Edmundson & Associates, Inc.

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UNITIZATION

August 1, 1986

Case 8998

New Mexico Oil Conservation
Division
P.O. Box 2088
Santa Fe, NM 87501-2088
Attn: Mr. Mike Stogner

Re: Proposed Bear Canyon Unit Area
Rio Aribba County, New Mexico

Dear Mr. Stogner:

Pursuant to our telephone conversation of today, enclosed please find the following:

1. Two (2) copies of the Application for Designation of proposed Unit Area and Determination of Depth of Test Well for the Bear Canyon Unit Area, Rio Aribba County, New Mexico.

2. Two (2) copies of the Geologic Memorandum accompanying the Area and Depth application.

3. Two (2) copies of the Bear Canyon Unit Agreement and Exhibit "B" thereto.

4. Two (2) copies of the Bear Canyon Unit Operating Agreement.

It is my understanding you will handle the necessary public announcements and reserve a slot at the hearing to be held on September 2, 1986.

If you would be so kind as to notify me when an approximate time has been set for the hearing, as we will need to make travel arrangements accordingly.

If there is anything that you may require, please feel free to contact me. We wish things to continue smoothly as Amoco Production Company is confident this area has geologic potential.

Thank you again for your kind and valuable assistance.

Very truly yours,

EDMUNDSON & ASSOCIATES, INC.

By Paul S. Conner
Paul S. Conner

PSC/pe
Enclosures

GEOLOGIC MEMORANDUM
PROPOSED BEAR CANYON UNIT AREA
RIO ARRIBA COUNTY, NEW MEXICO

Case 8998

LOCATION

Amoco Production Company proposes the formation of a Federal divided type exploratory unit, henceforth referred to as the Bear Canyon Unit, in the southeastern San Juan Basin. The proposed unit will cover approximately 4,800 acres in Township 26 North, Range 2 West of Rio Arriba County, New Mexico.

INITIAL TEST

Amoco Production Company will be the unit operator and proposes to drill an exploratory well through the Cretaceous Dakota sandstone. This well is tentatively located in NE/4 Section 15, Township 26 North, Range 2 West and will serve as the initial unit obligation well. This well will be drilled to a TD of approximately 8,300 feet penetrating the entire Dakota interval.

GEOLOGY

The San Juan Basin located in northwestern New Mexico and southwestern Colorado was in a part of the Late Cretaceous epicontinental seaway where deposition was dominated by marine and deltaic sedimentation. The present-day basin was formed during the Paleocene-Eocene Laramide orogeny. Most of the production in the basin is from low permeability sandstones and sandy shales and is controlled largely by diagenetic conditions.

The proposed Bear Canyon Unit is located in the southeastern San Juan Basin west of the basin-fringing monocline. The proposed unit is east of both the Blanco Mesaverde and Basin Dakota gas fields and is north of Tapacito Pictured Cliffs gas field. The proposed unit is north of Gavilan Mancos Field and west of West Puerto Chiquito Mancos Field.

OBJECTIVES

The primary objective is the fractured sandy shales of the Gallup Producing Interval of the Cretaceous Mancos Formation. The Bear Canyon prospect is located on a south-plunging anticline located west of the steeply dipping monocline. It is anticipated that fracturing of the Gallup will be enhanced where the structure plunges and along the flanks where the radius of curvature changes. Production from the Gallup at Bear Canyon would be analogous to that at Gavilan Field, located on the southern end of a south-plunging structural nose approximately seven miles south of the proposed Bear Canyon Unit. Structure in this area has been mapped with existing well control.

Additional potential exists in the Cretaceous Dakota, Mesaverde, and Pictured Cliffs Sandstones, however, production from these zones near the proposed Bear Canyon Unit is largely uneconomic.

DRILLING ACTIVITY

The nearest Gallup penetration to the proposed unit is the Aztec Tapacitos #1 located in the NE/4, Section 16, Township 26 North, Range 2 West. This well was completed on November 11, 1972, as a Mesaverde gas producer. It was tested nonproductive in the Gallup, however, actual test results were not reported. The nearest economic Gallup production to the proposed unit is the Dugan Tapacitos #4 located approximately three miles south of Amoco's proposed unit outline.

UNIT BOUNDARIES

The boundaries of the proposed Bear Canyon Unit have been delineated based on anticipated area of maximum fracturing in the Gallup, which is defined by the mapped plunging anticline. The eastern boundary is limited by the eastern limit of the anticline and coincides with the western limit of the Canada Ojitos Unit. The southern boundary is determined by the southern extent of the plunging structural nose. The western boundary is chosen as the -700 foot structural contour (top of Graneros marker) as it approximates the western extent of the structure and therefore the western limit of fracturing. The northern boundary has been located where the structure begins to plunge to the south. Fracturing in the Gallup is

controlled by changes in the radius of curvature on these small structures, and fracturing is therefore not anticipated to the north due to the lack of plunge of the structure.

R. J. Bottjer, Geologist
Amoco Production Company

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