

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 be 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 MCF/GPD 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 MECHANICAL CONDITION

1983	July 26	See Attachment "A". Well completed in the Carlsbad Morrow South Pool at 11,514-583. CAOP 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 CAOP 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.

ENFORCE EXAMINER ST. 1081  
OIL CONSERVATION DIVISION  
SFEOR 8  
CASE NO. 9021

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<u>1984</u>	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.
<u>1985</u>	June	Produced 45,242 MCF, 0 BO, 1186 BW, FTP 1575 psi.
	Dec.	Produced 27,605 MCF, 0 BO, 1282 BW, FTP 1000 psi.
<u>1986</u>	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 BWP 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

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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". <u>POB</u> 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.

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- 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