

KELLAHIN AND KELLAHIN

ATTORNEYS AT LAW

EL PATIO BUILDING

117 NORTH GUADALUPE

POST OFFICE BOX 2265

SANTA FE, NEW MEXICO 87504-2265

W. THOMAS KELLAHIN*

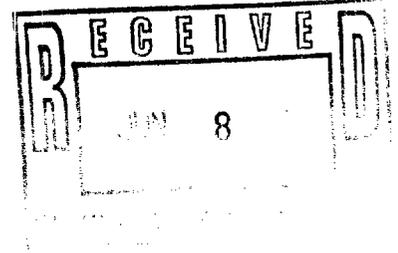
*NEW MEXICO BOARD OF LEGAL SPECIALIZATION
RECOGNIZED SPECIALIST IN THE AREA OF
NATURAL RESOURCES-OIL AND GAS LAW

JASON KELLAHIN (RETIRED 1991)

TELEPHONE (505) 982-4285
TELEFAX (505) 982-2047

June 17, 1996

HAND DELIVERED



Mr. William J. LeMay, Director
Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

**Re: ROPCO 15 GW "A" PC "B" FC Well No. 1
Application of Richardson Operating Company
for compulsory pooling, downhole commingling and
an unorthodox gas well location
San Juan County, New Mexico**

Dear Mr. LeMay:

On behalf of Richardson Operating Company, please find enclosed our referenced application which we request be set for hearing on the Examiner's docket now scheduled for July 11, 1996. Also enclosed is our proposed advertisement of this case for the NMOCD docket.

Very truly yours,

W. Thomas Kellahin

cc: Richardson Operating Company
Attn: Cathy Colby

PROPOSED ADVERTISEMENT FOR NMOCD DOCKET

CASE ____: Application of Richardson Operating Company for compulsory pooling, downhole commingling and an unorthodox gas well location, San Juan County, New Mexico. Applicant seeks an order pooling all mineral interests in the Pictured Cliffs formation underlying the NE/4 and all mineral interests in the Basin Fruitland Coal Gas Pool underlying the E/2 of Section 15, T29N, R13W, NMPM, San Juan County, New Mexico, forming standard 160-acre and 320-acre spacing and proration units, respectively. Said units are to be dedicated to its ROPCO 15 GW "A" PC, "B" FC Well No. 1 which is to be located at an unorthodox gas well location 2275 feet from the North line and 991 feet from the East line (Unit H) of said Section 15 for downhole commingled production from the Fulcher Kutz-Pictured Cliffs Gas Pool or the West Kutz-Pictured Cliffs Gas Pool and the Basin-Fruitland Coal Gas Pool. Also to be considered will be the costs of participation in said well, including but not limited to the costs of drilling, completing and equipping, with the inclusion of a risk factor penalty and the allocation of those costs and income therefor as well as actual operating costs and charges for supervision, and the designation of applicant as the operator of the well.

Said well is located near the intersection of US Highway 64 and Meadow View Drive within the City of Farmington, New Mexico.

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

IN THE MATTER OF THE APPLICATION
OF RICHARDSON OPERATING COMPANY FOR
COMPULSORY POOLING, DOWNHOLE COMMINGLING
AND AN UNORTHODOX GAS WELL LOCATION,
SAN JUAN COUNTY, NEW MEXICO.

CASE NO. _____

A P P L I C A T I O N

Comes now RICHARDSON OPERATING COMPANY, by its attorneys, Kellahin & Kellahin, and in accordance with Section 70-2-17(c) (1978) applies to the New Mexico Oil Conservation Division for an order pooling all mineral interests in the Pictured Cliffs formation underlying the NE/4 and all mineral interests in the Basin Fruitland Coal Gas Pool underlying the E/2 of Section 15, T29N, R13W, NMPM, San Juan County, New Mexico, forming standard 160-acre and 320-acre spacing and proration units, respectively. Said units are to be dedicated to its ROPCO 15 GW "A" PC "B" FC Well No. 1 which is to be located at an unorthodox gas well location 2275 feet from the North line and 991 feet from the East line (Unit H) of said Section 15 for downhole commingled production from the Fulcher Kutz-Pictured Cliffs Gas Pool or the West Kutz-Pictured Cliffs Gas Pool and the Basin-Fruitland Coal Gas Pool. Also to be considered will be the costs of participation in said well, including but not limited to the costs of drilling, completing and equipping, with the inclusion of a risk factor penalty and the allocation of those costs and income therefor as well as actual operating costs and charges for supervision, and the designation of applicant as the operator of the well.

In support of its application, Richardson Operating Company ("Richardson") states:

1. Richardson has a working interest ownership in the oil and gas minerals underlying the NE/4 and the E/2 of Section 15, T29N, R13W, NMPM, San Juan County, New Mexico.

2. In order to minimize surface disturbance within the NE/4 of said Section 15, Richardson seeks approval to locate its ROPCO 15 GW "A" PC "B" FC Well No. 1 at an unorthodox well location 2275 feet FNL and 991 feet FEL of said Section 15 so as to utilize the same drilling site used for an existing Dakota producing well located in Unit H of said Section 15. See Exhibit "A".

3. Richardson has proposed to the other working interest and unleased mineral interest owners that this well be drilled and completed as a "downhole commingled completion" for potential production from the Basin Fruitland Coal Gas Pool with any Pictured Cliffs production to be dedicated respectively to a 320-acre coal-gas spacing and proration unit consisting of the E/2 of Section 15 and to a 160-acre gas spacing and proration unit consisting of the NE/4 of said Section for production from either the Fulcher Kutz-Pictured Cliffs Gas Pool or the West Kutz-Pictured Cliffs Gas Pool.

4. In accordance with Division Rule 303, applicant has completed Division Form C-107-A, which is attached hereto and incorporated by reference.

5. Despite its good faith efforts, Richardson has been unable to obtain a written voluntary agreement from certain unleased mineral interest and leasehold owners as shown on Exhibit "B".

6. Pursuant to Section 70-2-17(c) NMSA (1978) and in order to obtain its just and equitable share of production from the subject well and these spacing units, Richardson needs an order of the Division pooling the identified and described mineral interests in order to protect correlative rights and prevent waste.

7. In accordance with the Division's notice requirements, a copy of this application has been sent to those interest owners.

8. In addition, in accordance with Rule 104.F, a copy of this application is being sent to all affected interest owners towards whom the subject well encroaches.

9. Richardson requests that this matter be set for a hearing before the Division on the next available Examiner's docket now scheduled for July 11, 1996.

WHEREFORE, Richardson, as applicant, requests that this application be set for hearing on July 11, 1996 before the Division's duly appointed examiner, and that after notice and hearing as required by law, the Division enter its order pooling the mineral interest described in these spacing units for the drilling, completion and operations of the subject well for downhole commingled production at a potential unorthodox gas well location upon terms and conditions which include:

- (1) Richardson Operating Company be named operator;
- (2) provisions for each working interest owner to participate in any production by reimbursing the applicant for the value of the costs of drilling, completing, equipping and operating said well;
- (3) In the event a working interest owner fails to elect to participate, then provisions be made to recover out of production, reimbursement to the applicant for the costs of drilling, completing, equipping and operating the well, including a risk factor penalty of 200 %;
- (4) Provision for overhead rates of \$3500 per month drilling and \$450 per month operating and a provision providing for an adjustment method of the overhead rates as provided by COPAS; and
- (5) For such other and further relief as may be proper.

RESPECTFULLY SUBMITTED:



W. THOMAS KELLAHIN
KELLAHIN & KELLAHIN
P. O. Box 2265
Santa Fe, New Mexico 87501
(505) 982-4285

NOTIFICATION LIST - ROPCO 15-1 GW (A) PC, (B) FC
E/2-Section 15-T29N-R13W-San Juan County, NM

Royalty Owners and Overriding Royalty Owners:

Merrill and Lucy Kempton
P.O. Box 293
Farmington, NM 87499-0293

Garth Westbrook
1955 Arapahoe, Apt. 907
Denver, CO 80202-1834

Richard M. Mumma
302 N. Court #A
Farmington, NM 87401-6934

Geneva Hines Pace
1305 Camina Vega
Farmington, NM 87401-8031

Cynthia Calvin
747 Newport Street
Denver, CO 80220-3507

Leola Hines Dobyms
8900 Aspen NE
Albuquerque, NM 87112-3902

James Kenneth Luther
325 West Spruce Street
Farmington, NM 87401-6631

Zelma Hines Tycksen
1309 Hines Road
Farmington, NM 87401-8171

Alton J. Ward
P.O. Box 88
Alamogordo, NM 88311

Robert Reid Coppinger
1600 E. Rochelle Ave. #8
Las Vegas, NV 89119-5557

Desert Land Company
P.O. Box 194
Farmington, NM 87499-0194

Michael L. Coppinger
3901 Lynette Street
Amarillo, TX 79109-5637

Lois R. Leese Living Trust
812 Crest View Drive
Farmington, NM 87401-9109

Donna M. Cardin
70 Timberline Trail
Elizabethtown, KY 42701-8950

Scott R. Brown
P.O. Box 983
Farmington, NM 87499-0983

Lisa Marie Williams
6414 North Hoyne
Chicago, IL 60645-5602

William F. Hoppe and
Beverly J. Hoppe
900 Hallett Circle
Farmington, NM 87401-9117

Arthur L. Welsh and
Jeannette H. Welsh,
Welsh Family Trust, Suite 206
6301 Indian School Road NE
Albuquerque, NM 87110-8113

B & C Development Corp.
P.O. Box 983
Farmington, NM 87499-0983

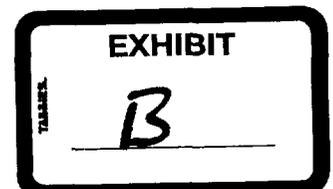
Camille Mildred Williams
423 Erie
South Haven, MI 49090-1323

Joy & Anna Noel Living Trust
511 McDonald Road
Farmington, NM 87401-3583

Dolly Williams
2402 Huldy
Houston, TX 77019-6722

Ira Kyrk Westbrook
P.O. Box 1282
Farmington, NM 87499-1282

Estelle Williams Turner
270 Villeneuve West
Montreal Quebec PQ H2V 2-2
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Savannah, GA 31406-3618

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Tulsa, OK 74112-7436

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Columbia SC 29203-5815

Linda Peterson
41880 RCR 44
Steamboat, CO 80487

First National Bank of
Farmington
P.O. Box 4540
Farmington, NM 87499-4540

Anna M. Perez
429 East Broadway
Farmington, NM 87401-6441

Hannes H. Parnegg
Hertzmark & Parnegg
P.O. Box 3667
Albuquerque, NM 87190-3667

Edward M. Calvin
1615 Cedar Hill Road
Charlottesville, VA 22901-2615

Robert E. Dwyer
P.O. Box 312
Santa Fe, NM 87504-0312

Flossie Alsop, Trustee
499 Shasta Park Drive
Shasta Lake City, CA 96019

William W. Dickey
3858 Patterson Court
Redding, CA 96003-1824

Thelma D. Gulledge Coyle
11794 Scott Road
Redding, CA 96003-1314

Ruby Lee Metherd
626 Main Street
Red Bluff, CA 96080-3344

Diane Olson Watkins
935 E. 3000 N #101
Layton, UT 84040-6554

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Neva L. Daugherty Trust
1113 North Butler
Farmington, NM 87401-6353

Christine T. Willins
Living Trust
P.O. Box 898
Belen, NM 87002-0898

Great Western Drilling Company
P.O. Box 1659
Midland, TX 79702-1659

Davoil Inc.
P.O. Box 200292
Dallas, TX 75320-0292

Denver Rio Grand Western RR
c/o The Anschutz Corporation
P.O. Box 209711
Houston, TX 77212

Jerald J. Eaton
P.O. Box 630596
Nacogdoches, TX 75963-0596

James E. Eaton
P.O. Box 247
Bloomfield, NM 87413-0247

Eaton Limited Partnership
P.O. Box 839
Farmington, NM 87499-0839

Alvin E. Sturdevant and
Augusta A. Sturdevant
1900 Southside River Road
Farmington, NM 87401-7859

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Fort Collins, CO 80525-2201

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Albuquerque, NM 87112-3939

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Dekalb, IL 60115-8926

Jack Watson
15230 S. 1st Street
Dekalb, IL 60115

Reider Watson
1702 County Road 200-N
Villa Grove, IL 61956-9735

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120 Sunlit Grove Drive
St. Petersburg, FL 33702-3228

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Las Vegas, NV 89126-1195

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1019 Third Street
Anacortes, WA 98221-1503

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4629 NW 11th Street
Albuquerque, NM 87107-3703

Agnes F. Nelson
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Farmington, NM 87401-7016

Rocky C. Mace
635 E. Main Street
Farmington, NM 87401

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Farmington, NM 87401

Dugan Production Corporation
P.O. Box 420
Farmington, NM 87499-0420

Alex and Edna Ferrendelli Tr
1204 Cooper Street
Farmington, NM 87401

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1220 E. Camino De La Sombre
Tucson, AZ 85718

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Flora Vista, New Mexico 87415

Doris McGee Jones
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Thoreau, NM 87323-0966

Tanis Harris
P.O. Box 692
Flora Vista, NM 87415-0692

Tracy Duncan
P.O. Box 902
Hereford, TX 79045-0902

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Farmington, NM 87401-1428

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609 S. Carlton
Farmington, NM 87401-7818

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2500 E. Harmony, Lt 351
Fort Collins, CO 80525-9588

Elna Goodman
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Bloomfield, NM 87413-2622

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Farmington, NM 87401-9238

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Cisco, TX 76437-3657

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2815 Main Avenue
Durango, CO 81301-5930

City of Farmington
c/o Mike Sullivan
800 Municipal Drive
Farmington, NM 87401

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6495 Camino Del Pargue
Carlsbad, CA 92008

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c/o Joseph L. Bugay, Pers Rep
3245 Garland Street
Wheat Ridge, CO 80033-5821

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34752 Perry Road, Apt. 4
Union City, CA 94587-5271

Mary L. Follansbee
3240 Garland Street
Wheat Ridge, CO 80033-5822

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6672 Welch Court
Arvada, CO 80004-2226

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Albuquerque, NM 87114-4614

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Farmington, NM 87401-7170

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712 McCormick School Road
Farmington, NM 87401

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Journey Inn Rentals
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Farmington, NM 87401

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El Paso, TX 79923-3237

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Payson, AZ 85541-3437

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Tuscon, AZ 85716-2401

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Umitilla, OR 97882

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Winslow, AZ 86047-4166

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Eagle, ID 83616-5615

Shawnee Teeples Plunkett
1810 15th Avenue
Santa Cruz, CA 95062-1704

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Citra, FL 32113

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Tooele, UT 84074

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P.O. Box 2043
Coolidge, AZ 85228-2043

Venna Bernice Long
78 North 100 West
Spanish Fork, UT 84660-1707

James Larry Teeples
22320 Sunshine Drive
Wittmann, AZ 85361-9669

Heidi Marie Hoffman
399 27 1/2 Road
Grand Junction, CO 81501

K Company
c/o Evelyn Kozinor
1906 Zuni
Farmington, NM 87401-2460

Mable Elaine Hanson
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Camarillo, CA 93010-3912

Board of Education School
District #5 of the City of
Farmington, New Mexico
2001 N. Dustin
Farmington, NM 87401-2120

Fern Cluff Reidhead
413 S. 97th Place
Mesa, AZ 85208-2527

John F. and Lucille H. Werner,
Trustees
1701 E. 30th Street
Farmington, NM 87401

Verlin Leo Cluff
Box 356
Florance, AZ 85232-0356

Central Latin American
District Council of the
Assemblies of God, Inc.
800 McCormick School Road
Farmington, NM 87401

Ivins Virgil Cluff
436 97th Place
Mesa, AZ 85208-2528

Mike & Florence Garcia
1116 1/2 Murray Road
Farmington, NM 87401

Ruth Cluff Hale
P.O. Box 246
Rimrock, AZ 86335-0246

Stephen F. Saiz and
Patricia Leyba-Saiz
1116 E. Murray Road
Farmington, NM 87401

George K. Bacon
3708 Crescent Avenue
Farmington, NM 87401-4139

Lisa A. Lorenz
2230 S RR 4 Lane
Portales, NM 88130

John J. Dempsey
1022 Warm Springs Avenue
Boise, ID 83712-7947

Weldon C. Julander Trust
P.O. Box 2773
Littleton, CO 80161-2773

John & Luern Hunt
86-D Highland Meadows
Laguna, NM 87026-9700

Kerr-McGee Corporation
Attn: John J. O'Brien, Jr.
P.O. Box 25861
Oklahoma City, OK 73125

Oliver W. Harris
#9 Road 5821
Farmington, NM 87401-9526

Herd Partners, Ltd.
P.O. Box 130
Midland, TX 79702-0130

Madeline S. Keenan
820 North Butler
Farmington, NM 87401-6858

Rod Markham
1500 Broadway, Suite 1212
Lubbock, TX 79401-3192

Christmann Mineral Company
1500 Broadway, Suite 800
Lubbock, TX 79401

Manon Markham McMullen
2200 Berkley
Wichita Falls, TX 76308

C. Patterson
5706 Fawn Drive
Farmington, NM 87402

Diamond Head Properties, L.P.
P.O. Box 2127
Midland, TX 79702-2127

Kelly Prespentt
Tres Rios Habitat for
Humanity, Inc.
P.O. Box 324
Farmington, NM 87499-0324

Royalty Owners
Unable to Locate:

Harold G. Vessels
Walter S. Johnson
Elizabeth Greis McBirney
Dave Lakey
Ida Schmerbauch
R. L. Burnett
Lamar Gunn
Paul E. & Mary Wilson

Unleased Mineral Interests:

E.M., Inc. (formerly 515 Inc.)
Attn: Mr. Ernie Martin
515 E. Main Street
Farmington, NM 87401

Clarence Hodgson Estate
c/o Mrs. Evelyn T. Tyler
1018 Murray Drive
Farmington, NM 87401-7232

Bernard W. Koski
1008 Kopra
Truth or Consequence, NM 87901

Lois P. Hodgson
RR1 Box 212
Blanco, NM 87412

Darrell Gene Hardy
c/o Richard Parmley, Jr.
232 N. Schwartz
Farmington, NM 87401

Don Hodgson
1018 E. Murray Drive
Farmington, NM 87401-7232

Fern Knight Lane
Wayne B. & Martha C. Lane
P.O. Box 822
Farmington, NM 87499-0822

F. Dickens & E. Dickens,
T. Roe & G. Roe, B. Tyler,
Roy M. Pitchford, Steven &
Richard Hodgson
1018 Murray Drive
Farmington, NM 87401

Justine Gordon Trust
809 E. Main Street
Farmington, NM 87401

Ida L. Casaus
1113 Montview Avenue
Farmington, NM 87401

Fred & Rosita Shorty
1201 Mountview Avenue
Farmington, NM 87401

Unleased Mineral Owner
Unable to Locate _____:
John Dent Lamar

Uncommitted Leasehold Owner:

Conoco Inc.
Attn: William W. Franklin
10 Desta Drive, Suite 100W
Midland, Texas 79705-4500

Working Interest Owners:

Richardson Production Company
1700 Lincoln, Suite 1700
Denver, CO 80203

Offset Operators/
Leasehold Owners:

Hallwood Energy Company
4582 S. Ulster Pkwy,
Suite 1700
Denver, CO 80237

Amoco Production Company
P.O. Box 800
Denver, CO 80201

Vincent S. Mulford, Jr.
23 W. Fourth Street, Suite 609
Tulsa, OK 74103-5084

Robert L. Bayless
P.O. Box 168
Farmington, NM 87499

DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-107-A
New 3-12-96

DISTRICT II
811 South First St., Artesia, NM 88210-2835

OIL CONSERVATION DIVISION

APPROVAL PROCESS:

2040 S. Pacheco
Santa Fe, New Mexico 87505-6429

Administrative Hearing

DISTRICT III
1000 Rio Brazos Rd, Aztec, NM 87410-1693

EXISTING WELLBORE

APPLICATION FOR DOWNHOLE COMMINGLING

YES NO

Richardson Operating Company 1700 Lincoln, Ste 1700, Denver CO 80202
Operator Address

ROPKO 15 GW "A"PC"B"FC 1 H 15 29N 13W San Juan
Lease Well No. Unit Tr. - Sec - Twp - Rge County

OGRID NO. 19219 Property Code _____ API NO. _____ Spacing Unit Lease Types (check 1 or more)
Federal _____ State _____ and/or Fee

The following facts are submitted in support of downhole commingling:	Upper Zone	Intermediate Zone	Lower Zone
1. Pool Name and Pool Code	Basin-Fruitland Coal Gas Pool		West Kutz Pictured Cliffs
2. Top and Bottom of Pay Section (Perforations)			
3. Type of production (Oil or Gas)	Gas		Gas
4. Method of Production (Flowing or Artificial Lift)	Flowing		Flowing
5. Bottomhole Pressure Oil Zones - Artificial Lift: Estimated Current Gas & Oil - Flowing: Measured Current All Gas Zones: Estimated Or Measured Original	a. (Current) 205 psig(est)	a.	a. 236 psig(est)
	b. (Original) 205 psig (est)	b.	b. 236 psig (est)
6. Oil Gravity (°API) or Gas BTU Content	1035 (est)		1000 (est)
7. Producing or Shut-In?			
Production Marginal? (yes or no)	Yes		No.
* If Shut-In, give date and oil/gas/water rates of last production	Date: Rates:	Date: Rates:	Date: Rates:
Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data			
* If Producing, give date and oil/gas/water rates of recent test (within 60 days)	Date: Rates:	Date: Rates:	Date: Rates:
8. Fixed Percentage Allocation Formula - % for each zone	Oil: % Gas: %	Oil: % Gas: %	Oil: % Gas: %

9. If allocation formula is based upon something other than current or past production, or is based upon some other method, submit attachments with supporting data and/or explaining method and providing rate projections or other required data.

10. Are all working, overriding, and royalty interests identical in all commingled zones? Yes No
If not, have all working, overriding, and royalty interests been notified by certified mail? Yes No
Have all offset operators been given written notice of the proposed downhole commingling? Yes No

11. Will cross-flow occur? Yes No If yes, are fluids compatible, will the formations not be damaged, will any cross-flowed production be recovered, and will the allocation formula be reliable. Yes No (If No, attach explanation)

12. Are all produced fluids from all commingled zones compatible with each other? Yes No

13. Will the value of production be decreased by commingling? Yes No (If Yes, attach explanation)

14. If this well is on, or communitized with, state or federal lands, either the Commissioner of Public Lands or the United States Bureau of Land Management has been notified in writing of this application. Yes No

15. NMOCD Reference Cases for Rule 303(D) Exceptions: ORDER NO(S). NMOCD Order R-10231

16. ATTACHMENTS:

- C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
- Production curve for each zone for at least one year. (If not available, attach explanation.)
- For zones with no production history, estimated production rates and supporting data.
- Data to support allocation method or formula.
- Notification list of all offset operators.
- Notification list of working, overriding, and royalty interests for uncommon interest cases.
- Any additional statements, data, or documents required to support commingling.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Thomas Kellahin TITLE Attorney DATE June 17, 1996

TYPE OR PRINT NAME W. Thomas Kellahin TELEPHONE NO. (505) 982-4285

ROPCO GW 15 "A" PC, "B" FC No. 1

MONTHLY GAS PRODUCTION ALLOCATION FORMULA

GENERAL EQUATION

$$Q_t = Q_{fte} + Q_{pc}$$

Where: Q_t = Total Monthly Production (MCF/MO)
 Q_{fte} = Fruitland Coal Monthly Production
 Q_{pc} = Pictured Cliffs Monthly Production

REARRANGING THE EQUATION TO SOLVE FOR Q_{fte} :

$$Q_{fte} = Q_t - Q_{pc}$$

ANY PRODUCTION RATE OVER WHAT IS CALCULATED FOR THE PICTURED CLIFFS USING THE APPLIED FORMULA IS FRUITLAND COAL PRODUCTION.

ICTURED CLIFFS FORMATION PRODUCTION FORMULA IS:

$$Q_{pc} = Q_{pci} * e^{-{(D_{pc}) * (t)}}$$

Where: Q_{pci} = Initial Pictured Cliffs monthly flow rate (calculated from flow test)

D_{pc} = Pictured Cliffs monthly decline rate calculated from

$$(Q_{pci} - Q_{pcabd}) / N_p$$

See Determination of Q_{pci} and PC Estimated Ultimate Recovery (EUR)
 $Q_{pcabd} = 300$ MCF/mo

Where: N_p = Pictured Cliffs estimated ultimate recovery (EUR)

$$P^* \times 9.5 \text{ MMCF/PSI}^* \times R_f$$

P^* = initial reservoir pressure (7 day SIBIP)

R_f = recovery factor (field analogy) = 0.85

* * Determined from material balance (field analogy) and volumetric reserves (log analysis)

By calculating PC EUR from SIBIP and determining PC initial flow rate, D_{pc} can then be estimated utilizing the previously described parameters.

THUS: $Q_{fte} = Q_t - Q_{pci} * e^{-{(D_{pc}) * (t)}}$
WHERE: (t) is in months

ROPCO GW 15 "A" PC, "B" FC No. 1

**SAMPLE
DETERMINATION OF Q_{pci}:**

(INITIAL PICTURED CLIFFS MONTHLY PRODUCTION)

$$Q_{pci} = Q_t (1) \times Q_{pc} (p) / \{Q_{pc} (p) + Q_{fte} (p)\}$$

WHERE:

Q_t (1) = First month's total production (MCF)	=	14,718 MCF
Q_{pc} (p) = Final Pictured Cliffs Flow Test (MCFD)	=	398 MCFD
Q_{fte} (p) = Final Fruitland Coal Flow Test (MCFD)	=	50 MCFD

THUS:

$$Q_{pci} = 14,718 \text{ MCF} \times [398 \text{ MCFD} / (398 + 50 \text{ MCFD})] = 13,075 \text{ MCFD}$$

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SAMPLE DETERMINATION OF N_p (PC):

$$N_p \text{ (PC)} = 9.5 \text{ MMCF/PSI} \times P^* \times R_f$$

$$P^* = 241 \text{ PSI}$$

$$N_p \text{ (PC)} = 9.5 \times 241 \times 0.85 = 1946.1 \text{ MMCF}$$

$$Q_{pci} = 13,075 \text{ MCF}$$

DETERMINATION OF D_{pc} :

$$D_{pc} = (Q_{pci} - Q_{peabn}) / N_{pc}$$

$$D_{pc} = (13,075 \text{ MCF} - 300 \text{ MCF}) / 1,946,100 \text{ MCF} = 0.006564$$

THUS:

$$Q_{fte} = Q_t \text{ (MCF/mo)} - [13,075 \times e^{-\{-(0.006564 \times t)\}}]$$