DOME PETROLEUM CORP.

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March 24, 1983

Mr. Joe D. Ramey
Secretary Director
New Mexico Oil Conservation Commission
P.O. Box 2088
Sante Fe, New Mexico 87501

Case 7877

Re: Amendment for Salt Water
Disposal at Snake Eyes Entrada Pool
Sec. 20, T21N, R8W
San Juan County, New Mexico

Gentlemen:

Dome Petroleum Corp. hereby re-submits a request for administrative approval to permit disposal of salt water in the Sante Fe 20#2 well into two zones via a single string of tubing. The two zones are the Morrison and Entrada which were previously approved for salt water disposal by order numbers SWD-188 and R-6220 respectively. We are re-submitting this request with the added condition that we will perform an annual test to confirm the volume of water which is entering each zone.

Upon the suggestion of your office we investigated the feasibility of segregating the disposal into the two zones by running two strings of tubing. This is not a feasible alternative because of the friction pressure drops that would result at the relatively high flow rates. The largest combination of tubing that could be run in 7" casing is a dual string consisting of 3 1/2" and 2 3/8" flush joint. In order to meet our disposal requirements the 2 3/8" tubing would have to handle approximately 3000 BWPD. The friction pressure drop at this rate would be 417 psi which is 43% of our maximum allowable surface disposal pressure for the Morrison zone.

We then investigated methods of determining individual flowrates downhole. When disposing down a single string of tubing into two or more zones it is possible to accurately determine the volume of water entering each zone by the use of a fullbore - spinner flowmeter. This tool is run on wireline using a standard computerized logging truck and is widely used. The tool is a spinner velocimeter which records revolutions per second of the spinner blades as fluid is passed through them. Readings are taken in the casing between the different zones and the velocity loss due to fluid leaving the casing is determined from the decrease in

revolutions per second. Knowing the cross sectional area of the casing, flowrates into the different zones are then calculated. A monophasic fluid such as is present in our disposal system is ideally suited to this type of technique. Further discussion of the full bore-spinner flowmeter is contained in the attached SPE paper.

The injectivity of the Entrada zone is well established by our past disposal history. Once the tubing is perforated across from the Morrison zone it will readily be apparent as to the volume of water entering this zone. To confirm the volumes entering the Morrison and Entrada zones we propose using the fullbore-spinner flowmeter survey on an annual basis.

A proposed procedure is attached for commingled salt water disposal in the Entrada and Morrison zones. When it is confirmed that commingled disposal will be sufficient to handle our requirements of approximately 9000 BWPD we will change out the 3 1/2" tubing to 4 1/2" in order to lower the friction pressure drop.

If there are any questions or if additional information is required please contact me at (303) 620-3136.

Very truly yours,
DOME PETROLEUM CORP.
Robert S. Kelley
Robert S. Kelley
Production Engineer

cc: Mr. Frank Chavez
Supervisor-District #3
1000 Rio Brazos Rd.
Aztec, New Mexico 87401

H.D. Hollingsworth
L. Jenkins

Procedure to Simultaneously Dispose
into Entrada and Morrison Zones
Snake Eyes Entrada Pool
Sante Fe 20#2 Disposal Well

1. Perforate 3 1/2" tubing to communicate with Morrison perforations.

2. Monitor disposal pressures and rates to confirm that simultaneous disposal into Morrison and Entrada is sufficient to handle 9000 BWPD.

3. Pull packers prviously used to isolate Morrison perforations.

4. Change out 3 1/2" tubing to 4 1/2" tubing and set packer at 4700' placing inert fluid in annulus.

5. After two weeks of disposal run fullbore-spinner flowmeter survey and use results to report water disposal volumes.

6. Run fullbore-spinner flowmeter survey annually and adjust reported water disposal volumes accordingly.