

Sec : 26 Twp : 22S Rng : 36E Section Type : NORMAL

<p>D 40.00 Fee owned U P A</p>	<p>C 40.00 Fee owned U A</p>	<p>B 40.00 CS A02614 0000 MARATHON OIL CO U 04/21/40</p>	<p>A 40.00 CS A02614 0000 MARATHON OIL CO U 04/21/40 A A</p>
<p>E 40.00 Fee owned U A</p>	<p>F 40.00 Fee owned U A A</p>	<p>G 40.00 CS A02614 0000 MARATHON OIL CO U 04/21/40 A A</p>	<p>H 40.00 CS A02614 0000 MARATHON OIL CO U 04/21/40 A A</p>
<p>L 40.00 Fee owned U A</p>	<p>K 40.00 Fee owned U A A</p>	<p>J 40.00 CS A02614 0000 MARATHON OIL CO U 04/21/40 A A A</p>	<p>I 40.00 CS A02614 0000 MARATHON OIL CO U 04/21/40 A A A</p>
<p>M 40.00 Fee owned U A A</p>	<p>N 40.00 Fee owned U A A</p>	<p>O 40.00 CS A02614 0000 MARATHON OIL CO U 04/21/40 A A</p>	<p>P 40.00 CS A02614 0000 MARATHON OIL CO U 04/21/40 P A</p>

 The sender of this message has requested a read receipt. [Click here to send a receipt.](#)

**Stogner, Michael, EMNRD**

**From:** Kautz, Paul, EMNRD **Sent:** Fri 6/2/2006 7:09 AM  
**To:** Stogner, Michael, EMNRD  
**Cc:**  
**Subject:** RE: Grayburg  
**Attachments:**

You are not missing anything a well bore in the SE/4 of Sec 26-T22S-R36E is more than 1 mile from the boundry of the Langlie Mattix;7R-Qu-Gb pool and therefore is a wildcat

Paul

**From:** Stogner, Michael, EMNRD  
**Sent:** Thu 6/1/2006 4:32 PM  
**To:** Kautz, Paul, EMNRD  
**Subject:** Grayburg

I need to double check with you that the Grayburg formation in the SE/4 of Section 26-T22S-R36E is indeed "wildcat"? Or am I missing something?



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:

NOMENCLATURE

CASE NO. 10261  
ORDER NO. R-9484

APPLICATION OF CHEVRON U.S.A., INC.  
FOR POOL EXTENSION AND CONTRACTION,  
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) Division Case Nos. 10259, 10260 and 10261 were consolidated at the time of the hearing for the purpose of testimony.

(3) The applicant, Chevron U.S.A., Inc., is the operator of the proposed Arrowhead Grayburg Unit Area, Arrowhead-Grayburg Pool, Lea County, New Mexico. The proposed horizontal limits

of the Arrowhead-Grayburg Pool are shown on Exhibit "A" attached hereto. The proposed Arrowhead-Grayburg Unit Area includes all of the acreage shown on Exhibit A except for the NW/4 NW/4 of Section 17 and the NE/4 NE/4 of Section 14.

(4) Chevron, as operator of the Arrowhead Grayburg Unit, seeks the expansion of the Arrowhead-Grayburg Pool to include the vertical limit described as the top of the Grayburg formation or -150 feet below sea level, whichever is shallower, to -1500 feet below sea level for the area described in Exhibit "A", except for the NW/4 NW/4 of Section 17, the SE/4 of Section 18 and the N/2 N/2 of Section 19 in Township 22 South, Range 37 East and the NE/4 NE/4 of Section 14, Township 22 South, Range 36 East which shall have a lower vertical limit as being the top of the San Andres formation.

(5) Various portions of both the vertical and horizontal limits of the proposed amended Arrowhead-Grayburg Pool are currently dedicated to existing pools.

(6) The expansion and contraction of the Arrowhead-Grayburg Pool and the corresponding contraction of portions of certain existing pools is necessary to permit the applicant to successfully carry out secondary recovery operations within the full oil column underlying said unit and said Unit Area.

(7) No party appeared and objected to the proposed amendment of said vertical limits.

(8) Granting this application will serve to prevent waste and will not violate correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) Within the area designated as the Arrowhead Grayburg Unit Area, as described in Finding No. (3) above, the vertical limits of the Arrowhead-Grayburg Pool are hereby amended to be from 150 feet below sea level or the top of the Grayburg formation, whichever is shallower, to a depth of 1,500 feet below sea level; with the geologic marker for the top of the Grayburg formation being found to occur at 3671 feet in the Chevron Harry Leonard (NCT-C) Well No. 20 (located 660 feet from the North line and 990 feet from the West line (Unit D) of Section 36, Township 21 South, Range 36 East, NMPM, Lea County,

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New Mexico) as recorded by the Gearhart Compensated Neutron Log measured from the Kelly Drive Bushing elevation of 3,532 feet and dated February 25, 1985, save and except the following: in the SE/4 of Section 18, Township 22 South, Range 37 East, and the N/2 N/2 of Section 19, Township 22 South, Range 37 East, NMPM, Lea County, New Mexico, the lower vertical limit of the Arrowhead-Grayburg Pool shall be the top of the San Andres Formation which occurs at 3,804 feet below the Kelly Drive Bushing on the Dresser Atlas Compensated Density Neutron Log dated August 16, 1978 on the Zia (Exxon) New Mexico "M" Well No. 49 which is located 2,610 feet from the South line and 2,310 feet from the East line (Unit J) of Section 18, Township 22 South, Range 37 East, NMPM, Lea County, New Mexico.

(2) The following changes in the horizontal and vertical limits of the following pools are hereby ordered:

a) Contract and expand horizontal limits of Arrowhead-Grayburg Pool to include the Unit Area (Exhibit "A") and the NE/4 NE/4 of Section 14, Township 22 South, Range 36 East and the NW/4 NW/4 of Section 17, Township 22 South, Range 37 East by:

(1) Adding:

Township 21 South, Range 36 East, NMPM

Section 25: E/2

Section 36: NE/4 NE/4

Township 22 South, Range 37 East, NMPM

Section 18: SE/4

Section 19: N/2 N/2

(2) Deleting:

Township 21 South, Range 36 East, NMPM

Section 26: W/2; NE/4; W/2 SE/4;

NE/4 SE/4

Section 34: E/2

Section 35: N/2 NW/4; SW/4 NW/4;

NW/4 SW/4

Township 22 South, Range 36 East, NMPM

Section 3: E/2  
Section 11: W/2 NW/4; SE/4 NW/4; W/2 SE/4;  
SE/4 SE/4  
Section 13: S/2 SW/4; NW/4 SW/4; SW/4 NW/4  
Section 14: SE/4; W/2 NE/4; SE/4 NE/4  
Section 24: S/2; NW/4; NW/4 NE/4;  
S/2 NE/4

Township 22 South, Range 37 East, NMPM

Section 6: E/2 NW/4  
Section 7: NE/4 SE/4

(b) Contract horizontal limits of Langlie-Mattix Pool by deleting the following acreage from that pool:

Township 22 South, Range 37 East, NMPM

Section 18: SE/4  
Section 19: N/2 N/2

(c) Contract horizontal limits of Penrose-Skelly Pool by deleting following acreage from that pool:

Township 21 South, Range 36 East, NMPM

Section 25: NE/4; E/2 SE/4

(d) Contract lower vertical limits of Eumont Pool (Yates-Seven Rivers, Queen) from the top of the Grayburg or -150 feet below sea level, whichever is shallower, in the following areas:

Township 21 South, Range 36 East, NMPM

Section 25: All  
Section 26: SE/4 SE/4  
Section 35: E/2; SE/4 NW/4; E/2 SW/4;  
SW/4 SW/4  
Section 36: All

OIL CONSERVATION DIVISION

Case No. 10261  
Order No. R-9484

EXHIBIT "A"

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 14: NE/4 NE/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 17: NW/4 NW/4  
Section 18: All  
Section 19: N/2 N/2

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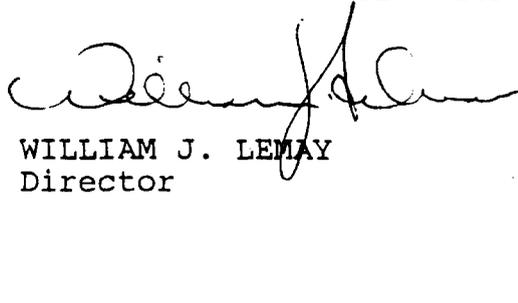
Township 22 South, Range 36 East, NMPM  
Sections 1 and 2: All  
Section 12: All  
Section 13: E/2; N/2 NW/4; SE/4 NW/4;  
NE/4 SW/4

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

(3) 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

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

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Order No. R-9483  
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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:

<u>Operator</u>	<u>Lease</u>	<u>Well</u>	<u>Location</u>
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.

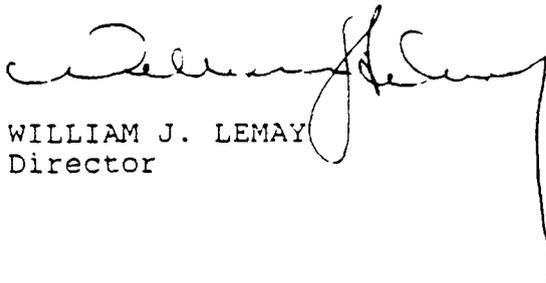
(15) Monthly progress reports shall be submitted to the Division in accordance with Rules 706 and 1115.

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

Case No. 10260  
Order No. R-9483  
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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

ARROWHEAD GRAYBURG UNIT  
PROPOSED INJECTION WELL CONVERSIONS

Proposed Well Number	Lease Name	Well No	Footage	Unit/Sec/TWS/RNG	Operator	Pool
AGU 106 WIC	H A RAMSAY (NCT-B)	5	2105 FNL & 1650 FEL	6 25 21 5 36 E	Chevron	Arrowhead (formerly Penrose Skelly)
AGU 115 WIC	KINGWOOD	2	660 FSL & 1650 FEL	0 25 21 5 36 E	Chevron	Arrowhead (formerly Penrose Skelly)
AGU 119 WIC	HARRY LEONARD (NCT-C)	5	660 FNL & 1980 FNL	C 36 21 5 36 E	Chevron	Arrowhead
AGU 121 WIC	H A RAMSAY (NCT-A)	11	660 FNL & 660 FEL	A 35 21 5 36 E	Chevron	Arrowhead
AGU 124 WIC	H A RAMSAY (NCT-A)	9	1980 FNL & 1980 FEL	G 35 21 5 36 E	Chevron	Arrowhead (formerly Eumont Oil)
AGU 126 WIC	HARRY LEONARD (NCT-C)	3	1980 FNL & 660 FNL	E 36 21 5 36 E	Chevron	Arrowhead
AGU 132 WIC	HARRY LEONARD (NCT-C)	2	1980 FSL & 1980 FNL	K 36 21 5 36 E	Chevron	Arrowhead
AGU 134 WIC	H A RAMSAY (NCT-A)	5	1980 FSL & 660 FEL	I 35 21 5 36 E	Chevron	Arrowhead
AGU 141 WIC	STATE 'M'	1	660 FSL & 660 FNL	M 36 21 5 36 E	OXY USA	Arrowhead
AGU 143 WIC	STATE 'D' DE	1	330 FSL & 2310 FEL	0 36 21 5 36 E	ARCO	Arrowhead
AGU 146 WIC	H T MATTERN (NCT-F)	2	660 FNL & 660 FEL	A 1 22 5 36 E	Chevron	Arrowhead
AGU 150 WIC	STATE J-2	4	660 FNL & 660 FEL	A 2 22 5 36 E	CONOCO	Arrowhead
AGU 152 WIC	STATE J-2	11	660 FNL & 1980 FNL	C 2 22 5 36 E	CONOCO	Arrowhead
AGU 156 WIC	STATE J-2	9	1980 FNL & 1980 FEL	G 2 22 5 36 E	CONOCO	Arrowhead
AGU 158 WIC	LOCKHART B-1 FED.	1	1980 FNL & 660 FNL	E 1 22 5 36 E	CONOCO	Arrowhead
AGU 160 WIC	LOCKHART B-1 FED.	7	1980 FNL & 1830 FEL	G 1 22 5 36 E	CONOCO	Arrowhead
AGU 167 WIC	H T MATTERN (NCT-E)	2	1980 FSL & 1980 FNL	K 1 22 5 36 E	Chevron	Arrowhead
AGU 169 WIC	STATE J-2	2	1980 FSL & 660 FEL	I 2 22 5 36 E	CONOCO	Arrowhead
AGU 171 WIC	STATE 'N'	2	2310 FSL & 2310 FNL	K 2 22 5 36 E	OXY USA	Arrowhead
AGU 175 WIC	STATE J-2	6	660 FSL & 1980 FEL	0 2 22 5 36 E	CONOCO	Arrowhead
AGU 177 WIC	H T MATTERN (NCT-E)	4	660 FSL & 660 FNL	M 1 22 5 36 E	Chevron	Arrowhead
AGU 179 WIC	LOCKHART B-1 FED.	5	660 FSL & 1980 FEL	0 1 22 5 36 E	CONOCO	Arrowhead
AGU 185 WIC	H T MATTERN (NCT-E)	12	660 FNL & 660 FEL	A 12 22 5 36 E	Chevron	Arrowhead
AGU 187 WIC	H T MATTERN (NCT-E)	9	660 FNL & 1980 FNL	C 12 22 5 36 E	Chevron	Arrowhead
AGU 189 WIC	STATE 'A' AC 2	13	660 FNL & 660 FEL	A 11 22 5 36 E	Rasmussen	Arrowhead
AGU 196 WIC	H T MATTERN (NCT-E)	7	2310 FNL & 2310 FEL	G 12 22 5 36 E	Chevron	Arrowhead
AGU 198 WIC	H T MATTERN (NCT-D)	2	2310 FNL & 330 FNL	E 7 22 5 37 E	Chevron	Arrowhead
AGU 201 WIC	MATTERN	2	1650 FSL & 1650 FNL	K 7 22 5 37 E	Chevron	Arrowhead
AGU 222 WIC	MCDONALD STATE AC 2	13	330 FNL & 2310 FNL	C 13 22 5 37 E	Marathon	Arrowhead
AGU 233 WIC	STATE 'PA'	4	2310 FSL & 1960 FNL	K 18 22 5 37 E	Amerada Hess	Arrowhead

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Exhibit A

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# PROPOSED ARROWHEAD GRAYBURG UNIT INJECTION WELLS TO BE DRILLED

## LOCATION

<u>WELL NO.</u>	<u>UNIT</u>	<u>SECTION</u>	<u>TWS</u>	<u>RANGE</u>
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

CASE NO. 10260 - ORDER NO. R-9483

CASE NO. 10260 - Order No. R-9483  
 Exhibit "B"

Proposed Arrowhead Grayburg Unit  
 Potential "Problem Wells"

<u>Operator</u>	<u>Lease</u>	<u>Well No</u>	<u>Location</u>	<u>Comment</u>
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

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. 10259  
ORDER NO. R-9482

APPLICATION OF CHEVRON U.S.A., INC.  
FOR STATUTORY UNITIZATION, 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) Division Case Nos. 10259, 10260 and 10261 were consolidated at the time of the hearing for the purpose of testimony.

(3) The applicant, Chevron U.S.A., Inc., seeks the statutory unitization, pursuant to the "Statutory Unitization Act", Sections 70-7-1 through 70-7-21, N.M.S.A. (1978), of 5922.26 acres, more or less, being a portion of the Grayburg-

San Andres formation, Lea County, New Mexico, said portion to be known as the Arrowhead Grayburg Unit; the applicant further seeks approval of the Unit Agreement and the Unit Operating Agreement which were submitted in evidence as applicant's Exhibit Nos. 61 and 62 in this case.

(4) The horizontal limits of said unit area should be comprised of the following described Federal, State and Fee lands 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

(5) The vertical limits of said unit area should comprise that interval which extends from an upper limit of 150 feet below sea level or the top of the Grayburg formation, whichever is shallower, to a lower limit of 1,500 feet below sea level; with the geologic marker for the top of the Grayburg formation being found to occur at 3,671 feet in the Chevron Harry Leonard (NCT-C) Well No. 20 (located 660 feet from the North line and 990 feet from the West line (Unit D) of Section 36, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico) as recorded by the Gearhart Compensated Neutron Log measured from the Kelly Drive Bushing elevation of 3,532 feet above sea level and dated February 25, 1985, save and except the following: in the SE/4 of Section 18, Township 22 South, Range 37 East, and N/2 N/2 of Section 19, Township 22 South, Range 37 East, NMPM, Lea County, New Mexico, the lower vertical limit shall be the top of the San

Case No. 10259  
Order No. R-9482  
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Andres Formation which occurs at 3,804 feet below the Kelly Drive Bushing on the Dresser Atlas Compensated Density Neutron Log dated August 16, 1978 on the Zia (Exxon) New Mexico "M" Well No. 49 which is located 2,610 feet from the South line and 2,310 feet from the East line (Unit J) of Section 18, Township 22 South, Range 37 East, NMPM, Lea County, New Mexico.

(6) The horizontal and vertical limits of said unit have been reasonably defined by development and should be known as the Arrowhead-Grayburg Pool.

(7) In order to provide a single pool designation for the Arrowhead Grayburg Unit, the horizontal/ vertical limits of the Arrowhead-Grayburg, Penrose-Skelly, Langlie-Mattix and Eumont Oil and Gas Pools should be extended/contracted as set forth in companion Case No. 10261.

(8) The establishment of a uniform depth limit to the unit serves the best interest of all parties because it includes a portion of the aquifer which may be productive of minor amounts of hydrocarbons and should be allocated to the unit if produced. Correspondingly, the amounts should be so small that no correlative rights are violated by its inclusion.

(9) The unit area contains 26 separate tracts of land owned by 48 different working interest owners.

(10) The applicant has made a good faith effort to secure voluntary unitization within the Unit Area and at the time of the hearing 87 percent of the working interest owners and approximately 82.5 percent of the royalty interest owners were effectively committed to the unit.

(11) The applicant proposes to institute a waterflood project for the secondary recovery of oil and associated gas, condensate, and all associated liquefiable hydrocarbons within and to be produced from the proposed unit area (being the subject of Division Case No. 10260).

(12) Arco Oil & Gas Company, as a proposed working interest owner in the unit, and some of the overriding royalty interest owners in Tract 20 appeared at the hearing but did not oppose the case.

(13) No working interest owner or royalty owner appeared in opposition to the case.

(14) The working interest owners in the proposed unit area formed a technical committee in May, 1988 which reached the following conclusions in September, 1989:

- a) that the proposed unit had sufficient secondary recovery potential to justify unitization estimating a 41.6% secondary to primary recovery ratio recovering an estimated 15 million barrels of additional oil; and
- b) that for an investment of approximately \$28.2 million dollars a rate of return of 20% with a 10% discount would result in a present worth profit of \$24.6 million dollars.

(15) The unit technical committee developed equity parameters for negotiation purposes which included cumulative oil production, remaining primary oil and gas reserves, ultimate primary oil reserves, current oil and gas production rates and gross acreage.

(16) Based upon those equity parameters 97.7712% of the unit working interest owners agreed upon a participation formula consisting of 57% cumulative oil plus 33% remaining oil reserves plus 10% current oil rates per tract as each tract's relative share of secondary oil recovery from the proposed unit.

(17) The working interest committee considered acreage as one of the factors in the participating formula, but ultimately agreed that a formula without an acreage factor was more equitable.

(18) The resulting participation of each unit tract using the proposed participation formula is set forth on applicant's Exhibit 20 which shows, with the exception of Tracts 18 and 20, that all tracts have a positive participation percentage.

(19) Tracts 18 and 20 have a "0" percent participation because no party has been able to establish production on those tracts despite wells being drilled and tested on those tracts in the unitized formation.

(20) Said Tracts 18 and 20 do not have contribution value and have been fairly treated under the proposed participation formula.

(21) Both Tracts 18 and 20 are necessary in order to provide an effective flood pattern for the unit and cannot be excluded from the unit area without the loss of substantial volumes of secondary oil.

(22) In order to accommodate the concerns expressed by certain overriding royalty owners in Tract 20, Chevron and those owners request the inclusion of a special provision in the statutory unitization order as follows:

Any ORRI owner in a unit tract which has a "0%" participation under the proposed participation formula for the unit, and who does not receive income from any other unit tract, shall be paid his/her proportionate share of the production from the "0%" tract as if that tract was not a part of the unit. The payment shall be made only if production is obtained from a producing unit well on the "0%" participation tract and the ORRI payment shall be charged as a unit expense against all the working interest owners of the unit. This provision shall apply only to the overriding working interest owner and not to the royalty or working interest owner for that tract, both of whom receive income from other unit tracts.

(23) The inclusion of the above special provision, while not required for approval of this unit, serves to resolve a potentially disputed issue which could delay institution of the waterflood and therefore is appropriate.

(24) The proposed secondary recovery operations should result in the additional recovery of approximately 15 million barrels of oil.

(25) The unitized management, operation and further development of the Arrowhead Grayburg Unit Area, as proposed, is reasonably necessary to effectively carry on secondary recovery operations and will substantially increase the ultimate recovery of oil and gas from the unitized portion of the pool.

(26) The proposed unitized method of operation as applied to the Arrowhead Grayburg Unit Area is feasible and should result with reasonable probability in the increased recovery of substantially more oil and gas from the unitized portion of the pool than would otherwise be recovered without unitization.

(27) The estimated additional costs of such operations will not exceed the estimated value of the additional oil so recovered plus a reasonable profit.

(28) Such unitization and adoption of applicant's proposed unitized method of operation will benefit the working interest owners and royalty owners of the oil and gas rights within the Arrowhead Grayburg Unit Area.

(29) The granting of the application in this case should have no adverse effect upon the Grayburg, San Andres or other formations located within or outside the proposed unit area.

(30) Chevron proposed a wellbore assessment method in the Unit Operating Agreement as an incentive to encourage the working interest owners in the Unit Area to contribute the maximum number of existing useable wellbores to the unit.

(31) This assessment method, though not common, is used in other unit agreements.

(32) A wellbore useable for production or injection in the unitized interval would be made available for any proration unit which currently has a well completed in the unitized interval within the Unit Area which is to participate in the proposed waterflood operation.

(33) It is not unreasonable to penalize the owners of such proration units if they do not dedicate that well to the unit.

(34) The proposed method of wellbore assessment is fair and reasonable.

(35) The applicant's Exhibit Nos. 61 and 62 in this case, being the Statutory Unit Agreement and the Unit Statutory Operating Agreement, respectively, should be incorporated by reference into this order.

(36) The Arrowhead Grayburg Unit Agreement and the Arrowhead Grayburg Unit Operating Agreement provide for unitization and unit operation of the Arrowhead Grayburg Unit Area upon terms and conditions that are fair, reasonable and equitable, and include:

- a) an allocation to the separately owned tracts in the unit area of all oil and gas that is produced from the unit area and which is saved, being the

production that is not used in the conduct of unit operations or not unavoidably lost;

- b) a provision for the credits and charges to be made in the adjustment among the owners in the unit area for their respective investments in wells, tanks, pumps, machinery, materials and equipment contributed to the unit operations;
- c) a provision governing how the costs of unit operations, including capital investments, shall be determined and charged to the separately owned tracts and how said costs shall be paid, including a provision providing when, how, and by whom, such costs shall be paid, including a provision providing when, how and by whom such costs shall be charged to each owner or the interest of such owner, and how his interest may be sold and the proceeds applied to the payment of his costs;
- d) a provision for carrying any working interest owner on a limited, carried or net-profits basis, payable out of production, upon terms and conditions which are just and reasonable, and which allow an appropriate charge for interest for such service payable out of production, upon such terms and conditions determined by the Division to be just and reasonable;
- e) a provision designating the Unit Operator and providing for supervision and conduct of the unit operations, including the selection, removal or substitution of an operator from among the working interest owners to conduct the unit operations;
- f) a provision for a voting procedure for decisions on matters to be decided by the working interest owners in respect to which each working interest owner shall have a voting interest equal to his unit participation; and,
- g) the time when the unit operations shall commence and the manner in which, and the circumstances under which, the operations shall terminate and

for the settlement of accounts upon such termination.

(37) At the time of the hearing, the applicant requested that no penalty be assessed against non-consenting working interest owners in said unit.

(38) The Bureau of Land Management and the commissioner of Public Lands of the State of New Mexico have granted preliminary approval of the proposed unit.

(39) The statutory unitization of the Arrowhead Grayburg Unit Area is in conformity with the above findings, and will prevent waste and protect correlative rights of all interest owners within the proposed unit area, and should be approved.

IT IS THEREFORE ORDERED:

(1) The application of Chevron U.S.A., Inc. for the Arrowhead Grayburg Unit Agreement covering 5922.26 acres, more or less, of Federal, State and Fee lands in the Arrowhead Grayburg Pool, Lea County, New Mexico, is hereby approved for statutory unitization pursuant to the "Statutory Unitization Act", Section 70-7-1 through 70-7-21, N.M.S.A. (1978).

(2) The lands covered by said Arrowhead Grayburg Unit Agreement shall be designated the Arrowhead Grayburg Unit Area and shall comprise the following described acreage 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; and 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; and NE/4 SE/4  
Section 12: All

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Section 13: E/2; E/2 NW/4; NW/4 NW/4; and NE/4 SW/4  
Section 24: NE/4 NE/4

Township 22 South, Range 37 East, NMPM

Section 6: W/2 NW/4; and SW/4  
Section 7: W/2; S/2 SE/4; and NW/4 SE/4  
Section 18: All  
Section 19: N/2 N/2

(3) The vertical limits of said unit area shall comprise that interval which extends from an upper limit of 150 feet below sea level or the top of the Grayburg formation, whichever is shallower, to a lower limit of 1,500 feet below sea level; the geologic marker for the top of the Grayburg formation being found to occur at 3,671 feet in the Chevron Harry Leonard (NCT-C) Well No. 20 (located 660 feet from the North line and 990 feet from the West line (Unit D) of Section 36, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico) as recorded by the Gearhart Compensated Neutron Log measured from the Kelly Drive Bushing elevation of 3,532 feet and dated February 25, 1985, save and except the following: in the SE/4 of Section 18, Township 22 South, Range 37 East, and the N/2 N/2 of Section 19, Township 22 South, Range 37 East, NMPM, Lea County, New Mexico, the lower vertical limit of the Arrowhead Grayburg Unit Area shall be the top of the San Andres Formation which occurs at 3,804 feet below the Kelly Drive Bushing on the Dresser Atlas Compensated Density Neutron Log dated August 16, 1978 on the Zia (Exxon) New Mexico "M" Well No. 49 which is located 2,610 feet from the South line and 2,310 feet from the East line (Unit J) of Section 18, Township 22 South, Range 37 East, NMPM, Lea County, New Mexico.

(4) The applicant shall institute a waterflood project for the secondary recovery of oil and associated gas, condensate and all associated liquefiable hydrocarbons within and produced from the unit area, and said waterflood project is the subject of Division Case No. 10260.

(5) The Arrowhead Grayburg Unit Agreement and the Arrowhead Grayburg Unit Operating Agreement, which were submitted to the Division at the time of the hearing as Exhibit Nos. 61 and 62, respectively, are hereby incorporated by reference into this order.

(6) The Arrowhead Grayburg Unit Agreement and the Arrowhead Grayburg Unit Operating Agreement shall be subject to the following additional special provision:

Any ORRI owner in a unit tract which has a "0%" participation under the proposed participation formula for the unit, and who does not receive income from any other unit tract, shall be paid his/her proportionate share of the production from the "0%" tract as if that tract was not a part of the unit. The payment shall be made only if production is obtained from a producing unit well on the "0%" participation tract and the ORRI payment shall be charged as a unit expense against all the working interest owners of the unit. This provision shall apply only to the overriding working interest owner and not to the royalty or working interest owner for that tract, both of whom receive income from other unit tracts.

(7) This order shall not become effective unless and until seventy-five percent of the working interest and seventy-five percent of the royalty interest owners in the Unit Area have approved the plan for unit operations as required by Section 70-7-8, N.M.S.A., 1978 Compilation.

(8) If the persons owning the required percentage of interest in the Unit Area as set out in Section 70-7-8, N.M.S.A., 1978 Compilation, do not approve the plan for unit operations within a period of six months from the date of entry of this order, this order shall cease to be of further force and effect and shall be revoked by the Division, unless the Division shall extend the time for ratification for good cause shown.

(9) When the persons owning the required percentage of interest in the Unit Area have approved the plan for unit operations, the interests of all persons in the Unit Area are unitized whether or not such persons have approved the plan or unitization in writing.

(10) Any working interest owner who has not agreed in writing to participate in the unit prior to the effective date of this order shall be deemed to have relinquished to the Unit Operator all of his operating rights and working interest in and to the unit until his share of the costs has been repaid. Such

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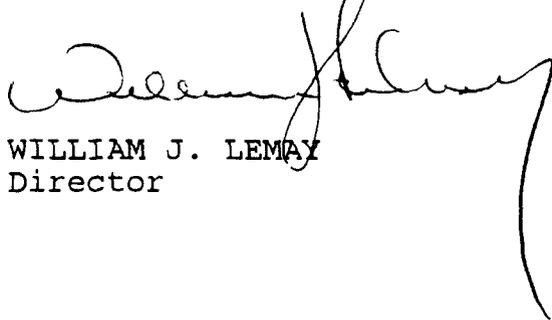
repayment shall not include a non-consent penalty (Section 70-7-7.F N.M.S.A. 1978)

(11) The applicant as Unit Operator shall notify in writing the Division Director of any removal or substitution of said Unit Operator by any other working interest owner within the area.

(12) 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