Amoco Production Company (USA)

Houston Region–West
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

R. G. Smith
Regional Engineering
Manager–West

File: JCA-986.51NM-1188

Re: Application for Administrative Approval
Unorthodox Gas Well Location
Federal "DH" Gas Com Well No. 1
Empire South Area
Eddy County, New Mexico

NSL-1800
from base of Wolfcamp
through the Silurian formation
Rule 104 F
April 1, 1984
ALL GAS PRODUCTIVE FORMATIONS BELOW THE BASE OF THE WOLFCAMP.

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
State Land Office Building
Old Santa Fe Trail
P. O. Box 2088
Santa Fe, NM 87501

Attention: Mr. Joe D. Ramey (3)

Gentlemen:

Amoco Production Company hereby makes application for administrative approval of an unorthodox gas well location under the provision of Statewide Rule 104(F). Amoco seeks approval of this unorthodox gas well location for the Federal "DH" Gas Com Well No. 1 which is proposed to be drilled 700' FSL and 990' FWL (Unit M) of Section 11, T-18-S, R-27-E, in the Empire South area of Eddy County, New Mexico. The subject well is proposed as a deep wildcat test of potentially productive Ordovician and Silurian formations and will allow for shallower Pennsylvanian formations already developed in the area to also be tested. The primary completion targets are the Ellenburger, Silurian and Morrow formations; however, testing is proposed in all potentially productive formations encountered below the base of the Wolfcamp to the well's total depth of 11,950' in the Ellenburger.

Amoco proposes to dedicate the S/2 of Section 11 to the subject well in order to form a 320 acre gas proration unit for any gas productive formation encountered from the base of the Wolfcamp to total depth. The well's location in the proposed proration unit will be unorthodox for all gas producing formations below the base of the Wolfcamp.

As stated, this application, in part, requests approval of an unorthodox location for all Pennsylvanian formations to be dedicated to a proration unit covering the S/2 of Section 11. It should be noted, the SW/4 of Section 11 is currently dedicated to a W/2 320 acre proration unit for the Amoco operated Malco "S" Federal No. 1 Well which is completed in the Scoggin Draw-Morrow Gas Pool. Appropriate action will be taken to prevent the dual dedication of this 160 acres in the event the subject well is completed in the Morrow formation.

The necessity for an unorthodox location for the Federal "DH" Gas Com Well No. 1 is due to geological conditions that exist for primary completion targets in the Ellengurger, Silurian and Morrow formations. As required by Statewide Rule 104(F)(III), the following exhibits are attached in support of Amoco's request for administrative approval of the unorthodox location.

Exhibit No. 1 is a portion of the Eddy County Land ownership map for the area subject to this application. This exhibit depicts the subject well location in proximity to the adjacent leases and reveals the ownership of all leases and the wells completed offset the proposed 320 acre spacing unit.

Exhibit No. 2 is a list of each operator in offsetting proration units to the proposed 320 acre spacing units.

Exhibit No. 3 is a copy of the letter of notification sent to all offset operators by certified mail.

Exhibit No. 4 is a certified Form C-102 (i.e., well lcoation and acreage dedication plat) showing the surveyed well location and proposed spacing unit.

Exhibit No. 5 is a discussion of the geological interpretation which justifies the necessity for the subject unorthodox location.

Exhibit No. 5A is a structure map contoured on top of the Silurian.

Exhibit No. 5B is a geological structure map representative of the Pennsylvanian Structure and contoured on the top of the Morrow Classics.

Exhibit No. 5C is a clean sand isopach map of the completed sand interval in the Amoco Hondo "B" Federal Gas Com No. 1 Well located in Unit L of Section 8, T-18-S, R-27-E. This well was used to identify the target Morrow sand interval in the Empire South prospect area.

In summary, Amoco Production Company, as Applicant in this case, hereby requests administrative authorization of an unorthodox gas well location applicable to all gas productive formations below the base of the Wolfcamp, or in the alternative, approval of an unorthodox location specifically for the Ellenburger, Silurian and Morrow formations. If approved, this will allow the subject well to be situated at the proposed location in the S/2 of Section 11 to facilitate the drilling of a rank wildcat well into the Ellenburger and Silurian formations as well as allowing further development of the Morrow formation. Approval of this application would also insure timely testing of all productive horizons below the base of the Wolfcamp to a total depth of 11,950'.

The necessity of this unorthodox location is the result of geological conditions which are documented in the geological discussion contained in this application. It is imperative the subject well be drilled as close to the south and west leaselines as is practical in order to assure the maximum probability of encountering the productive portions of the Ordovician, Silurian and Pennsylvanian pay underlying this property. Approval of this application will serve to prevent the economic waste which would result from drilling unnecessary wells and is otherwise in the interest of conservation.

Amoco as applicant hereby certifies that on March 9, 1984 notice of this application was forwarded by certified mail (Exhibit No. 3) to each of the offsetting parties to the proposed proration unit. In the absence of objection to this application, Amoco requests the issuance of an administrative order approving this unorthodox location as soon as possible in order to allow commencement of drilling operations in time to hold leases with impending expiration dates. Any questions regarding this application should be directed to Steve Scheffler (713/556-3929) in our Houston-West Region Proration Section.

Yours very truly,

R. G. Smith SPS

SPS/gg
ER1569/J

Attachments

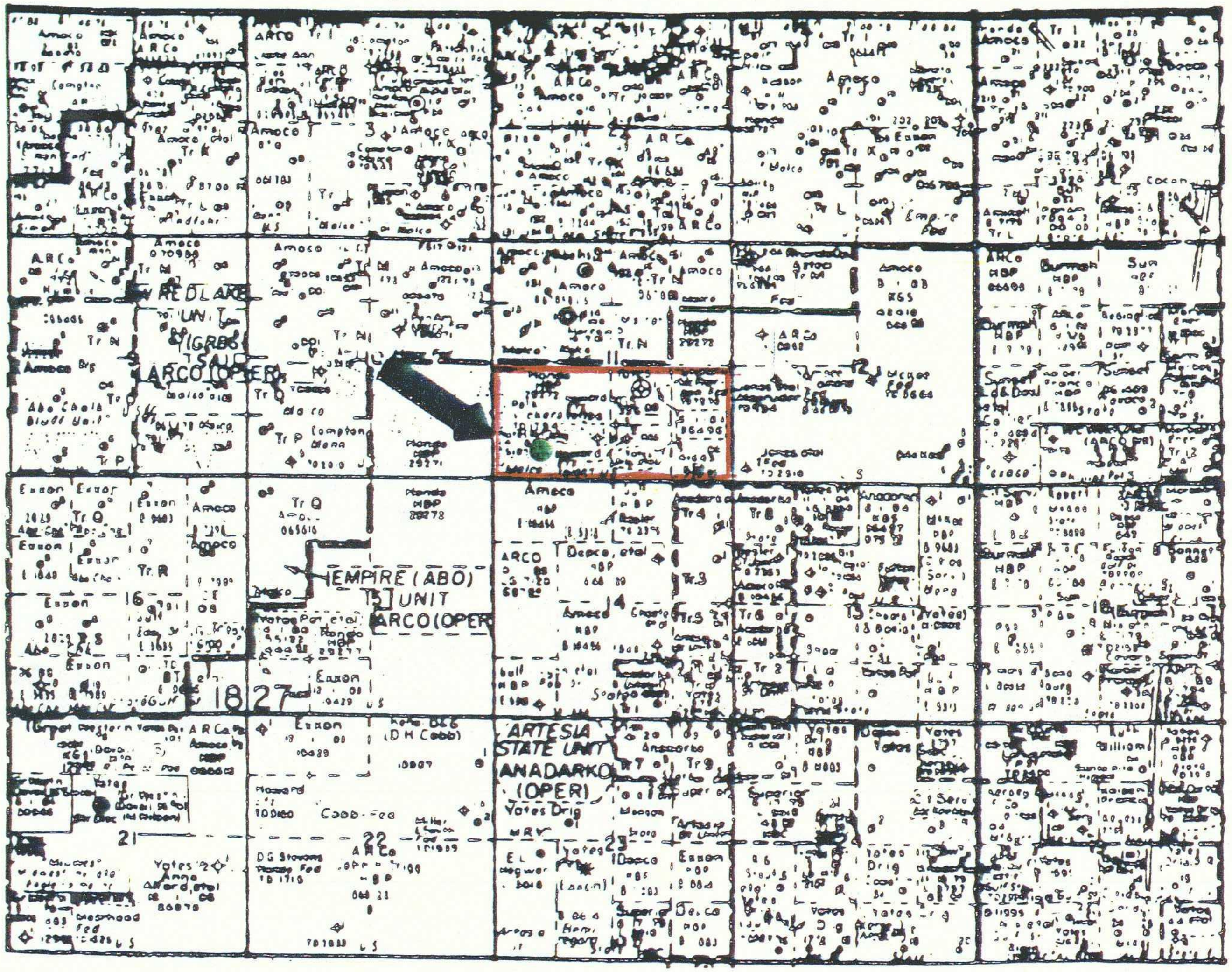


EXHIBIT No. 1

LOCATION PLAT

Federal "DH" Gas Com. No. 1
700' FSL x 990' FWL(Unit -M)
of Section 11, T-18-S,
R-27-E, Eddy Cty., N.M.

320 acre proration unit
S/2 section 11

List of Offset Operators

North Offset

Amoco Production Co.
Atlantic Richfield Co.

Northwest Offset

Amoco Production Co.
Atlantic Richfield Co.

West Offset

Amoco Production Co.

Southwest Offset

Amoco Production Co.

South Offset

Amoco Production Co.
Anadarko Production Co.
Gulf Oil Exploration and Production Co.
Yates Petroleum Corporation

Southeast Offset

Anadarko Production Co.

East Offset

Amoco Production Co.

EXHIBIT No. 2

Northeast Offset

Don L. Benscoter
Bernard J. MacElhenny Jr.
Keith C. Berry
Michael F. Muench
Eric Lang
Halwell, Inc.
Walter L. Lipski
Robert G. Cox
R. Dixon Wood
Mrs. Evelyn Flannery
Robert E. Gove
Walter W. Hudson
Donald R. Church
Thomas J. Orloski
C. Robert Mandeville
Robert V. Ratts
Robert J. Sabinske
John D. Couturie
Dr. Edward G. Murphy
Robert S. Olson
Jack Wiziarde

SS/gg
ER/1569/K

R. G. Smith
Regional Engineering
Manager–West

March 9, 1984

Amoco Production Company (USA)
Houston Region–West
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

File: JCA-986.51-1203

Re: Notice of Application for
Administrative Approval
Unorthodox Gas Well Location
Federal "DH" Gas Com Well No. 1
Empire South Area
Eddy County, New Mexico

OFFSET OPERATORS
(See Attached List)

Gentlemen:

Amoco Production Company has made application to the New Mexico Oil Conservation Division for the administrative approval of an unorthodox gas well location under Statewide Rule 104(F). Amoco seeks approval of the unorthodox gas well location for the Federal "DH" Gas Com Well No. 1 which is proposed to be drilled 700' FSL and 990' FWL (Unit M) of Section 11, T-18-S, R-27-E, Empire South Area, Eddy County, New Mexico. The subject well is proposed as a deep wildcat test of potentially productive Ordovician and Silurian formations and will allow for shallower Pennsylvanian formations already developed in the area to also be tested. The primary completion targets are the Ellenburger, Silurian, and Morrow formations; however, testing is proposed in potentially productive formations encountered below the base Wolfcamp to the well's total depth of 11,950' in the Ellenburger.

Amoco proposes to dedicate the S/2 of Section 11 to the subject well in order to form a 320-acre gas proration unit for any productive formation encountered from the base of the Wolfcamp to total depth. The well's location in the proposed proration unit would be unorthodox for all gas producing formations below the base of the Wolfcamp.

EXHIBIT No. 3

Amoco has requested that in the absence of objection to this application by offset operators, approval be granted administratively by the New Mexico Oil Conservation Division Director in accordance with Statewide Rule 104(F)(III). Any questions regarding the application should be directed to Steve Scheffler (713/556-3929), in our Houston Region-West Proration Section.

Yours very truly,

R. G. Smith

SPS/mes
887/P

Attachment

cc: State of New Mexico
Energy and Minerals Department
Oil Conservation Division
State Land Office Building
Old Santa Fe Trail
P. O. Box 2088
Santa Fe, NM 87501

LIST OF OFFSET OPERATORS

Anadarko Production Company
P. O. Box 2497
Midland, TX 79702

Atlantic Richfield Company
P. O. Box 1600
Midland, TX 79702

Gulf Oil Exploration and
Production Company
P. O. Box 1150
Midland, TX 79702

Yates Petroleum Corporation
207 South Fourth Street
Artesia, NM 88210

Mr. Don L. Benscoter
6105 East Sage Drive
Scottsdale, AR 85253

Mr. Bernard J. MacElhenny, Jr.
The Financial Plaza
3838 State Street
Santa Barbara, CA 93105

Mr. Keith C. Berry
The Financial Plaza
3938 State Street
Santa Barbara, CA 93105

Mr. Michael F. Muench
The Financial Plaza
3938 State Street
Santa Barbara, CA 93105

Mr. Eric Lang
The Financial Plaza
3938 State Street
Santa Barbara, CA 93105

A. J. Losee
P. O. Drawer 239
Artesia, NM 88210

As Agent and Attorney For:
Halwell, Inc.
Walter L. Lipski
Robert G. Cox
R. Dixon Wood
Mrs. Evelyn Flannery
Robert E. Gove
Walter W. Hudson
Donald R. Church
Thomas J. Orloski
C. Robert Mandeville
Robert V. Ratts
Robert J. Sabinske
John D. Couturie
Dr. Edward G. Murphy
Robert S. Olson
Jack Wiziarde

SPS/mes
887/BB

EXHIBIT No. 4

NEW MEXICO OIL CONSERVATION COMMISSION

WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102
Supersedes C-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
AMOCO PRODUCTION COMPANY	FEDERAL "DH" GAS COMM.	1

Unit Letter	Section	Township	Range	County
M	11	18 SOUTH	27 EAST	EDDY

Actual Footage Location of Well:
990 feet from the WEST line and 700 feet from the SOUTH line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
3546.0			Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

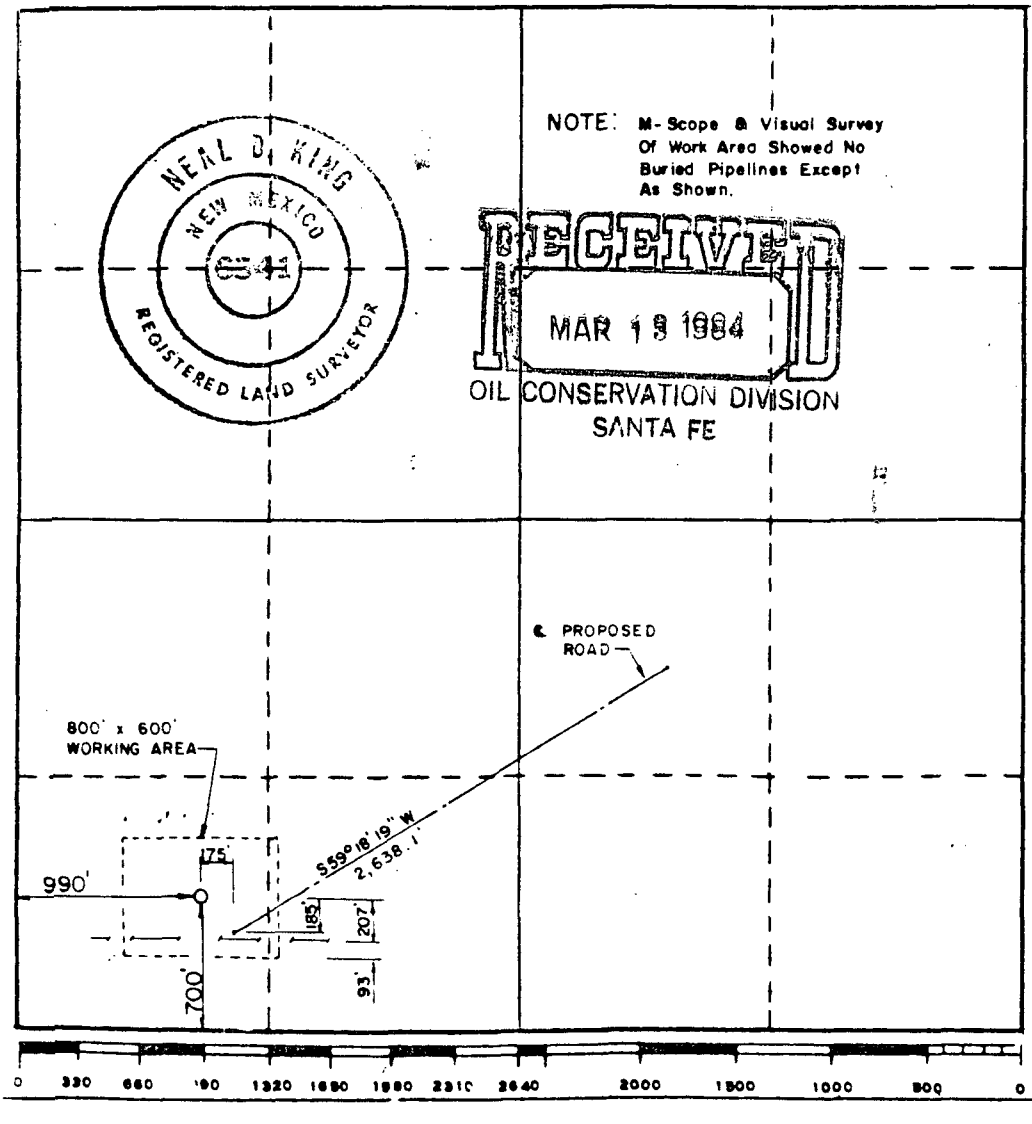
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

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

Name

Position

Company

Date

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed
2/24/84

Registered Professional Engineer and/or Land Surveyor

Neal D. King

Certificate No.
N.M. R.L.S. 6541

Geological Justification for Unorthodox Location
Federal "DH" Gas Com. Well No. 1
Empire South Area
Eddy County, New Mexico

The Empire South Area produces gas from the Pennsylvanian (Eddy Undesignated Atoka and Strawn, Scoggin Draw Morrow, and Red Lake Penn Fields), but, to date, has not produced from Ordovician or Silurian formations. The geological characteristics of the Ordovician, Silurian and Pennsylvanian will be discussed in order to justify the unorthodox location (700' FSL x 990' FWL, Section 11, T-18-S, R-27-E) proposed for the subject well.

Ordovician

The Ordovician in Eddy County, New Mexico has not yet proven productive. The nearest Ordovician production to the prospect area in which the subject well is located is 25 miles to the northeast in the Little Lucky Lake Field in southeast Chaves County, New Mexico. Here the Ordovician is thought to be locally high and conform to the Silurian structure. The Ordovician in the Empire South prospect area also is thought to be locally high, and conform to the Silurian structure (Exhibit 5A). Empire South Area wells down-dip and off-structure have tested water in the Ordovician, and for this reason it is necessary that a high structural location be drilled to remain above the oil-water contact. The Ordovician will be 100'-150' higher at the unorthodox location than the orthodox location (660' FSL x 1980' FWL) thereby, substantially increasing Ordovician hydrocarbon potential for the Federal "DH" Gas Com. Well No. 1.

Silurian

The Silurian in Eddy County, New Mexico produces oil and gas only from small isolated highs. The Federal "DH" Gas Com. Well No. 1 will test a structural high bounded on the west by a fault (Exhibit 5A). Wells down-dip from this structure have tested water in the Silurian so it is imperative that the Federal "DH" be located as high on the structure as possible. The Silurian is 120' higher at the unorthodox location than at the orthodox location (660' FSL x 1980' FWL) thus, substantially increasing the Silurian hydrocarbon potential.

Pennsylvanian

The Pennsylvanian formations in the Eddy Undesignated Atoka and Strawn, Scoggin Draw Morrow, and Red Lake Penn Fields produce gas from stratigraphic traps which lie at the up-dip pinch-out of sand bodies. Regional dip to the southeast is generally the only influential structural component (Exhibit 5B). However, the faulting which is evident in the Silurian extends up into the Pennsylvanian and will elevate the Pennsylvanian

EXHIBIT No. 5

sands above the gas-water contact. The Yates Beauregard Com. No. 1 in Section 23, T-18-S, R-27-E tested 8,300' of salt water in the Pennsylvanian and lies 400' down-dip from the proposed unorthodox location. The top of the Pennsylvanian formation is 50' higher at the proposed location than at the orthodox location (660' FSL x 1980' FWL) thus, enhancing Pennsylvanian hydrocarbon potential. Also reservoir characteristics (porosity and permeability) increase as the sand gets thicker. The unorthodox location will have 35' of sand as opposed to only 25' of sand in the orthodox location (660' FSL x 1980' FWL) (Exhibit C). The three wells in the area with 20'-30' of sand are all poor producers or dry (Unit C, Section 10, T-18-S, R-27-E; Unit F, Section 11, T-18-S, R-27-E; Unit D, Section 15, T-18-S, R-27-E, as seen on Exhibit C). Therefore, the additional 10' of sand gained at the unorthodox location will increase Pennsylvanian hydrocarbon potential.

Summary

The proposed unorthodox location 700' FSL x 990' FWL of Section 11, T-18-S, R-27-E is necessary to adequately test Ordovician, Silurian and Pennsylvanian formations in the area. When compared structurally to an orthodox location (660' FSL x 1980' FWL) the proposed location will be 100'-150' higher in the Ordovician and 120' higher in the Silurian; the Pennsylvanian should be encountered 50' higher with thicker, cleaner sands. Therefore the well's structurally higher position at the proposed unorthodox location should substantially increase Ordovician, Silurian and Pennsylvanian hydrocarbon potential.

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