12B-12	13B-12	14B-12	Total
Jan	6.6	31.2	79.1	0	25.9	1.3	144.1
Feb	6.3	29.7	74.4	0	24.7	1.3	136.4
Mar	6.7	31.5	79.8	0	26.3	1.4	145.7
Apr	6.5	30.4	76.5	0	25.4	1.3	140.1
May	6.5	30.7	77.5	0	25.6	1.4	141.7
JUN	6.4	29.9	75.7	0	24.9	1.3	138.2
July	6.6	12.6	77.3	0	25.4	1.3	123.2



# Production Report

Group : Daly Unit #3 Infill wells  
 Well : Infill summary  
 : 000000180  
 Hist.Data : 08/91-12/95  
 Operator :  
 Field :

Date : August 7, 1996 3:10:20 pm  
 User : DAN  
 On Prod : 02/09  
 Status : Unknown  
 Zone :

## Production Data from August, 1991 to December, 1995

Year	Avg Daily Oil m3/d	Monthly Oil m3	Monthly Water m3	Cum Oil m3	Days On days	Num Wells
Aug., 1991	2.8	2.8	13.9	2.8	1	1
Sep., 1991	14.5364	53.3	22.1	56.1	3.66667	3
Oct., 1991	9.93488	213.6	111.7	269.7	21.5	6
Nov., 1991	13.7557	403.5	92.7	673.2	29.3333	6
Dec., 1991	10.2968	319.2	110.4	992.4	31	6
Jan., 1992	10.2968	319.2	78.5	1311.6	31	6
Feb., 1992	8.46897	245.6	48.9	1557.2	29	6
Mar., 1992	8.65246	263.9	48.6	1821.1	30.5	6
Apr., 1992	8.78889	237.3	48.7	2058.4	27	6
May., 1992	9.88696	227.4	41.7	2285.8	23	6
Jun., 1992	8.63	258.9	40.5	2544.7	30	6
Jul., 1992	7.85246	239.5	30.2	2784.2	30.5	6
Aug., 1992	8.31522	255	30.3	3039.2	30.6667	6
Sep., 1992	8.29667	248.9	27.3	3288.1	30	6
Oct., 1992	8.01935	248.6	39.6	3536.7	31	6
Nov., 1992	7.61899	227.3	61.7	3764	29.8333	6
Dec., 1992	7.76374	235.5	59.5	3999.5	30.3333	6
Jan., 1993	7.61613	236.1	61.9	4235.6	31	6
Feb., 1993	7.73214	216.5	52.3	4452.1	28	6
Mar., 1993	7.75806	240.5	58.4	4692.6	31	6
Apr., 1993	7.77989	232.1	58.6	4924.7	29.8333	6
May., 1993	7.6	235.6	57.4	5160.3	31	6
Jun., 1993	6.47	194.1	62	5354.4	30	6
Jul., 1993	6.71525	198.1	66.7	5552.5	29.5	6
Aug., 1993	6.94194	215.2	72.2	5767.7	31	6
Sep., 1993	6.67	200.1	64.1	5967.8	30	6
Oct., 1993	6.51523	197.9	11.4	6165.7	30.375	5
Nov., 1993	6.49667	194.9	7	6360.6	30	5
Dec., 1993	6.48387	201	7.2	6561.6	31	5
Jan., 1994	7.44199	224.5	38.7	6786.1	30.1667	5
Feb., 1994	6.5116	173.1	6.2	6959.2	26.5833	5
Mar., 1994	6.31717	193.2	6.8	7152.4	30.5833	5
Apr., 1994	6.25333	187.6	6.2	7340	30	5
May., 1994	6.22581	193	6.8	7533	31	5
Jun., 1994	6.68333	200.5	7.2	7733.5	30	5
Jul., 1994	7.25484	224.9	7.4	7958.4	31	5
Aug., 1994	6.2	192.2	11.2	8150.6	31	5
Sep., 1994	6.04867	180.2	10.5	8330.8	29.7917	5
Oct., 1994	6.16452	191.1	17.5	8521.9	31	5
Nov., 1994	6.07099	179.6	15.4	8701.5	29.5833	5
Dec., 1994	6.07742	188.4	16.8	8889.9	31	5
Jan., 1995	5.97711	182.8	15.8	9072.7	30.5833	5
Feb., 1995	6.03778	167.8	14.1	9240.5	27.7917	5
Mar., 1995	6.15967	187.1	16.2	9427.6	30.375	5

# Production Report

Group : Daly Unit No. 3  
Well : Daly Unit No. 3  
: 000000177

Date : August 7, 1996 2:58:15 pm  
User : DAN

## Production Data from January, 1990 to December, 1995 (cont.)

Year	Avg Daily Oil m3/d	Monthly Oil m3	Cum Oil m3	Monthly Water m3	Days On days	Num Wells
Sep., 1993	87.7416	2603	1.61347e+06	5884.8	29.6667	50
Oct., 1993	86.8455	2670.5	1.61614e+06	6426.1	30.75	49
Nov., 1993	87.4233	2597.2	1.61874e+06	5898.3	29.7083	49
Dec., 1993	86.6588	2679.2	1.62141e+06	5998.5	30.9167	49
Jan., 1994	84.8446	2601.9	1.62402e+06	5405.6	30.6667	49
Feb., 1994	85.1456	2348.6	1.62637e+06	5167.9	27.5833	49
Mar., 1994	84.3073	2606.5	1.62897e+06	5781.2	30.9167	49
Apr., 1994	84.1638	2517.9	1.63149e+06	5016.5	29.9167	49
May., 1994	82.3128	2517.4	1.63401e+06	5655.6	30.5833	49
Jun., 1994	81.055	2394.5	1.6364e+06	5670.3	29.5417	49
Jul., 1994	85.5665	2638.3	1.63904e+06	5956.8	30.8333	49
Aug., 1994	82.0956	2534.7	1.64157e+06	5924.7	30.875	49
Sep., 1994	82.2076	2435.4	1.64401e+06	5096	29.625	49
Oct., 1994	82.658	2531.4	1.64654e+06	6262.6	30.625	49
Nov., 1994	81.6804	2436.8	1.64898e+06	5499	29.8333	49
Dec., 1994	81.3261	2494	1.65147e+06	5944.6	30.6667	49
Jan., 1995	80.5061	2465.5	1.65394e+06	5678.7	30.625	49
Feb., 1995	81.6505	2262.4	1.6562e+06	5061.2	27.7083	49
Mar., 1995	83.4093	2471	1.65867e+06	5420.1	29.625	49
Apr., 1995	79.5	2358.5	1.66103e+06	5043.2	29.6667	48
May., 1995	77.4611	2378.7	1.66341e+06	5794.2	30.7083	48
Jun., 1995	79.2785	2322.2	1.66573e+06	5566.8	29.2917	49
Jul., 1995	79.2324	2446.3	1.66818e+06	6044	30.875	49
Aug., 1995	78.2992	2407.7	1.67058e+06	5916.6	30.75	49
Sep., 1995	77.532	2319.5	1.6729e+06	5182.6	29.9167	49
Oct., 1995	76.2878	2323.6	1.67523e+06	5152.6	30.4583	49
Nov., 1995	76.9404	2301.8	1.67753e+06	4782.6	29.9167	49
Dec., 1995	75.1827	2315	1.67984e+06	4557	30.7917	46

JAN 96 2363.7

FEB 2161.5

MAR 2361.9

APR 2294.9

MAY 2312.4

94 76.0 m3/d  
95 - 72.2 - 2000  
{excluding  
infills}  
Total 248 m3/d in  
fluid  
12.1% decline  
total fluid 93-95

# Production Report

Group	: Daily Unit No. 3	Date	: August 7, 1996 2:58:14 pm
Well	: Daily Unit No. 3	User	: DAN
	: 000000177		
Hist.Data	: 01/52-12/95	On Prod	: 02/09
Operator	:	Status	: Unknown
Field	:	Zone	:

## Production Data from January, 1990 to December, 1995

Year	Avg Daily Oil m3/d	Monthly Oil m3	Cum Oil m3	Monthly Water m3	Days On days	Num Wells
Jan., 1990	88.4507	2734.6	1.49275e+06	5441.2	30.9167	44
Feb., 1990	88.8036	2479.1	1.49523e+06	5298.6	27.9167	44
Mar., 1990	88.5094	2710.6	1.49794e+06	5971.9	30.625	44
Apr., 1990	90.2739	2505.1	1.50044e+06	5473.6	27.75	44
May., 1990	92.062	2819.4	1.50326e+06	5697.8	30.625	44
Jun., 1990	88.5088	2644.2	1.50591e+06	5910.3	29.875	44
Jul., 1990	90.1455	2787	1.50869e+06	6009.4	30.9167	44
Aug., 1990	86.2793	2574	1.51127e+06	4766.1	29.8333	44
Sep., 1990	89.695	2675.9	1.51394e+06	5915.5	29.8333	44
Oct., 1990	94.5393	2918.9	1.51686e+06	5856	30.875	44
Nov., 1990	89.5688	2679.6	1.51954e+06	6065	29.9167	44
Dec., 1990	88.7677	2751.8	1.52229e+06	6243.1	31	44
Jan., 1991	88.8227	2742.4	1.52504e+06	6015	30.875	44
Feb., 1991	90.1277	2504.8	1.52754e+06	5318.6	27.7917	44
Mar., 1991	87.8419	2704.8	1.53025e+06	6083.6	30.7917	44
Apr., 1991	90.4266	2607.3	1.53285e+06	5782.6	28.8333	44
May., 1991	89.0014	2651.5	1.53551e+06	5915	29.7917	44
Jun., 1991	90.4732	2676.5	1.53818e+06	5548.2	29.5833	44
Jul., 1991	89.7529	2778.6	1.54096e+06	5859.6	30.9583	44
Aug., 1991	89.8257	2706	1.54367e+06	5870.3	30.125	45
Sep., 1991	94.1735	2660.4	1.54633e+06	5936.9	28.25	47
Oct., 1991	96.4336	2868.9	1.5492e+06	5920.7	29.75	50
Nov., 1991	102.502	2908.5	1.5521e+06	5827.2	28.375	50
Dec., 1991	94.5352	2891.2	1.555e+06	5992.6	30.5833	50
Jan., 1992	94.1903	2904.2	1.5579e+06	6085.9	30.8333	50
Feb., 1992	91.8678	2641.2	1.56054e+06	5601.3	28.75	50
Mar., 1992	96.081	2966.5	1.56351e+06	5970.8	30.875	50
Apr., 1992	100.319	2813.1	1.56632e+06	6007.7	28.0417	50
May., 1992	100.656	2856.1	1.56918e+06	6105.7	28.375	50
Jun., 1992	98.9282	2790.6	1.57197e+06	6045	28.2083	50
Jul., 1992	98.3199	2822.6	1.57479e+06	6061.6	28.7083	50
Aug., 1992	99.5129	2914.9	1.5777e+06	6152.1	29.2917	50
Sep., 1992	100.2	2855.7	1.58056e+06	5681.7	28.5	50
Oct., 1992	99.011	2916.7	1.58348e+06	6254.7	29.4583	50
Nov., 1992	91.0117	2707.6	1.58618e+06	6120.1	29.75	50
Dec., 1992	91.3435	2801.2	1.58899e+06	5931.7	30.6667	50
Jan., 1993	90.5227	2779.8	1.59177e+06	6147	30.7083	50
Feb., 1993	92.1686	2569.2	1.59434e+06	5206	27.875	50
Mar., 1993	91.6325	2817.7	1.59715e+06	5796.1	30.75	50
Apr., 1993	96.8965	2745.4	1.5999e+06	5649.4	28.3333	50
May., 1993	95.3711	2805.5	1.6027e+06	5630.2	29.4167	50
Jun., 1993	94.6899	2667.1	1.60537e+06	5669.9	28.1667	50
Jul., 1993	90.5659	2784.9	1.60816e+06	5972.2	30.75	50
Aug., 1993	89.1885	2709.1	1.61086e+06	6071.9	30.375	50

'90 - 88.4

'91

'92 - 84.9 m3/d

Total Fluid 282.2 m3/d

'93 81.9 m3/d

TABLE 1

DALY UNIT NO. 3 - NEW OIL STATUS  
HISTORICAL PRODUCTION DECLINE

Year	Month	Daily Rate (m3/d)	Monthly Production (m3)
1994	June	68.605	2058.1
	July	68.548	2125.0
	August	68.491	2123.2
	September	68.434	2053.0
	October	68.377	2119.7
	November	68.320	2049.6
	December	68.263	2116.1
1995	January	68.206	2114.4
	February	68.149	1908.2
	March	68.092	2110.9
	April	68.036	2041.1
	May	67.979	2107.3
	June	67.922	2037.7
	July	67.866	2103.8
	August	67.809	2102.1
	September	67.753	2032.6
	October	67.696	2098.6
	November	67.640	2029.2
	December	67.584	2095.1
1996	January	67.527	2093.3
	February	67.471	1956.7
	March	67.415	2089.9
	April	67.359	2020.8
	May	67.303	2086.4
	June	67.247	2017.4
	July	67.191	2082.9
	August	67.135	2081.2
	September	67.079	2012.4
	October	67.023	2077.7
	November	66.967	2009.0
	December	66.911	2074.2

TABLE 1

DALY UNIT NO. 3 - NEW OIL STATUS  
HISTORICAL PRODUCTION DECLINE

Year	Month	Daily Rate (m3/d)	Monthly Production (m3)
1997	January	66.855	2072.5
	February	66.800	1870.4
	March	66.744	2069.1
	April	66.688	2000.7
	May	66.633	2065.6
	June	66.577	1997.3
	July	66.522	2062.2
	August	66.467	2060.5
	September	66.411	1992.3
	October	66.356	2057.0
	November	66.301	1989.0
	December	66.245	2053.6
1998	January	66.190	2051.9
	February	66.135	1851.8
	March	66.080	2048.5
	April	66.025	1980.7
	May	65.970	2045.1
	June	65.915	1977.4
	July	65.860	2041.7
	August	65.805	2040.0
	September	65.750	1972.5
	October	65.696	2036.6
	November	65.641	1969.2
	December	65.586	2033.2
1999	January	65.532	2031.5
	February	65.477	1833.4
	March	65.422	2028.1
	April	65.368	1961.0
	May	65.313	2024.7
	June	65.259	1957.8

# Production Report

Group	: Daly Unit No. 3	Date	: August 8, 1996 8:34:24 am
Well	: Daly Unit # 3 Inj	User	: DAN
	: 000000182		
Hist.Data	: 04/53-12/95	On Prod	: 01/00
Operator	:	Status	: Unknown
Field	:	Zone	:

## Production Data from January, 1990 to December, 1995

Year	Month Water Inj m3
Jan., 1990	15759
Feb., 1990	13748
Mar., 1990	15201
Apr., 1990	11877
May., 1990	11764
Jun., 1990	9803
Jul., 1990	14523
Aug., 1990	13838
Sep., 1990	17058
Oct., 1990	16378
Nov., 1990	14685
Dec., 1990	16521
Jan., 1991	17352
Feb., 1991	13758
Mar., 1991	17548
Apr., 1991	19297
May., 1991	10251
Jun., 1991	9396
Jul., 1991	9416
Aug., 1991	7506
Sep., 1991	8285
Oct., 1991	10672
Nov., 1991	13051
Dec., 1991	11637
Jan., 1992	13723
Feb., 1992	12702
Mar., 1992	13652
Apr., 1992	14770
May., 1992	12756
Jun., 1992	13925
Jul., 1992	16183
Aug., 1992	16245
Sep., 1992	13622
Oct., 1992	14060
Nov., 1992	11912
Dec., 1992	14004
Jan., 1993	15142
Feb., 1993	12546
Mar., 1993	8520
Apr., 1993	5658
May., 1993	5655.2
Jun., 1993	5754
Jul., 1993	5988
Aug., 1993	7327

459 m<sup>3</sup>/d

## Production Report

Group : Daly Unit No. 3  
Well : Daly Unit # 3 Inj  
: 000000182

Date : August 8, 1996 8:34:25 am  
User : DAN

### Production Data from January, 1990 to December, 1995 (cont.)

Year	Month Water Inj m3
Sep., 1993	6013.6
Oct., 1993	6477.3
Nov., 1993	6048.5
Dec., 1993	6338.7
Jan., 1994	5488.7
Feb., 1994	5238.5
Mar., 1994	5825.1
Apr., 1994	5504.2
May., 1994	5701.3
Jun., 1994	5738.3
Jul., 1994	6006.2
Aug., 1994	5961
Sep., 1994	6027
Oct., 1994	6296
Nov., 1994	5529
Dec., 1994	5972.5
Jan., 1995	5709
Feb., 1995	5080
Mar., 1995	5439.7
Apr., 1995	5651
May., 1995	6260
Jun., 1995	5584.5
Jul., 1995	6067.7
Aug., 1995	5950
Sep., 1995	5212
Oct., 1995	5152
Nov., 1995	4832
Dec., 1995	4586

DAILY UNIT #1

- CHEVRON PREDICTS  $D = 5.7\%$  p.a. (1985-93)
- 1996-2009 difference in recovery between Chevron's 10% probably & 90% probably forecast  
 $106,047 \text{ m}^3$  to  $136,795 \text{ m}^3$
- $D = 5.7\%$  p.a. rec. reserves 1996-2009 = 122958  $\text{m}^3$
- incremental rec. reserves = 9500  $\text{m}^3$
- NEW OIL (97-2004) 9508  $\text{m}^3$
- CHEVRON'S forecast  $IP_{96} = 33.81 \text{ m}^3/\text{d}$  (aver.)
- RESERVOIR STUDY (ADAMS PEARSON 1989)  
PREDICTED '96 PRODUCTION 34.3  $\text{m}^3/\text{d}$   
PREDICTED PROD. 96-2009 137,465  $\text{m}^3$  (CLOSE MATCH TO CHEVRON'S OPTIMISTIC FORECAST)
- P.B. predicted  $D = 4.7\%$  p.a. (1990-95)  
P.B. predicted recoverable reserves (96-2009) 131,484  $\text{m}^3$
- P.B. historical production-decline matches more closely with Chevron's optimistic 90% probably forecast & reduces proposed incremental rec. reserves  
from 9500  $\text{m}^3$  to 974  $\text{m}^3$
- comparison of P.B.  $D = 4.7\%$  p.a. forecast with Chevron's 50% developed forecast, yields new oil of 4990  $\text{m}^3$
- REVIEW UNIT TOTALS, '95 MONTHLY TOTALS. (CUMUL. PROD. MATCH WITHIN 600  $\text{m}^3$ )
- CHECK PRODUCTION, DETERMINE ANNUAL DECLINE 2-5 YRS.
- COMMENT ON OPERATIONAL CHANGES, INCREASE IN ECONOMIC LIMIT, (MORE WELLS ABO OR SI), EFFORT TO REDUCE OPERATING COST (LOWER TOTAL FLUID PRODUCTION), CHANGE IN WATERFLOOD OPERATIONS (LOWER INJECTION VOLUMES)



Daily unit No. 1

WORK UNIT TOTAL 1,147,839

Actual UNIT TOTAL 1,147,193.9

- composition of production 90-93 - MATCHES.

Daily Unit No. 1

CHEVRON HAS PROPOSED A MOST LIKELY DECLINE OF 5.7% p.a. BASED ON PRODUCTION TRENDS BETWEEN 1985-93. THE COMPANY ESTIMATES PRODUCTION FROM THE UNIT FROM 1996-2009 WILL TOTAL 122,958 m<sup>3</sup>. CHEVRON ESTIMATES PRODUCTION FROM THE UNIT WILL AVERAGE 33.81 m<sup>3</sup>/d IN 1996.

CHEVRON PLANS TO CONDUCT ~~INTERIOR~~ PROFILE MODIFICATION ON TWO INJECTORS, STIMULATE A NUMBER OF WELLS AND MODIFY ~~INTERIOR~~ PATTERN INJECTION/WITHDRAWALS. THE COMPANY ESTIMATES THESE ACTIVITIES ARE GOING TO RESULT IN THE RECOVERY OF AN ADDITIONAL 9508 m<sup>3</sup> BETWEEN 1997-2004.

THE BRANCH HAS DETERMINED A HISTORICAL PRODUCTION DECLINE FOR THE UNIT OF 4.7% p.a. BETWEEN 1990-95. THE BRANCH'S DECLINE MORE CLOSELY MATCHES CHEVRON'S OPTIMISTIC PRODUCTION FORECAST (HYPERBOLIC DECLINE 1985-93). USING THE BRANCH DECLINE, PRODUCTION FROM THE UNIT WILL AVERAGE 34.5 m<sup>3</sup>/d IN 1996 AND PRODUCTION FROM THE <sup>UNIT FROM</sup> 1996-2009 WILL TOTAL 132,228 m<sup>3</sup>. THE BRANCH'S DECLINE REDUCES CHEVRON'S INCREMENTAL RESERVES OR VOLUME OF NEW OIL BY 51% TO 4900 m<sup>3</sup>. TABLE \* SHOWS A COMPARISON BETWEEN CHEVRON'S AND THE BRANCH HISTORICAL PRODUCTION DECLINE ESTIMATE

	EXPONENTIAL DECLINE RATE (% p.a.)	CUMULATIVE PRODUCTION 1996-2009 (10 <sup>3</sup> m <sup>3</sup> )	ESTIMATED VOLUME OF NEW OIL (10 <sup>3</sup> m <sup>3</sup> )
CHEVRON	5.7	123.0	9.5
BRANCH	4.7	132.2	4.9

# Production Report

Group : Daly Unit No. 1  
Well : Daly Unit No. 1 Summary  
 : 000000179

Date : August 7, 1996 2:46:58 pm  
User : DAN

## Production Data from January, 1990 to December, 1995 (cont.)

Year	Avg Daily Oil m3/d	Monthly Oil m3	Monthly Water m3	Cum Oil m3	Days On days	Num Wells
Sep., 1993	43.327	1261.9	25354.5	1.11754e+06	29.125	32
Oct., 1993	41.9072	1286.9	24936.8	1.11883e+06	30.7083	31
Nov., 1993	43.4303	1301.1	23818.6	1.12013e+06	29.9583	31
Dec., 1993	41.6162	1284.9	23437.2	1.12141e+06	30.875	31
Jan., 1994	41.2173	1274.3	24206.1	1.12269e+06	30.9167	31
Feb., 1994	38.9043	1087.7	22145.9	1.12378e+06	27.9583	31
Mar., 1994	40.6214	1250.8	24964.6	1.12503e+06	30.7917	31
Apr., 1994	39.4685	1170.9	22360.6	1.1262e+06	29.6667	31
May., 1994	38.511	1179.4	21221	1.12738e+06	30.625	31
Jun., 1994	38.676	1149	22990.5	1.12853e+06	29.7083	31
Jul., 1994	37.663	1155	23300.9	1.12968e+06	30.6667	31
Aug., 1994	37.9388	1168.2	27173.2	1.13085e+06	30.7917	31
Sep., 1994	37.8412	1124.2	21957.3	1.13197e+06	29.7083	31
Oct., 1994	37.2767	1141.6	21543	1.13311e+06	30.625	31
Nov., 1994	37.1276	1103	20684.8	1.13422e+06	29.7083	31
Dec., 1994	37.0764	1140.1	23201.9	1.13536e+06	30.75	31
Jan., 1995	37.187	1140.4	23451.8	1.1365e+06	30.6667	31
Feb., 1995	36.8072	1016.8	20529.3	1.13752e+06	27.625	31
Mar., 1995	37.0704	1101.3	16973.4	1.13862e+06	29.7083	31
Apr., 1995	34.6158	1005.3	15646.2	1.13962e+06	29.0417	30
May., 1995	31.1902	951.3	13855.3	1.14057e+06	30.5	28
Jun., 1995	33.3416	941.9	18796.8	1.14151e+06	28.25	31
Jul., 1995	36.2736	1100.3	17416.9	1.14262e+06	30.3333	30
Aug., 1995	35.7275	1088.2	19693.2	1.1437e+06	30.4583	31
Sep., 1995	35.4109	1052	22350.8	1.14476e+06	29.7083	31
Oct., 1995	34.095	1047	22402.3	1.1458e+06	30.7083	31
Nov., 1995	34.6128	1035.5	21820.4	1.14684e+06	29.9167	31
Dec., 1995	32.6263	1001.9	22737.9	1.14784e+06	30.7083	31

94 - 38.2

Total fluid.  
793.7 m<sup>3</sup>/d

95 - 34.2 m<sup>3</sup>/d  
TOTAL = 679.9 m<sup>3</sup>/d  
Δ total fluid: 24.2%  
in past 2 yrs.  
CONSTANT accompanied  
WELL COUNT by accelerated  
production  
decline of  
7.2%/pa.

## PROD. RATES.

03/90 46.4 m<sup>3</sup>/d 1430 - 1/2 -  
'95 MAR 34.2 m<sup>3</sup>/d 1040.2 - 1/2 -  
'95 4TH QU. 33.5 m<sup>3</sup>/d 1028.1 - 1/2 -  
'96 1ST QU. 33.9 m<sup>3</sup>/d 1029.1 - 1/2 -

D = 4.7%/pa. '95 - 12 = 35.4

JAN '96 1074.5

FEB 985.5

MAR 1027.3

APR 1010.5

MAY 1007.2

over. 33.6 m<sup>3</sup>/d

fill in  
column

# Production Report

Group : Daly Unit No. 1  
Well : Daly Unit No. 1 Summary  
: 000000179  
Hist.Data : 05/52-12/95  
Operator :  
Field :

Date : August 7, 1996 2:46:56 pm  
User : DAN  
On Prod : 01/00  
Status : Unknown  
Zone :

## Production Data from January, 1990 to December, 1995

Year	Avg Daily Oil m3/d	Monthly Oil m3	Monthly Water m3	Cum Oil m3	Days On days	Num Wells
Jan., 1990	47.3951	1441.6	25511	1.06225e+06	30.4167	32
Feb., 1990	47.8829	1308.8	22208	1.06356e+06	27.3333	32
Mar., 1990	46.3784	1430	27679	1.06499e+06	30.8333	32
Apr., 1990	45.4391	1327.2	27178	1.06631e+06	29.2083	32
May., 1990	45.4233	1362.7	28499	1.06768e+06	30	32
Jun., 1990	45.6312	1317.6	27659	1.06899e+06	28.875	32
Jul., 1990	45.2354	1364.6	27008.1	1.07036e+06	30.1667	31
Aug., 1990	44.7566	1374.4	28093	1.07173e+06	30.7083	32
Sep., 1990	44.2915	1306.6	26534	1.07304e+06	29.5	32
Oct., 1990	45.2148	1373.4	28033.5	1.07441e+06	30.375	32
Nov., 1990	45.2738	1318.6	26315	1.07573e+06	29.125	31
Dec., 1990	44.6024	1377.1	28673	1.07711e+06	30.875	31
Jan., 1991	43.7618	1347.5	29726	1.07846e+06	30.7917	31
Feb., 1991	42.8371	1192.3	27703	1.07965e+06	27.8333	31
Mar., 1991	44.8555	1373.7	30698.5	1.08102e+06	30.625	32
Apr., 1991	48.6027	1354.8	29419.1	1.08238e+06	27.875	32
May., 1991	45.566	1338.5	30856.8	1.08371e+06	29.375	29
Jun., 1991	44.0378	1282.6	27596	1.085e+06	29.125	32
Jul., 1991	43.1544	1325.2	27855	1.08632e+06	30.7083	31
Aug., 1991	42.4054	1312.8	27950.1	1.08764e+06	30.9583	31
Sep., 1991	39.1937	1041.9	23950	1.08868e+06	26.5833	31
Oct., 1991	40.6111	1247.1	27274	1.08992e+06	30.7083	31
Nov., 1991	44.8156	1337	26737	1.09126e+06	29.8333	31
Dec., 1991	41.7555	1289.2	29466	1.09255e+06	30.875	31
Jan., 1992	41.7854	1284.9	27583	1.09384e+06	30.75	31
Feb., 1992	40.5039	1162.8	26356	1.095e+06	28.7083	31
Mar., 1992	40.3692	1246.4	29877	1.09624e+06	30.875	31
Apr., 1992	42.3909	1236.4	28110	1.09748e+06	29.1667	32
May., 1992	42.7092	1270.6	28776.8	1.09875e+06	29.75	32
Jun., 1992	41.6579	1223.7	30669.4	1.09998e+06	29.375	32
Jul., 1992	39.0187	1198.2	27505.8	1.10117e+06	30.7083	31
Aug., 1992	39.3672	1200.7	28253.7	1.10237e+06	30.5	31
Sep., 1992	37.8379	1097.3	27098.6	1.10347e+06	29	32
Oct., 1992	38.4923	1167.6	28490.8	1.10464e+06	30.3333	32
Nov., 1992	39.3681	1171.2	26420.2	1.10581e+06	29.75	32
Dec., 1992	38.1308	1175.7	28284.9	1.10699e+06	30.8333	32
Jan., 1993	38.8962	1199.3	26910.8	1.10819e+06	30.8333	32
Feb., 1993	37.0529	1020.5	26188.1	1.10921e+06	27.5417	32
Mar., 1993	39.2724	1210.9	28245.3	1.11042e+06	30.8333	32
Apr., 1993	39.0623	1144.2	25110.8	1.11156e+06	29.2917	32
May., 1993	39.1282	1198.3	28494.8	1.11276e+06	30.625	32
Jun., 1993	38.9643	1146.2	26019.9	1.11391e+06	29.4167	32
Jul., 1993	39.1706	1199.6	28195	1.11511e+06	30.625	32
Aug., 1993	38.7967	1173.6	26211	1.11628e+06	30.25	32

90 - 34.2  
Total fluid  
920.2

91 - 38.8

92 - 39.5

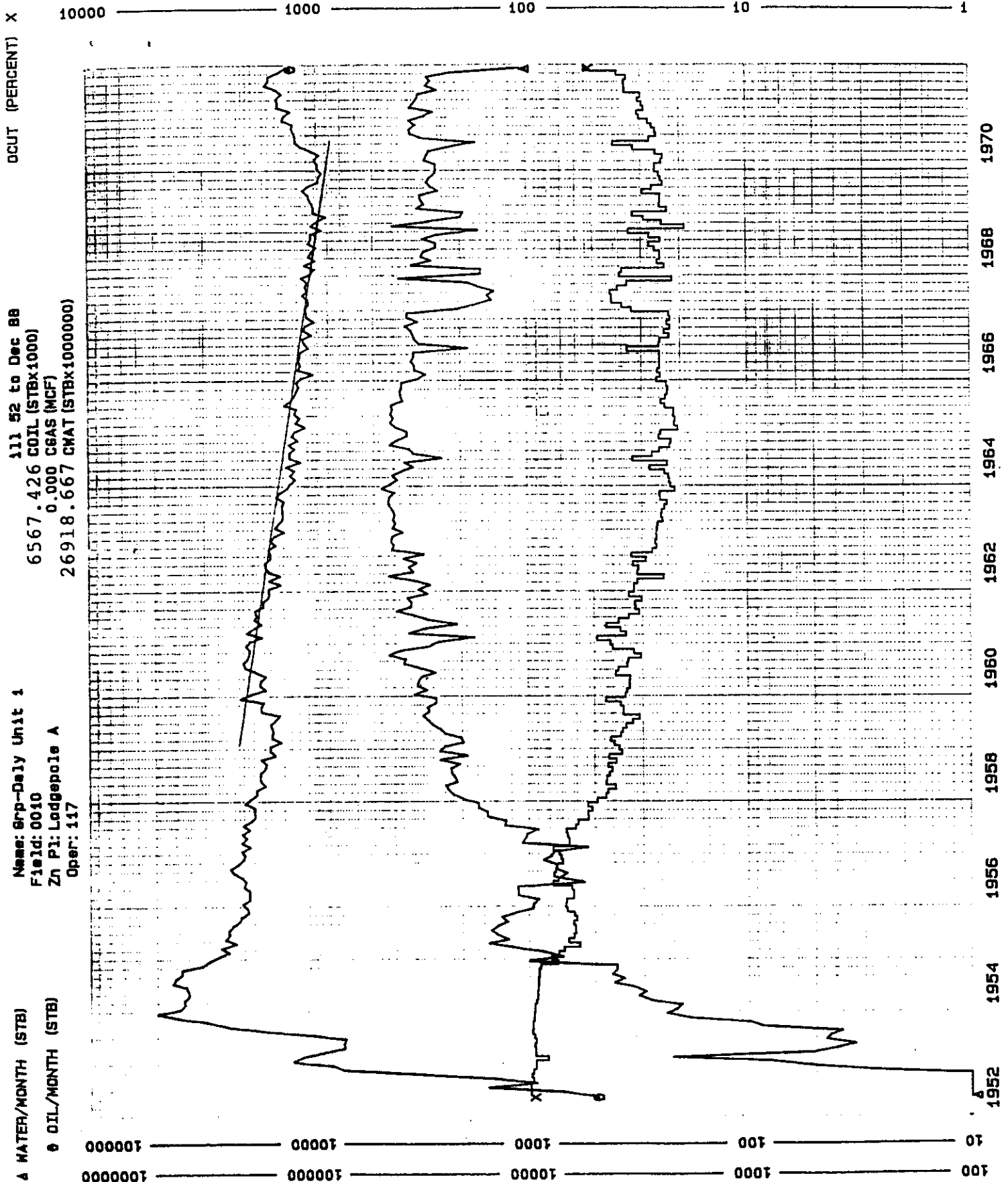
TOTAL  
FLUID  
1037.7 - 2/0

93 - 39.5  
TOTAL FLUID  
896.8 m3/d

TABLE 3.3

DALY UNIT #1  
PREDICTED FUTURE PERFORMANCE - TOTAL UNIT

YEAR	OIL PROD'N (STB/YEAR)	OIL CUM PROD'N (STB)	CALC'D WOR	WATER PROD'N (STB/YEAR)
1988	113,349	6,567,426	11.875	1,346,043
1989	108,362	6,680,775	12.461	1,350,253
1990	103,594	6,789,137	13.047	1,351,611
1991	99,036	6,892,730	13.634	1,350,234
1992	94,678	6,991,766	14.219	1,346,252
1993	90,512	7,086,444	14.802	1,339,800
1994	86,530	7,176,956	15.382	1,331,023
1995	82,722	7,263,486	15.958	1,320,070
1996	79,083	7,346,208	16.528	1,307,093
1997	75,603	7,425,291	17.093	1,292,245
1998	72,276	7,500,894	17.650	1,275,679
1999	69,096	7,573,170	18.200	1,257,549
2000	66,056	7,642,266	18.742	1,238,005
2001	63,150	7,708,322	19.275	1,217,191
2002	60,371	7,771,472	19.798	1,195,253
2003	57,715	7,831,843	20.312	1,172,325
2004	55,175	7,889,558	20.816	1,148,542
2005	52,747	7,944,733	21.310	1,124,029
2006	50,427	7,997,480	21.792	1,098,906
2007	48,208	8,047,907	22.264	1,073,286
2008	46,087	8,096,115	22.724	1,047,277
2009	44,660	8,128,540	23.039	1,028,923



DALY UNIT No. 1  
PRODUCTION HISTORY PLOT

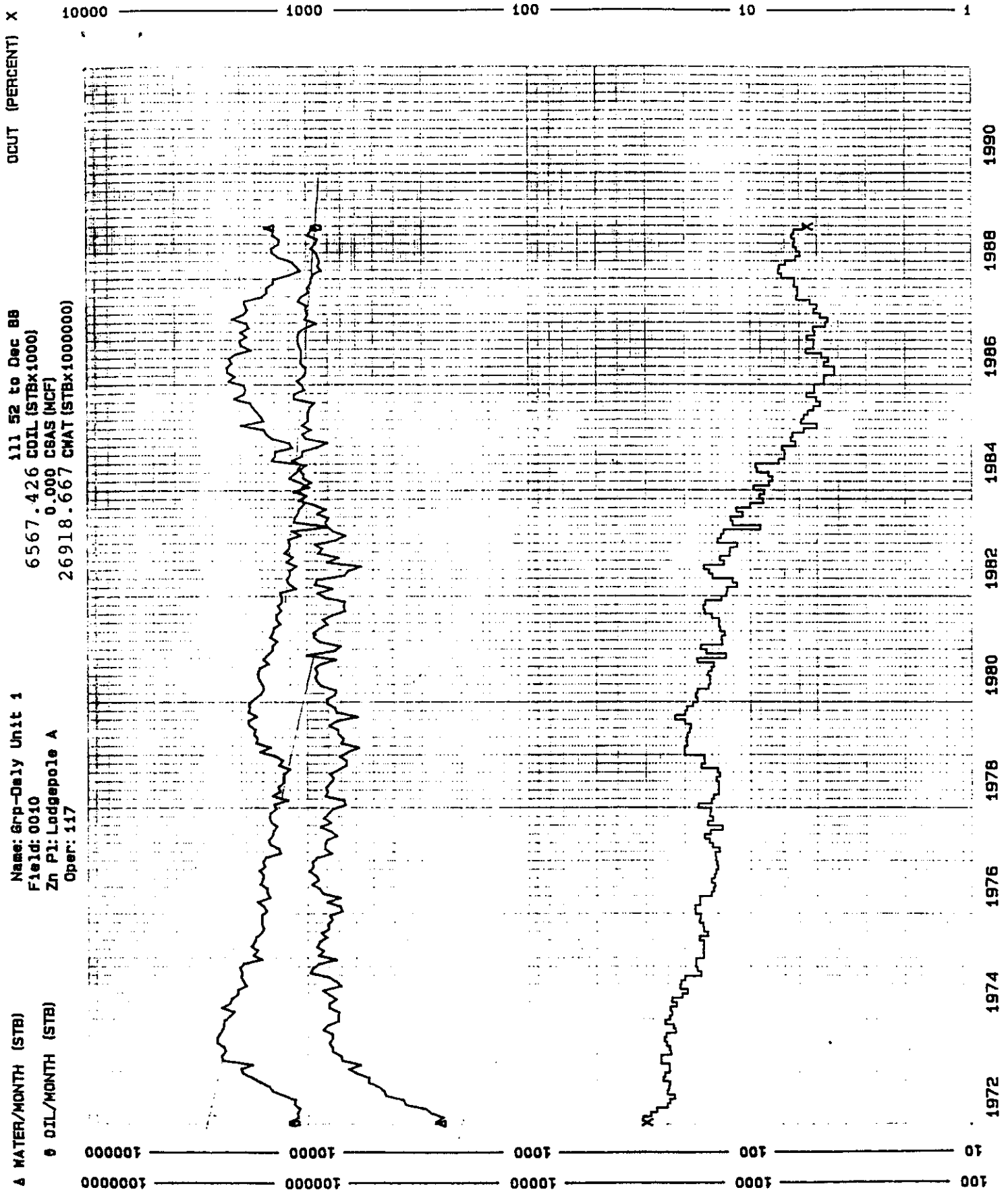


Figure: 5.1 (b)

# Production Report

Group	: Daly Unit No. 1	Date	: August 8, 1996 8:20:08 am
Well	: Daly Unit # 1 INJ	User	: DAN
	: 000000181		
Hist.Data	: 01/69-12/95	On Prod	: 01/00
Operator	:	Status	: Unknown
Field	:	Zone	:

## Production Data from January, 1990 to December, 1995

Year	Month Water Inj m3
Jan., 1990	25511
Feb., 1990	22208
Mar., 1990	27679
Apr., 1990	27178
May., 1990	28649
Jun., 1990	28245
Jul., 1990	27607
Aug., 1990	28169
Sep., 1990	26536
Oct., 1990	28115
Nov., 1990	26344
Dec., 1990	28673
Jan., 1991	29726
Feb., 1991	27703
Mar., 1991	30698
Apr., 1991	29422
May., 1991	30017
Jun., 1991	27735
Jul., 1991	27960
Aug., 1991	26912
Sep., 1991	23950
Oct., 1991	27274
Nov., 1991	26737
Dec., 1991	29473
Jan., 1992	27570
Feb., 1992	26361
Mar., 1992	29891
Apr., 1992	28110
May., 1992	28818
Jun., 1992	28472
Jul., 1992	27606
Aug., 1992	28327
Sep., 1992	27249
Oct., 1992	28576
Nov., 1992	26517
Dec., 1992	28381
Jan., 1993	27002
Feb., 1993	26290
Mar., 1993	28339
Apr., 1993	25249
May., 1993	28588
Jun., 1993	26116
Jul., 1993	24785
Aug., 1993	26219

920.2 m3/d



# Production Report

Group : Daly Unit No. 1  
Well : Daly Unit # 1 INJ  
: 000000181

Date : August 8, 1996 8:20:09 am  
User : DAN

## Production Data from January, 1990 to December, 1995 (cont.)

Year	Month Water Inj m3
Sep., 1993	25328
Oct., 1993	25001
Nov., 1993	23944
Dec., 1993	23789
Jan., 1994	24574
Feb., 1994	22549
Mar., 1994	25223
Apr., 1994	22488
May., 1994	21336
Jun., 1994	23024
Jul., 1994	23484
Aug., 1994	27225
Sep., 1994	21958
Oct., 1994	21578
Nov., 1994	20739
Dec., 1994	23260
Jan., 1995	23507
Feb., 1995	20583
Mar., 1995	17020
Apr., 1995	15695
May., 1995	13903
Jun., 1995	18836
Jul., 1995	17466
Aug., 1995	19742
Sep., 1995	22406
Oct., 1995	22460
Nov., 1995	21881
Dec., 1995	22841

647.5 ~ 16

NVSU #1

- CHEVRON'S PREDICTS  $D = 8.5\%$  (92-96) including 89 infill wells.

$D = 8.5\%$  case rec. reserves (96-2009) =  $639.8 \times 10^3 \text{ m}^3$

- 1996-2012 difference in recovery between Chevron's 10% probability & 90% probability case  
 $526.9 \times 10^3 \text{ m}^3$  to  $692.1 \times 10^3 \text{ m}^3$

Predicted Incremental Recoverable Reserves  $100.8 \times 10^3 \text{ m}^3$  (NEW OIL)

- CHEVRON'S REVISED FORECAST  $D = 8.5\% \text{ pa}$

REVISED RECOVERIES

$D = 8.5\%$   $634.5 \times 10^3 \text{ m}^3$  (INFILL WELLS EXPECTED TO RECOVER AN ADDITIONAL  $5300 \text{ m}^3$ )

2D actually represents 10.3%

10% probability to 90% probability  $521.3 \times 10^3 \text{ m}^3$  to  $687.7 \times 10^3 \text{ m}^3$

-  $D = 8.5\%$  incremental rec. res =  $119.2 \times 10^3 \text{ m}^3$

P.B. predicts  $D = 9.4\% \text{ pa}$  (Oct/91 to Dec/95)

- analysis period corresponds to change in production trend & steepening of decline rate

-  $D = 8.5\% \text{ pa}$  case P.B. calculate rec. reserves  $716.1 \times 10^3 \text{ m}^3$   
greater recovery than Chevron's optimistic forecast

-  $D = 9.4\% \text{ pa}$  case P.B.  $Q_T = 680.4 \times 10^3 \text{ m}^3$   
matches closely with Chevron's optimistic forecast

- using  $D = 9.4\% \text{ pa}$  incremental rec. res. =  $73.3 \times 10^3 \text{ m}^3$

- REVIEW UNIT TOTAL (31-DEC-95)

POSS:  $9,756,503 \text{ L}^3$  INCLUDING INFILL WELLS  
MERAK:  $9,632,230 \text{ L}^3$  NO INFILLS

FAX TO: ULRICH

1 pg.

NVSU #1

DEC/95 9,728,710 m<sup>3</sup> MERAK

DEC/95 9,756,503 m<sup>3</sup> ACTUAL

DATA BETWEEN 1990 - 95.12 ACCURATE

'89 INFILL WELL CUMULATIVE PRODUCTION DEC/95 -

REVISED NVSU #1 TOTAL 9,714,005 EXCLUDING INFILL WELLS

	1996	NVSU #1	PRODUCTION	EXCLUDING	INFILL	WELLS. TOTAL EX. INFILL
1996	UNIT TOTAL	AD-23	10D-23	13C-24	3D-26	
JAN	6732.6	10.4	18.2	0.3	41.5	6662.2
FEB	6260.6	9.8	16.7	0.3	38.8	6195.0
MAR	6740.4	10.4	18.1	0.2	41.5	6670.2
APR	6434.7	9.9	17.4	0.2	39.8	6367.4
MAY	6584.5	10.4	18.1	0.3	41.3	6514.4

NVSU No. 1

Chevron has proposed a most likely decline of 10.3% p.a. based on the unit production trend between 1992-96 excluding production from 1989 infill wells. The company estimates production from the unit from 1996-2011 will total 634.5  $10^3 m^3$ . Chevron estimates production from the unit well average 210.2 m<sup>3</sup>/d in 1996 (excluding '89 infill wells).

Figure # is a plot of the production history from NVSU No. 1. The Branch has matched the unit production history between 1979-1992 with a hyperbolic decline. Since 1993 unit production has dropped rapidly below this trend. Between 1993-95 unit production has declined at 11.4% p.a. The rapid decline coincides with a change in unit operations. Since 1992 injection in the has declined 39%, from 2874 m<sup>3</sup>/d to 1745 m<sup>3</sup>/d. The reduced injection has been accompanied by a 38% drop in total fluid production, from 3167 m<sup>3</sup>/d to 1961 m<sup>3</sup>/d. Oil production over the same period has dropped by 26.2%.

With respect to existing enhanced recovery projects, new oil status has been granted to incremental recoverable reserves that can be reasonably attributed to enhanced recovery project modifications. The Branch believes that reduced injection in NVSU No. 1 has negatively impacted unit production and possibly ultimate recovery from the unit.

Chevron in its 1989 & 1991 applications for infill drilling in NVSU No. 1 submitted production forecasts for the unit. The production forecasts used an exponential decline rate of 6.5% p.a. Chevron's 1989 unit production forecast estimated recoverable reserves between 1996-2011 of 785.8  $10^3 m^3$ , compared to recoverable reserves of 634.5  $10^3 m^3$ .

# Production Report

Group : NVS No. 1 (excluding '89 infill )  
Well : NVS No. 1  
: 000000178

Date : August 7, 1996 1:54:55 pm  
User : DAN

## Production Data from January, 1990 to February, 1996 (cont.)

Year	Avg Daily Oil m3/d	Monthly Oil m3	Monthly Water m3	Cum Oil m3	Days On days	Num Wells
Sep., 1993	286.048	8486.1	74754.1	9.512e+06	29.6667	161
Oct., 1993	280.581	8569.4	77171.5	9.52057e+06	30.5417	161
Nov., 1993	277.578	8200.1	77796.6	9.52877e+06	29.5417	160
Dec., 1993	276.293	8496	81420.5	9.53727e+06	30.75	160
Jan., 1994	270.921	8364.7	87360.9	9.54563e+06	30.875	160
Feb., 1994	270.667	7567.4	84933.8	9.5532e+06	27.9583	159
Mar., 1994	270.133	8351.6	95544.3	9.56155e+06	30.9167	159
Apr., 1994	265.877	7932	90464.6	9.56948e+06	29.8333	159
May., 1994	264.449	8186.9	90820.9	9.57767e+06	30.9583	159
Jun., 1994	260.116	7749.3	84802	9.58542e+06	29.7917	159
Jul., 1994	252.559	7724.1	73473.9	9.59314e+06	30.5833	159
Aug., 1994	249.14	7578	66870.8	9.60072e+06	30.4167	159
Sep., 1994	277.993	7922.8	49891.3	9.60864e+06	28.5	158
Oct., 1994	254.066	7833.7	54251.7	9.61648e+06	30.8333	155
Nov., 1994	251.103	7470.3	55609.7	9.62395e+06	29.75	156
Dec., 1994	245.203	7540	52789.5	9.63149e+06	30.75	156
Jan., 1995	242.309	7451	58458.3	9.63894e+06	30.75	155
Feb., 1995	239.494	6626	50623.6	9.64556e+06	27.6667	155
Mar., 1995	235.958	7255.7	47871.4	9.65282e+06	30.75	156
Apr., 1995	229.751	6863.8	47741	9.65968e+06	29.875	154
May., 1995	230.114	6922.6	55368.4	9.66661e+06	30.0833	155
Jun., 1995	225.695	6676.8	54034.6	9.67328e+06	29.5833	155
Jul., 1995	228.37	6974.8	52072.1	9.68026e+06	30.5417	156
Aug., 1995	221.989	6816.9	50253.8	9.68707e+06	30.7083	153
Sep., 1995	223.193	6649.3	49232.8	9.69372e+06	29.7917	155
Oct., 1995	222.725	6885.9	54753.8	9.70061e+06	30.9167	153
Nov., 1995	221.718	6642.3	56022.2	9.70725e+06	29.9583	153
Dec., 1995	219.563	6724.1	56672.2	9.71398e+06	30.625	152
Jan., 1996	0.477419	14.8	215.7	9.71399e+06	31	1
Feb., 1996	0.475862	13.8	198.8	9.714e+06	29	1

'94 - 258.1 m3/d  
2605.5 m3/d

'95 - 226.0 m3/d  
TOTAL FLUID  
1960.5 m3/d

WELL COUNT  
DROPPED (JAN/91) 7.3%  
EXCLUDING INFILL  
WELLS.

- decline '93-95 11.4% pa  
- '93-95 34.1% decline  
total fluid

ULRICH - I HAVE REVIEWED THE NVSU #1 PLUT (EX. INFILL WELLS)

AND YOUR CUM. OIL  $9.63 \times 10^6$  DOES NOT MATCH  
WITH MY VALUE  $9.71 \times 10^6$ . I BELIEVE YOU MAY  
HAVE DELETED MORE THAN THE FOLLOWING WELLS  
FROM THE DATABASE

9D-23 15D-23  
10D-23 13C-24  
11D-23 1D-26  
14D-23 2D-26  
3D-26.

### AVERAGE PROD

'95 226 m3/d  
4TH QU 95 220.1 m3/d  
1ST QU 96 214.6 m3/d  
96-01 + 96-05 213.2 m3/d.

# Production Report

Group : NVS No. 1 (excluding '89 infill)  
Well : NVS No. 1  
 : 000000178  
Hist.Data : 01/53-02/96  
Operator :  
Field :

Date : August 7, 1996 1:54:54 pm  
User : DAN  
On Prod : 01/00  
Status : Unknown  
Zone :

## Production Data from January, 1990 to February, 1996

Year	Avg Daily Oil m3/d	Monthly Oil m3	Monthly Water m3	Cum Oil m3	Days On days	Num Wells
Jan., 1990	346.883	10652.2	80324.6	9.09174e+06	30.7083	164
Feb., 1990	345.55	9603.4	73549.6	9.10135e+06	27.7917	164
Mar., 1990	339.8	10434.7	84750.8	9.11178e+06	30.7083	164
Apr., 1990	339.743	9994.1	83048.7	9.12178e+06	29.4167	164
May., 1990	334.559	10120.4	88204.2	9.1319e+06	30.25	161
Jun., 1990	331.677	9660.1	80675.9	9.14156e+06	29.125	164
Jul., 1990	350.433	10513	76428.4	9.15207e+06	30	164
Aug., 1990	344.03	10234.9	78712.4	9.1623e+06	29.75	164
Sep., 1990	346.636	10240.2	80131.7	9.17255e+06	29.5417	164
Oct., 1990	344.325	10588	84746.9	9.18313e+06	30.75	164
Nov., 1990	342.262	10182.3	86623.3	9.19332e+06	29.75	164
Dec., 1990	339.925	10452.7	82760.1	9.20377e+06	30.75	164
Jan., 1991	335.057	10303	92219.9	9.21407e+06	30.75	164
Feb., 1991	338.068	9353.2	83004.4	9.22342e+06	27.6667	164
Mar., 1991	332.327	10232.9	89370.2	9.23366e+06	30.7917	163
Apr., 1991	328.361	9727.7	87220.3	9.24339e+06	29.625	163
May., 1991	317.945	9750.3	88964.6	9.25314e+06	30.6667	161
Jun., 1991	324.94	9572.2	78670.6	9.26271e+06	29.4583	163
Jul., 1991	327.589	10032.4	87378.2	9.27274e+06	30.625	164
Aug., 1991	325.738	9989.3	78473.5	9.28273e+06	30.6667	164
Sep., 1991	325.699	9703.1	78756.9	9.29243e+06	29.7917	164
Oct., 1991	323.873	9959.1	85638.5	9.30239e+06	30.75	164
Nov., 1991	319.415	9502.6	79344.1	9.31189e+06	29.75	164
Dec., 1991	322.321	9924.8	89708.5	9.32182e+06	30.7917	164
Jan., 1992	319.286	9698.3	81551.4	9.33152e+06	30.375	163
Feb., 1992	316.225	9078.3	85623	9.3406e+06	28.7083	163
Mar., 1992	312.398	9580.2	94918.2	9.35018e+06	30.6667	163
Apr., 1992	310.202	9176.8	88018.3	9.35935e+06	29.5833	163
May., 1992	326.986	9428.1	88860.3	9.36878e+06	28.8333	164
Jun., 1992	326.314	9109.6	90540.6	9.37789e+06	27.9167	164
Jul., 1992	330.371	9525.7	83894.7	9.38742e+06	28.8333	164
Aug., 1992	325.177	9362.4	88527.5	9.39678e+06	28.7917	164
Sep., 1992	327.248	9149.3	79609.8	9.40593e+06	27.9583	164
Oct., 1992	325.08	9481.5	88037.6	9.41541e+06	29.1667	163
Nov., 1992	304.938	9071.9	87806.9	9.42448e+06	29.75	163
Dec., 1992	301.005	9168.1	86584.2	9.43365e+06	30.4583	163
Jan., 1993	302.615	9166.7	91602.2	9.44282e+06	30.2917	163
Feb., 1993	302.154	7969.3	82557.4	9.45078e+06	26.375	162
Mar., 1993	299.456	9133.4	89862.4	9.45992e+06	30.5	161
Apr., 1993	294.748	8744.2	83069.2	9.46866e+06	29.6667	161
May., 1993	293.248	8895.2	85198.5	9.47756e+06	30.3333	161
Jun., 1993	289.861	8490.5	75910.7	9.48605e+06	29.2917	161
Jul., 1993	285.665	8736.6	82395.1	9.49478e+06	30.5833	161
Aug., 1993	286.615	8729.8	80503.3	9.50351e+06	30.4583	161

'90 336.1 m3/DD  
total fluid  
3020.9 m3/D

'91 323.4 m3/DD  
3114.5 m3/D

'92 306.4 m3/DD  
total fluid  
3166.6

'93 283.9 m3/DD  
total fluid  
2975 m3

90-93 total fluid  
dropped 1.5%  
prod decline 5.6 p.a

# OTHER COMMENTS

1989 infill application - (bare) historical production -  
decline estimated by Chevron @ 6.5% pa.

'96	212.4
97	198.6
98	185.69
99	173.62
2000	162.33
01	151.78
02	141.92
03	132.67
04	124.07
05	116.00
06	108.46
07	101.41
08	94.8
09	88.66
10	82.89
11	77.51

REC.  
RES 785.8 10<sup>3</sup>L<sup>3</sup>

1991 infill application -  
prod. forecast used  
6.6% p.a. (including  
89 infills)

REC Reserves under  
this forecast  
1996 - 2011 - 878 10<sup>3</sup>L<sup>3</sup>  
(96 prod 235-2011)

ULRICH

ATTACHED IS CHEVRON'S APPLICATION FOR DETERMINATION OF BASE DECLINE RATES FOR NVSU #1, DALY UNIT #1 & 3 AND ROUTLEDGE UNIT #1. PLEASE DETERMINE A BASE DECLINE RATE AND BASE CASE PRODUCTION FORECAST FOR 10 YEARS SIMILAR TO THE WORK I DID FOR DALY UNIT #3 (YOU HAVE THE FILE). TENTATIVE DEADLINE JUN 27/96.

## NVSU #1

CHEVRON HAS USED A CONSERVATIVE, MOST LIKELY & OPTIMISTIC FORECAST EACH COVERING A CERTAIN TIME FRAME. I THINK THE BASE CASE FORECAST WE USE SHOULD UTILIZE AS LONG A PRODUCTION HISTORY AS POSSIBLE.

IN 1989 CHEVRON DRILLED (9) 8 ha INFILL WELLS AND CONVERTED 3 WELL TO INJECTION.

### INFILL WELLS

2141.4	9D-23-11-26	✓
5608.2	10D-23-11-26	✓
934.4	11D-23-11-26	ABD. ✓
112.4	14D-23-11-26	ABD. ✓
229.1	15D-23-11-26	ABD. ✓
1804.6	13C-24-11-26	✓
486.5	1D-26-11-26	ABD ✓
225.	22D-26-11-26	ABD ✓
3,186.2	3D-26-11-26	✓

### CONVERSIONS

15-23-11-26
1-26-11-26
2-26-11-26



THE (4) RETAINING NON-ABANDONED INFILL WELLS ARE CLASSIFIED AS NEW OIL WELLS AND PRODUCTION FROM THESE WELLS ALREADY QUALIFIES FOR NEW OIL STATUS. THEREFORE WHEN CONDUCTING YOUR~~SE~~ ANALYSIS EXCLUDE ALL 1989 INFILL WELLS FROM THE PRODUCTION FORECAST.

I SUGGEST WHEN ANALYZING THE BASE HISTORICAL PRODUCTION DECLINE WE DO IT BOTH MANUALLY & AUTOMATICALLY, USING MERAK. I WOULD LIKE TO DO EACH UNIT ANALYSIS COMPLETE IT AND DISCUSS THE RESULTS WITH BOB AND CHEVRON. I WOULD ALSO LIKE THE WHOLE REVIEW COMPLETED BY JUNE 27TH.



PS. MORE COMMENTS TO FOLLOW.

NOTE: I'VE ALSO INCLUDED COPIES OF NVSU #1  
PRODUCTION FORECASTS SUBMITTED BY  
CHEVRON IN 1989 & 1991

TABLE 3

1989-01 start up  
 Peak production is equal to maximum original production  
 Water breakthrough occurs after one year  
 Production decline: project base: 5.8%/year  
                           unit base: 6.5%/year  
                           infill: 15.0%/year

NORTH VIRDEN SCALLION UNIT #1  
 PRODUCTION FORECAST

	REDUCED SPACING PROJECT				TOTAL UNIT		% NEW OIL
	BASE	INFILL	WF	INCREMENT	BASE	INFILL	
	(m3/d)	(m3/d)	(m3/d)	(m3/d)	(m3/d)	(m3/d)	(%)
1989	23.00	61.00	0.00	38.00	340.00	378.00	16.14
1990	21.67	56.43	13.00	47.76	317.90	365.66	15.43
1991	20.41	47.96	26.00	53.55	297.24	350.79	13.67
1992	19.23	40.77	22.10	43.64	277.92	321.56	12.68
1993	18.11	34.65	18.78	35.33	259.85	295.18	11.74
1994	17.06	29.45	15.97	28.36	242.96	271.32	10.86
1995	16.07	25.04	13.57	22.54	227.17	249.71	10.03
1996	15.14	21.28	11.54	17.68	212.40	230.08	9.25
1997	14.26	18.09	9.81	13.63	198.60	212.23	8.52
1998	13.43	15.38	8.34	10.28	185.69	195.96	7.85
1999	12.65	13.07	7.08	7.50	173.62	181.12	7.22
2000	11.92	11.11	6.02	5.21	162.33	167.54	6.63
2001	11.23	9.44	5.12	3.33	151.78	155.11	6.09
2002	10.58	8.03	4.35	1.80	141.92	143.71	5.58
2003	9.96	6.82	3.70	0.56	132.69	133.25	5.12
2004	9.39	5.80	3.14	-0.44	124.07	123.62	4.69
2005	8.84	4.93	2.67	-1.24	116.00	114.76	4.29
2006	8.33	4.19	2.27	-1.87	108.46	106.59	3.93
2007	7.85	3.56	1.93	-2.35	101.41	99.06	3.60
2008	7.39	3.03	1.64	-2.72	94.82	92.10	3.29
2009	6.96	2.57	1.39	-2.99	88.66	85.66	3.00
2010	6.56	2.19	1.19	-3.19	82.89	79.71	2.74
2011	6.18	1.86	1.01	-3.31	77.51	74.19	2.51
2012	5.82	0.00	0.86	-4.96	72.47	67.50	0.00
2013	5.48	0.00	0.73	-4.75	67.76	63.00	0.00
2014	5.16	0.00	0.62	-4.55	63.35	58.81	0.00
2015	4.86	0.00	0.53	-4.34	59.24	54.90	0.00
2016	4.58	0.00	0.45	-4.14	55.39	51.25	0.00
2017	4.32	0.00	0.38	-3.94	51.79	47.85	0.00
2018	4.07	0.00	0.32	-3.74	48.42	44.68	0.00
2019	3.83	0.00	0.27	-3.56	45.27	41.72	0.00
2020	3.61	0.00	0.23	-3.37	42.33	38.95	0.00
TOTAL (m3)	123351	155721	67529	99899	1686987	1786886	
OOIP (E3 m3)	2920.6	1161.7	1758.9				
SHARE OF BASE PROD (m3)		67720	55631				
INCREMENTAL PROD (m3)		88001	11898				
(%)		7.58	0.68				

FIGURE 4

PERFORMANCE OF NVSU NO.1 WATERFLOOD

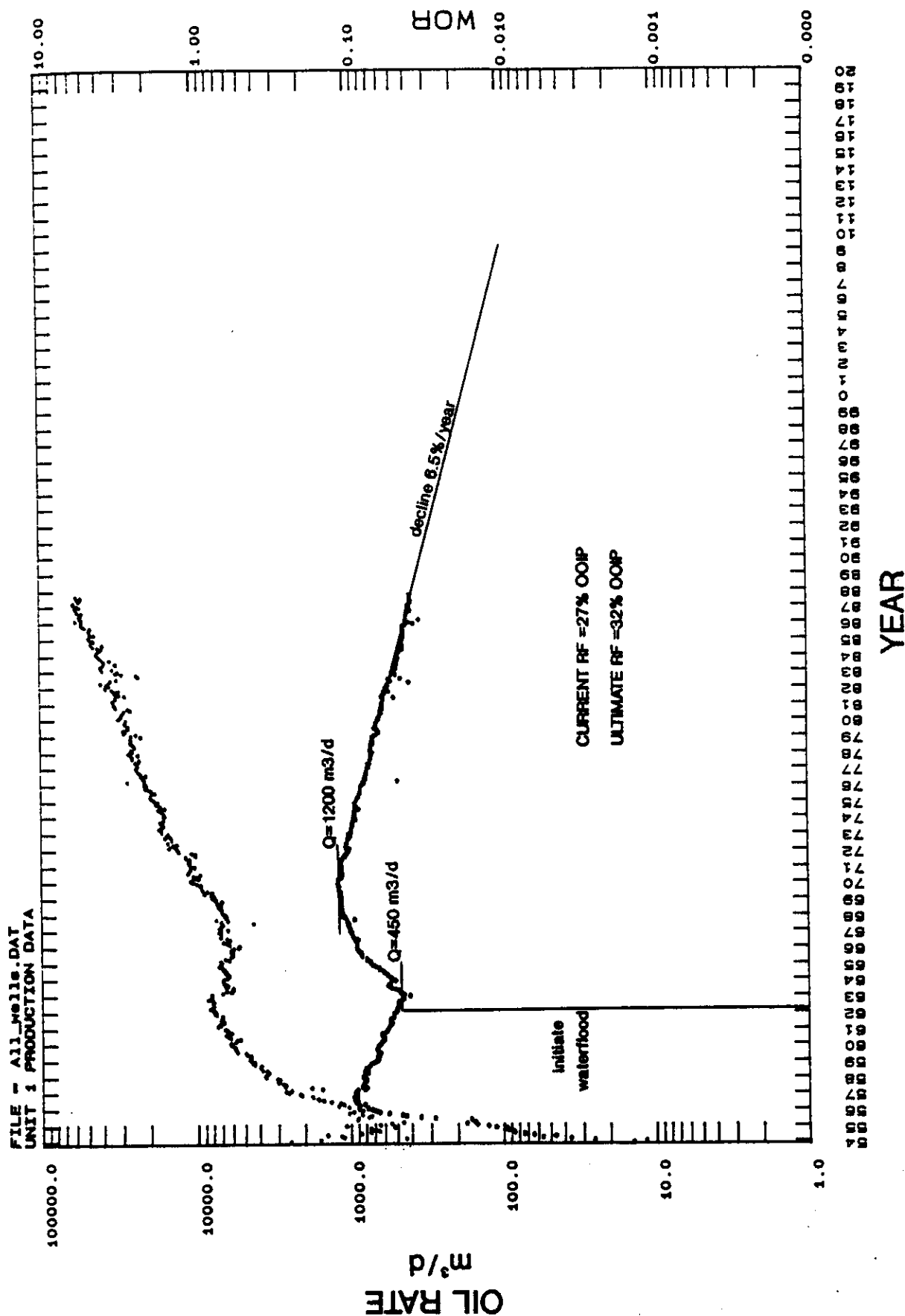


FIGURE 9

1989

# NORTH VIRDEN SCALLION UNIT #1

PROJECT AREA PRODUCTION FORECAST

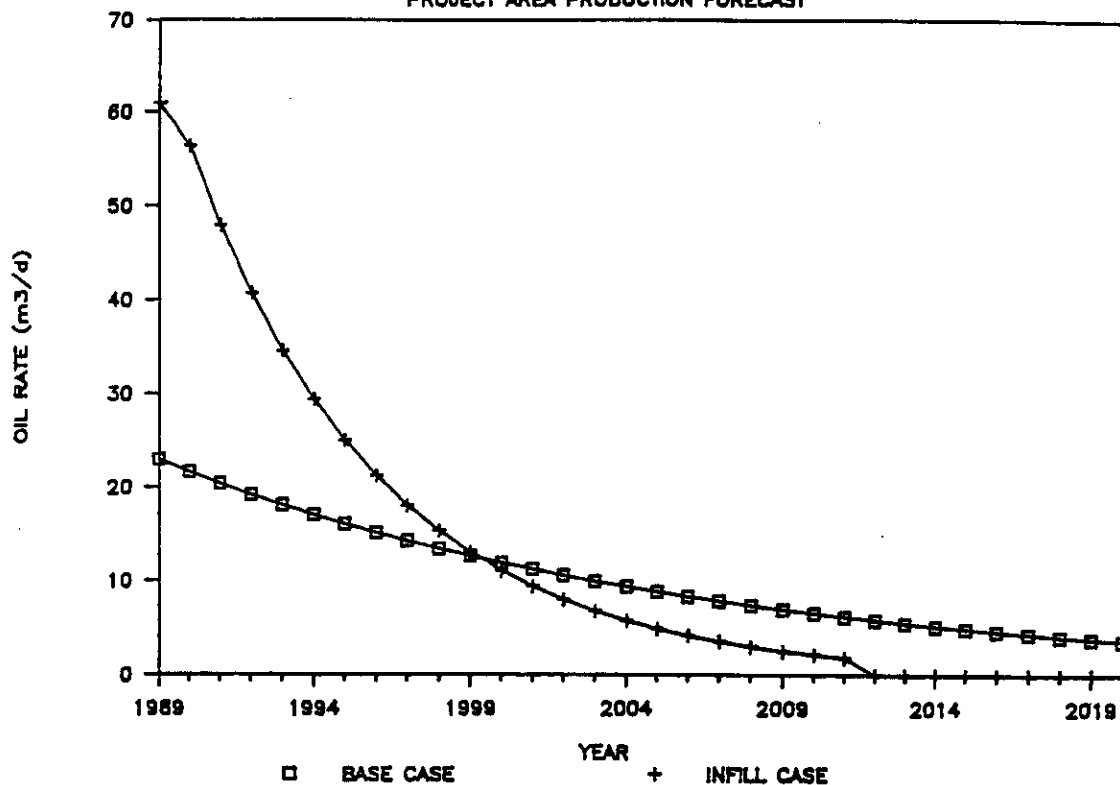
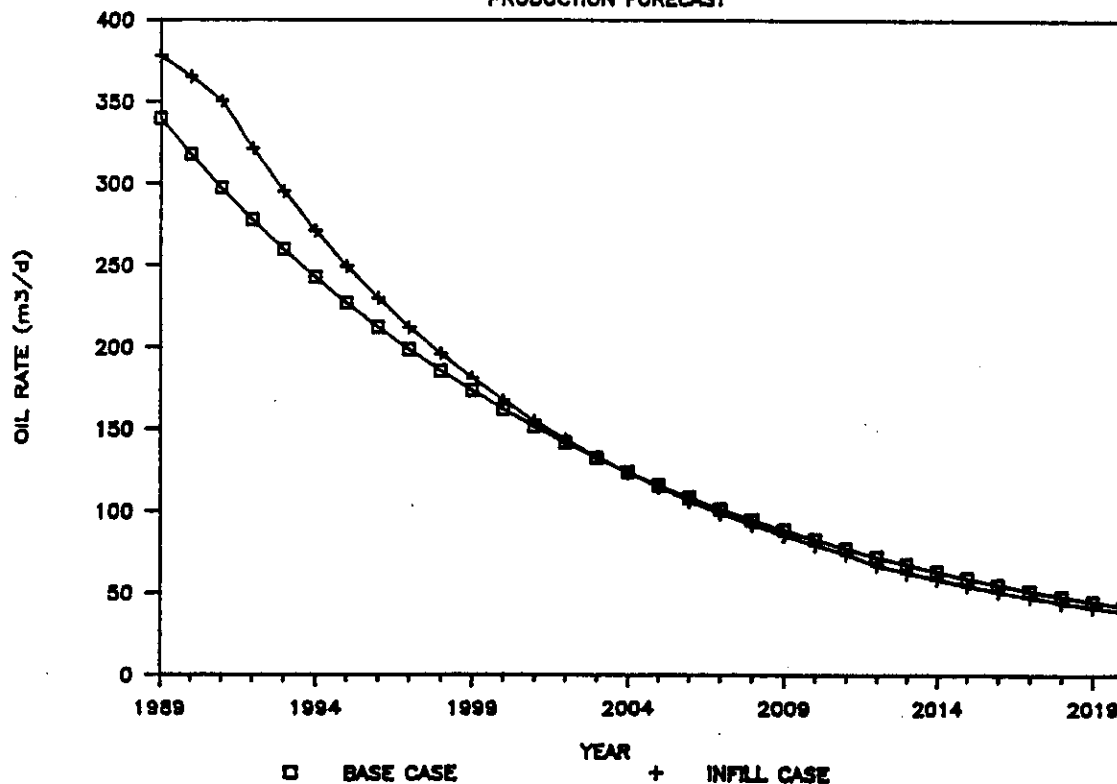


FIGURE 10

# NORTH VIRDEN SCALLION UNIT #1

PRODUCTION FORECAST



CASE 3.3(a) see Board  
determining letter

NORTH VIRDEN SCALLION UNIT #1

REDUCED SPACING FORECASTS FOR ENTIRE UNIT

SENSITIVITY CASE: 100% INCREMENTAL OIL 74000 m<sup>3</sup>

91-08-02

INCLUDES

Production  
From 1989

INFILL  
WELLS

YEAR	BASE CASE (E3M3/YEAR)	UNIT % NEW OIL	INFILL CASE (E3M3/YEAR)	UNIT % NEW OIL
1992	309.6	113	117	3.90
1993		105	110	4.10
1994		99	103	4.15
1995		92	96	4.20
1996		86	90	4.25
1997		81	84	4.31
1998		76	79	4.36
1999		71	74	4.42
2000		66	69	4.48
2001		62	65	4.54
2002		58	61	4.61
2003		54	57	4.67
2004		51	53	4.74
2005		47	50	4.81
2006		44	47	4.85
2007		41	44	4.95
2008		39	41	5.03
2009		36	38	5.11
2010		34	36	5.19
2011		32	33	5.27
2012		30	31	5.35
2013		28	29	5.44
2014		26	27	5.53
2015		24	26	5.62
2016		23	24	5.72
2017		21	23	5.82
2018		20	21	6.02
2019		19	20	6.13
2020		17	19	6.24
2021		16	17	6.35
2022		15	16	6.46
sum		1526		1600

INFILL  
PRODUCTION  
(10<sup>3</sup> L<sup>3</sup>)

4.56

4.51

4.27

4.15

4.20

3.83

3.62

3.44

3.27

3.09

2.95

2.81

2.66

2.51

2.41

2.28

2.18

2.06

1.94

1.87

1.74

1.66

1.58

1.49

1.46

1.37

1.34

1.26

1.23

1.19

1.08

1.03

NOTE: MUST BE REDUCED

53,000 m<sup>3</sup> FROM

BASE CASE (0.214)

THIS ASSUMES

EXISTING WELLS

RECOVER ONLY

3/4 OF THEIR

ESTIMATED

ROTI. REC. RES.

IS AND SHOULD BE

ESSENTIAL UNCHANGED

FROM INFILL CASE (0.214)

NOTE: CHEVRON ASSUMES WELLS PRODUCE

350 DAYS PER YEAR

NOTE: 53400 m<sup>3</sup>

REN. REC. RESERVES  
CHEVRON ESTIMATES WILL  
BE DRAINED FROM EXISTING  
WELLS BY INFILL  
WELLS

NWSU #1

① SET-UP UNIT WBOUS IN GROUP FILE ~~IN~~ TIERATIC  
PALETTE ~~8~~ (TO VERIFY UNIT WBOUS)

② <sup>UNIT</sup> EVALUATE, DECLINE

- HARMONIC, EXPONENTIAL, HARMONIC
- MANUAL & USING PTDB
- > DEVELOP 10, 50, 90% probability base case forecasts ②

③ PROFILE MODIFICATION - NO SPECIFIC APPROVAL REQ'D.

- CURRENT INJ VOLUMES + INJ ZONE (PROFILE?), VRR
- PERFORMANCE OF PRODUCERS WITHIN INJ. PATTERN
- POST-POLYMER INJ. TARGET VOLUME & TARGET ZONE
- PLANS FOR RUNNING INJ PROFILE LOG.
- ESTIMATED PROD. FORECAST.

④ INJECTOR CONVERSION (3)

- 1-28-11-26 on 1B-28-11-26  
~~which was~~
- 4-27-11-26 or 4B-27-11-26
- 4-25-11-26 well is at edge of Unit, see the mineral owner & lesson of 6-25 (4) also participants in the unit, no cumulative rights issues.
- need proposed conversion program in form of an application for approval of well operation
- pressure survey data, injection pattern
- target injection zones, ~~BOIP~~ & ROIP, proposed injection rate & pressure
- proposed VRR, fill appl<sup>n</sup> to bettering cond.

A summary

- current withdrawal rates, location of recent injection support

## ⑤ H2 RE-ENTRIES

- 13-15-11-26 proposed well design, TVD target, h<sub>2</sub> length, h<sub>2</sub> orientation
- dist. from offsetting producers. (100 m. preferred)
- 12-34-11-26 - more than 100 m from unit boundary.
- H<sub>2</sub> producers. part of i-j. conversion pattern.

## H2 INJECTORS.

- 6-26-11-26 < plans to re-enter abd. producers in 6-26 i-j. pattern >
- see injection conversion comments.

## ⑥ LATEST TAPPLING ON FILE

- 1989 infill project post-mortem.

9D-23 7-26 •

10D-23 •

11D-23 +

12D-23 +

15D-23 +

13C-24 •

1D-26 +

2D-26 +

3D-26 •

OOIP 100 000 m<sup>3</sup>  
or 11000 m<sup>3</sup>/well.

- consider wells in Sec. 21, 22, 27 & 28 drilled 1974 & 78

- analogy conversion <sup>(1986)</sup> of 16C-22 to W1W 8ha 5 spot

- updated pressure data

- METHODOLOGY FOR Royalty/Tax calculations co-ordinate with Carol I. & II.

- facilities changes.

- underbalanced H<sub>2</sub> drilling program.

- injection metering accuracy.

- injection targets

- inj. press.

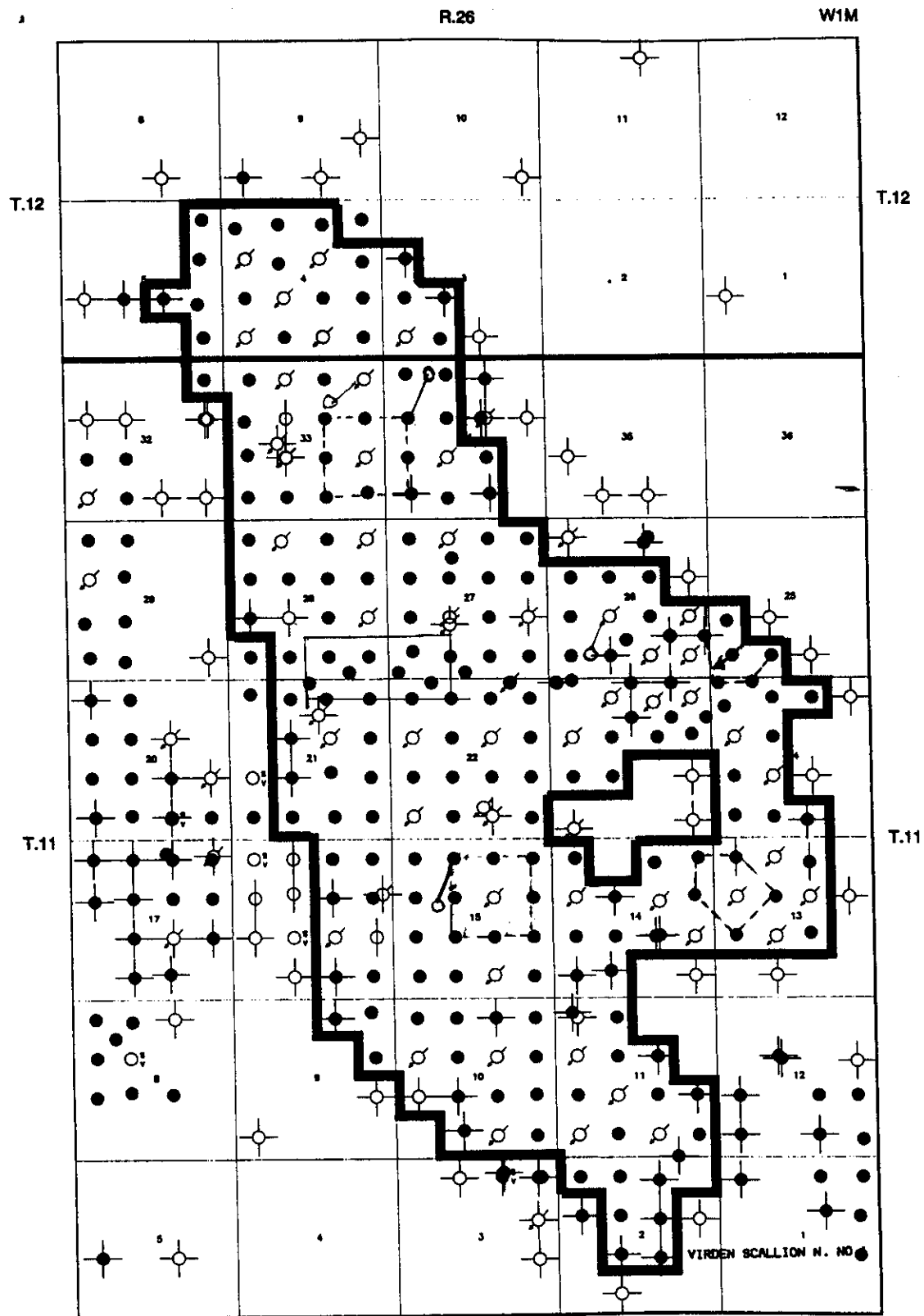
- production measurement - net oil computer

- 1991 infill project involving 3 wells denied  
denied due large  
acceleration component

7A-21, 5A-27  
† 1A-4-12-26



FIGURE 2



Map scale 1:63 360

March 1995

Virden, Manitoba

Scallion Unit No. 1

# Production Report

Group	:	NVS No. 1	Date	:	August 8, 1996 9:39:24 am
Well	:	NVSU #1 INJ	User	:	DAN
	:	000000183			
Hist.Data	:	01/57-12/95	On Prod	:	01/00
Operator	:		Status	:	Unknown
Field	:		Zone	:	

## Production Data from January, 1990 to December, 1995

Year	Month Water Inj m3
Jan., 1990	82438.3
Feb., 1990	74872.9
Mar., 1990	86086.3
Apr., 1990	84059.2
May., 1990	89152.7
Jun., 1990	82723.4
Jul., 1990	77547
Aug., 1990	78821
Sep., 1990	80787.7
Oct., 1990	86815.9
Nov., 1990	87547.8
Dec., 1990	84068
Jan., 1991	93437.1
Feb., 1991	84516.5
Mar., 1991	90889.8
Apr., 1991	88806.7
May., 1991	89299.8
Jun., 1991	79350.3
Jul., 1991	87694.1
Aug., 1991	79049.6
Sep., 1991	79117.7
Oct., 1991	85950.6
Nov., 1991	80497.6
Dec., 1991	91170.3
Jan., 1992	88601.2
Feb., 1992	86127.2
Mar., 1992	95018.2
Apr., 1992	88436.5
May., 1992	89279.5
Jun., 1992	89349.7
Jul., 1992	84089.1
Aug., 1992	88475.7
Sep., 1992	79519.8
Oct., 1992	87809.3
Nov., 1992	87883
Dec., 1992	87347.9
Jan., 1993	91826.3
Feb., 1993	83021.7
Mar., 1993	89999.8
Apr., 1993	83324.4
May., 1993	86547
Jun., 1993	78538.2
Jul., 1993	82515.9
Aug., 1993	83991.8

2421.3 m<sup>3</sup>/d

2574 m<sup>3</sup>/d

2503  
2196 m<sup>3</sup>/d

# Production Report

Group : NVS No. 1  
Well : NVSU #1 INJ  
: 000000183

Date : August 8, 1996 9:39:25 am  
User : DAN

## Production Data from January, 1990 to December, 1995 (cont.)

Year	Month Water Inj m3
Sep., 1993	79319.4
Oct., 1993	76402.9
Nov., 1993	77937.4
Dec., 1993	81663.4
Jan., 1994	87957.8
Feb., 1994	85397.8
Mar., 1994	96032.1
Apr., 1994	90906
May., 1994	93527.9
Jun., 1994	84897.2
Jul., 1994	73571.4
Aug., 1994	66736.5
Sep., 1994	50042.4
Oct., 1994	55176.8
Nov., 1994	55427.8
Dec., 1994	52179.6
Jan., 1995	58597
Feb., 1995	50721
Mar., 1995	47907.4
Apr., 1995	47534.2
May., 1995	56889.8
Jun., 1995	52381
Jul., 1995	51678.7
Aug., 1995	50080.5
Sep., 1995	53681.3
Oct., 1995	54795.7
Nov., 1995	56077.2
Dec., 1995	56627.8

2443 m3/d

1745 m3/d