MEWBOURNE OIL COMPANY

P.O. BOX 7698
TYLER, TEXAS 75711
903 - 561-2900
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BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 10960 Exhibit No. 1
Submitted by
Hearing Date 8/11/94

July 27, 1994

New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504
Attn: Jim Morrow

Re: Findings 13,14,15,18 and 19
NMOCD Division Order R-10151
Querecho Plains Queen Assoc.
Sand Unit Waterflood Project
Lea County, New Mexico

Dear Mr. Morrow:

This letter is sent to review technical information and again seek authority to inject in the referenced waterflood using uncoated tubing.

Item seven on page eight of the referenced Order dictates that plastic coated tubing be used and is based on Finding 13 located on page four. Finding 13 suggests that the water supply currently consists of all fresh water and that the "evidence of corrosion" was taken with fresh water in the system. I apologize for not making this clear in the hearing of April 28, 1994, but the subject system has been operating with upwards of 66% produced water to date. As a matter of fact, a corrosion rate of 1.7 mils per year was recorded on a corrosion coupon while testing injectivity in the Government K No. 2 back in January, 1993. The water being injected during this test was made up entirely of 300,000 ppm TDS produced Delaware brine. Most of the produced water coming into the system which will supply both the Bone Spring waterflood and the referenced waterflood is this same Delaware produced water. Corrosion rates associated with the above mentioned system have averaged 1.5 mils per year based on seven corrosion coupons analyzed over eight months while the system has supplied water to the Querecho Plains Bone Spring waterflood. Attached for your consideration are the monthly water reports for the Bone Spring waterflood. All sources are listed at the bottom of said report with the Double Eagle being the only fresh water and the QPBSSU being the Bone Spring produced water. All other sources are Delaware produced water. Please remember the referenced waterflood will use this same water in its operations. As mentioned in the hearing for the Querecho Plains Bone Spring waterflood, there are

no detectible amounts of H2S or CO2 in any of the waters brought into the system.

In that the referenced waterflood is estimated to have a life of five and a half years and if the corrosion rate is sustained at 1.5 mils per year then the tubing wall will loose 8.25 mils. This represents a four percent (4%) loss in tubing wall thickness for 2 3/8" tubing (less in 2 7/8" tubing) and will certainly not degrade the integrity of the tubing. API standards allow for a 12.5% variation in wall thickness for new pipe shipped from the factory.

Item twelve located on page nine of the referenced Order goes on to further dictate that any failure of the tubing shall be reported to the supervisor of the Hobbs Office and corrected in a timely manner. This is based on Findings 14, 15, 18 and 19 which site that all injectors will be equipped, operated, monitored and maintained to facilitate testing and assure mechanical integrity. It is the opinion of Mewbourne Oil Company that the decision to accomplish this with or without coated tubing lies with the well's Operator. We are in complete agreement with item twelve and will repair any tubing leak occurring during our injection operations. However, it is our opinion that the expense of coating all the injection tubulars associated with the referenced waterflood is unmerited.

If you are in agreement with the above opinions we would appreciate written recantation of the plastic coating requirement of Item seven of the referenced Order. We appreciate your consideration in this matter. If you have any questions please contact me or Ken Calvert at (903) 561-2900.

Sincerely,

Kevin Mayes

Kevin Mayes, P.E.
Project Engineer

cc: Ken Calvert
Kelly Ryan
Jim Bruce
David Catanach
Jerry Sexton

Attachments: NMOCD Order No. R-10151
Excerpts from April 28 Hearing
Bone Spring Monthly Water Reports
Corrosion coupon analysis

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

Case No. 10960
Order No. R-10151

APPLICATION OF MEWBOURNE OIL COMPANY FOR A WATERFLOOD PROJECT AND QUALIFICATION FOR THE RECOVERED OIL TAX RATE, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on April 28, 1994 at Santa Fe, New Mexico, before Examiner Jim Morrow.

NOW, on this 14th day of July, 1994 the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) At the time of the hearing this case was consolidated with Division Case No. 10959 for the purpose of testimony. Case No. 10959 is a companion case concerning statutory unitization.

(3) The applicant, Mewbourne Oil Company, seeks authority to institute a waterflood project in its proposed Querecho Plains Queen Associated Sand Unit Area (Division Case No. 10959), Lea County, New Mexico, by the injection of water into the Querecho Plains-Queen Associated Pool, as found in that stratigraphic interval between 3886 feet to 4222 feet as measured on the *Welex - Compensated Acoustic Velocity Log* run on July 15, 1983 in the applicant's Federal Well No. 7 located 330 feet from the North line and 990 feet from the East line (Unit A) of Section 27, Township 18 South, Range 32 East, NMPM, Lea County, New Mexico, through ten certain wells as further described in Exhibit "A" attached hereto and made a part hereof.

(4) It is proposed that the waterflood project area coincide with the boundary of the Querecho Plains Queen Associated Sand Unit Area in Lea County, New Mexico, as further described below, which was the subject of Division Case No. 10959 and was heard in combination with this case:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM
Section 21: S/2 SE/4
Section 22: S/2
Section 23: S/2 and S/2 NW/4
Section 26: N/2 N/2
Section 27: N/2 and N/2 SW/4
Section 28: NE/4 SE/4, N/2 NE/4, and SE/4 NE/4

(5) The above-described area contains several tracts of undeveloped acreage; therefore, in compliance with Division General Rule 701.G(1) the project area as requested should be reduced to include only those oil spacing and proration units within the proposed area that have experienced production from the Querecho Plains-Queen Associated Pool. The S/2 SE/4 of Section 21 should also be removed from the project area because of the reasons explained in Finding Paragraph No. 21 of this order. The resulting project area should contain the following described 1000 acres in Lea County, New Mexico:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM
Section 22: S/2
Section 23: SW/4, S/2 NW/4 and NE/4 SE/4
Section 26: NW/4 NW/4
Section 27: N/2 NE/4, SE/4 NE/4, S/2 NW/4, NE/4 NW/4 and N/2 SW/4
Section 28: SE/4 NE/4

(6) The present Queen Associated oil producing wells within the subject project area and interval are in an advanced state of depletion and should therefore be properly classified as "stripper wells".

(7) The applicant requested that maximum surface injection pressure be set at 1400 psi. In support of this request, the applicant's witness used initial shut-in pressure and fluid gradients from the fracture treatments of seventeen wells in the pool, but failed to prove that 1400 psi surface injection pressure would not cause fracturing in the Queen-Penrose interval.

(8) The injection wells or pressurization system should be initially equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 777 PSI because the increase in surface injection pressure as requested by the applicant was not supported with step rate tests.

(9) The Division Director should have the authority to administratively authorize a pressure limitation in excess of the above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(10) The operator of the proposed Querecho Plains Queen Associated Sand Unit Waterflood Project should take all steps necessary to ensure that the injected water enters and remains confined to only the proposed injection interval and is not permitted to escape from that interval and migrate into other formations, producing intervals, pools or onto the surface from injection, production, or plugged and abandoned wells.

(11) The applicant submitted data concerning all plugged and producing wells within the area of review. There are five wells which may not be plugged in such a manner which will assure that their wellbores will not serve as a conduit for movement of injected fluid out of the injection interval. Three of the wells are located outside the zero contour lines of the Queen and Penrose porosity isopach maps and should pose no problem. The other two following described wells should be re-plugged in a manner which will assure that the wellbores will not serve as a conduit for migration of injection fluid to the satisfaction of the Hobbs District Supervisor.

Plugged Wells:

Oil Associates, Inc.
Edwards Well No. 1
660' FSL & 660' FWL (Unit M), Section 22;

H & S Oil Company
Anadarko Well No. 1-Y
1980' FNL & 1995' FWL (Unit F), Section 27.

(12) There are five active producing wells in the area of review which do not have cement covering the Queen-Penrose interval. These wells, and their casing program and calculated cement tops, are listed below. These wells will require remedial cement operations in a manner which will assure that the wellbores will not serve as a conduit for migration of injection fluid to the satisfaction of the Hobbs District Supervisor.

Anadarko Pet. Co.	Cavalcade Federal No. 3	I-21-18S-32E
	13 3/8" @ 753' w/750 sx	TOC - Surface
	8 5/8" @ 3465' W/1700 sx	TOC - Surface
	5 1/2" @ 10,787' w/400 sx	TOC - 8880'
Mewbourne Oil Co.	Murjo Federal Well No. 1	E-23-18S-32E
	13 3/8" @ 350' w/350 sx	TOC - Surface
	8 5/8" @ 2777' w/1200 sx	TOC - Surface
	5 1/2" @ 10,800' w/650 sx	TOC - 7701'
Mewbourne Oil Co.	Burleson Federal No. 1	B-26-18S-32E
	11 3/4" @ 350' w/485 sx	TOC - Surface
	8 5/8" @ 2800' w/2250 sx	TOC - Surface
	4 1/2" @ 8700' w/1205 sx	TOC - 4331'
Mewbourne Oil Co.	Sprinkle Federal No. 3	E-26-18S-32E
	11 3/4" @ 350' w/485 sx	TOC - Surface
	8 5/8" @ 2767' w/1700 sx	TOC - Surface
	5 1/2" @ 8710' w/700 sx	TOC - 5373'
Santa Fe Energy	Sprinkle Federal No. 4	F-26-18S-32E
	13 3/8" @ 353' w/370 sx	TOC - Surface
	8 5/8" @ 2810' w/1050 sx	TOC - Surface
	5 1/2" @ 9700' w/900 sx	TOC - 5409'

(13) Evidence on the corrosive nature of the proposed injection fluid was submitted by the applicant in support of its request to utilize "bare steel" tubing instead of internally plastic-coated tubing at this time. The Division requires plastic-coated tubing on injection wells because even though fresh water is used for initial injection, this water is recirculated and injected with producted water from the Queen-Penrose formation, which can be corrosive.

(14) The injection of water into the proposed injection wells should be accomplished either through 2 3/8-inch or 2 7/8-inch plastic-coated tubing installed in a packer set within 100 feet of the uppermost injection perforation; the casing-tubing annulus should be filled with an inert fluid and a gauge or approved leak-detection device should be attached to the annulus in order to determine leakage in the casing, tubing or packer.

(15) Prior to commencing injection operations into the proposed injection wells, the casing in each well should be pressure tested throughout the interval from the surface down to the proposed packer setting depth, to assure the integrity of such casing.

(16) The injection wells or pressurization system for each well should be so equipped as to initially limit injection pressure at the wellhead to no more than 777 psi.

(17) Any further increase in the injection pressure limitation placed upon any well in the project area should only be approved after the Santa Fe office of the Division has reviewed evidence showing that increased injection pressure will not result in fracturing.

(18) The operator should give advance notification to the supervisor of the Hobbs District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure-tests in order that the same may be witnessed.

(19) The proposed waterflood project should be approved and the project should be governed by the provisions of Rule Nos. 701 through 708 of the Oil Conservation Division Rules and Regulations.

(20) The applicant further requests that the subject waterflood project be approved by the Division as a qualified "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(21) The applicant's witness submitted a unit area production performance curve showing oil, gas and water production from 1973 to 1993. Oil production peaked at approximately 12,000 barrels per month in 1983 and has now declined to less than 2500 barrels per month. Slight increases in production were shown in 1987 and 1991 in response to injection in Section 27 outside the unit area and later into the Cavalcade Federal 21 Well No. 4 in Section 21 as approved by Division Order No. R-9240, dated July 1, 1990. While injection outside the unit area had some slight affect on unit production, it does not constitute an area project and would not disqualify any part of the project for approval under the "Enhanced Oil Recovery Act." However, as required by Rule D.2, Exhibit "A" of Division Order No. R-9708, the project area should have the S/2 SE/4 of Section 21 removed because of the injection into the Cavalcade Federal 21 Well No. 4. Average injection rate into the well in 1993 was 66 barrels of water per day. Total injection as of December 1993 was 88,208 barrels.

(22) The evidence presented indicates that the subject waterflood project meets all the criteria for approval.

(23) The approved "project area" should initially comprise that area described in Finding Paragraph No. (5) above.

(24) To be eligible for the EOR credit, prior to commencing injection operations, the operator must request from the Division a Certificate of Qualification, which certificate will specify the proposed project area as described above.

(25) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells which the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Department of Taxation and Revenue those lands and wells which are eligible for the credit.

(26) The project is expected to cost at least $592,000 and recover an additional 220,000 barrels of oil.

(27) The applicant requested special operating rules for the unit which would provide for administrative approval of unorthodox locations and injection wells. Division General Rule 104.F(1) and 701.G currently provide for the administrative procedures, therefore the special rules are not needed.

(28) The injection authority granted herein for the proposed injection wells should terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Mewbourne Oil Company, is hereby authorized to institute a waterflood project in its Querecho Plains Queen Associated Sand Unit Area (Division Case No. 10959), Lea County, New Mexico, by the injection of water into the Querecho Plains-Queen Associated Pool (as found in that stratigraphic interval between 3886 feet to 4222 feet as measured on the *Welex - Compensated Acoustic Velocity Log* run on July 15, 1983 in the applicant's Federal "E" Well No. 7 located 330 feet from the North line and 990 feet from the East line (Unit A) of Section 27, Township 18 South, Range 32 East, NMPM, Lea County, New Mexico) through ten certain wells as further described in Exhibit "A" attached hereto and made a part hereof.

(2) The waterflood project, hereby designated the Querecho Plains Queen Associated Sand Unit Waterflood Project, shall coincide with the boundary of the Querecho Plains Queen Associated Sand Unit Area, as further described below, which was the subject of Division Case No. 10959 heard in combination with this case:

QUERECHO PLAINS QUEEN ASSOCIATED SAND UNIT
WATERFLOOD PROJECT
LEA COUNTY, NEW MEXICO

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM

Section 21:	S/2 SE/4
Section 22:	S/2
Section 23:	S/2 and S/2 NW/4
Section 26:	N/2 N/2
Section 27:	N/2 and N/2 SW/4
Section 28:	NE/4 SE/4, N/2 NE/4, and SE/4 NE/4

(3) However, the initial waterflood project area, for allowable and tax credit purposes, shall comprise only the following described 1000 acres in Lea County, New Mexico:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM

Section 22:	S/2
Section 23:	SW/4, S/2 NW/4 and NE/4 SE/4
Section 26:	NW/4 NW/4
Section 27:	N/2 NE/4, SE/4 NE/4, S/2 NW/4, NE/4 NW/4 and N/2 SW/4
Section 28:	SE/4 NE/4

(4) The applicant must take all steps necessary to ensure that the injected water only enters and remains confined to the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

PROVIDED HOWEVER THAT:

(5) Prior to initiating injection within one-half mile of any of the wells listed below, the applicant shall re-plug said wells in a manner which will assure that these wellbores will not serve as a conduit for migration of injected fluid to the satisfaction of the supervisor of the Hobbs District Office of the Division.

Plugged Wells:

Oil Associates, Inc.
Edwards Well No. 1
(Unit M), Section 22;

H & S Oil Company
Anadarko Well No. 1-Y
(Unit F), Section 27.

(6) Prior to initiating injection within one-half mile of any of the five active, producing wells listed below, the applicant shall perform remedial cement operations on said wells in a manner which will assure that these wellbores will not serve as a conduit for migration of injected fluid to the satisfaction of the supervisor of the Hobbs District Office of the Division.

Producing Wells:

Anadarko Petroleum Company
Cavalcade Federal No. 3
(Unit I), Section 21;

Mewbourne Oil Company
Murjo Federal Well No. 1
(Unit E), Section 23;

Mewbourne Oil Company
Burleson Federal No. 1
(Unit B), Section 26;

Mewbourne Oil Company
Sprinkle Federal Well No. 3
(Unit E), Section 26; and,

Santa Fe Energy Company
Sprinkle Federal Well No. 4
(Unit F), Section 26,

all in Township 18 South, Range 32 East, NMPM,
Lea County, New Mexico.

IT IS FURTHER ORDERED THAT:

(7) Injection shall be accomplished through 2 3/8-inch or 2 7/8-inch plastic-coated tubing installed in a packer set approximately within 100 feet of the uppermost injection perforation; the casing-tubing annulus in each well shall be filled with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(8) The injection wells or pressurization system for each injection well shall be so equipped as to initially limit injection pressure at the wellhead to no more than 777 psi.

(9) Any additional increase in the injection pressure limitation placed upon any well in the project area shall only be approved by the Santa Fe Office of the Division.

(10) Prior to commencing injection operations, the casing in each injection well shall be pressure-tested throughout the interval from the surface down to the proposed packer setting depth, to assure the integrity of such casing.

(11) The operator shall give advance notification to the supervisor of the Hobbs District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(12) The applicant shall immediately notify the supervisor of the Hobbs District Office of the Division of the failure of the tubing, casing or packer in any of the injection wells, the leakage of water or oil from or around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area, and shall take such steps as may be timely and necessary to correct such failure or leakage.

(13) The applicant shall conduct injection operations in accordance with Division Rule Nos. 701 through 708 and shall submit monthly progress reports in accordance with Division Rule Nos. 706 and 1115.

FURTHERMORE:

(14) The subject waterflood project is hereby approved as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(15) The approved "project area" shall initially comprise that area described in Decretory Paragraph No. (3) above.

(16) To be eligible for the EOR credit, prior to commencing injection operations, the operator must request from the Division a Certificate of Qualification, which certificate will specify the proposed project area as described above.

(17) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells which the

operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Department of Taxation and Revenue those lands and wells which are eligible for the credit.

(18) The injection authority granted herein for the proposed injection wells shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

(19) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LeMAY
Director

S E A L

EXHIBIT "A"

CASE NO. 10960
ORDER NO. R-10151

Mewbourne Oil Company
Proposed Injection Well Locations
Querecho Plains Queen Associated Sand Unit Waterflood Project Area

Township 18 South, Range 32 East, NMPM,
Lea County, New Mexico

Well Name and Number	Footage Location	Section	Unit	Proposed Injection Interval (Feet)
Cavalcade Federal Well No. 4	400' FSL & 660' FEL	21	P	4096 - 4130
Bennett Federal Well No. 1	660' FSL & 1650' FEL	22	O	3897 - 4138
Flip Federal Well No. 1	1650' FNL & 330' FWL	23	E	4143 - 4150
Edith Federal Well No. 2	1980' FSL & 1980' FEL	23	J	3953 - 4224
Marshall Federal Well No. 1	660' FSL & 1980' FWL	23	N	4176 - 4190
Walker Federal Well No. 1	330' FNL & 330' FWL	26	D	3914 - 3947
Federal "E" Well No. 8	1650' FNL & 660' FEL	27	H	3934 - 4198
Anadarko Federal Well No. 2	1650' FSL & 1980' FWL	27	K	3888 - 4026
Anadarko Federal Well No. 3	1650' FSL & 990' FWL	27	L	3830 - 4060
Federal "E" Well No. 9	1980' FNL & 330' FEL	28	H	3875 - 4152

discuss your proposed injection wells?

A. Yes. Pages 2 through 11 of the C-108 are schematics of all of our proposed injection wells. The mechanical integrity of all the proposed injectors appears to be adequate.

The first schematic, on page 2, is the already-existing injector, Cavalcade Number 4.

And then if I could refer the Examiner to page number 3, there are notes at the bottom of page number 3 that describe how the top of cement was calculated. Throughout the C-108, the top of cement is calculated using appropriate cement yields, a 25-percent reduction to that yield with no consideration given to casing collars.

It is our intention to set a packer within 100 feet of the top perforation and use non-coated tubing. And we have a number of reasons for requesting non-coated tubing, beyond the fact the initial cost is substantial.

First, the Bone Spring unit that we've discussed is going to provide the water for this Queen Unit.

Q. This is the Querecho Plains-Bone Spring Unit?

A. That's correct, the Querecho Plains-Bone Spring, in that the facilities and the water injection system for that Bone Spring waterflood are already in place and geographically overlie the same area as this Queen unit will lie.

We've had that Bone Spring injection system in place for six months now, and just pulled our first corrosion coupons out of that water injection system, and the corrosion rate was measured at 1.2 mils per year, which is an exceptionally low corrosion rate.

Second, we will set a packer 100 feet within the top perforation and have packer fluid circulated into the tubing and casing annulus on all these injectors, so we will have a means for monitoring. Should there be a tubing leak at any time, we will have immediate monitoring of that, and we will repair that tubing leak immediately.

Third, the Division approved a non-coated tubing for the Querecho Plains-Bone Spring Unit, in that we presented the waters would be noncorrosive with this water system. As a result, in that we have low corrosive water and that we have a means to immediately monitor if there is a tubing leak of any kind with our injection wells, and that the Queen is going to have a short waterflood life, we would request that the Division approve non-coated tubing for this Queen Unit.

Q. Now, keeping Exhibit 23 in front of you, but also adding Exhibit 24, Mr. Mayes, could you identify that exhibit and discuss the wells in the area of review?

A. Yes, I can. Exhibit 24 is a plat showing the area of review, which is a one-half mile radius around all

producing and will require removal of pumping equipment. We again plan to install a packer within 100 feet of the top perforation and circulate an inert fluid into the tubing casing annulus.

All injectors will receive acid treatments during their conversions, and all injection wellheads will have pressure gauges installed on the tubing and casing annuluses.

Q. We've already gone over this briefly, but could you describe what additional facilities Mewbourne Oil Company will need to install for the unit and the waterflood?

A. Okay. Very few additional facilities are planned. The injection water, again, will be obtained from the already-in-place injection system that's associated with the Querecho Plains-Bone Spring waterflood. This will require laying a minimal amount of injection lines, tying into the Bone Spring system and just laying over to the Queen injectors.

Pressure regulators will be installed so that we can control the injection pressures going from the Bone Spring lines to the Queen injectors. And production facilities will remain essentially intact by utilizing three satellite tank batteries, and all flow lines will be rerouted accordingly.

QPBSSU WATER INJECTION MONTHLY REPORT

JUNE 1994

WELL NAMES	DAYS INJ.	DAILY AVE.	MONTH TOTAL	GROSS TOTAL
BURLESON FED #1	30	221	6627	83681
BURLESON FED #2	30	107	3198	45757
FEDERAL "E" #10	30	281	8441	69702
FEDERAL "E" #11	30	174	5214	85695
FEDERAL "F" #3	30	222	6667	101236
FEDERAL "L" #2	30	345	10355	76759
FEDERAL "P" #1	30	249	7460	103860
GOVERNMENT "K" #2	30	127	3813	90050
SHINNERY "14" #3	30	191	5743	71968
SHINNERY "14" #4	30	272	8159	87879
SPRINKLE FED. #1	30	257	7696	93594
SPRINKLE FED. #2	30	168	5039	57065
FEDERAL "L" #4	30	0	0	84259
FEDERAL "L" #5	30	0	0	55334
FEDERAL "L" #7	30	0	0	73153

Average barrels of water injected per day	2614
Total barrels of water injected for month	78412
Total barrels of water injected as of 7/01/94	1179992

SOURCE	DATE	07/01/94	06/01/94	
DOUBLE EAGLE		80415	77512	29030 → 34%
ANADARKO		36538	33698	2840
FED. JEWITT		134992	134281	711
SANTA FE (SWD)		30838	22478	8360
SANTA FE (SF4)		1525	907	618
PRONGHORN				37797
CEDAR LAKE #4				1517
QPBSSU				4171
			TOTAL	84426

QPBSSU WATER INJECTION SUMMARY

MAY 1994

/ELL AMES	Tubing Pressure	DAYS INJ.	DAILY AVE.	MONTH TOTAL	GROSS TOTAL	REMARKS
URLESON FED #1	1700 psi	31	262	8108	77054	
URLESON FED #2		31	129	4014	42559	
EDERAL "E" #10		28	337	9438	61261	HOLE IN TBG
EDERAL "E" #11		31	208	6433	80481	
EDERAL "F" #3		31	254	7865	94569	
EDERAL "L" #2		15	687	10306	66404	TURNED WELL ON
EDERAL "P" #1		31	293	9088	96400	
OVERNMENT "K" #2		31	141	4363	86237	
HINNERY "14" #3		31	217	6739	66225	
HINNERY "14" #4		31	308	9557	79720	
PRINKLE FED. #1		31	301	9334	85898	
PRINKLE FED. #2		31	186	5758	52026	
EDERAL "L" #4	0	0	0	0	84259	SI
EDERAL "L" #5	0	0	0	0	55334	PRODUCER
EDERAL "L" #7	0	0	0	0	73153	SI

Average barrels of water injected per day	3323
Total barrels of water injected for month	91003
Total barrels of water injected as of 6/1/94	1101580

SOURCE	DATE	06/01/94	05/01/94	
DOUBLE EAGLE		77512	74370	31420 ⇒ 35%
ANADARKO		33698	30488	3210
FED. JEWITT		134281	129198	5083
SANTA FE (SWD)		22478	13136	9342
SANTA FE (SF4)		907	320	587
PRONGHORN				0
CEDAR LAKE #4				1887
QPBSSU				6532
			TOTAL	57474

QPBSSU
WATER INJECTION SUMMARY
APRIL 1994

'ELL AMES	DAYS INJ.	DAILY AVE.	MONTH TOTAL	GROSS TOTAL
URLESON FED #1	30	313	9376	68946
URLESON FED. #2	30	148	4425	38545
EDERAL 'E' #10	30	611	18344	51823
EDERAL 'E' #11	30	244	7323	74048
EDERAL "F" #3	30	301	9025	86704
EDERAL "P" #1	30	348	10436	87312
OVERNMENT "K" FE	30	157	4724	81874
HINNERY "14" #3	30	268	8049	59486
HINNERY "14" #4	30	371	11117	70163
PRINKLE FED. #1	30	361	10841	76564
PRINKLE FED. #2	30	209	6264	46268
'EDERAL "L" #2	0	0	0	56098
'EDERAL "L" #4	0	0	0	84259
'EDERAL "L" #5	0	0	0	55334
'EDERAL "L" #7	0	0	0	73153

Average barrels of water injected per day	3331
Total barrels of water injected for month	99924
Total barrels of water injected as of 5/01/94	1010577

SOURCE	DATE	NEW M/R 05/01/94	OLD M/R 04/01/94	USAGE	
DOUBLE EAGLE		74370	69878	44920	→ 41%
ANADARKO		30488	27445	3043	
FED. JEWITT		129198	123833	5365	
SANTA FE (SWD)		13136	4302	8834	
SANTA FE (SF4)		320	0	320	
PRONGHORN				36292	
CEDAR LAKE #4				1706	
QPBSSU				10492	
			TOTAL	110652	

To: Kevin ...
Revised 4-22-94

QPBSSU
WATER INJECTION SUMMARY
MARCH 1994

WELL	Tubing Press	DAYS	DAILY	MONTH	GROSS	REMARKS
BURLESON FED. #1	1600	31	307	9525	59570	
BURLESON FED. #2	1600	30	157	4704	34120	RAN INJ PROFILE
FEDERAL "E" #10	1600	30	355	10651	33479	RAN INJ PROFILE
FEDERAL "E" #11	1600	31	288	8914	66725	
FEDERAL "F" #3	1600	31	376	11661	77679	
FEDERAL "L" #2	0	0	0	0	56098	
FEDERAL "L" #4	0	0	0	0	84259	
FEDERAL "L" #5	0	0	0	0	55334	
FEDERAL "L" #7	0	0	0	0	73153	
FEDERAL "P" #1	1600	31	427	13226	76876	
GOVERNMENT "K" #2	1600	31	156	4837	77150	
SHINNERY "14" #3	1600	30	338	10128	51437	RAN INJ PROFILE
SHINNERY "14" #4	1600	30	436	13075	59046	RAN INJ PROFILE
SPRINKLE FED. #1	1600	30	448	13439	65723	RAN INJ PROFILE
SPRINKLE FED. #2	1600	31	213	6590	40004	

Average barrels of water injected per day	3813
Total barrels of water injected for month	106750
Total barrels of water injected as of 4/1/94	910653

SOURCE	DATE	NEW M/R 04/01/94	OLD M/R 03/01/94	USAGE
DOUBLE EAGLE		69878	63804	(60740 ⇒ 52%
ANADARKO		27445	23342	4103
FED. JEWITT		123833	117369	6464
SANTA FE		4302	0	4302
PRONGHORN				31396
CEDAR LAKE #4				1892
QPBSSU				6891
			TOTAL	115788

QPBSSU
WATER INJECTION SUMMARY
FEBRUARY 1994

VELL	DAYS	DAILY	MONTH	GROSS	Ave Tbg Pressure
3URLESON FED. #1	28	334	9360	50045	1700
3URLESON FED. #2	28	183	5112	29416	1700
FEDERAL "E" #10	28	376	10516	22828	1600
FEDERAL "E" #11	8	551	4410	57811	1600
FEDERAL "F" #3	28	521	14599	66018	1600
FEDERAL "L" #2	13	653	8490	56098	1700
FEDERAL "L" #4	13	1345	17489	84259	1600
FEDERAL "L" #5	0	0	0	55334	0
FEDERAL "L" #7	13	1033	13434	73153	1600
FEDERAL "P" #1	28	563	15776	63650	1700
GOVERNMENT "K" (FE) 2	28	169	4739	72313	1600
SHINNERY "14" #3	28	470	13172	41309	1700
SHINNERY "14" #4	28	556	15557	45971	1700
SPRINKLE FED. #1	28	607	16987	52284	1700
SPRINKLE FED. #2	28	230	6446	33414	1700

Average barrels of water injected per day	5575
Total barrels of water injected for month	156087
Total barrels of water injected as of 3/1/94	803903

SOURCE	DATE	NEW M/R 03/01/94	OLD M/R 02/01/94	USAGE	
DOUBLE EAGLE		63804	50976	128280	=> 79%
ANADARKO		23342	20364	2978	
FED. JEWITT		117369	107582	9787	
SANTA FE				0	
PRONGHORN				14595	
CEDAR LAKE #4				2001	
QPBSSU				5065	
			TOTAL	162706	

QPBSSU
WATER INJECTION SUMMARY
JANUARY 1994 (Revised)

WELL NAMES	DAYS INJ.	DAILY AVE.	MONTH TOTAL	GROSS TOTAL	AVG TBG PRESS
BURLESON FED. #1	31	371	11502	40685	1500
BURLESON FED. #2	31	197	6100	24304	1500
FEDERAL "E" #10	21	586	12312	12312	1500
FEDERAL "E" #11	0	0	0	53401	0
FEDERAL "F" #3	30	775	23254	51419	1500
FEDERAL "L" #2	31	631	19574	47608	1500
FEDERAL "L" #4	30	1093	32796	66770	1300
FEDERAL "L" #5	24	1219	29248	55334	0
FEDERAL "L" #7	31	901	27932	59719	1500
FEDERAL "P" #1	29	838	24295	47874	1500
GOVERNMENT "K" #2	31	156	4843	67574	1500
SHINNERY "14" #3	31	731	22667	28137	1300
SHINNERY "14" #4	31	817	25324	30414	1300
SPRINKLE FED. #1	31	970	30085	35297	800
SPRINKLE FED. #2	31	249	7717	26968	1500

Average barrels of water injected per day	9535
Total barrels of water injected for month	277649
Total barrels of water injected	647816

SOURCE	DATE	NEW M/R 02/01/94	OLD M/R ?	USAGE
DOUBLE EAGLE		50976	26000	249760 ⇒ 87%
ANADARKO		20364	16500	3864
FED. JEWITT		107582	93200	14382
SANTA FE				0
PRONGHORN				9969
CEDAR LAKE #4				3084
QPBSSU				5340
			TOTAL	286399

OO COUPONS

Corrosion Specialties

PHONE 915 586-2902
STAR RT., SOUTH HIGHWAY 18
KERMIT, TEXAS 79745

TESTING

COUPON ANALYSIS REPORT

DATE: JAN. 13, 1993

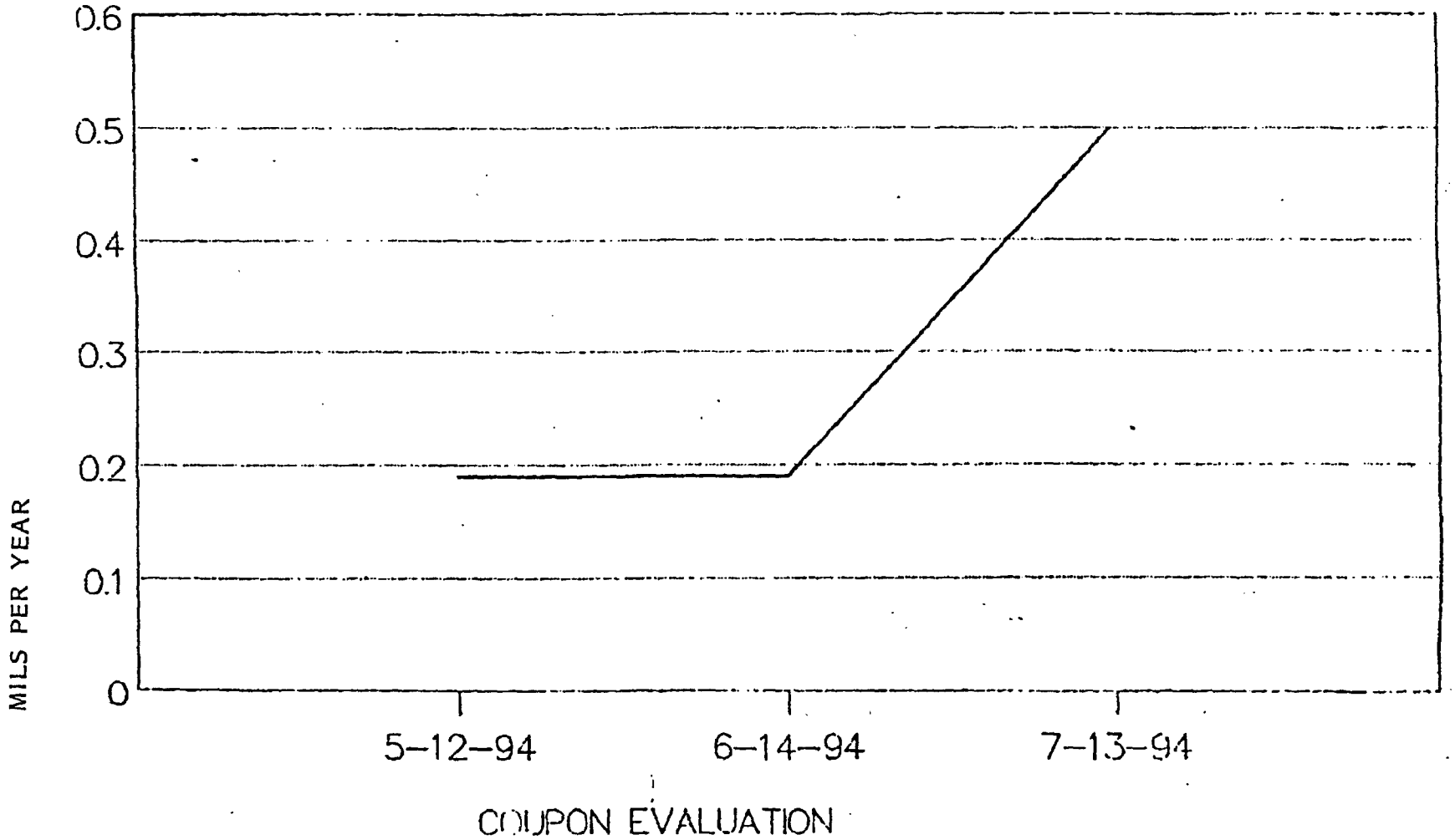
COMPANY NALCO CHEMICAL COMPANY SUBMITTED: TERRY BURLESON

LOCATION	COUPON NO.	DAYS IN	INSTALLED WEIGHT	REMOVED WEIGHT	WEIGHT LOSS	MPY RATE
[redacted]						
~~KELLER #1~~	~~7648~~	~~33~~	~~11.0618~~	~~11.0438~~	~~.0180~~	~~.9623~~
GOVT. K-2	7165	85	11.0475	10.9692	.0783	1.6816
~~[redacted] 4416~~	~~7642~~	~~31~~	~~11.0668~~	~~11.0271~~	~~.0397~~	~~2.2594~~

MEWBOURNE OIL CO.

QPBSSU 7A-10

COUPON STATION AT SOUTH END OF WATER SYSTEM



MEWBOURNE OIL CO.

QPBSSU 12B--3

COUPON STATION AT NORTH END OF WATER SYSTEM