Ref: Item VII of C108

DATA ON PROPOSED OPERATION OF THE ARROWHEAD GRAYBURG UNIT

1. Proposed average and maximum daily rate and volume of fluids to be injected:

   Average Daily Rate of 500 BWPD
   Maximum Daily Rate of 800 BWPD

2. System is closed

3. Proposed average and maximum injection pressures:

   Average injection pressure of 350 psi
   Maximum injection pressure of 740 psi*

4. The source of injection fluids will be from two proposed AGU San Andres water supply wells and produced water from the existing Arrowhead Grayburg producers.

5. The make-up water from the San Andres formation to be used as injection fluid is compatible with the produced water from the Unit wells (see attached water analysis).

   * Until a fracture gradient is determined, maximum injection pressure will be based on a .2 psi/foot gradient.

P O BOX 1468
MONAHANS, TEXAS 79756
PH. 943-3234 OR 563-1040

Martin Water Laboratories, Inc.

709 W INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 1190152

TO: Mr. Ray Cramer
P. O. Box 670, Hobbs, NM 88240

SAMPLE RECEIVED 11-14-90

RESULTS REPORTED 11-21-90

COMPANY Chevron U.S.A., Inc. LEASE As Listed

FIELD OR POOL Eunice Monument

SECTION ___ BLOCK ___ SURVEY ___ COUNTY Lea STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Produced water - taken from Harry Leonard "C" #6. 11-14-90

NO. 2 Raw water - taken from Eunice Monument South Unit water supply well #461. 11-14-90

NO. 3 Mixture of 10% Grayburg and 90% San Andres.

NO. 4 Mixture of 50% Grayburg and 50% San Andres.

REMARKS: 1. Grayburg 2. San Andres

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0077	1.0174	1.0158	1.0125
pH When Sampled		6.8		
pH When Received	7.45	6.91	7.05	7.16
Bicarbonate as HCO_3	2,379	671	878	1,452
Supersaturation as $CaCO_3$	50	0	20	40
Undersaturation as $CaCO_3$	--	--	--	--
Total Hardness as $CaCO_3$	1,875	4,600	4,250	3,300
Calcium as Ca	488	1,220	1,140	860
Magnesium as Mg	159	377	340	279
Sodium and/or Potassium	2,047	5,903	5,594	4,322
Sulfate as SO_4	451	2,560	2,377	2,011
Chloride as Cl	2,770	10,085	9,375	6,676
Iron as Fe	1.3	0.40	0.88	0.52
Barium as Ba	0	0	0	0
Turbidity, Electric	121	14	19	40
Color as Pt	42	32	32	40
Total Solids, Calculated	8,294	20,815	19,704	15,600
Temperature °F.		70		
Carbon Dioxide, Calculated	157	174	114	160
Dissolved Oxygen.		0.020		
Hydrogen Sulfide	265	318	212	212
Resistivity, ohms/m at 77° F.	0.850	0.410	0.430	0.520
Suspended Oil	--	1	--	--
Filtrable Solids as mg/l	34.0	13.8	8.0	52.0
Volume Filtered, ml	100	1,200	100	100
Calcium Carbonate Scaling Tendency	NONE	NONE	NONE	NONE
Calcium Sulfate Scaling Tendency	NONE	NONE	NONE	NONE

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: The objective herein is to evaluate compatibility between the two waters represented. In striving to accomplish the desired mixtures that are represented, we feel that some qualification is warranted. In making these mixtures, we primarily strive to avoid air contamination and loss of gasses at least as much as possible during the mixing. The result is that the mixtures are not precisely accurate but reasonably close to the designated percentage. Also, it was necessary to work under the oil in the produced Grayburg water; therefore, the difficulty with avoiding re-suspension of oil causes the filtrable solids levels to vary significantly and therefore may not be generally representative.

Form No. 3

- CONTINUED ON PAGE 2 -

By ___

P O BOX 1468
MONAHANS, TEXAS 79756
PH 943-3234 OR 563-1040

Martin Water Laboratories, Inc.

709 W INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 1190152 (Page 2)

TO: Mr. Ray Cramer
P. O. Box 670, Hobbs, NM 88240

SAMPLE RECEIVED 11-14-90
RESULTS REPORTED 11-21-90

COMPANY Chevron U.S.A., Inc. LEASE As Listed
FIELD OR POOL Eunice Monument
SECTION ___ BLOCK ___ SURVEY ___ COUNTY Lea STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:
NO. 1 Mixture of 90% Grayburg and 10% San Andres.
NO. 2
NO. 3
NO. 4
REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0073			
pH When Sampled				
pH When Received	7.36			
Bicarbonate as HCO_3	2,147			
Supersaturation as $CaCO_3$	80			
Undersaturation as $CaCO_3$	--			
Total Hardness as $CaCO_3$	2,100			
Calcium as Ca	560			
Magnesium as Mg	170			
Sodium and/or Potassium	2,329			
Sulfate as SO_4	622			
Chloride as Cl	3,373			
Iron as Fe	0.40			
Barium as Ba	0			
Turbidity, Electric	73			
Color as Pt	48			
Total Solids, Calculated	9,202			
Temperature °F.				
Carbon Dioxide, Calculated	142			
Dissolved Oxygen,				
Hydrogen Sulfide	212			
Resistivity, ohms/m at 77° F.	0.750			
Suspended Oil				
Filtrable Solids as mg/l	7.0			
Volume Filtered, ml	100			
Calcium Carbonate Scaling Tendency	NONE			
Calcium Sulfate Scaling Tendency	NONE			

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks Our microscopic study of the suspended material in the mixtures clearly indicated that this is the reason they are so variable in ranging from much lower than would be expected to much higher than would be expected. We identified no evidence in these microscopic studies of any precipitates or particles that would imply any incompatibility. There was no implication of potential precipitation or scaling potential as a result of combining the waters. The results of this study are considered conclusive evidence of no incompatibility between these waters. Therefore, it is concluded that the waters can be mixed in any proportion with no difficulty to be expected from the mixing.

Form No. 3

By _____
Waylan C. Martin, M.A.