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I N D E X

GREGORY L. HAIR

Direct Examination by Mr. Kellahin 3

E X H I B I T S

Pennzoil Exhibit One, Document 4

Pennzoil Exhibit Two, Document 5

Pennzoil Exhibit Three, Document 7

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MR. STOGNER: Call now Case No.
8500.

MR. TAYLOR: The application of
Pennzoil Company for an unorthodox gas well location, Lea
County, New Mexico.

MR. STOGNER: We will now call
for appearances in this matter.

MR. KELLAHIN: If the Examiner
please, I'm Tom Kellahin of Santa Fe, New Mexico appearing
on behalf of the applicant, and I have one witness to be
sworn.

MR. STOGNER: Are there any
other appearances in this matter?

Will the witness please stand
to be sworn?

(Witness sworn.)

GREGORY L. HAIR,
being called as a witness and being duly sworn upon his oath
testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Hair, for the record, would you
please state your name and occupation?

A My name's Gregory L. Hair. I'm District

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Geologist for Pennzoil Company in Midland, Texas.

Q Mr. Hair, have you previously testified as a petroleum geologist before the Oil Conservation Division?

A Yes.

Q And pursuant to your employment have you made a study of the geologic factors under consideration for this application?

A Yes, I have.

MR. KELLAHIN: We tender Mr. Hair as an expert petroleum geologist.

MR. STOGNER: Mr. Hair is so qualified.

Q Mr. Hair, I'd like to direct your attention to what has been marked as Pennzoil's Exhibit Number One, and have you first of all orient us as to the proposed well location, giving us the footage location from the south line and from the east line of Section 30.

A Okay. The proposed well will be in Section 30, and it is 510 feet from the south line and 990 feet from the east line.

Q Would you identify for us what you, in your opinion you believe to be the primary possible producing formations that may be encountered at this location?

A We have potential production in the Queen, Bone Spring, the Wolfcamp, Cisco Canyon, and the Morrow.

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Q And you're seeking approval of this location contingent upon production from any one or multiples of those--

A Yes.

Q --producing formations?

A Yes.

Q What is the primary target formation for the well?

A The primary target is the Morrow formation.

Q And if you're successful in the Morrow for a gas well, what will be the spacing and proration unit in Section 30 that's assigned to the well?

A We're asking for 320 acres and it would be the south half of Section 30.

Q Would you describe for us, Mr. Hair, why Pennzoil is seeking to have an unorthodox location approved?

A Yes. There are two factors. One of them deals with the north-south coordinates and the other one deals with the east-west.

We'll deal with the east-west first.

We are seeking an unorthodox location by moving farther east than the standard location because of the orientation of the Morrow sands, as shown on the maps that you have in front of you, Mr. Examiner, Exhibits One and Two, I believe.

These are the primary sands that we are

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looking for. The only well in the area they produce in is the well directly south of Section 30, the David Faskin No. 1 Ling Federal.

Q All right. Let me interrupt you and make sure I have found that well. Identify that well for me again.

A It is marked with a "1" and has a "30" beside it, and the "30" refers to the thickness of the particular sand on the Upper Ling Sand Morrow B Isopach--

Q And that--

A --which is Exhibit One.

Q --that's the David Faskin well?

A Yes.

Q All right.

A We believe that the Morrow sands in this area are aligned in a northeast-southwest direction. And we are trying to minimize our risk in what is a very risky formation by moving closer to what is the axis of those sands. This is the reason we've asked for an unorthodox location in the east-west direction.

In the north-south direction, we had wanted to drill in a standard location, that being 660 feet from the south line. Upon having an archaeological survey done by New Mexico Archaeological Services, they found an archaeological site at that location. There are also topographic problems at that location, and they are one and the same. There's a large sand dune sitting approximately at

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our location which would force us to do a lot of leveling work, a lot of dirt work on the dune, and they have--and New Mexico Archaeological Services has decided that that is an archaeological site also, therefore requesting we not do any dirt work there. So we've asked to move 150 feet south to clear that site and also to make it topographically more feasible for us to build a location.

And New Mexico Archaeological Services has agreed with that location at 150 feet south of 660, in other words, 510 feet from the south line, we would clear the archaeological site with room to spare.

Q And that information is depicted on Exhibit Three?

A Yes. Which is a report from New Mexico Archaeological Services of their findings.

Q Let me make sure I am clear on the types of unorthodox locations you're seeking.

If we obtain a Wolfcamp or Pennsylvanian deep gas formation to which the south half of Section 30 would be dedicated--

A Yes.

Q --then you need an unorthodox location approved for that reason?

A Yes.

Q You would be, instead of 660 from the south line and 1980 from the east line, you would be 510 from the south line and 990 from the east line?

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A That's correct.

Q If you have shallower gas that is productive based upon 160-acre spacing, then you are too close to the south line--

A That's correct.

Q --and would require 660 from the south line and you're still 510 from the south line?

A That is correct.

Q With regards to your study of the Morrow formation and its potential in this area, do you believe that the proposed unorthodox location is the optimum location from which to penetrate and test the Morrow formation?

A Yes, we do. We think that at that location it considerably minimizes the risk inherent in the Morrow formation.

Q Were Exhibits One and Two prepared by you or compiled under your direction and supervision?

A Yes, they were.

Q And in your opinion, Mr. Hair, will approval of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A Yes.

MR. KELLAHIN: We move the introduction of Exhibits One, Two, and Three.

MR. STOGNER: Exhibits One, Two, and Three will be admitted into evidence.

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I have no questions of this witness.

Is there any--any further questions of Mr. Hair?

MR. KELLAHIN: No, sir.

MR. STOGNER: If not, he may be excused.

Anything further in this case?

MR. KELLAHIN: No, sir.

MR. STOGNER: This case will be taken under advisement.

(Hearing concluded.)

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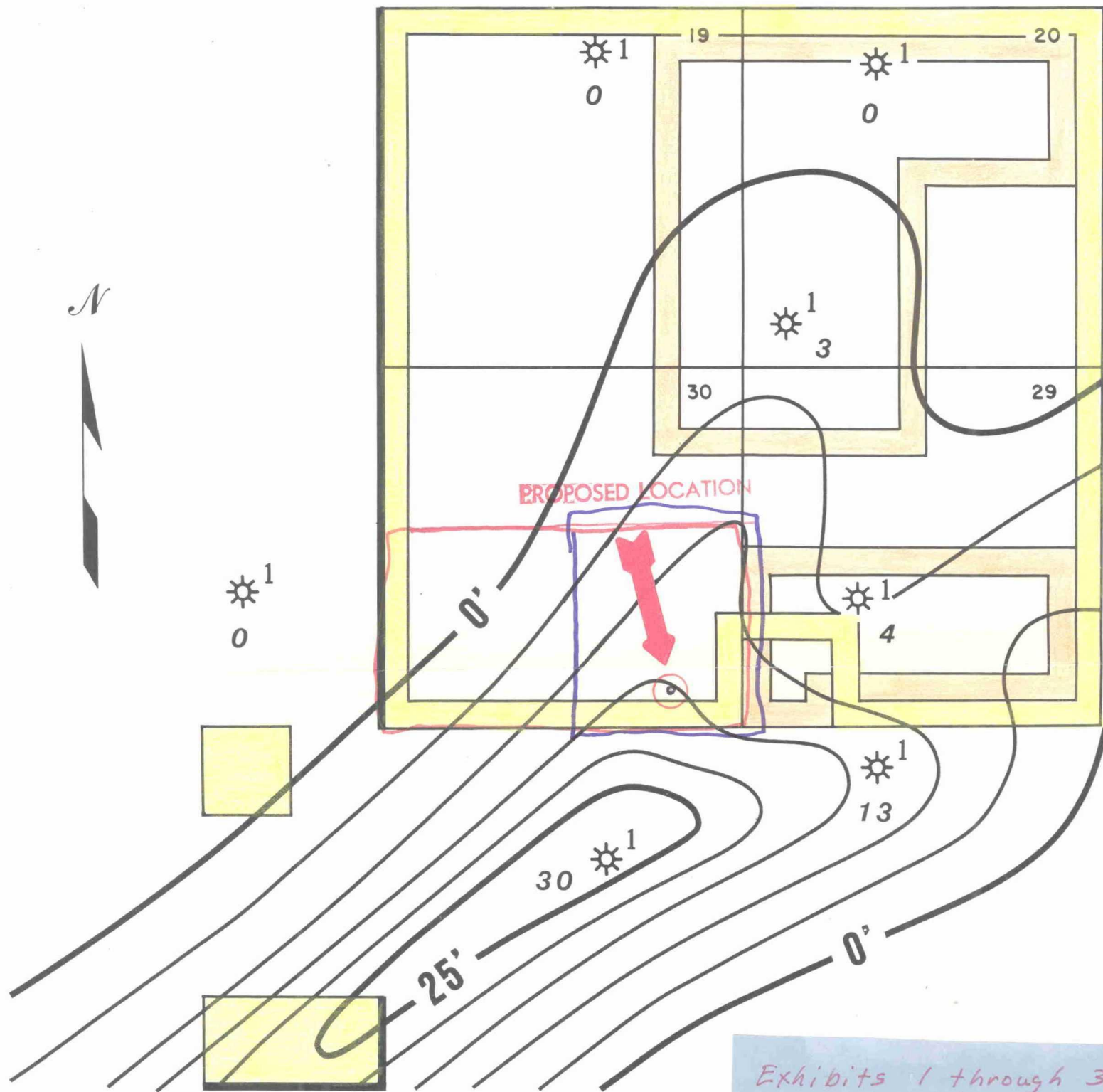
C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete copy of the proceedings in the Examiner's hearing of Case No. 8500, heard by me on 27 February 1985.

Michael J. Fitzgerald, Examiner
Oil Conservation Division



*Exhibits 1 through 3
Complete Set*

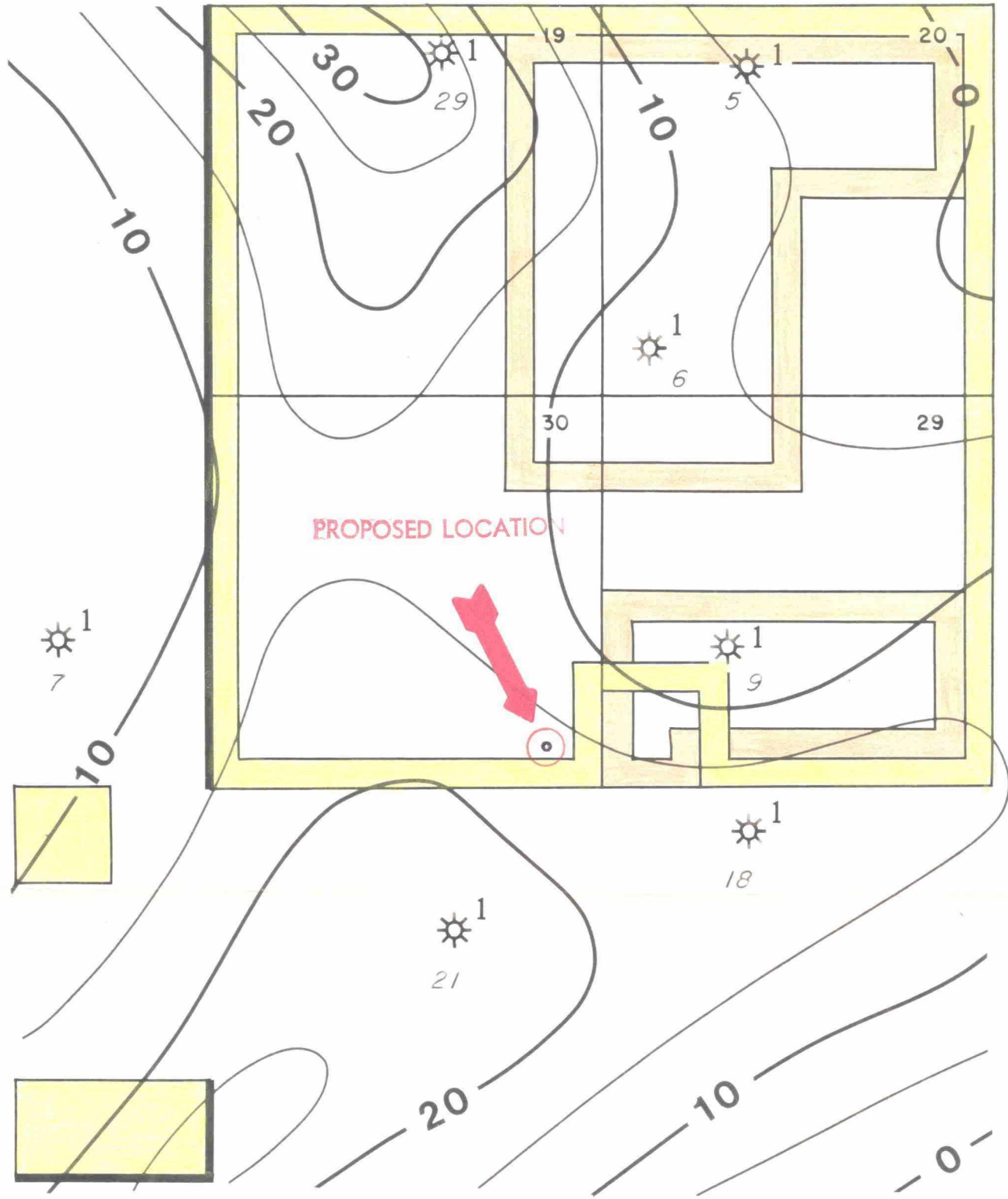
**NORTHWESTERN SHELF
QUAIL RIDGE FIELD
LEA COUNTY, NEW MEXICO
ISOPACH MAP**

**UPPER LING SAND MORROW B
POROSITY > 6%
CONTOUR INTERVAL: 5 FEET**



SCALE IN FEET

BEFORE EXAMINER STOGNER OIL CONSERVATION DIVISION	
<i>Pennzoil</i>	EXHIBIT NO. <u>1</u>
CASE NO.	<u>8500</u>



NORTHWESTERN SHELF
QUAIL RIDGE FIELD
LEA COUNTY, NEW MEXICO
ISOPACH MAP
MIDDLE LING SAND MORROW B
CONTOUR INTERVAL: 5 FEET



BEFORE EXAMINER STOGNER OIL CONSERVATION DIVISION
<i>Pennzoil</i> EXHIBIT NO. <u>2</u>
CASE NO. <u>8500</u>



Reconnaissance
Excavation
Analysis
Explanation
Curation

PENNZOIL
FEB 04 1985
MIDLAND

NMAS

New Mexico Archaeological Services, Inc.

P. O. Box 1341
Carlsbad, New Mexico 88220
(505) 887-7646

31 January 1985

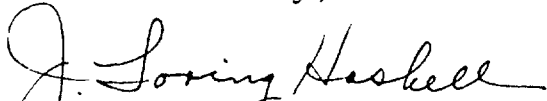
Mr. L. Charles Marquart
District Operations Superintendent
PENNZOIL COMPANY
P.O. Drawer 1828
Midland, Texas 79702

Dear Mr. Marquart:

Enclosed please find NMAS' Archaeological Clearance Report for PENNZOIL COMPANY's proposed Mescalero Federal "30" Well No. 1 and its associated access road in Lea County, New Mexico. One archaeological site (NMAS 5707) was recorded during this survey. NMAS is suggesting clearance for this project provided the archaeological site is avoided.

If you have any questions pertaining to this report, please call my office. Thank you for asking NMAS to do this survey.

Your sincerely,


Dr. J. Loring Haskell
Principal Investigator

Enclosure

cc: Ms. Linda Brett, BLM, Carlsbad
Mr. Ray Foster, Bureau of Land Management
Minerals Oil and Gas, Hobbs
Mr. Thomas W. Merlan, SHPO, Santa Fe

as

BEFORE EXAMINER STOGNER OIL CONSERVATION DIVISION
<i>Pennzoil</i> EXHIBIT NO. <u>3</u>
CASE NO. <u>8500</u>

Archaeological Clearance Report

for

PENNZOIL COMPANY

Mescalero Federal "30"

Well No. 1

Prepared

By

Dr. J. Loring Haskell

Submitted

By

Dr. J. Loring Haskell
Principal Investigator
New Mexico Archaeological Services, Inc.
Carlsbad, New Mexico

31 January 1985

Permit No. 14-2920-84-B

Report Number: NMAS-1985-42-J

ABSTRACT

New Mexico Archaeological Services, Inc., representing PENNZOIL COMPANY, Midland, undertook a Class III survey of Bureau of Land Management lands scheduled to be impacted by the construction of a drill location and access road. Field work was conducted under bright sunny weather conditions in mid-day. The proposed location will measure 400 X 400 ft (Actual Area Surveyed 5.98 Acres). The access road will measure 30 X 1750 ft (Actual Area Surveyed 2.01 Acres). They will be situated in Sections 29 and 30, T19S, R34E, NMPM, Lea County, New Mexico. Cultural properties consist of one archaeological site (NMAS 5707). Clearance is suggested provided the archaeological site is avoided.

Introduction

On 29 January 1985, New Mexico Archaeological Services, Inc., (NMAS), Carlsbad, undertook for PENNZOIL COMPANY, Midland, an archaeological survey of federal lands administered by the Bureau of Land Management in Lea County, New Mexico. Field work was conducted under bright sunny weather conditions in mid-day. The reconnoitered area will be impacted by the construction of a drill location and its associated access road. This project was advanced by Mr. L. Charles Marquart, PENNZOIL COMPANY, and administered by Dr. J. Loring Haskell, Principal Investigator, NMAS, Inc. This survey was undertaken by Dr. Haskell.

Survey Technique

For this investigation, PENNZOIL COMPANY's proposed location was reconnoitered for evidence of man's past activities by walking it in a series of 25 ft wide, close interval (15° or less), zigzag transects. In addition, an added zone extending 200 ft north of the location and 20 ft to the east, south and west of it, and hence lying outside the bounds of the proposed work area, was reconnoitered by a similar means. The access road was walked in one close interval (15°) 50 ft wide transect. Lathe is considered to be the center of the proposed road. Methodologically, this procedure served to promote optimal conditions for the visual examination of areas to be impacted by construction-related activities,

Mescalero Federal "30" Well No. 1

Location

The proposed location will measure 400 X 400 ft (Actual Area Surveyed 5.98 Acres) on federal lands and will be situated 510 ft

from the south line and 990 ft from the east line.

Section 30, T19S, R34E, NMPM, Lea County, NM

Thus it will be situated in the:

SE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 30, T19S, R34E, NMPM, Lea County, NM

The associated access road will measure approximately 30 X 1750 ft (Actual Area Surveyed 2.01 Acres) and is situated in the:

SE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 30, T19S, R34E, NMPM, Lea County, NM

SW $\frac{1}{4}$ SW $\frac{1}{4}$, Section 29, T19S, R34E, NMPM, Lea County, NM

Map Reference: USGS LAGUNA GATUNA QUADRANGLE, 15 Minute Series, 1963.

Terrain

PENNZOIL COMPANY's proposed location will be situated on a gently undulating landform which in its broader context is coextensive with the Querecho Plains. As a whole, the coeval surface is overlain by a thick aeolian deposit of stable character. Prominent dunes occur to the north and northeast and are only partially stabilized. Associated deflation basins there are deep, self-contained and irregularly shaped. Microrelief in the dune field ranges up to 6.0 m in height. Elsewhere, dune development is minor with microrelief ranging between 0.50 and 1.0 m in height. Opaline flint inclusions commonly occur in the dune field. Outside of this system, areal soils generally lack inclusions. Drainage is of an internal nature owing to the permeability of areal soils. Taxonomically, local soils are assignable to the Typic Torripsamment subgroup.

Floristics

Plants of the overstory are Quercus havardii, Artemisia filifolia, Yucca glauca, Chrysothamnus pulchellus and Sapindus drummondii. Associated forbs include Croton sp., Oenothera sp., Penstemon sp. and Gutierrezia sarothrae. Grasses occurring locally are Aristida

sp., Andropogon spp., Cenchrus incertus, Munroa squarrosa, Muhlenbergia arenaceous and Stipa neomexicana. The Cactaceae is represented by Opuntia macrocentra and Opuntia davisii.

Cultural Resources

During the course of this survey, one archaeological site (NMAS 5707) was recorded.

NMAS 5707

Location: NW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 30, T19S, R34E, NMPM, Lea County,
NM

UTM: Zone 13, N3,610,550; E631,925

Map Reference: USGS LAGUNA GATUNA QUADRANGLE, 15 Minute Series,
1963.

Ownership: Bureau of Land Management

Dimension of Resources: 60 X 135 m

Typological Designation: Task Locus

Authorship/ Temporality: Unknown

Nature of Cultural Resources: NMAS 5707, a task locus, is situated within a series of deep deflation basins which are associated with a system of partially stabilized dunes. Microrelief ranges up to 6.0 m in height. Basins are irregularly shaped and host opaline flint nodules.

Observed cultural properties include opaline flint primary- and secondary-decortication flakes, thinning flakes of this material, one observed quartzite secondary decortication flake with platform, an opaline flint tested core, and an amorphous scatter of fire-fractured caliche gravels and small cobbles. No bona fide hearth was observed. Resources occur in the form of a general scatter in the principal basin hosting cultural properties with occasional pieces occurring elsewhere.

No diagnostic artifacts were noted; consequently, temporality and authorship cannot be established at this time. This site has been termed a task locus as task-related activities focused solely on the testing of locally available opaline flint. Overnight occupancy of the site is probably judging by the amount and highly reduced nature of attendant caliche. Additional cultural remains undoubtedly are buried in the sand.

Further work at NMAS 5707 minimally should focus on more precise mapping of attendant properties along with collection and analysis. A test trench should be established in the basin hosting the general scatter. Resulting data should be compared with similar collections made elsewhere on the Querecho Plains. The results of the investigation should be published in a scholarly paper.

Recommendations

NMAS suggests clearance for PENNZOIL COMPANY's proposed location as presently staked. NMAS 5707 is situated to the north of the location and is not threatened by it as long as men and materiel are confined to the proposed work area (Fig. 1). *Men are to refrain from illicit collecting of artifacts.* Clearance, of course, is granted by the Bureau of Land Management. If additional cultural properties are encountered during construction, the BLM and NMAS should be notified immediately. Duned areas are notorious for covering and uncovering cultural properties.

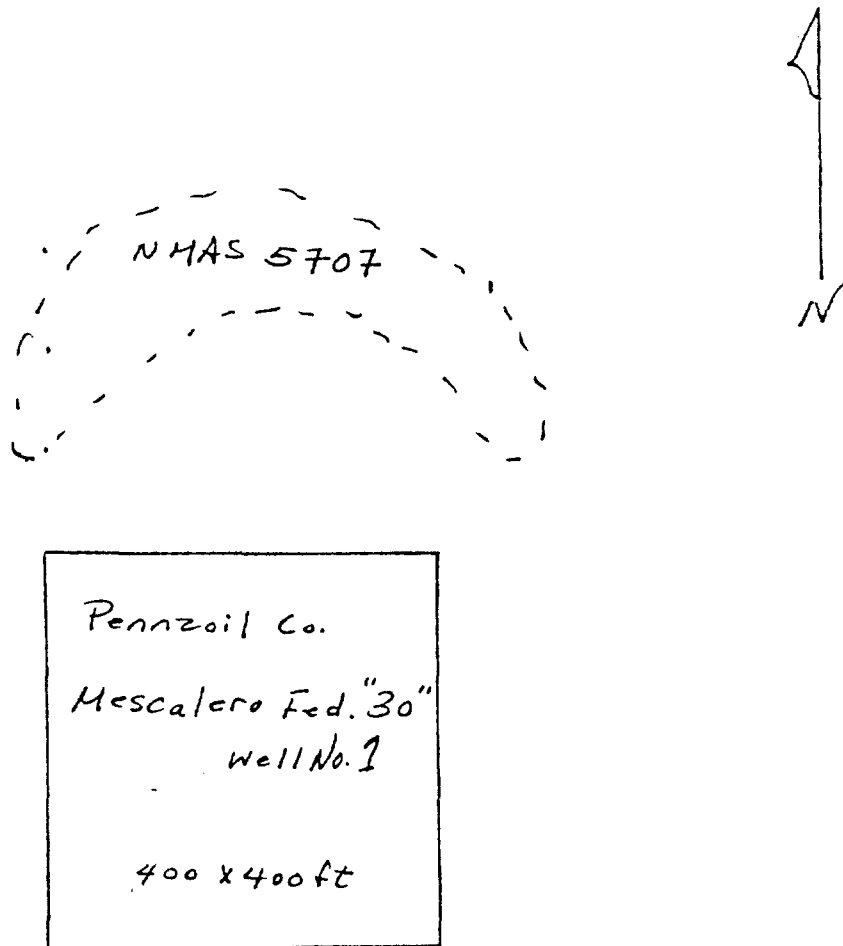
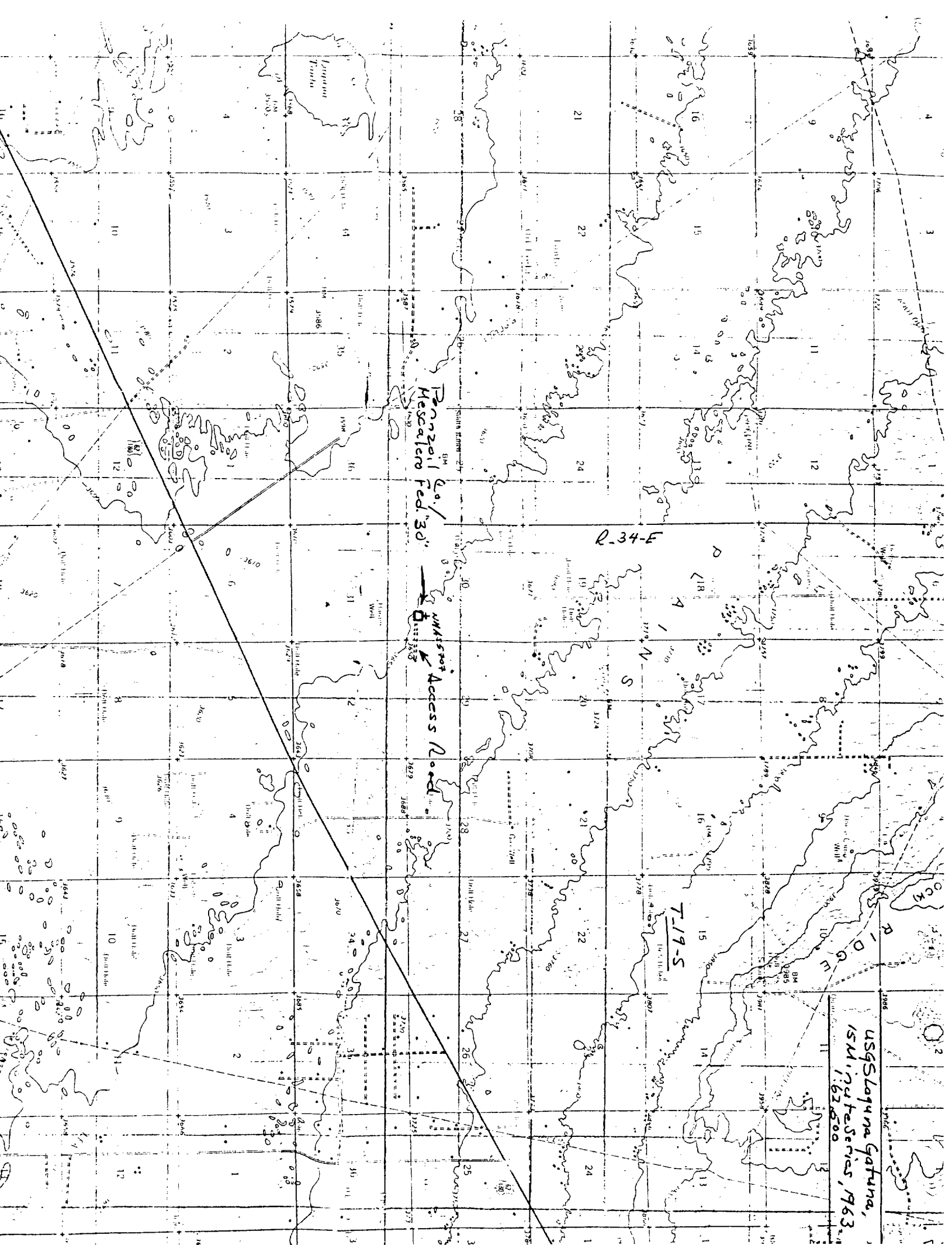


Fig. 1. Schematic representation showing PENNZOIL COMPANY's proposed Mescalero Federal "30" Well No. 1 vis à vis NMAS 5707. PENNZOIL's location is situated well to the south of the site and hence does not threaten it.



Panama Co. /
Mesasera Fed. 30'

Wharf
Access Road

R-34-E

T-19-S

USGS Laguna Gatuna,
Panama, Series, 1963
1:62,500

NMAS' Site Typology

As used by NMAS, a "site" is defined as any cultural material containing clear evidence of other than en passant human occupation. (A site is a physical location of past human activities or events. Cultural resource sites are extremely variable in size, and range from a cluster of several objects or materials to structures with associated objects or features.)

OCCUPATION ZONE

An occupation zone is a site at which associated cultural properties occur scattered over an extensive tract of land. Specifically, resources occur as a light, but extensive, scatter, and lack overall concentration. Sites of this type, may or may not, reflect one task-specific activity.

TASK LOCUS

A task locus is a site at which an individual, or social unit, carries out a single task-related activity, e.g., a milling station or a lithic fabrication station (one type of cultural resource).

SPECIAL ACTIVITIES ZONE

A special activities zone is distinguished by a small range of related tasks, e.g., milling tools in association with hide working tools (more varied cultural resources).

LIMITED BASE

A limited base is characterized by a wider range of socio-economic activities resulting from more sustained occupation. Although it contains a wider array of task-related activities than at the above, it represents less than the full range of expected cultural resources construed as constituting a local group.

HOME BASE

A home base is a site which evidences signs of year-around occupation and hence was occupied by the full spectrum of social units normally construed as constituting a local group, i.e., the full range of cultural resources.

ISOLATED CULTURAL RESOURCE(S)

Isolated Occurrences generally contain fewer than 10 artifacts, have densities of less than one artifact per square meter, and have only a single type of material present.

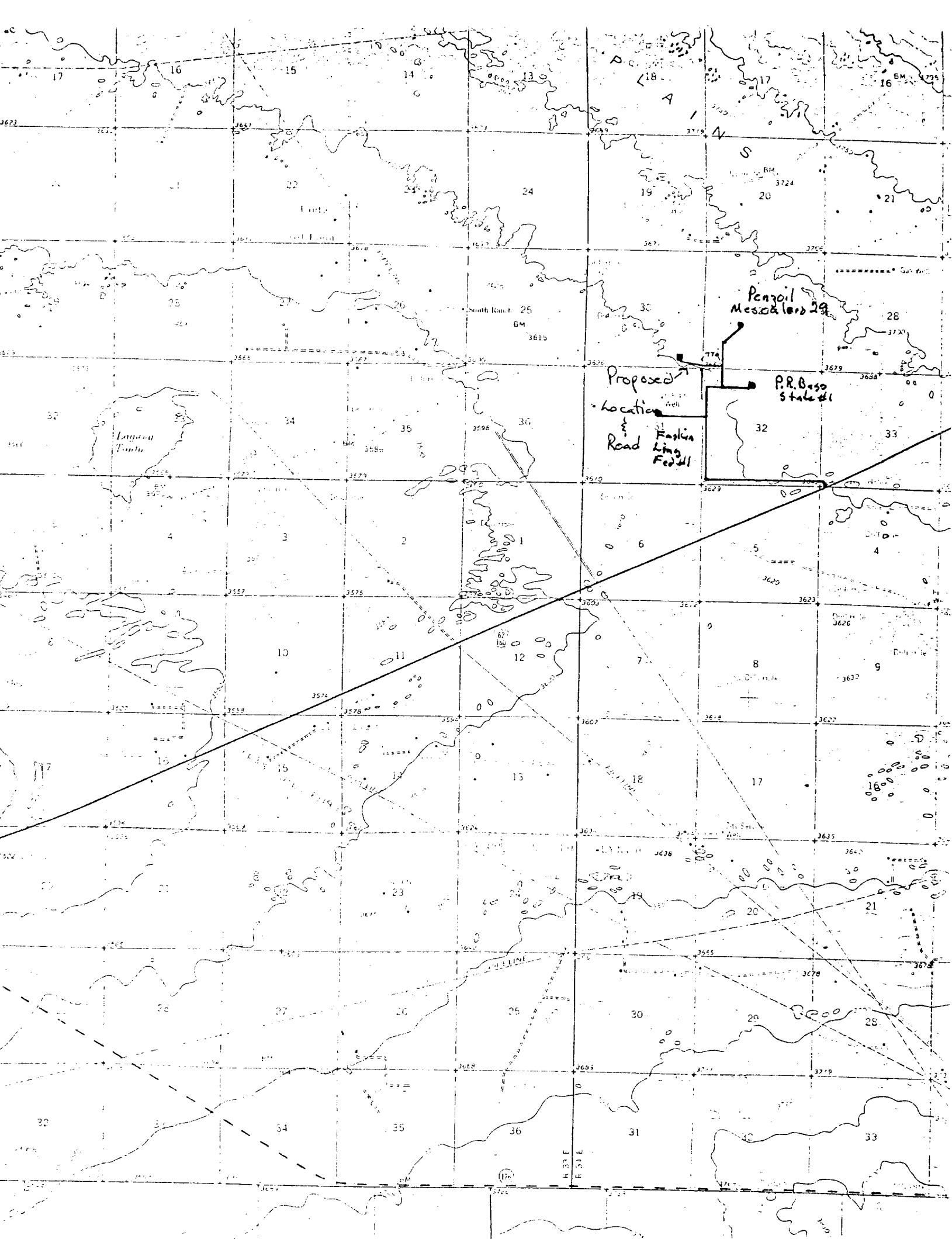
LITHIC DEFINITIONS

- CORES: The block or nodules of raw material from which flakes are removed in the manufacture of chipped-stone tools.
- UNPREPARED CORE: A core which possesses no systematic shaping of lateral edges and primary flaking is limited to preparation of a striking platform.
- PREPARED CORE: A core which displays systematic preparation of the lateral edges.
- PRIMARY DECORTICATION FLAKE: A flake struck during the initial shaping of a core which displays cortex over the entire dorsal surface.
- SECONDARY DECORTICATION FLAKE: A flake struck during the initial shaping of the core which exhibits cortex over only part of the dorsal surface. An important difference between primary and secondary decortication flakes is that the latter are often utilized as tools themselves in a modified or unmodified state.
- TABULAR FLAKE: Flake struck from an unprepared core, exhibiting a quadrilateral cross-section. The dorsal and ventral surfaces of these flakes are flat and parallel.
- PARALLEL-SIDED FLAKE: Flake struck from a prepared core; large, thick flakes possessing a triangular cross section.
- RECTANGULAR FLAKE: Flake struck from a prepared core exhibiting parallel, or slightly expanding lateral edges in relation to its longitudinal axis. These flakes are generally smaller than Parallel-Sided flakes and are believed to be struck from the edges, toward the center of a pyramidal core.
- LAMELLAR FLAKE: Flake struck from a prepared core which exhibits a thinner, more regular shape than the other flakes detached from prepared cores. The symmetry and length-width ratio of Lamellar Flakes cause them to possess traits intermediate between those of flakes and blades. Indeed, they are removed from cores prepared similarly to the ones true blades are struck from, but lack the careful attention to the striking platform necessary to produce such a blade.
- THINNING FLAKE: Flake removed to thin a piece for artifact manufacture.
- BLADE: A specialized flake which possesses parallel lateral edges and a length equal to or more than twice the width. Blades are manufactured from carefully prepared

LITHIC DEFINITIONS (Cont.)

core, utilizing a blade technique which results in a unique pattern of ridges on the dorsal surface.

GRAVER: Chipped stone tool designed to possess a point or spur which is generally assumed to function as an incising implement. Frequently, heavy wear on such a spur is a diagnostic trait of such tools.



Penroil Mesozoic 29

Proposed
Location
of
Road
to
Fashia
Ling
Field

P.R. Base
Station #1

Laposa
Tantu

R. 33 E
E. 31 N

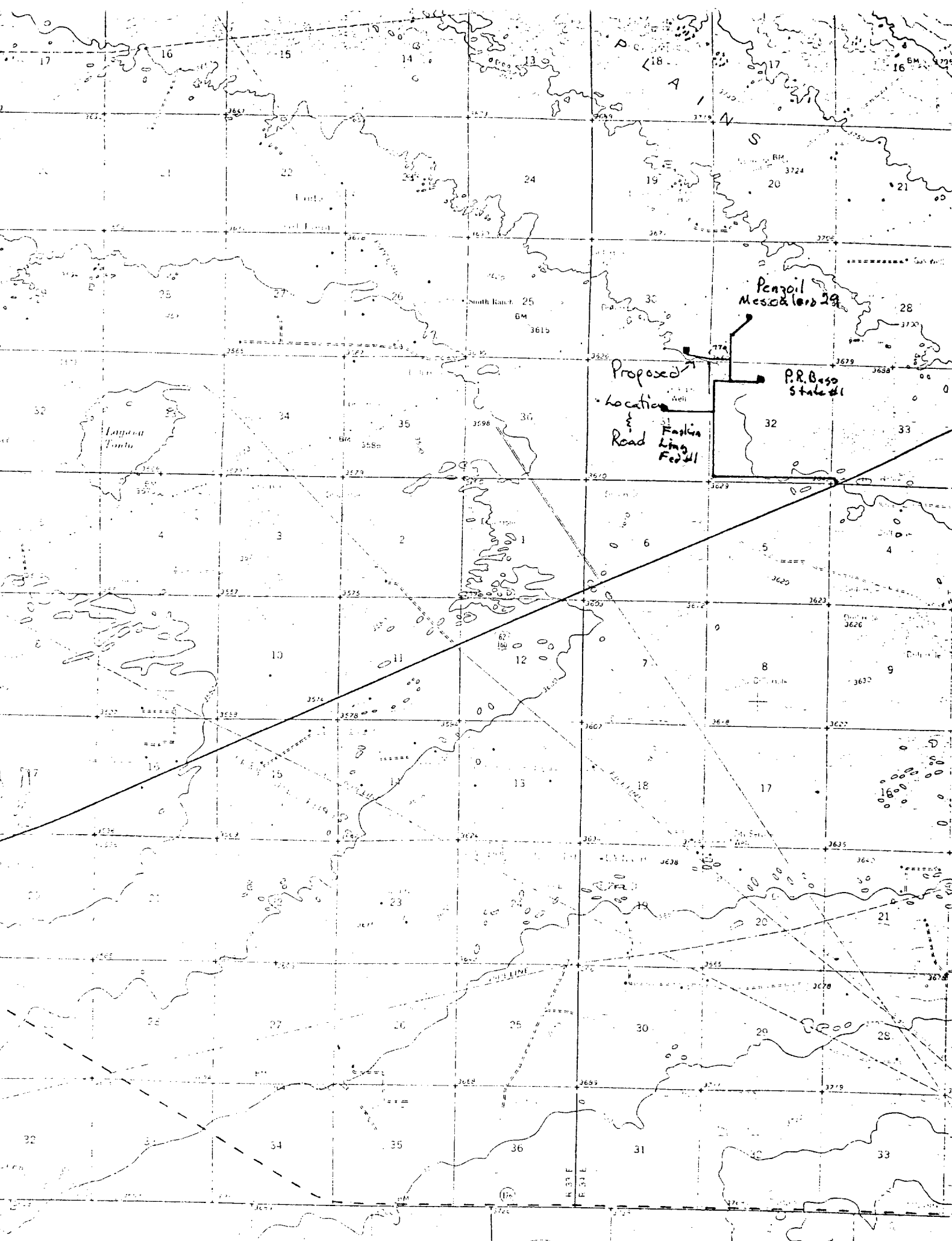


EXHIBIT "A"
PENNZOIL COMPANY
PLANNED ACCESS ROADS
Quail Ridge (Morrow) Field
S10 FSL & 990 F WL
Section 30 T. 19. R. 34 E.

