

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:

CASES NOS. 10356 AND 10369
Order No. R-4808-A

APPLICATION OF OXY USA, INC. FOR
STATEWIDE PRORATIONING, EDDY COUNTY,
NEW MEXICO.

APPLICATION OF ARCO OIL AND GAS COMPANY
TO AMEND DIVISION ORDER NO. R-4808,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on August 22 and 23, 1991, at Santa Fe, New Mexico, before Examiner Jim Morrow.

NOW, on this 17th day of September, 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) The applicant in Case No. 10356, Oxy USA, Inc. (Oxy), seeks to place its Citgo Empire-Abo Pressure Maintenance Project (Citgo Unit), located in portions of Section 35, Township 17 South, Range 27 East, NMPM, Eddy County, New Mexico and Section 2, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico, under the provisions of Division Order A-261 (statewide oil prorationing) effective May 1, 1988 by rescinding Division Order No. R-4808 and by an exception to Rule 502 seeks special assignment of allowables and the adoption of procedures concerning underproduction. Applicant further seeks a determination of the appropriate procedure to be applied by Arco Oil and Gas Company in its Empire-Abo Pressure Maintenance Project (Area Unit), located within Eddy County, New Mexico in portions of Sections 34 and 36, Township 17 South, Range 27 East, NMPM; portions of Sections 25, 26, 27 and 31 through 36, Township 17 South, Range 28 East, NMPM; portions of Sections 29 and 30, Township 17 South, Range 29 East, NMPM; portions of Sections 1 through 4, 8 through 11, 15 through 17, Township 18 South, Range 27 East, NMPM; and portions of Sections 4, 5 and 6, Township 18 South, Range 28 East, NMPM, concerning the accumulation of unused allowable under

Rule 3 and Rule 5 of Order No. R-4549, as amended, to ensure that the correlative rights of the parties involved in these two adjoining projects are not impaired.

(3) The applicant in Case No. 10369, ARCO Oil and Gas Company (Arco), seeks an order from the Division determining the appropriate procedure to be applied by OXY U.S.A., Inc. in its Citgo Empire-Abo Unit to make up its current overproduction and to assure its full compliance with all Division Orders approving this Unit and operations therein, and the amendment of Division Order No. R- 4808 to assure that future production from the Citgo Empire-Abo Unit is limited to a rate equal to the reservoir voidage occurring in the Empire-Abo Unit.

(4) Both Oxy and Arco were represented at pre-hearing meetings concerning these cases on June 5, 1991 and August 9, 1991 to discuss hearing procedures.

(5) Cases Nos. 10356 and 10369 were consolidated for the purpose of hearing and should be handled with a single order since the cases involve common issues. Testimony at the hearing centered around the volume of overproduction or underproduction which should be assigned to the Citgo Unit, the make up provisions which should be applicable to the over or underproduction, and the future allowable producing rate for the Citgo Unit.

(6) In support of its application, Oxy submitted the following information through exhibits and the testimony of witnesses that:

- (a) There are two units in the Empire Abo Pool, the Citgo Unit and the much larger Arco Unit, each operating under its own set of OCD rules. Five operators in the pool produce wells which are subject to statewide rules.
- (b) There are two producing wells, four temporarily abandoned producing wells, and one temporarily abandoned injection well in the Citgo Unit.
- (c) The pool was discovered in 1957. Arco began pressure maintenance in 1974 and Oxy began in 1975. Oxy ceased gas injection in 1988.
- (d) OCD rules for the Arco Unit provide for oil allowables equal to the amount of oil associated with a maximum of 65 MMCF per day associate gas production. Arco may exceed the allowable on a cumulative basis by 325 MMCF.
- (e) OCD rules for the Citgo Unit provide for a daily allowable equal to an average reservoir voidage of 2213 reservoir barrels or 852 barrels of oil whichever is less. Procedures for reservoir voidage and gas bank calculations are set out in the rules.

- (f) In December, 1986 Oxy shut down its unprofitable NGL plant and began injecting wet gas. The injection of wet gas was discontinued in early 1988 and unit production ceased except for small volumes to hold the unit together. A small volume of produced gas was flared until a gas market was obtained in 1989 and unit production began again with gas being sold rather than reinjected.
- (g) Oxy recalculated reservoir voidage for the Citgo Unit from the start of injection using pressure data from their records corrected to datum using reported gradients. Oxy used absolute pressures as required by OCD Order No. R-4808. Following the hearing these calculations were updated through July 1991. Oxy shows the Citgo Unit to be underproduced by 1,103,018 reservoir barrels on August 1, 1991.
- (h) Oxy submitted a January 21, 1988 letter from OCD which authorized the accumulation of underproduction in the Arco Unit.
- (i) Oil recoveries from both the Citgo Unit and the Arco Unit have exceeded 1975 estimates of future primary and secondary oil recovery.
- (j) Citgo Unit bottomhole pressures were higher than the pressures in Arco Unit boundary wells from 1976 until 1988. Currently Citgo Unit pressures are lower.

(7) Oxy summarized their requests of OCD as follows: Rescind Order No. R-4808 effective May 1, 1988, assign each capable well in the Citgo Unit an allowable of 142 BOPD with a gas limit of 284 MCFD, reinstate all underproduction, allow two years to make up underproduction, and allow total Citgo Unit allowable to be produced for any well or wells in the Unit. Oxy witnesses expressed the belief that OCD rules were designed for equal treatment of the Arco Unit and Citgo Unit.

(8) Arco presented testimony and exhibits to show the following:

- (a) The Arco Unit is 84 times larger than the Citgo Unit.
- (b) The Citgo Unit has been voided 3.3 times faster than the Arco Unit and has consistently overproduced its gas allowable except when it had no gas market.
- (c) The Arco Unit has produced within its allowable limit for the life of the pressure maintenance project.

- (d) Voidage rate for the Arco Unit was changed from a reservoir rate to a surface rate of 65 MMCFD in 1984.
- (e) Arco calculated reservoir voidage for the Citgo Unit using pressures from Forms C-124 filed with the OCD. They used gauge pressures rather than absolute pressures. Following the hearing, these calculations were updated through July, 1991. Arco shows the Citgo Unit to be overproduced by 799,729 reservoir barrels on August 1, 1991.
- (f) Arco data shows that the Citgo Unit had produced 21.2 BCF through December 1990, that 10.6 BCF had been reinjected and that net production (also 10.6 BCF) was equal to 180% of the gas in place under the Citgo Unit. Arco also calculated total gas influx into the Citgo Unit of 7.1 BCF at the end of 1990.
- (g) Arco data shows that Arco Unit pressures are generally higher than those in the Citgo Unit.

(9) Arco summarized their requests as follows: Shut in the Citgo Unit until all overproduction is made up, and change OCD Order No. R-4808 to assign an allowable of 613 reservoir barrels per day to the Citgo Unit.

(10) As stated in Findings (6)(g) and (8)(e) above, Oxy's calculations show the Citgo Unit underproduced by 1,103,018 reservoir barrels on August 1, 1991 and Arco calculates overproduction of 799,729 reservoir barrels on that same date. The differences in these calculations are as follows:

- (a) Arco begins the over/under calculations in June, 1974 when the Citgo Unit was approved. Oxy starts its calculations in June, 1975 when gas injection started.
- (b) Oxy credits the Unit with underproduction during any month when it did not produce the reservoir voidage allowable. Arco credits the Unit with underproduction only when it may be applied against cumulative overproduction.
- (c) Arco and Oxy used different pressures as explained in Findings (6)(g) and (7)(e) above.

(11) Arco is correct in their position that OCD Order No. R-4808 does not authorize the carry forward of cumulative underproduction in the Oxy Citgo Unit except that Rule 9 provides that a gas bank may be used to store up overinjection credits.

(12) Arco's calculations show that overproduction from the Citgo Unit was made up in September 1987 and that the unit remained underproduced until April 1989 when it began to overproduce.

(13) Oxy's calculations show all overproduction made up in September, 1984. Oxy shows a cumulative underproduced status of 1,718,370 reservoir barrels on April 1, 1989. However, they are not authorized by the rules to carry this underproduction forward since it is not needed to make up past overproduction and no gas injection had occurred since March 1988.

(14) April 1, 1989 should be accepted as a date when the Oxy Citgo Unit was in balance as to over or underproduction.

(15) From April 1, 1989 through July 31, 1991, Arco shows overproduction of 799,729 reservoir barrels from the Oxy Citgo Unit. Oxy's calculations indicate overproduction of 626,416 reservoir barrels for this same period after correcting February, April and June, 1991 voidage allowables.

(16) Oxy's calculation should be accepted as the correct volume of overproduction for the Citgo Unit for the April 89-July 91 period since the pressures they used appear more nearly correct. Overproduction on August 1, 1991 should be equal to 626,416 reservoir barrels. This is equivalent to 195,467 MCF of gas at surface conditions.

(17) Oil recovery volumes indicate that Oxy has conducted a successful pressure maintenance project involving its Citgo Unit. Gas injection has been discontinued because the pressure maintenance project is no longer profitable. Oxy's request to discontinue operating the unit under OCD Order No. R-4808 should be approved. Allowables based on statewide rules should be assigned to the producing wells in the Citgo Unit. Each producing well should be authorized to produce only its own allowable. Overproduction should be made up by producing at a monthly rate no higher than one-half the total gas limit. Reservoir pressure information should be obtained at 6-month intervals.

(18) Approval as set out above will allow the applicant the opportunity to produce its just and equitable share of the hydrocarbons in the Empire-Abo Pool and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) Division Order No. R-4808 is hereby rescinded effective August 1, 1991.

(2) The producing wells in the Oxy USA Inc. Citgo Empire Abo Unit shall be operated under the Division's Statewide rules beginning August 1, 1991. Each well capable of producing and to which 40 acres is dedicated shall be assigned a top daily allowable of 142 barrels of oil per day and a top daily gas limit of 284 MCF. Wells not capable of producing at these rates shall be assigned allowables and gas limits consistent with their ability to produce. Except for flexibility and tolerances

Cases Nos. 10356 and 10369
Order No. R-4808-A
Page 6

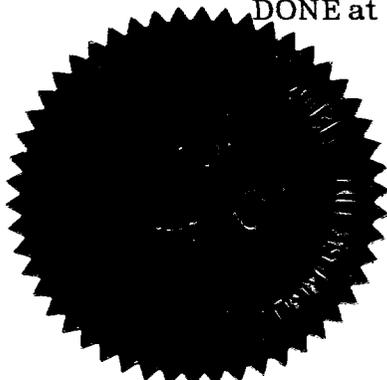
authorized by statewide rules, each well shall produce no more than the allowable assigned to it.

(3) Overproduction for the Citgo Empire-Abo Unit is hereby fixed at 195,467 MCF of gas on August 1, 1991. Gas overproduction shall be made up by producing each well in the unit at monthly rates no higher than one-half the monthly gas limit assigned to the well.

(4) Reservoir pressures shall be measured and reported in October and April each year beginning in 1991, using the procedures and reporting requirements set forth in the Division Statewide Rule No. 302. All producing wells in the Oxy Citgo Unit and all producing wells in the Arco Unit which offset the Citgo Unit shall be subject to this requirement.

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

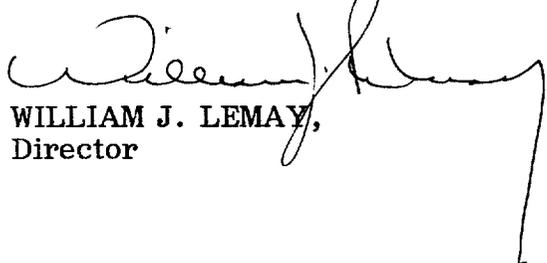
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



S E A L

dr/

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


WILLIAM J. LEMAY,
Director

Cases Nos. 10356 and 10369
Order No. R-?
Rough Draft
Page 1

JHM 9-13-91
MS. 9/13/91
PIC
AS 9/16/91
WJ 9/14/91

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:

CASES NOS. 10356 AND 10369
Order No. R-? 4808-A

APPLICATION OF OXY USA, INC. FOR
STATEWIDE PRORATIONING, EDDY COUNTY,
NEW MEXICO.

APPLICATION OF ARCO OIL AND GAS COMPANY
TO AMEND DIVISION ORDER NO. R-4808,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

Cases Nos. 10356 and 10369
Order No. R-?
Rough Draft
Page 2

This cause came on for hearing at 8:15 a.m. on August 22 and 23, 1991, at Santa Fe, New Mexico, before Examiner Jim Morrow.

NOW, on this _____ day of September, 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) The applicant in Case No. 10356, Oxy USA, Inc. (Oxy), seeks to place its Citgo Empire-Abo Pressure Maintenance Project (Citgo Unit), located in portions of Section 35, Township 17 South, Range 27 East, and Section 2, Township 18 South, Range 27 East, ^{NMPM, Eddy County, NM} under the provisions of Division Order A-261 (statewide oil prorationing) effective ~~and~~ May 1, 1988 by rescinding Division Order No. R-4808 and by an exception to Rule 502 seeks special assignment of allowables and the adoption of procedures concerning underproduction. Applicant further seeks a determination of the appropriate procedure to be applied by ARCO Oil and Gas Company in its Empire-Abo Pressure Maintenance Project (Area Unit), located ^{NMPM} in portions of Sections 34 and 36, Township 17 South, Range 27 East; portions of ^{NMPM} Section 25, 26, 27 and 31 through 36, Township 17 South, Range 28 East; portions of ^{NMPM} Sections 29 and 30, Township 17 South, Range 29 East; portions of Sections 1 ^{within Eddy County, New Mexico}

through 4, 8 through 11, 15 through 17, Township 18 South, Range 27 East; and portions of Sections 4, 5 and 6, Township 18 South, Range 28 East, concerning the accumulation of unused allowable under Rule 3 and Rule 5 of Order No. R-4549, as amended, to ensure that the correlative rights of the parties involved in these two adjoining projects are not impaired. *NMPM*

(3) The applicant, ARCO Oil and Gas Company (Arco), in Case No. 10369 seeks an order from the Division determining the appropriate procedure to be applied by OXY U.S.A., Inc. in its Citgo Empire-Abo Unit to make up its current overproduction and to assure its full compliance with all Division Orders approving this Unit and operations therein, and the amendment of Division Order No. R- 4808 to assure that future production from the Citgo Empire-Abo Unit is limited to a rate equal to the reservoir voidage occurring in the Empire-Abo Unit.

(4) Both Oxy and Arco were represented at pre-hearing meetings concerning these cases on June 5, 1991 and August 9, 1991 to discuss hearing procedures.

(5) Cases Nos. 10356 and 10369 were consolidated for the purpose of hearing and should be handled with ~~order~~ a single order since the cases involve common issues. Testimony at the hearing centered around the volume of overproduction or underproduction which should be assigned to the Citgo Unit, the make up provisions which should be applicable to the over or underproduction, and the future allowable producing rate for the Citgo Unit.

(6) In support of its application, Oxy submitted the following information through exhibits and the testimony of witnesses *that*;

- (a) There are two units in the Empire Abo Pool, the Citgo Unit and the much larger Arco Unit, each operating under its own set of OCD rules. Five operators in the pool produce wells which are subject to statewide rules.
- (b) There are two producing wells, four temporarily abandoned producing wells, and one temporarily abandoned injection well in the Citgo Unit.
- (c) The pool was discovered in 1957. Arco began pressure maintenance in 1974 and Oxy began in 1975. Oxy ceased gas injection in 1988.
- (d) OCD rules for the Arco Unit provide for oil allowables equal to the amount of oil associated with a maximum of 65 MMCF per day associate gas production. Arco may exceed the allowable on a cumulative basis by 325 MMCF.
- (e) OCD rules for the Citgo Unit provide for a daily allowable equal to an average reservoir voidage of 2213 reservoir barrels or 852 barrels of oil whichever is less. Procedures for reservoir

voidage and gas bank calculations are set out in the rules.

- (f) In December, 1986 Oxy shut down its unprofitable NGL plant and began injecting wet gas. The injection of wet gas was discontinued in early 1988 and unit production ceased except for small volumes to hold the unit together. A small volume of produced gas was flared until a gas market was obtained in 1989 and unit production began again with gas being sold rather than reinjected.
- (g) Oxy recalculated reservoir voidage for the Citgo Unit from the start of injection using pressure data from their records corrected to datum using reported gradients. Oxy used absolute pressures as required by OCD Order No. R-4808. Following the hearing these calculations were updated through July 1991. Oxy shows the Citgo Unit to be underproduced by 1,103,018 reservoir barrels on August 1, 1991.
- (h) Oxy submitted a January 21, 1988 letter from OCD which authorized the accumulation of underproduction in the Arco Unit.
- (i) Oil recoveries from both the Citgo Unit and the Arco Unit have exceeded 1975 estimates of future primary and secondary oil recovery.

(j) Citgo Unit bottomhole pressures were higher than the pressures in Arco Unit boundary wells from 1976 until 1988. Currently Citgo Unit pressures are lower.

(7) ~~(k)~~ Oxy summarized their requests of OCD as follows: Rescind Order No. R-4808 effective May 1, 1988, assign each capable well in the Citgo Unit an allowable of 142 BOPD with a gas limit of 284 MCFD, reinstate all underproduction, allow two years to make up underproduction, and allow total Citgo Unit allowable to be produced for any well or wells in the Unit. Oxy witnesses expressed the belief that OCD rules were designed for equal treatment of the Arco Unit and Citgo Unit.

(l) Arco presented testimony and exhibits to show the following:

- (a) The Arco Unit is 84 times larger than the Citgo Unit.
- (b) The Citgo Unit has been voided 3.3 times faster than the Arco Unit and has consistently overproduced its gas allowable except when it had no gas market.
- (c) The Arco Unit has produced within its allowable limit for the life of the pressure maintenance project.

- (d) Voidage rate for the Arco Unit was changed from a reservoir rate to a surface rate of 65 MMCFD in 1984.
- (e) Arco calculated reservoir voidage for the Citgo Unit using pressures from Forms C-124 filed with the OCD. They used gauge pressures rather than absolute pressures. Following the hearing, these calculations were updated through July, 1991. Arco shows the Citgo Unit to be overproduced by 799,729 reservoir barrels on August 1, 1991.
- (f) Arco data shows that the Citgo Unit had produced 21.2 BCF through December 1990, that 10.6 BCF had been reinjected and that net production (also 10.6 BCF) was equal to 180% of the gas in place under the Citgo Unit. Arco also calculated total gas influx into the Citgo Unit of 7.1 BCF at the end of 1990.
- (g) Arco data shows that Arco Unit pressures are generally higher than those in the Citgo Unit.

(9) ← ~~Arco~~ Arco summarized their requests as follows: Shut in the Citgo Unit until all overproduction is made up, and change OCD Order No. R-4808 to assign an allowable of 613 reservoir barrels per day to the Citgo Unit.

(9)(e)

~~10~~(8) As stated in Findings (6)(g) and ~~(7)(e)~~ above, Oxy's calculations show the Citgo Unit underproduced by 1,103,018 reservoir barrels on August 1, 1991 and Arco calculates overproduction of 799,729 reservoir barrels on that same date. The differences in these calculations are as follows:

- (a) Arco begins the over/under calculations in June, 1974 when the Citgo Unit was approved. Oxy starts ^{its} ~~their~~ calculations in June, 1975 when gas injection started.
- (b) Oxy credits the Unit with underproduction during any month when it did not produce the reservoir voidage allowable. Arco credits the Unit with underproduction only when it may be applied against cumulative overproduction.
- (c) ~~Arco~~ ^A Arco and Oxy used different pressures as explained in Findings (6)(g) and (7)(e) above.

~~11~~ (9) Arco is correct in their position that OCD Order No. R-4808 does not authorize the carry forward of cumulative underproduction in the Oxy Citgo Unit except that Rule 9 provides that a gas bank may be used to store up overinjection credits.

~~12~~ (10) Arco's calculations show that overproduction from the Citgo Unit was made up in September 1987 and that the unit remained underproduced until April

1989 when it began to overproduce.

(13) Oxy's calculations show all overproduction made up in September, 1984. Oxy shows a cumulative underproduced status of 1,718,370 reservoir barrels on April 1, 1989. However, they are not authorized by the rules to carry this underproduction forward since it is not needed to make up past overproduction and no gas injection had occurred since March 1988.

(14) April 1, 1989 should be accepted as a date when the Oxy Citgo Unit was in balance as to over~~or~~ or underproduction.

(15) (11) From April 1, 1989 through July 31, 1991, Arco shows overproduction of 799,729 reservoir barrels from the Oxy Citgo Unit. Oxy's calculations indicate overproduction of 626,416 reservoir barrels for this same period after correcting February, April and June, 1991 voidage allowables.

(16) Oxy's calculation should be accepted as the correct volume of overproduction for the Citgo Unit for the April 89-July 91 period since the pressures they used appear more nearly correct. Overproduction on August 1, 1991 should be equal to 626,416 reservoir barrels. This is equivalent to 195,467 MCF of gas at surface conditions.

(17) (12) ^{oil recovery volumes indicate that} Oxy has conducted a successful pressure maintenance project involving its Citgo Unit. Gas injection has been discontinued because the pressure

maintenance project is no longer profitable. Oxy's request to discontinue operating the unit under OCD Order No. R-4808 should be approved. Allowables based on statewide rules should be assigned to the producing wells in the Citgo Unit. Each producing well should be authorized to produce only its own allowable. Overproduction should be made up by producing at a monthly rate no higher than one-half the total gas ^{limit} reservoir pressure ~~and~~ information should be obtained at 6-month intervals.

(18)
(13) Approval as set out above will allow the applicant the opportunity to produce its just and equitable share of the hydrocarbons in the Empire-Abo Pool and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED THAT:

- (1) Division Order No. R-4808 is hereby rescinded effective August 1, 1991.
- (2) The producing wells in the Oxy USA Inc. Citgo Empire Abo Unit shall be operated under the Division's Statewide rules beginning August 1, 1991. Each well capable of producing and to which 40 acres is dedicated shall be assigned a top daily allowable of 142 barrels of oil per day and a top daily gas limit of 284 MCF. Wells not capable of producing at these rates shall be assigned allowables and gas limits consistent with their ability to produce. Except for flexibility and tolerances authorized by statewide rules, each well shall produce no more than the allowable assigned to it.

Cases Nos. 10356 and 10369
Order No. R-?
Rough Draft
Page 11

(3) Overproduction for the Citgo Empire-Abo Unit is hereby fixed at 195,467 MCF of gas on August 1, 1991. Gas overproduction shall be made up by producing each well in the unit at monthly rates no higher than one-half the monthly gas limit assigned to the well.

(4) Reservoir pressures shall be measured and reported in October and April each year ^{beginning in 1991,} using the procedures and reporting requirements set forth in the Division Statewide Rule No. 302. All producing wells in the Oxy Citgo Unit and all producing wells in the Arco Unit which offset the Citgo Unit shall be subject to this requirement.

(5) Jurisdiction of this cause is retained for 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