Texaco Exploration and Production Inc.
Permian Business Unit

January 15, 2001

Lori Wrotenbery, Director
Oil Conservation Division
New Mexico Department of Energy
Minerals and Natural Resources
State Land Office Building
2040 South Pacheco St.
Santa Fe, New Mexico 87505

Re: Application of Texaco Exploration and Production Inc. for Enhanced Oil Recovery Project Qualification for the Recovered Oil Tax Rate at Vacuum Grayburg San Andres Unit, Lea County, New Mexico

Dear Ms. Wrotenbery:

Texaco Exploration and Production Inc. (TEPI) hereby makes application to qualify a portion of Vacuum Grayburg San Andres Unit (VGSAU) for the recovered oil tax rate as authorized by the Enhanced Oil Recovery Act. TEPI plans to commence construction on delivery and gathering facilities, contract for delivery of injectants, and upgrade existing installations in a timeline which will allow initiation of a miscible CO_2 flood during the first quarter of 2001. TEPI is making application pursuant to the rules promulgated by Commission Order No. R-9708 entered on August 27, 1992.

In accordance with this Order, TEPI provides the following information:

a. Operator's name and address:

Texaco Exploration and Production Inc.
P.O. Box 3109 or 500 N. Loraine
Midland, TX 79702 Midland, TX 79701

b. Description of project area:

1. Provide a plat outlining the project area;

See **Exhibit "A"** for a plat of the project area.

2. Describe the project area by section, township and range;

The following Table identifies the acreage within the boundaries of the VGSAU.

Township & Range	Section	Description
T18S-R34E	Sec. 1	ALL
	Sec. 2	ALL
	Sec. 11	NE/4 NE/4
	Sec. 12	N/2 NW/4
T17S-R34E	Sec. 35	W/2 SW/4

The proposed project will impact only 86% of the VGSAU acreage and is more accurately

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Case No. 12592 Exhibit No. 12
Submitted by:
Texaco Exploration & Production, Inc.
Hearing Date: February 8, 2001

identified as those injection patterns highlighted on **Exhibit "A"**, which include those wells listed in **Exhibit "B"**.

3. **Total acres;**

   The VGSAU contains a total of 1,486 Acres (m/l).
   TEPI is targeting 1,280 Acres (m/l) for the CO_2 project. This area is highlighted on **Exhibit "A"**.

4. **Provide the name of the subject pool and formation.**

   The VGSAU is within the Vacuum Field.
   The VGSAU is unitized within portions of the Grayburg and San Andres Formations.
   The type-log identified in the Unit Agreement is reproduced as **Exhibit "C"**.

c. **Status of operations in the project area:**

   1. **Provide the name of the unit and the date and number of the Division Order approving the unit plan of operation;**

      The proposed CO_2 project is at the TEPI operated Vacuum Grayburg San Andres Unit (VGSAU).
      The Commission approved the VGSAU on November 8, 1972 with Order No. R-4443.
      The VGSAU pressure maintenance project was further ruled on with Order No's. R-4433-A (11-08-72); R-4422 (11-27-72); .R-6094 (09-01-79); and R-7010 (07-01-82).

d. **Method of recovery to be used:**

   1. **Identify fluids to be injected; and**

      Recovery is to be enhanced with the introduction of Carbon Dioxide (CO_2). Produced gases will be recycled (reinjected). Water will continue to be injected outside of the target area, and in the target area with alternating slugs with the CO_2 in what industry calls a WAG injection scenario.

   2. **If the Division has not approved the project, provide the date the application for approval was filed with the Division on Form C-108.**

      A supplemental C-108 is provided with this Application dated January 15, 2001.

e. **Description of the project:**

   1. **A list of producing wells;**

      See **Exhibit "B"** for a listing of the 51 existing producers within the project target area.
      There are currently no plans to drill additional producing wells.

   2. **A list of injection wells;**

      See **Exhibit "B"** for a listing of the 26 existing injectors within the project target area.
      There are currently no plans to drill additional injection wells.

3. **Capital cost of additional facilities;**

Description	Cost, $ Million*
Field Installations/Upgrades	6.6
Well Remediation & Misc.	2.0
CO_2 Injectant Purchase	50.7
Separation/Compression Facility	0.0
Injectant Recycle Cost	34.2

* current dollars.

4. **Total project cost;**

The project will cost a total of $93.5 Million inclusive of associated injectant expenses. Of this total, $8.6 Million will go toward facilities and well work on the VGSAU.

5. **Provide the estimated total value of the additional production that will be recovered as a result of this project;**

An additional 14.4 Million STB of Oil are anticipated to be recovered, along with 19.3 Bscf of hydrocarbon gas as a result of the project. Based on an average posted of $23.00/STB for West Texas intermediate sour crude oil, and an equivalent barrel basis of 6 Mscf/STB oil, the estimated value of the hydrocarbons produced from the proposed project is $404.7 Million.

6. **Provide anticipated date for commencement of injection; and**

The anticipated initial CO_2 injection date is April 1, 2001.

7. **What type of fluid will be injected and what are the anticipated volumes?**

A total of 93 Bscf of CO_2 will be purchased for the project. Produced gases will be recycled back to the reservoir resulting in an ultimate injection of 163 Bscf of gas during a 50 year period. The recycled gas would consist of CO_2, certain hydrocarbons that cannot be economically marketed, and associated non-hydrocarbon gases. The injection scheme to be employed is known as a WAG, or water-alternating-gas injection. Alternating slugs of gas and slugs of water would be introduced in varying volumes with the length of injection (time) dependent upon reservoir response.

f. **Production data: Provide graphs, charts and other supporting data to show the production history and production forecast of oil, gas, casinghead gas and water from the project area.**

Exhibit "D" provides the VGSAU production and injection history along with the forecast of enhanced recovery due to the introduction of CO_2.

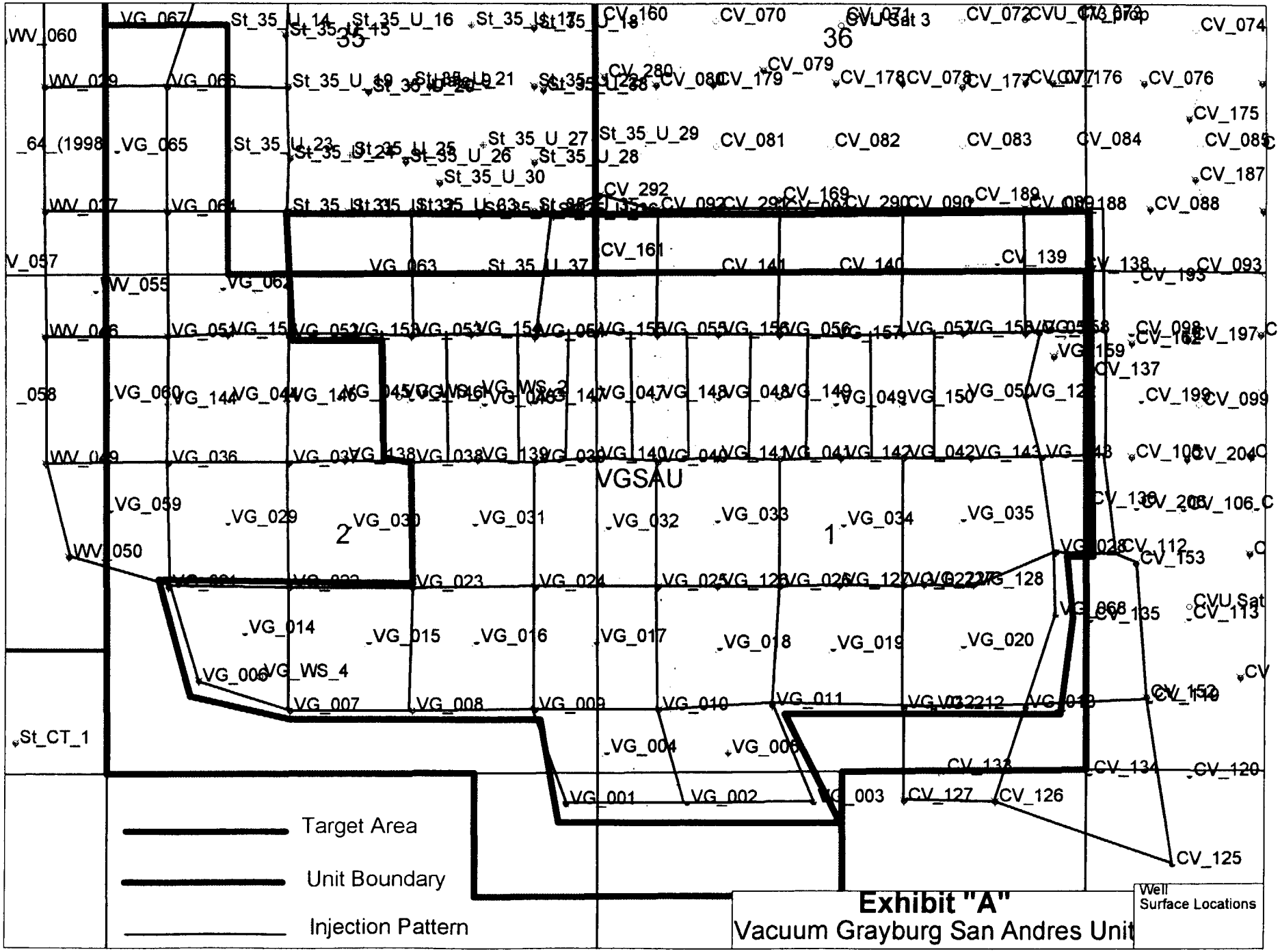
TEPI requests that this application be set for hearing, and with no objections, be approved.

Very truly yours,

Robert J. Boomer

Robert J. Boomer
Project Engineer

RJB/
Attachments


35
36
VGSAU
2
1
Target Area
Unit Boundary
Injection Pattern
Exhibit "A"
Vacuum Grayburg San Andres Unit
Well
Surface Locations

*** EXHIBIT "B" ***

Vacuum Grayburg San Andres Unit

Wells within Proposed CO_2 Target Area

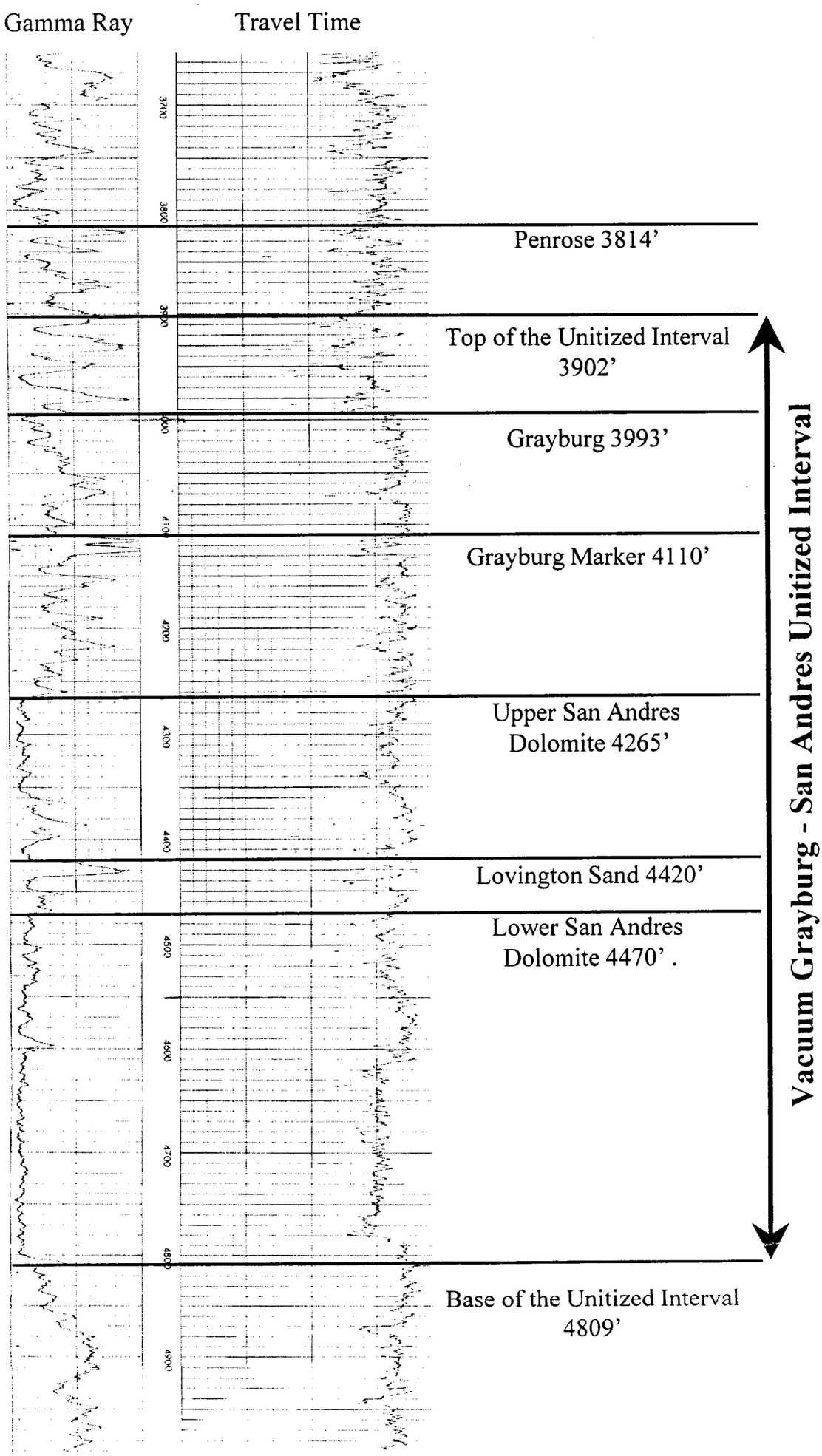
PRODUCERS			INJECTORS	
VGSAU Well No.	API Well No.	Count	VGSAU Well No.	API Well No.
1	3002521634	1	4	30025243321
2	3002521421	2	5	3002524333
3	3002502326	3	14	3002524359
6	3002521420	4	15	3002524378
7	3002502277	5	16	3002524308
8	3002502275	6	17	3002524316
9	3002502274	7	18	3002524317
10	3002502258	8	19	3002524331
11	3002502257	9	20	3002524360
12	3002502259	10	31	3002524314
13	3002502260	11	32	3002524330
21	3002502276	12	33	3002524323
22	3002502273	13	34	3002524312
23	3002502272	14	35	3002524361
24	3002502271	15	46	3002524364
25	3002502256	16	47	3002524365
26	3002502255	17	48	3002524322
27	3002502254	18	49	3002524329
28	3002502253	19	50	3002524366
38	3002502265	20	63	3002527974
39	3002502264	21	68	3002502110
40	3002502252	22	146	3002530846
41	3002502249	23	147	3002530798
42	3002502245	24	148	3002530799
43	3002502247	25	149	3002530847
52	3002502267	26	150	3002530917
53	3002502262	27		
54	3002502263	28		
55	3002502250	29		
56	3002502251	30		
57	3002502248	31		
58*	3002502246	32		
59	3002502246	33		
122**	3002530721	34		
126	3002532026	35.		
127	3002532027	36		
128	3002532028	37		
139	3002530755	38		
140	3002530756	39		
141	3002530797	40		

142	3002530843	41		
143	3002530844	42		
153	3002530802	43		
154	3002530801	44		
155	3002530800	45		
156	3002530851	46		
157	3002530717	47		
158	3002530718	48		
212	3002532004	49		
227	3002531993	50		
258	3002532009	51		

*** P&A'd well**

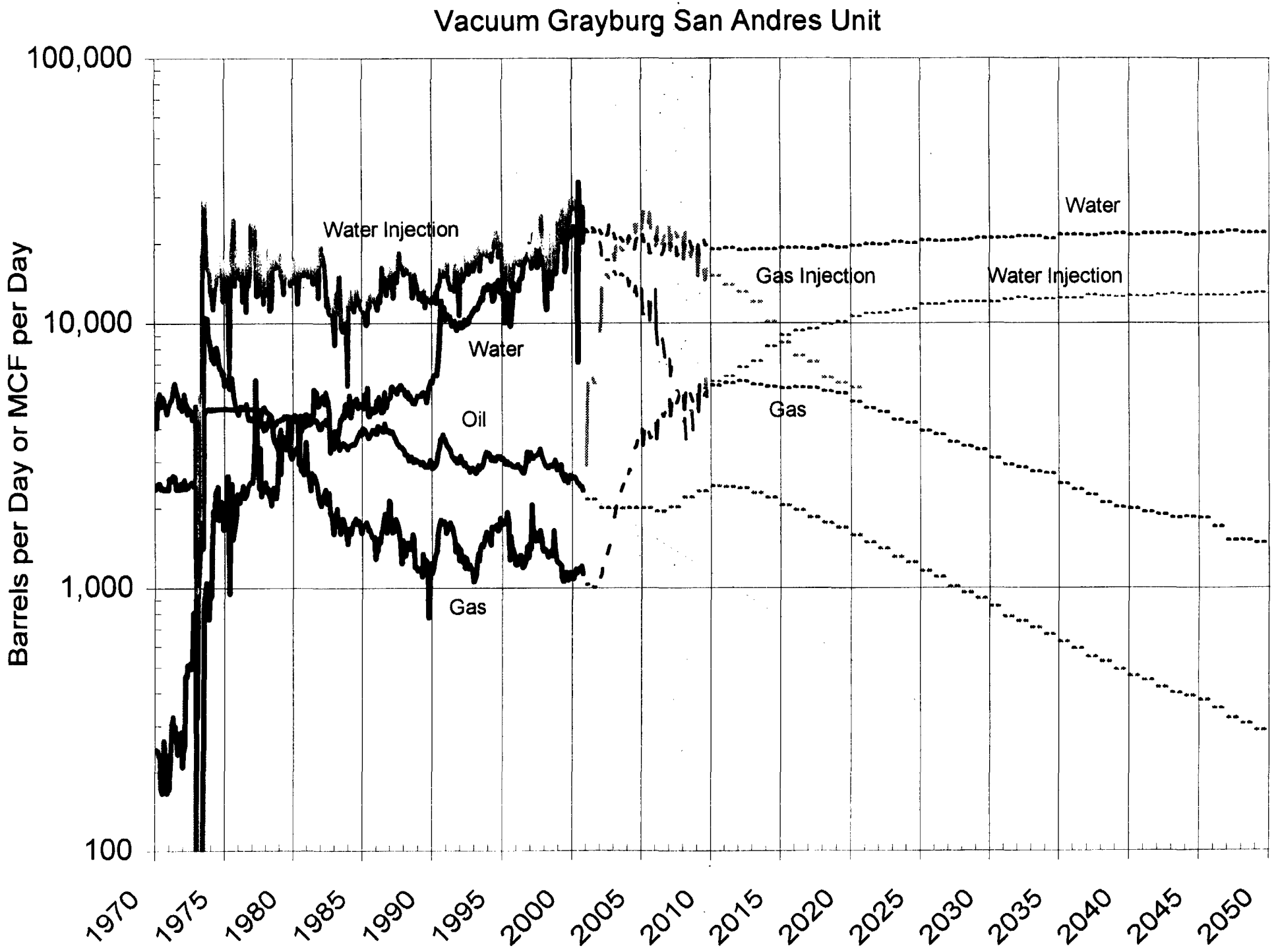
*** Well to be converted to injection**

Exhibit C
Vacuum Grayburg-San Andres Unit
Type Log



Welex Acoustic Velocity Log
Texaco - New Mexico "M" State Well #8
(Now Vacuum Glorieta West Unit #113)
API # 3002521107 KB = 4007

Exhibit "D"


Vacuum Grayburg San Andres Unit
Barrels per Day or MCF per Day
100,000
10,000
1,000
100
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
Water Injection
Water
Oil
Gas
Gas Injection
Water
Water Injection
Gas