STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. Box 2088
Santa Fe, New Mexico 87501

Adopted 3-1-84
Side 1

EXHIBIT #1

APPLICATION FOR CLASSIFICATION AS HARDSHIP GAS WELL

Operator Yates Petroleum Corporation Contact Party Jim Brown

Address 105 South 4th Street, Artesia, NM 88210 Phone No. 505-748-1471

Lease Mescal "SE" Fed Well No. 1 UT C Sec. 18 TWP 21S RGE 22E

Pool Name Little Box Canyon Morrow Minimum Rate Requested 200 MSCFD

Transporter Name El Paso Natural Gas Company Purchaser (if different) Same

Are you seeking emergency "hardship" classification for this well? _____ yes X no

Applicant must provide the following information to support his contention that the subject well qualifies as a hardship gas well.

1) Provide a statement of the problem that leads the applicant to believe that "underground waste" will occur if the subject well is shut-in or is curtailed below its ability to produce. (The definition of underground waste is shown on the reverse side of this form)

2) Document that you as applicant have done all you reasonably and economically can do to eliminate or prevent the problem(s) leading to this application.

   a) Well history. Explain fully all attempts made to rectify the problem. If no attempts have been made, explain reasons for failure to do so.

   b) Mechanical condition of the well(provide wellbore sketch). Explain fully mechanical attempts to rectify the problem, including but not limited to:

      i) the use of "smallbore" tubing; ii) other de-watering devices, such as plunger lift, rod pumping units, etc.

3) Present historical data which demonstrates conditions that can lead to waste. Such data should include:

   a) Permanent loss of productivity after shut-in periods (i.e., formation damage).

   b) Frequency of swabbing required after the well is shut-in or curtailed.

   c) Length of time swabbing is required to return well to production after being shut-in.

   d) Actual cost figures showing inability to continue operations without special relief

4) If failure to obtain a hardship gas well classification would result in premature abandonment, calculate the quantity of gas reserves which would be lost

5) Show the minimum sustainable producing rate of the subject well. This rate can be determined by:

   a) Minimum flow or "log off" test; and/or

   b) Documentation of well production history (producing rates and pressures, as well as gas/water ratio, both before and after shut-in periods due to the well dying, and other appropriate production data).

6) Attach a plat and/or map showing the proration unit dedicated to the well and the ownership of all offsetting acreage.

7) Submit any other appropriate data which will support the need for a hardship classification.

8) If the well is in a prorated pool, please show its current under- or over-produced status.

9) Attach a signed statement certifying that all information submitted with this application is true and correct to the best of your knowledge; that one copy of the application has been submitted to the appropriate Division district office (give the name) and that notice of the application has been given to the transporter/purchaser and all offset operators.

YATES PETROLEUM CORPORATION
Case No. 9031
12/17/86 Examiner Hearing
Exhibit No. 1

Attachment to Application for

Classification as Hardship Gas Well

Yates Petroleum Corporation is not seeking emergency "hardship" classification for this well because the gas transporter, El Paso Natural Gas Company, has agreed verbally to take gas at the minimum rate requested while this application is being processed.

The following information is provided as evidence that the Mescal "SE" Federal #1 qualifies as a hardship gas well.

1) Provide a statement of the problem that leads the applicant to believe that "underground waste" will occur if the subject well is shut-in or is curtailed below its ability to produce.

Underground waste will occur by two mechanisms: a) gas will be vented to the atmosphere, and b) reserves will be lost due to premature abandonment.

Gas Venting

Production characteristics of this well and other wells in the same pool indicate that the reservoir produces by a water drive mechanism. Beginning in November of 1985, the pipeline company limited gas takes from this well to one day per month. For the first seven months since then, the fluid level in the tubing was low enough that the well kicked off flowing on its own, when it was brought on line for its one day of production each month. However, beginning on June 28, 1986, the tubing pressure at the surface was only 90 psig, indicating that significant water encroachment had occurred. Gas was vented to the atmosphere in an unsuccessful attempt to unload the water. Soap sticks were dropped into the well, and the well was vented overnight, and again, the well did not unload. The well was then shut in for 48 hours for pressure buildup, but the well was dead. The well did not produce in June. After another unsuccessful attempt to blow the well down on July 28th, a swab unit was brought in on July 29th. After the fourth swab run, the well kicked off flowing. The well vented to the atmosphere 24 hours, flowing approximately 5 million cubic feet of gas to unload approximately 400 barrels of water to the pit. Yates Petroleum sold 3.9 million cubic feet of gas before shutting the well in again. On August 15th through 18th the well was vented to the atmosphere in another unsuccessful attempt to unload the fluid. On September 26th through October 1st, the well was blown down to atmosphere, two soap sticks were dropped, and the well vented to atmosphere for 48 hours in another unsuccessful attempt to bring the well online. The well was shut in for pressure buildup, and the surface pressure only built up to 100 psig. The well has not produced since August 2nd. In summary, since June 28th, far more gas has been vented to atmosphere than has been sold.

Lost Reserves

If the well were allowed to produce steadily, the remaining reserves would be 5 billion cubic feet, by material-balance calculations. The well is presently beyond its economic limit, due to the curtailment imposed by the present market conditions. Net revenue is approximately $1250 per month, while operating cost is about $1350 per month. Thus, under the current hardship conditions, 5 billion cubic feet of reserves will be lost, due to premature abandonment.

2) Document that you as applicant have done all you reasonably and economically can do to eliminate or prevent the problem(s) leading to this application.

a) Well history. Explain fully all attempts made to rectify the problem. If no attempts have been made, explain reasons for failure to do so.

The Mescal "SE" Federal #1 was spudded on 11-30-81 and completed on 2-3-82 for an initial potential of 8750 MSCFD from the Morrow formation through perforations from 8129' to 8134'. The well began producing on 12-14-82, and has produced 1.63 BCF of gas, 3187 barrels of condensate, and 35,055 barrels of water, as of September 1, 1986.

The well began producing water in September of 1983. In November of 1985, the pipeline company curtailed production to one day per month for lease protection. From September, 1983 through November, 1985, the water production has climbed steadily from 2 barrels of water per million cubic feet of gas to 86 barrels of water per million cubic feet of gas. Beginning on June 28, 1986, the well would no longer unload itself of water. As described above in question #1, the well was blown down, soap sticks were dropped, and finally, a swab unit was brought in to initiate gas production. The attached bill from Mack Chase Inc. (Figure 1) reveals the economic impracticality of swabbing the well in for one day's production. The swabbing cost is $655.21, which is 50% of the total monthly operating costs for the well. El Paso Natural Gas has indicated that, in the future, the well will be allowed to produce just 8 hours, rather than 1 day per month.

b) Mechanical condition of the well (provide wellbore sketch). Explain fully mechanical attempts to rectify the problem.

A wellbore sketch is provided in the attached Figure 2. The problem with this well is initiating gas flow, not maintaining it. Therefore, the use of small-bore tubing or plunger lift would hinder operations, not help them. The use of rod pumping equipment is not economically feasible, nor practical in this case.

3) Present historical data which demonstrates conditions that can lead to waste.

As described in question #1 above, the well will not produce at all after being shut in, without swabbing it in. There is evidence that permanent wellbore damage is occurring. As the plot of the production history indicates (Figure 3 and 4) the water-gas ratio climbed steadily while the well produced continuously. However, after prolonged shut in periods, the water-gas ratio jumped up from 86 BW/MMCF to 166 BW/MMCF. This is evidence of formation damage, caused by an increase in formation water saturation, caused by water encroachment.

Further evidence of formation damage is that the well's gas deliverability has fallen significantly, as indicated by the low gas flow rate achieved on July 31st through August 2nd. The well had been shut in for 2 1/2 months prior to July 31st. The gas flow rate was 1350 MCFD at a tubing pressure of 950 psig during that period. According to the deliverability curve determined by multipoint back pressure testing, (Figure 4) the well should produce 3600 MCFD at 950 psig wellhead pressure. Thus, the well's gas production is only one third of what it should be, due to formation damage. The constant "C" in the deliverability equation, $q = C\left[P_{res}^{2} - P_{wf}^{2}\right]^{n}$, has decreased, which indicates that the relative

permeability to gas has decreased. The relative permeability to gas has decreased due to water encroachment: the formation water saturation has increased as a direct result of the curtailment.

If the well were allowed to produce continuously, the relative permeability to gas will improve, but it has probably been permanently damaged to some extent . If the well is not allowed to produce continuously, further formation damage will occur, and the 5 billion cubic feet of gas reserves will be permanently lost.

The following actual cost figures indicate that the well is presently not profitable to operate.

Cost Item	Average Monthly	Cost Factor	Actual Cost Incurred, $/Mo
Pumper	120	3/30	$ 12.00
Foreman	35	3/30	3.50
Pickup	65	3/30	6.50
Overhead	380	3/30	38.00
Swab Unit	655	1.0	655.00
Water Disposal	624	1.0	624.00
			$1339/Month

Revenue*

1350 MCF x $1.31/Mcf x .845 NRI = $1494
Severance Taxes - 265
$1229/Month.

*Note: Revenues shown are based on 24 hours of production per month. If El Paso takes only 8 hours of production per month, revenues will be only $410/month. It is assumed that the pumper will visit the well three days per month, and hence the cost factor 3/30.

Without special relief, we cannot continue operations on this well, and the 5 billion cubic feet of gas reserves will be lost.

4) If failure to obtain a hardship gas well classification would result in premature abandonment, calculate the quantity of gas reserves which would be lost.

Premature abandonment would result in the loss of 5 billion cubic feet of reserves, by material balance calculation. The graph of P/Z vs cumulative gas produced is attached (Figure 5). Gross revenues lost to the parties involved are summarized below, based on $1.31 per MCF.

Working Interest Owners	$4,671,160
Federal Government	818,750
State Government	894,250
Royalty Owners	165,840
Total Gross Gas Sales	$6,550,000

Due to the water drive mechanism, the reserves calculated above are optimistic, but decline curve analysis resulted in even more optimistic reserves (12 billion cubic feet).

5) Show the minimum sustainable producing rate of the subject well.

Wells in the surrounding area with similar water-to-gas ratios have been shown, by log-off tests, to have minimum sustainable producing rates of 130 MSCFD. Yates Petroleum intends to perform log-off tests while this application is being considered. We do not anticipate the minimum sustainable producing rate to be greater than 200 MSCFD, which is the rate requested.

6) Attach a plat and/or map showing the proration unit dedicated to the well and the ownership of all offsetting acreage.

The map is attached as Figure 6. All working interest owners of all offsetting acreage are listed on page 6.

7) Submit any other appropriate data which will support the need for a hardship classification.

As previously indicated in Figure 6, three bottomhole pressure measurements have been taken during the life of this well. On the first two measurements, taken on 2-4-82 and 10-2-84, no water was encountered in the tubing. The most recent measurement was taken on 7-3-86 after the well had been shut in for 47 days. During this test, water was encountered in the tubing at a depth of 3400 feet from the surface, which is 4,729 feet above the perforations.

This provides further evidence that water is encroaching into the formation, which lowers the relative permeability to gas, thereby reducing gas deliverability. If the well were allowed to produce continuously, formation damage would be significantly reduced.

8) If the well is in a prorated pool, please show its current under-or over-produced status.

Not in a prorated pool.

9) Attach a signed statement certifying that all information submitted with this application is true and correct to the best of your knowledge; that one copy of the application has been submitted to the appropriate Division district office (give the name) and that notice of the application has been given to the transporter/purchaser and all offset operators.

I certify that:

a) All information submitted with this application is true and correct to the best of my knowledge.

b) One copy of the application has been submitted to the Artesia office of the New Mexico Oil Conservation Division; and

c) Notice of the application has been given to El Paso Natural Gas Company and to all working interest owners of the offset leases.

Signature James S. Brown

Name: James S. Brown

Title: Engineer

Date: October 20, 1986

Working Interest Owners of Offset Leases

Lease: Mescal "SE" Federal #1
Section 18-21S-22E
Eddy County, New Mexico

1. Cities Service Oil & Gas Company, Southwest Region
   P. O. Box 1919
   Midland, Texas 79702
   ATTN: E. F. Motter

2. Ben Fortson
   3000 Fort Worth National Bank Bldg.
   Forth Worth, Texas 76102

3. Union Texas Petroleum Corporation
   P. O. Box 200128
   Houston, Texas 77216

4. Marshall and Winston
   310 W. Tower
   10 Desta Dr.
   Midland, Texas 79705

5. A. G. Andrikopoulos
   Box 788
   Cheyenne, Wyoming 82003

6. Ronadero
   P. O. Box 430
   Roswell, New Mexico 88201

7. El Paso Natural Gas Company
   P. O. Box 1492
   El Paso, Texas 79978
   ATTN: Paul Burchell

Figure 1. Swabbing Bill

MACK CHASE, INC.
P.O. DRAWER V
OFFICE
505/746-3692
ARTESIA, NEW MEXICO 88210
TELEPHONES
505/746-6500

INVOICE NO. 18770

DATE	LEASE	WELL NO.	LOCATION
07/31/86	MESCAL SE	FED #1	
WELL OWNER	CUSTOMER'S ORDER NO.	CONTRACTOR	
	6-0650	TRACY RICHARDSON	

BILL TO:

MAILING ADDRESS: YATES PETROLEUM CORP.
207 S FOURTH STREET

CITY AND STATE: ARTESIA NM 88210

DATE	DESCRIPTION	HOURS	RATE	AMOUNT
	7-29-86			
	20-00000115 SWAB UNIT 2 MEN	5.50	63.50	349.25
	14-00000301 OIL SAVER RUBBERS	2.00	9.75	19.50
	14-00000305 SWAB CUPS 2 7/8"	2.00	17.25	34.50
	7-30-86			
	20-00000115 SWAB UNIT 2 MEN	3.50	63.50	222.25
				625.50

DATE RECEIVED AUG 7 1986
APPROVAL DATE
APPROVAL DATE
GL ACCOUNT NO
WELL NAME

INVOICE

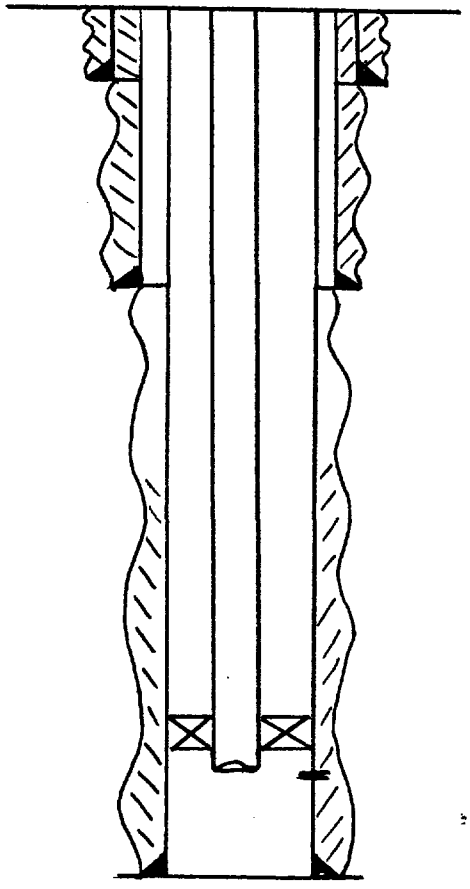
PAYABLE IN 30 DAYS

SUB TOTAL $	625.50
TAX	29.71
TOTAL $	655.21

Figure 2.

Well Sketch

Yates Petroleum Corp.
Mescal SE Federal #1
F 18-21-22
Eddy County, New Mexico



TD 8500'

17½" hole to 359'
13 3/8" csg. @ 359' cmt. w/625 sx.

12¼" hole to 1800'
9 5/8" csg. @ 1800' cmt. w/950 sx.

Top of Cement 3670' (CBL)

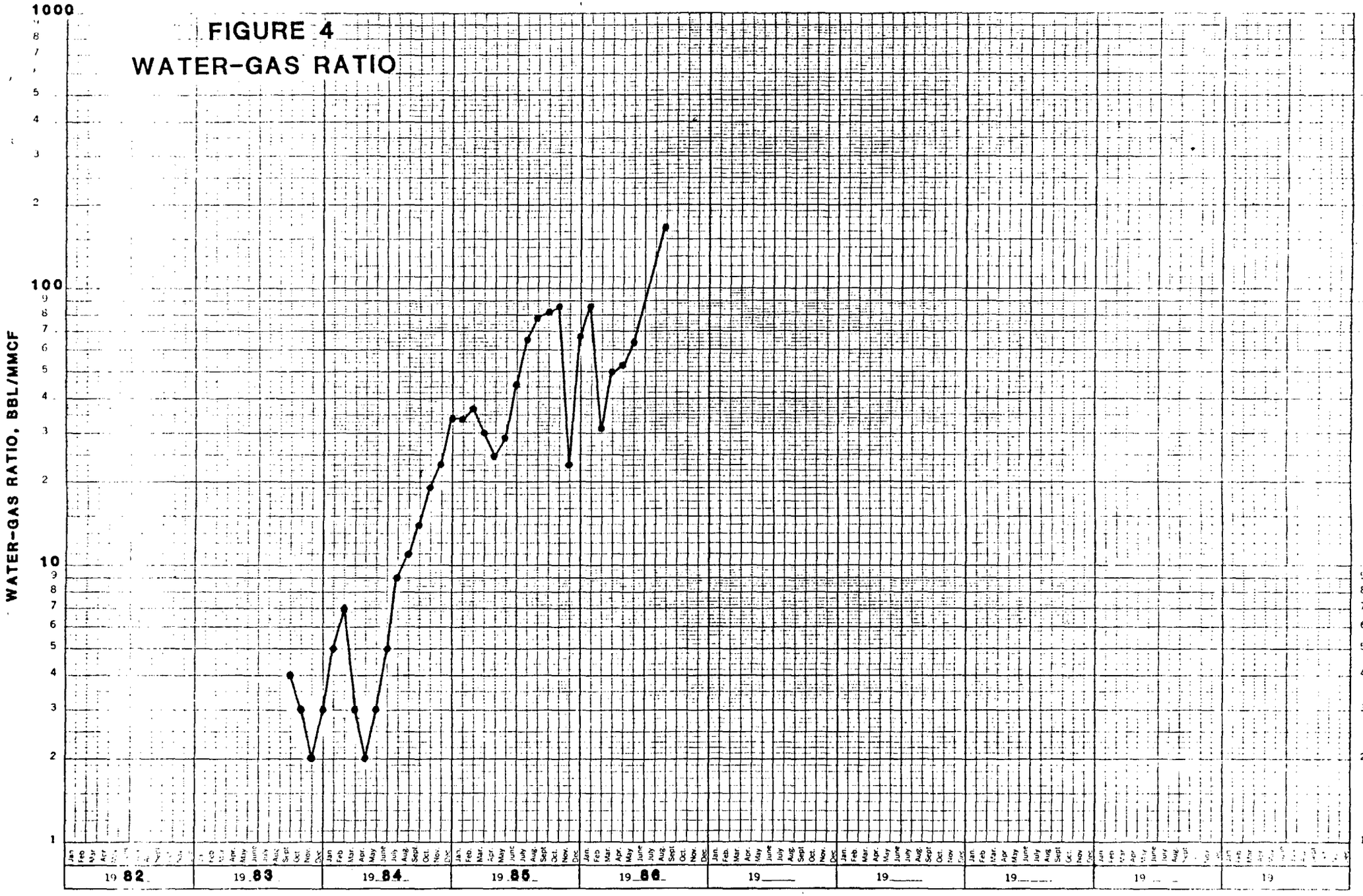
Packer @ 8092'
2 7/8" tbg. @ 8128'
Perf. 8129-34' w/20--.50" holes (Morrow)

PBTD 8446'
7 7/8" hole to 8500'
5½" csg. @ 8500' cmt. w/1435 sx.

YATES PETRO. CORP. C 18-21S-22E LITTLE BOX CANYON MORROW MESCAL SE FED. #1

FIGURE 4

WATER-GAS RATIO



YATES PETRO. CORP. C 18-21S-22E LITTLE BOX CANYON MORROW MESCAL SE FED.

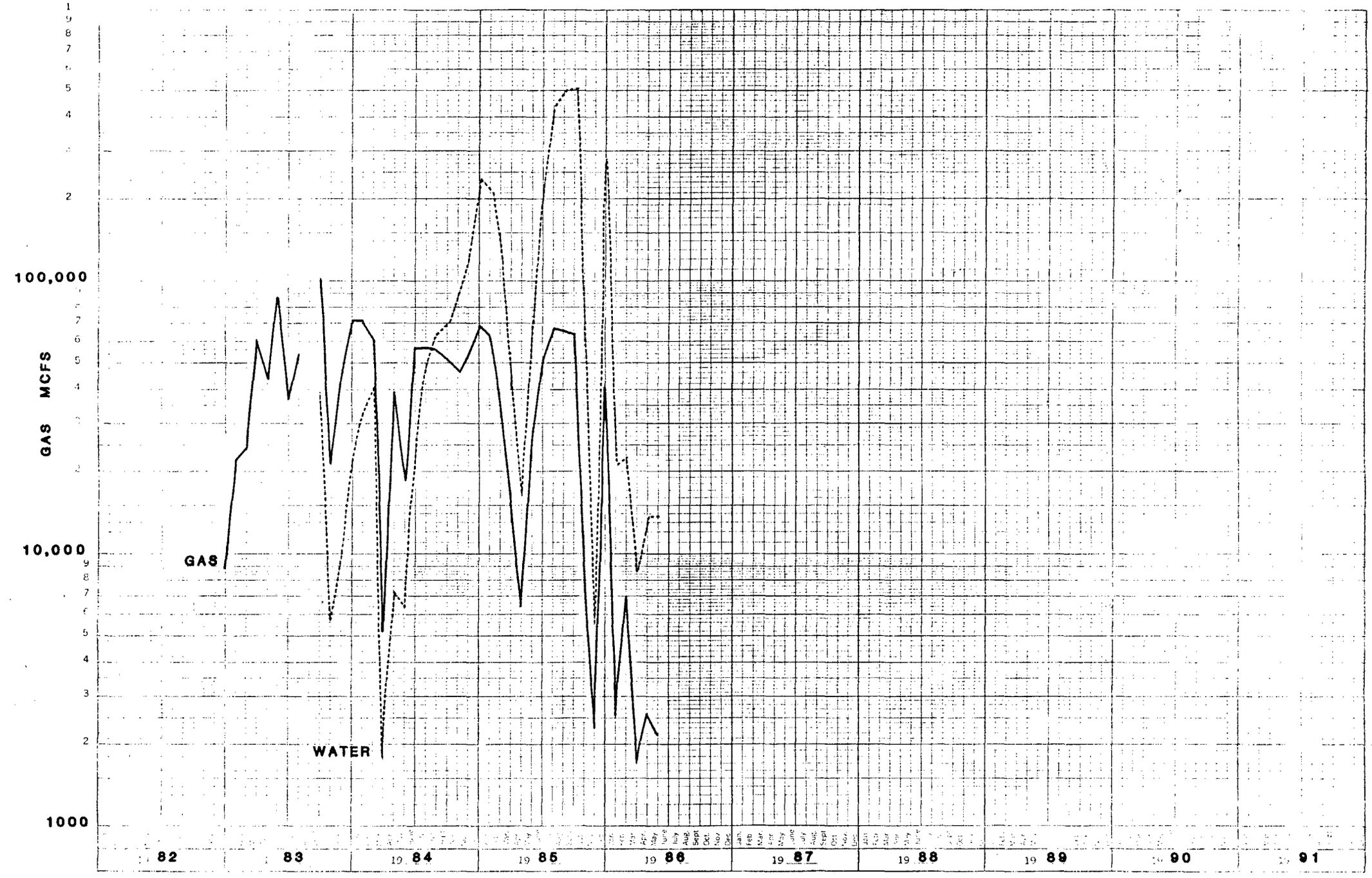
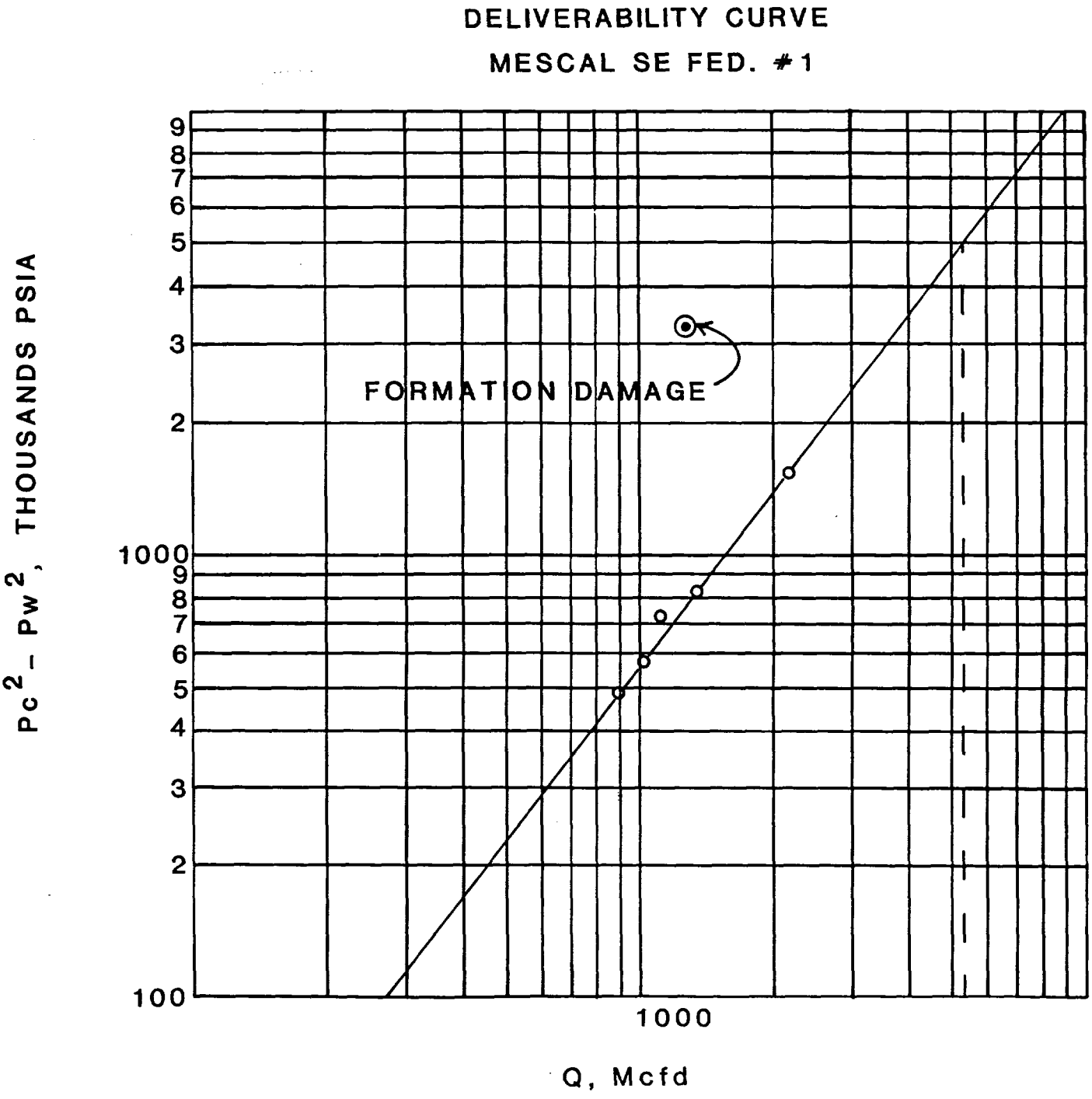


FIGURE 3

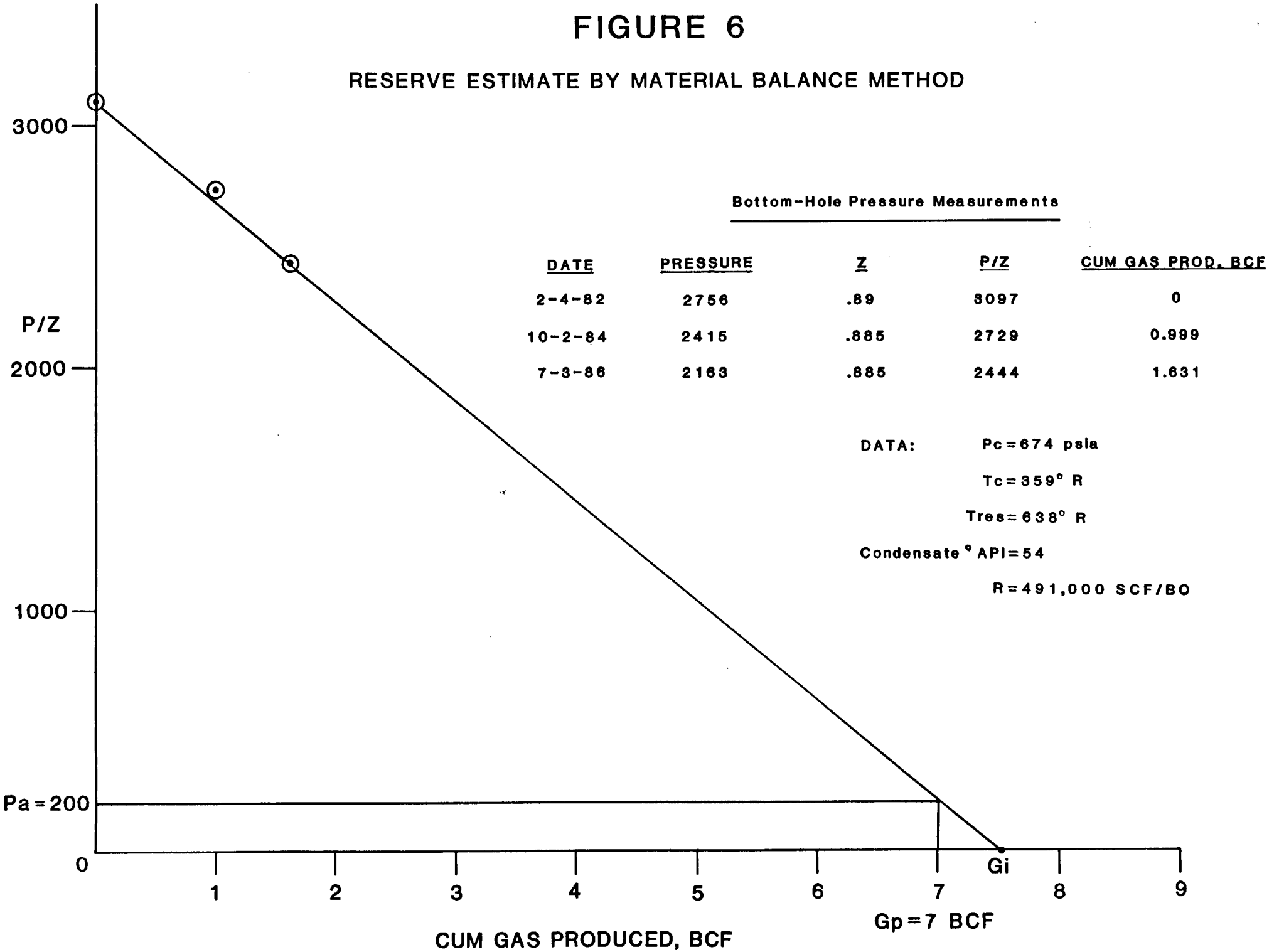
FIGURE 5



Taken from NMOCD Form C-122

FIGURE 6

RESERVE ESTIMATE BY MATERIAL BALANCE METHOD



Bottom-Hole Pressure Measurements

DATE	PRESSURE	Z	P/Z	CUM GAS PROD. BCF
2-4-82	2756	.89	3097	0
10-2-84	2415	.885	2729	0.999
7-3-86	2163	.885	2444	1.631

DATA: Pc = 674 psia

Tc = 359° R

Tres = 638° R

Condensate ° API = 54

R = 491,000 SCF/BO

Figure 7. Ownership Map