Santa Fe Energy Operating Partners, L.P.

Santa Fe Pacific Exploration Company
Managing General Partner

September 19, 1986

Oil Conservation Division
P. O. Box 2088
Santa Fe, NM 87501

Case 9021

Re: Application for Hardship
Gas Well Classification
Walker No. 1
I-21-22S-27E-NMPM
Eddy County, New Mexico
Carlsbad Morrow South
(Prorated Gas) Pool

Gentlemen:

Enclosed is our application for a hardship classification for the subject well and the required documentation which supports same. we have a high degree of confidence that a shut-in of this well, or a curtailment below approximately 400 MCFPD will result in the loss of about 125 MMCF of economical reserves.

We have attempted to present the well's production history in a concise and relevant manner. Unfortunately, the pertinent history is still voluminous. We do have more detailed, daily records should you desire them.

We are reluctant to run a "log-off" test on this well, for reasons which will be apparent in reading the well history. However, if the OCD requires such a test, we will conduct same at the OCD's convenience.

Should you have any questions on our application, please contact Anthony J. Welker (915-687-3551) or me.

Sincerely,

Anthony J. Welker for HLB

Hugh L. Boyt
District Production Manager

AJW:dw-131b

Enclosures

cc: Oil Conversation Division
P. O. Drawer DD
Artesia, NM 88210
Attention: Les A. Clements

Permian Basin District
500 W. Illinois
Suite 500
Midland, Texas 79701
915/687-3551

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

Adopted 3-2-84
Side 1

Case 9021

APPLICATION FOR CLASSIFICATION AS HARDSHIP GAS WELL

Operator Santa Fe Energy Operating Partners, LP Contact Party Anthony J. Welker

Address 500 W. Illinois, Suite 500, Midland, TX 79701 Phone No. 915/687-3551

Lease Walker Well No. 1 UT I Sec. 21 TWP 22S RGE 27E

Pool Name Carlsbad Morrow South Pool Minimum Rate Requested 400 MCF@PD

Transporter Name Llano, Inc. Purchaser (if different)

Are you seeking emergency "hardship" classification for this well? X yes ____ 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.

GENERAL INFORMATION APPLICABLE TO HARDSHIP GAS WELL CLASSIFICATION

1) Definition of Underground Waste.

> "Underground Waste as those words are generally understood in the oil and gas business, and in any event to embrace the inefficient, excessive, or improper use or dissipation of the reservoir energy, including gas energy and water drive, of any pool, and the locating, spacing, drilling, equipping, operating, or producing, of any well or wells in a manner to reduce or tend to reduce the total quantity of crude petroleum oil or natural gas ultimately recovered from any pool, and the use of inefficient underground storage of natural gas."

2) The only acceptable basis for obtaining a "hardship" classification is prevention of waste with the burden of proof solely on the applicant. The applicant must not only prove waste will occur without the "hardship" classification, but also that he has acted in a responsible and prudent manner to minimize or eliminate the problem prior to requesting this special consideration. If the subject well is classified as a "hardship" well, it will be permitted to produce at a specified minimum sustainable rate without being subject to shut-in by the purchaser due to low demand. The Division can rescind approval at any time without notice and require the operator to show cause why the classification should not be permanently rescinded if abuse of this special classification becomes apparent.

3) The minimum rate will be the minimum sustainable rate at which the well will flow. If data from historical production is insufficient to support this rate (in the opinion of the Director), or if an offset operator or purchaser objects to the requested rate, a minimum flow ("log off") test may be required. The operator may, if he desires, conduct the minimum flow test, and submit this information with his application.

4) If a minimum flow test is to be run, either at the operator's option or at the request of the Division, the offset operators, any protesting party, the purchaser and OCD will be notified of the date of the test and given the opportunity to witness, if they so desire.

5) Any interested party may review the data submitted at either the Santa Fe office or the appropriate OCD District Office.

6) The Director can approve uncontested applications administratively if, in his opinion, sufficient justification is furnished. Notice shall be given of intent to approve by attaching such notice to the regular examiner's hearing docket. Within 20 days following the date of such hearing, the affected parties will be permitted to file an objection. If no objection has been filed, the application may be approved.

7) Should a protest be filed in writing, the applicant will be permitted to either withdraw the application, or request it to be set for hearing.

8) An emergency approval, on a temporary basis for a period not to exceed 90 days, may be granted by the District Supervisor, pending filing of formal application and final action of the OCD Director. This temporary approval may be granted only if the District Supervisor is convinced waste will occur without immediate relief. If granted, the District Supervisor will notify the purchaser.

9) After a well receives a "hardship" classification, it will be retained for a period of one year unless rescinded sooner by the Division. The applicant will be required to certify annually that conditions have not changed substantially in order to continue to retain this classification.

10) Nothing here withstanding, the Division may, on its own motion, require any and all operators to show cause why approval(s) should not be rescinded if abuse is suspected or market conditions substantially change in the State of New Mexico.

11) A well classified as a "hardship well" will continue to accumulate over and under production (prorated pools). Should allowables exceed the hardship allowable assigned, the well will be permitted to produce at the higher rate, if capable of doing so, and would be treated as any other non-hardship well. Any cumulative overproduction accrued either before or after being classified "hardship" must, however, be balanced before the well can be allowed to produce at the higher rate.

APPLICATION FOR CLASSIFICATION AS HARDSHIP GAS WELL

Walker No. 1, I-21-22S-27E, Eddy, NM

ITEM 1 - STATEMENT OF PROBLEM

We request approval of a Hardship Gas Well Classification for the Walker No. 1 well located in Unit I, Section 21-22S-27E, Eddy County, New Mexico. This action is requested in order to prevent loss of gas reserves.

Due to a lack of market, Llano (the gas purchaser) ordered the Walker No. 1 shut-in on February 25-27, 1986, and again on March 2-13, 1986. The well was damaged on both occasions. From the attached detail of the well's history (Item 2a), it can been seen that the well's deliverability decreased some 44% and 100% following the first and second shut-in, respectively. Multiple blowdown efforts to revive the well were unsuccessful. A $50,000 "last resort" workover from May 6th to May 27th was required to return the well to a productive status. On August 13th, we installed a rental compressor to keep the well active.

We believe that shutting in the Walker No. 1 allows water to displace gas in the near wellbore area. This reduces permeability for the gas phase and will result in the premature abandonment of the well. We believe that the well needs to be produced at a rate high enough to prevent slugging of the produced water. That minimum rate is 400 MCFGPD through 2 3/8" tubing into a 750 average psi sales line.

Although the gas market varies daily, the purchaser currently has a market for the gas we can produce and has been nominating at 100% of deliverability. The purchaser has been cooperating with us to avoid the shut-in of this specific well since March. We are presently producing the well at 400-450 MCFPD. This is the lower limit of the compressor capacity.

ITEM 2 - WELL HISTORY AND MECHNICAL CONDITION

1983	July 26	See Attachment "A". Well completed in the Carlsbad Morrow South Pool at 11,514-583. CAOF 5.5 MMCF and no liquid. Natural completion. Also perforated in Morrow zones 11790-888', but left SI below a retrievable bridge plug set at 11,642'. Lower zone had been acidized and fraced. Lower zone CAOF 2.8 MMCF with water production.
	Nov. 7	Place well on production. FTP 3825 psi.
	Dec.	Produced 20782 MCF, 0 BO, 0 BW, FTP 2410 psi.

1984	June	Produced 27,011 MCF, 0 BO, 27 BW, FTP 1100 psi.
	Oct.	Produced 13,827 MCF, 0 BO, 32 BW, FTP 600 psi.
	Nov. 6-12	FTP increased from 700 to 3500 psi. Production increased from 457 to 2205 MCFPD. Recovered a 34 bbl slug of oil, and water production increased from 1 to 56 BWPD. Produced large amounts of frac sand for 5 days. We suspect the retrievable bridge plug @ 11,642' failed.
	Dec.	Produced 70,070 MCF, 0 BO, 966 BW, FTP 2500 psi.
1985	June	Produced 45,242 MCF, 0 BO, 1186 BW, FTP 1575 psi.
	Dec.	Produced 27,605 MCF, 0 BO, 1282 BW, FTP 1000 psi.
1986	Feb. 23	757 MCF, 0 BO, 38 BW, 900 FTP
	Feb, 24	757 MCF, 0 BO, 39 BW, 900 FTP
	Feb. 25	691 MCF, 0 BO, 28 BW, 900 FTP. Well was SI @ 12:45 PM per Llano request.
	Feb. 26	166 MCF, 0 BO, 5 BW, 1675 SITP. Production was from 7 AM - 12:45 PM 7/25/86 for 5 3/4 hr flow.
	Feb. 27	1750 SITP well returned to production @ 9:25 AM.
	Feb. 28	342 MCF, 0 BW, 42 BW, 850 FTP, 21 1/2 hr flow.
	Mar. 1	425 MCF, 0 BW, 34 BW, 850 FTP (low production & FTP). Well SI again per Llano's request.
	Mar. 2	1750 SITP
	Mar. 3	1850 SITP. Return to prod @ 11:20 AM.
	Mar. 4	214 MCF, 0 BO, 14 BW, 800 FTP, 21 hr flow. Well SI @ 8:15 AM per Llano request.
	Mar. 5-13	1850 SITP. Well SI. Open well @ 11:30 AM 3/13/86.
	Mar. 14	TP 600 psi. Well dead. Will not flow.
	Mar. 15	TP 750 psi. Full choke. Will not flow.
	Mar. 16	1200 SITP. SI to build press.
	Mar. 17	1850 SITP. SI to build press. Opened to pit. Flowed 55 BW. 32 BW in 1st 5 hrs & 22 BW in 2nd 5 hrs.
	Mar. 18	Put on line @ 2 AM @ 88 MCF 4 BWPH 700 FTP. Well quit flowing.
	Mar. 19	0 MCF, 0 BO, 0 BW, 700 FTP, well dead. Dropped 2 soap sticks @ 9:50 AM. SI 55 min. Open @ 10:45 AM. No flow. SI @ 1:30 PM for buildup.
	Mar. 20	1300 SITP. Opened @ 8:35 AM @ 550 flowline pressure. Flowline went to 680 psi. Well was dead by afternoon.
	Mar. 21	39 MCF, 0 BO, 6 BW, 600 FTP. Switch well to pit @ 3:30 PM for blow down.
	Mar. 22	Unknown MCF, 0 BO, 155 BW, 100 FTP. SI well @ 8 AM.
	Mar. 23	1800 SITP.
	Mar. 24	1800 SITP. Opened well @ 1 PM.
	Mar. 25	110 MCF, 0 BO, 37 BW, 625 FTP.
	Mar. 26	0 MCF, 0 BO, 1 BW, 560 FTP. SI well @ 8 AM.
	Mar. 27	1300 SITP

Mar. 28	1800 SITP
Mar. 29 thru Apr. 14	1850 & 1875 SITP. Submit workover AFE to partners to return well to productive status.
Apr. 14-21	1900 SITP. Open well to flow test.
Apr. 22	73 MCF, 0 BO, 19 BW, 620 FTP - stayed on line for 11 hrs.
April 23	Well dead - SI @ 8:30 AM.
April 24	1400 SITP
April 25-29	1875 to 1950 SITP. Open well @ 10:11 AM.
April 30	11 MCF, 0 BO, 2 BW, 600 FTP. Stayed on line for 4 hrs. SI @ 1 PM.
May 1	1200 SITP
May 2	1750 SITP
May 3-5	1950 SITP. Open well @ 9:30 AM and prepare to start workover.
May 6	2 MCF, 2 BO, 5 BW, 675 FTP. Stayed on line 1 hr. Blow well down & start workover.
May 6-27	Workover. See Attachment "B". POH w/retrievable bridge plug. The RBP had failed and was sand cut. Replace 2 7/8" tbg with 2 3/8" N-80 tbg. Set CIBP @ 11,849' to plug off high water saturation zones at 11,867-888'. Acidized upper Morrow zones 11,514-583' with 2300 gals 7 1/2% Morrow acid. Swabbed and flowed well for 8 days to get well kicked off to flow. Flowed well to pit for 5 days for additional cleanup. Switched down sales line at 550 psi FTP, 501 MCFPD, 0 BOPD, & 32 BWPD.
June	Produced 19,176 MCF, 0 BO, 585 BW, 600 FTP.
July 29	255 MCF, 0 BO, 14 BW, 710 FTP. The sales line pressure increased from 600 to 710 psi causing a production decrease from 500 to 250 MCFPD. With such a low production rate, we believe the well will load up and die. Start looking for a rental compressor.
Aug. 7	258 MCF, 0 BO, 21 BW, 560 FTP
Aug. 8	333 MCF, 0 BO, 17 BW, 570 FTP. After three days of lower FTP, well is just now showing signs of cleaning back up and returning to earlier productivity.
Aug. 9-11	Averaged 202 MCF, 0 BW, 16 BW, 670 FTP. Note: If FTP had remained low, a rate of about 350 might have been adequate to lift.
Aug. 13	243 MCF, 0 BO, 15 BW, 570 FTP. Place well on rental HRM compressor at 707 MCF, 0 BO, 28 BWPD, and 160 psi FTP.
Aug. 14	Receive OCD form letter on over-production.
Aug. 18	Cut production to 400 MCFPD - minimum safe production rate.
Aug. 22	Write hardship letter to Mr. R. L. Staments with OCD.
Aug. 29	Receive Aug. 26th form letter from OCD.

Sept. 3	Telephone conversation with Vick Lyon of OCD @ Santa Fe, NM.
Sept. 5	Receive Sept. 4th letter and hardship application form from Les Clements.

The workover of May 6-27, 1986, took a shotgun approach to accomplish four mechanical objectives.

1) We removed the retrievable bridge plug which was a casing obstruction above the lower Morrow perforations.

2) We set a cast iron bridge plug at 11849' to shut off production from zones which were calculated to be heavy water producers.

3) We replaced the 2 7/8" tubing with 2 3/8" tubing to more efficiently lift and produce liquid with the gas.

4) We acidized the upper Morrow intervals that had been completed naturally in an effort to break into previously untapped gas productive stringers.

We spent over $50,000 on this workover. With remaining reserves calculated to be 125 MMCF, it is not economically feasible to spend much more on this well.

ITEM 3

3(a&b) Permanent loss of productivity after shut-in periods are shown by referring to well history dates of February 28th, March 1st, March 4th, and March 14 through May 6, 1986.

Although the well would not flow after shut-in periods, due to the gas volumes vented during blowdown efforts we deemed it unsafe to attempt swabbing prior to the workover.

3c) We would not attempt swabbing the well prior to the workover; however, after the workover it took eight days of swabbing and five days of venting to unload the well enough that it would produce against sales line pressure.

3d) Actual operating costs for this well are as follows:

Avg Monthly Cost thru April:	$ 1,714 in field expenses
	$ 5,227 total expenses before BFIT and depreciation
Avg Monthly Cost thru July:	$ 8,083 in field expenses
	$10,137 in total expenses BFIT and depreciation
Expect Future Monthly Costs of:	$ 4,100 in field expenses
	$ 7,600 total expenses BFIT and depreciation

We estimate the gross value of remaining reserves at $137,500 to $187,500. If the well was shut-in again and watered out, we could not economically justify another workover effort.

ITEM 4

Our remaining reserves of 125 MMCF would be lost if we shut-in the Walker No. 1 and lost the well.

ITEM 5a

We are reluctant to run a log off test for fear of damaging the well. If, after reviewing the well's history, you determine a log off test is required, we will run one. The ability to run a log-off test will be somewhat hindered by the compressor operation.

ITEM 5b

Please review Item 2a, well history from July 29 through August 13, 1986. Please note that when the sales line pressure increased, the well's production was cut in half, and on August 7-8, when the sales line pressure was again low, the well was very slow in cleaning back up. The well's production history on August 9-11 again emphasizes the well's sensitivity to minor changes in line pressure.

We recommend an allowable rate of 400 MCFGPD because it is the calculated minimum gas flow rate required to prevent liquid slugging at 750 psi. This calculated rate appears to conform with the well's capability.

ITEM 6

Attachment C is a well plat and Attachment D is a land map showing ownership of the immediate offset property.

ITEM 7

We have included a base production map (Attachment G) of the area surrounding the subject well. Although the map is not required by the application, we feel the data may be relavent in evaluating our case from the viewpoint of correlative rights. We will furnish any other data the OCD may require.

ITEM 8

Our overproduced status is as follows:

Status		
July over-production		192,952
August allowables:	13,311	
August production:	11,628	
9-1-86 over-production:		191,269
September allowables:	70,554	
Estimated 30-day production:	11,850	
Projected 10-1-86 over-production:		132,582

ITEM 9

I certify that all information submitted with this application is true and correct to the best of my knowledge; that one copy of this application has been submitted to Oil Conservation Division, P. O. Drawer DD, Artesia, NM 88210, Attention Les A. Clements; and that notice of the application has been given to the purchaser and all offset operators. See Attachments E and F.

Anthony J. Welker
District Production Engineer
Permian Basin District
Santa Fe Energy Operating Partners, L. P.

ATTACHMENT C

Form C-102
Supersedes C-128
Effective 1-1-65

NEW MEXICO OIL CONSERVATION COMMISSION

WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
SANTA FE ENERGY COMPANY	WALKER	1

Unit Letter	Section	Township	Range	County
I	21	22 SOUTH	27 EAST	EDDY

Actual Footage Location of Well:
1980 feet from the SOUTH line and 990 feet from the EAST line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
3109.8'	Morrow	Undes. East Carlsbad Morrow	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

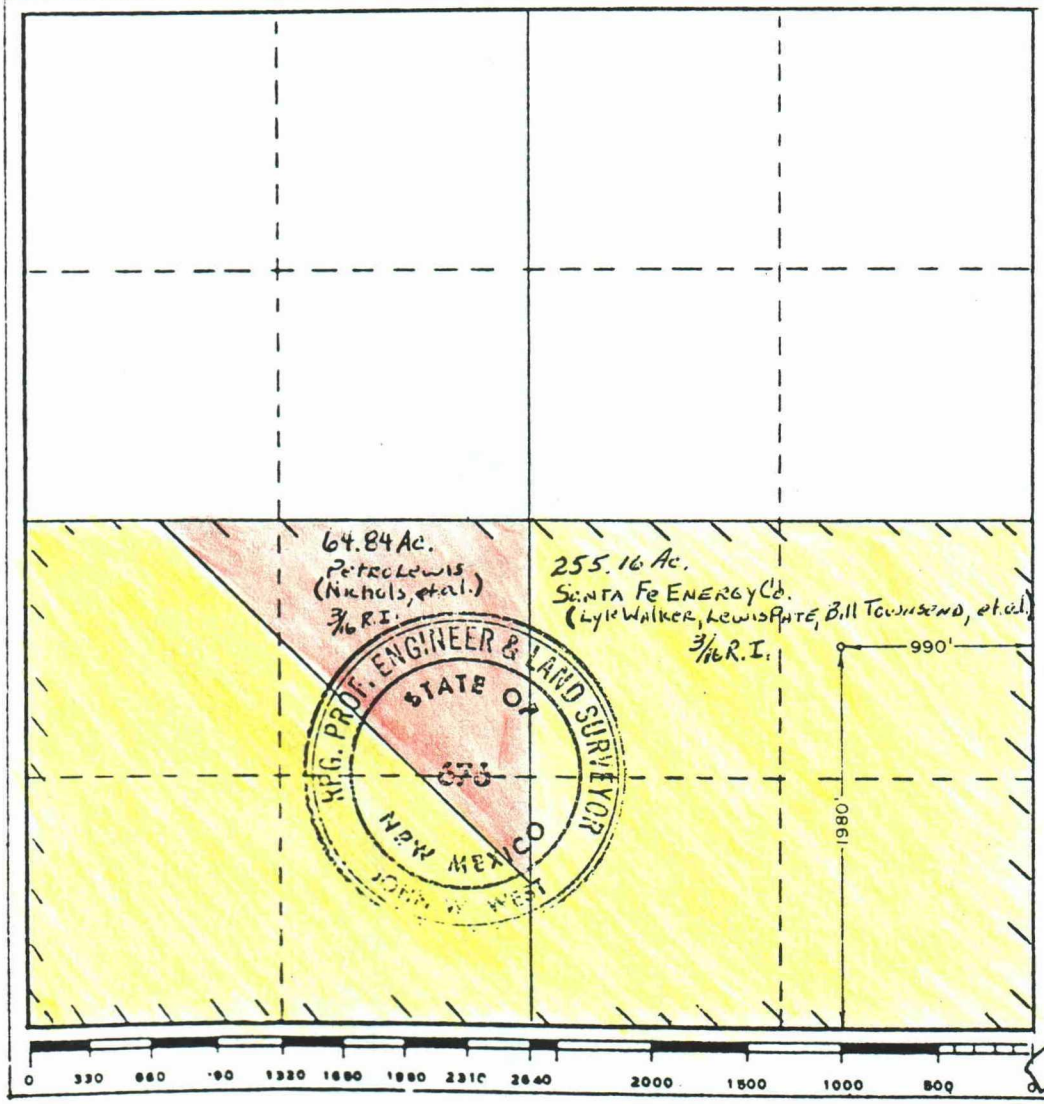
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

☒ Yes ☐ No If answer is "yes," type of consolidation Unitization

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name: Michael R. Burton

Position: Senior Drilling Engineer

Company: Santa Fe Energy Company

Date: February 25, 1983

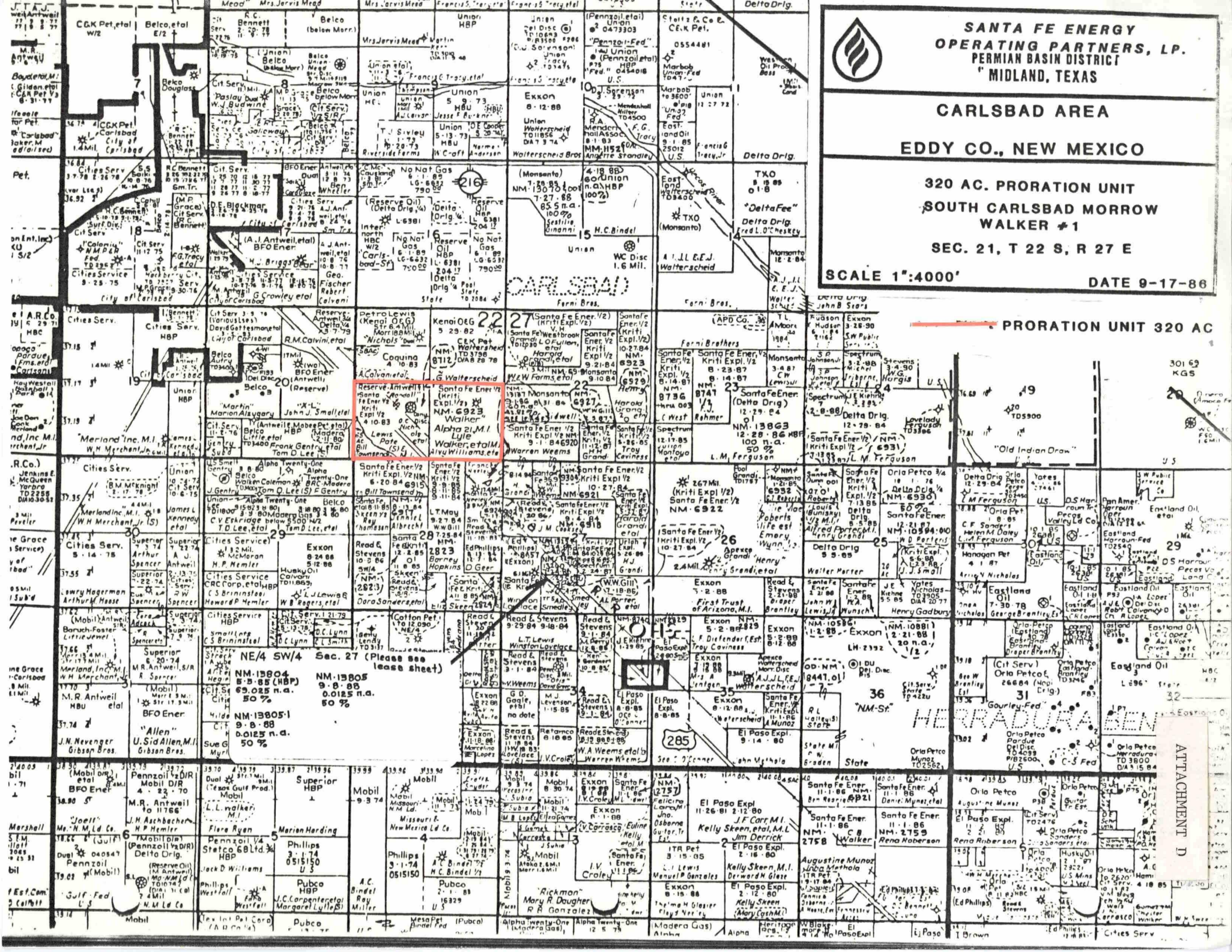
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 2/23/83

Registered Professional Engineer and/or Land Surveyor

John W West

Certificate No. JOHN W. WEST NO. 676


SANTA FE ENERGY
OPERATING PARTNERS, LP.
PERMIAN BASIN DISTRICT
" MIDLAND, TEXAS
CARLSBAD AREA
EDDY CO., NEW MEXICO
320 AC. PRORATION UNIT
SOUTH CARLSBAD MORROW
WALKER #1
SEC. 21, T 22 S, R 27 E
SCALE 1":4000'
DATE 9-17-86
PRORATION UNIT 320 AC
NE/4 SW/4 Sec. 27 (Please see lease sheet)
NM-13804
5-5-85 (HBP)
69.025 n.a.
50 %
NM-13805
9-8-88
0.0125 n.a.
50 %
NM-13805-1
9-8-88
0.0125 n.a.
50 %
CARLSBAD
"Old Indian Draw"
HERRADURA BEND
ATTACHMENT D