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

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

CASE NO. 10260
ORDER NO. R-9483

APPLICATION OF CHEVRON U.S.A., INC.
FOR A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on March 7, 1991, at Santa Fe, New Mexico, before Examiner Jim Morrow.

NOW, on this 8th day of April, 1991, 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 Nos. 10259 and 10261 for the purpose of testimony.

(3) The applicant, Chevron U.S.A., Inc., seeks authority to institute a waterflood project on its proposed Arrowhead-Grayburg Unit Area (Division Case No. 10259), Lea County, New Mexico, by the injection of water into the Arrowhead-Grayburg Pool through certain wells as listed in Exhibit "A", attached hereto and made a part hereof, to be either new wells drilled as injection wells or producing oil wells converted to injection wells.

(4) It is proposed that the waterflood project area coincide with the boundary of the Arrowhead-Grayburg Unit Area in Lea County, New Mexico as further described below, which was the subject of Division Case No. 10259 and was heard in conjunction with this case:

Township 21 South, Range 36 East, NMPM
Section 25: All
Section 26: SE/4 SE/4
Section 35: E/2; E/2 SW/4; SW/4 SW/4; SE/4 NW/4
Section 36: All

Township 22 South, Range 36 East, NMPM
Section 1: All
Section 2: All
Section 11: NE/4 NW/4; NE/4; NE/4 SE/4
Section 12: All
Section 13: E/2; E/2 NW/4; NW/4 NW/4; NE/4 SW/4
Section 24: NE/4 NE/4

Township 22 South, Range 37 East, NMPM
Section 6: W/2 NW/4; SW/4
Section 7: W/2; S/2 SE/4; NW/4 SE/4
Section 18: All
Section 19: N/2 N/2

(5) The wells in the proposed project area are in an advanced state of depletion and should therefore be properly classified for secondary recovery operations.

(6) The proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(7) The operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape into other formations or onto the surface from injection, production or plugged and abandoned wells.

(8) The applicant's testimony indicates that there are six previously abandoned wells which may not have been adequately plugged and which are located within one-half mile of certain proposed injection wells in the proposed unit all as shown on Exhibit "B" hereto.

(9) Prior to commencement of injection into any injector within one-half mile of a problem well, as described on Exhibit "B", the applicant should consult with the supervisor of the Oil Conservation Division's district office at Hobbs to develop a plan acceptable to the Director of said Division, for the repairing, plugging, or replugging of said wells or for the monitoring for determination of fluid movement from the injected interval or for the drilling of producing wells to lower reservoir pressure and fluid levels in the vicinity of said wells in order to protect neighboring properties and to protect other oil or gas zones or fresh water. Any additional problem wells within one-half mile of an injector identified by the supervisor of the Hobbs office should be handled in the manner set out above.

(10) The operator should immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing or packer in any of said 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 should take such timely steps as may be necessary or required to correct such failure or leakage.

(11) Injection into each well should be accomplished through plastic-lined tubing installed in a packer set at approximately 100 feet above the uppermost perforation; the casing-tubing annulus in each well should be filled with an inert fluid; and a pressure gauge or approved leak-detection device should be attached to the annulus in order to determine leaks in the casing, tubing or packer.

(12) The injection wells or pressurization system for each well should be so equipped as to limit surface injection pressure at the wellhead to no more than 734 psi (0.2 psi per foot).

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

(14) There are currently two Eumont gas wells which penetrate into the unitized interval: The Chevron W.A. Ramsay B-2 well, Unit E, Section 25, Township 21 South, Range 36 East, and the Amerada Hess P.A. State No. 5 well, Unit N, Section 18, Township 22 South, Range 37 East, NMPM, for which special procedures should be established to avoid the migration of injection fluids into the Eumont Gas Pool without having either gas well recompleted out of the unitized interval at this time.

(15) The applicant identified five wells shown on Exhibit "30", which were completed in the unit but were also completed from one to eight feet above the top of the unit.

(16) The applicant's request that it not be required to isolate the unitized interval from the non-unitized interval in each of these five wells should be granted because none of these wells is productive in the non-unit interval and the expense of a workover to accomplish that separation is not warranted and the risk of damage to the well is not justified.

(17) The Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected waters from the unitized formations.

(18) The operator should give advance notice 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.

(19) The subject application should be approved and the project should be governed by the provisions of Rules 702 through 708 of the Division Rules and Regulations.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Chevron U.S.A., Inc., is hereby authorized to institute a waterflood project on its proposed

Arrowhead-Grayburg Unit Area (Division Case No. 10259), Lea County, New Mexico, by the injection of water into the Arrowhead Pool through wells listed in Exhibit "A", attached hereto and made a part hereof, which will be drilled as injection wells or converted from producing oil wells to injection wells.

(2) The waterflood project, hereby designated the Arrowhead-Grayburg Waterflood Project, shall be comprised of the following described area in Lea County, New Mexico:

Township 21 South, Range 36 East, NMPM
Section 25: All
Section 26: SE/4 SE/4
Section 35: E/2; E/2 SW/4; SW/4 SW/4; SE/4 NW/4
Section 36: All

Township 22 South, Range 36 East, NMPM
Section 1: All
Section 2: All
Section 11: NE/4 NW/4; NE/4; NE/4 SE/4
Section 12: All
Section 13: E/2; E/2 NW/4; NW/4 NW/4; NE/4 SW/4
Section 24: NE/4 NE/4

Township 22 South, Range 37 East, NMPM
Section 6: W/2 NW/4; SW/4
Section 7: W/2; S/2 SE/4; NW/4 SE/4
Section 18: All
Section 19: N/2 N/2

(3) Prior to commencing injection into any injector within one-half mile of a problem well as shown on Exhibit "B" of this order, the applicant shall consult with the supervisor of the Oil Conservation Division's district office at Hobbs to develop a plan acceptable to the Director of said Division, for the repairing, plugging, or replugging of said wells or for the monitoring for determination of fluid movement from the injected interval or for the drilling of producing wells to lower reservoir pressure and fluid levels in the vicinity of said wells in order to protect neighboring properties and to protect either oil or gas zones or fresh water. Any additional problem wells within one-half mile of an injector identified by the supervisor of the Hobbs office shall be handled in the manner set out above.

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

(5) Injection into each well described in Exhibit "A" shall be accomplished through plastic-lined tubing installed in a packer set at approximately 100 feet above the uppermost perforation.

(6) The casing-tubing annulus in each well shall be filled with an inert fluid; and a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak-detection device in order to determine leakage in the casing, tubing or packer.

(7) Prior to commencing injection operations, the casing in each of the subject wells shall be pressure-tested to assure the integrity of such casing in a manner that is satisfactory to the supervisor of the Division's Hobbs District Office.

(8) Each injection well or pressurization system for each well shall be equipped with a pressure-limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 734 psi (0.2 psi per foot).

(9) The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the Grayburg-San Andres formation.

(10) The operator shall notify the supervisor of the Hobbs District Office of the Division in advance 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.

(11) The operator shall immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing, casing or packer, in any of said injection wells or the leakage of water 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 timely steps as may be necessary or required to correct such failure or leakage.

(12) The operator shall monitor the pressure annually and the fluid monthly on the following two Eumont gas wells with completion intervals extending into the unitization formation. At such time as either the pressure or the fluid composition of either well indicates potential migration of unit fluids into either wellbore, the operator shall cause the affected gas well to be plugged back out of the unitized interval and isolated from the unit:

(1) Chevron W.A. Ramsay B-2 well,
Unit E, Section 25, T21S, R36E

(2) Amerada Hess P.A. State No. 5 well,
Unit N. Section 18, T22S, R37E

(13) Unless converted to injectors, the operator shall not be required to isolate the unitized interval in the following wells from the non-unitized interval:

Operator	Lease	Well	Location
Conoco	Lockhart B-1	5	Unit O, Sec. 1, T22S, R36E
Marathon	McDonald State	12	Unit B, Sec. 13, T22S, R36E
Marathon	McDonald State	13	Unit C, Sec. 13, T22S, R36E
Rasmussen	State A "AC" 2	16	Unit I, Sec. 11, T22S, R36E
Rasmussen	State A "AC" 2	17	Unit H, Sec. 11, T22S, R36E

(14) Said waterflood project shall be governed by the provisions of Rules 702 through 708 of the Division Rules and Regulations.

(15) Monthly progress reports shall be submitted to the Division in accordance with Rules 706 and 1115.

(16) 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

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Exhibit A

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ARROWHEAD GRAYBURG UNIT
PROPOSED INJECTION WELL CONVERSIONS

Proposed Well Number	Lease Name	Wellno	Footage	Unit/Sec/TWS/RNG	Operator	Pool
AGU 106 WIC	W A RAMSAY (NCT-B)	5	2105 FNL & 1650 FEL	G 25 21 S 36 E	Chevron	Arrowhead (formerly Penrose Skelly)
AGU 115 WIC	KINGWOOD	2	660 FSL & 1650 FEL	O 25 21 S 36 E	Chevron	Arrowhead (formerly Penrose Skelly)
AGU 119 WIC	HARRY LEONARD (NCT-C)	5	660 FNL & 1980 FWL	C 36 21 S 36 E	Chevron	Arrowhead
AGU 121 WIC	W A RAMSAY (NCT-A)	11	660 FNL & 660 FEL	A 35 21 S 36 E	Chevron	Arrowhead
AGU 124 WIC	W A RAMSAY (NCT-A)	9	1980 FNL & 1980 FEL	G 35 21 S 36 E	Chevron	Arrowhead (formerly Eumont Oil)
AGU 126 WIC	HARRY LEONARD (NCT-C)	3	1980 FNL & 660 FWL	E 36 21 S 36 E	Chevron	Arrowhead
AGU 132 WIC	HARRY LEONARD (NCT-C)	2	1980 FSL & 1980 FWL	K 36 21 S 36 E	Chevron	Arrowhead
AGU 134 WIC	W A RAMSAY (NCT-A)	5	1980 FSL & 660 FEL	I 35 21 S 36 E	Chevron	Arrowhead
AGU 141 WIC	STATE 'M'	1	660 FSL & 660 FWL	M 36 21 S 36 E	OXY USA	Arrowhead
AGU 143 WIC	STATE 'D' DE	1	330 FSL & 2310 FEL	O 36 21 S 36 E	ARCO	Arrowhead
AGU 146 WIC	H T MATTERN (NCT-F)	2	660 FNL & 660 FEL	A 1 22 S 36 E	Chevron	Arrowhead
AGU 150 WIC	STATE J-2	4	660 FNL & 660 FEL	A 2 22 S 36 E	CONOCO	Arrowhead
AGU 152 WIC	STATE J-2	11	660 FNL & 1980 FWL	C 2 22 S 36 E	CONOCO	Arrowhead
AGU 156 WIC	STATE J-2	9	1980 FNL & 1980 FEL	G 2 22 S 36 E	CONOCO	Arrowhead
AGU 158 WIC	LOCKHART B-1 FED.	1	1980 FNL & 660 FWL	E 1 22 S 36 E	CONOCO	Arrowhead
AGU 160 WIC	LOCKHART B-1 FED.	7	1980 FNL & 1830 FEL	G 1 22 S 36 E	CONOCO	Arrowhead
AGU 167 WIC	H T MATTERN (NCT-E)	2	1980 FSL & 1980 FWL	K 1 22 S 36 E	Chevron	Arrowhead
AGU 169 WIC	STATE J-2	2	1980 FSL & 660 FEL	I 2 22 S 36 E	CONOCO	Arrowhead
AGU 171 WIC	STATE 'N'	2	2310 FSL & 2310 FWL	K 2 22 S 36 E	OXY USA	Arrowhead
AGU 175 WIC	STATE J-2	6	660 FSL & 1980 FEL	O 2 22 S 36 E	CONOCO	Arrowhead
AGU 177 WIC	H T MATTERN (NCT-E)	4	660 FSL & 660 FWL	M 1 22 S 36 E	Chevron	Arrowhead
AGU 179 WIC	LOCKHART B-1 FED.	5	660 FSL & 1980 FEL	O 1 22 S 36 E	CONOCO	Arrowhead
AGU 185 WIC	H T MATTERN (NCT-E)	12	660 FNL & 660 FEL	A 12 22 S 36 E	Chevron	Arrowhead
AGU 187 WIC	H T MATTERN (NCT-E)	9	660 FNL & 1980 FWL	C 12 22 S 36 E	Chevron	Arrowhead
AGU 189 WIC	STATE 'A' AC 2	13	660 FNL & 660 FEL	A 11 22 S 36 E	Rasmussen	Arrowhead
AGU 196 WIC	H T MATTERN (NCT-E)	7	2310 FNL & 2310 FEL	G 12 22 S 36 E	Chevron	Arrowhead
AGU 198 WIC	H T MATTERN (NCT-D)	2	2310 FNL & 330 FWL	E 7 22 S 37 E	Chevron	Arrowhead
AGU 201 WIC	MATTERN	2	1650 FSL & 1650 FWL	K 7 22 S 37 E	Chevron	Arrowhead
AGU 222 WIC	MCDONALD STATE AC 2	13	330 FNL & 2310 FWL	C 13 22 S 37 E	Marathon	Arrowhead
AGU 233 WIC	STATE 'PA'	4	2310 FSL & 1980 FWL	K 18 22 S 37 E	Amerada Hess	Arrowhead

PROPOSED ARROWHEAD GRAYBURG UNIT
INJECTION WELLS TO BE DRILLED

WELL NO.	UNIT	LOCATION SECTION	TWS	RANGE
AGU 110 WI	NE/4 SW/4	25	21-S	36-E
AGU 113 WI	SW/4 SW/4	25	21-S	36-E
AGU 128 WI	SE/4 NE/4	36	21-S	36-E
AGU 139 WI	SW/4 SE/4	35	21-S	36-E
AGU 148 WI	NE/4 NW/4	1	22-S	36-E
AGU 165 WI	NE/4 SE/4	1	22-S	36-E
AGU 181 WI	SW/4 SW/4	6	22-S	37-E
AGU 194 WI	SW/4 NW/4	12	22-S	36-E
AGU 203 WI	NE/4 SE/4	12	22-S	36-E
AGU 205 WI	NE/4 SW/4	12	22-S	36-E
AGU 210 WI	SW/4 SE/4	12	22-S	36-E
AGU 212 WI	SW/4 SW/4	7	22-S	37-E
AGU 214 WI	SW/4 SE/4	7	22-S	37-E
AGU 218 WI	NE/4 NW/4	18	22-S	37-E
AGU 220 WI	NE/4 NE/4	13	22-S	36-E
AGU 225 WI	SW/4 NE/4	13	22-S	36-E
AGU 227 WI	SW/4 NW/4	18	22-S	37-E
AGU 229 WI	SW/4 NE/4	18	22-S	37-E
AGU 235 WI	NE/4 SE/4	13	22-S	36-E
AGU 240 WI	SW/4 SW/4	18	22-S	37-E
AGU 242 WI	SW/4 SE/4	18	22-S	37-E
AGU 246 WI	NE/4 NW/4	19	22-S	37-E

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Exhibit "B"

Proposed Arrowhead Grayburg Unit
Potential "Problem Wells"

Operator	Lease	Well No	Location	Comment
Bay Petroleum	Brownlee	1	25 21-S 36-E	Insure DH marker and Surface Plug
Gribble	State	1	36 21-S 36-E	Depths of plugs unknown
Conoco	State J-2	8	2 22-S 36-E	No plugs at pay or salt
Chevron	HT Mattern (NCT-E)	5	12 22-S 36-E	No plug at salt or base of surface string
Chevron	HT Mattern (NCT-D)	5	7 22-S 37-E	No plug at salt or base of surface string
Amerada Hess	State 'PA'	2	18 22-S 37-E	No plugs at pay or salt