

# FILE NOTATIONS

Entered in MID File ..... ✓  
Location Map Pinned ..... ✓  
Card Indexed ..... ✓

Checked by Chief .....  
Approval Letter .....  
Disapproval Letter .....

## COMPLETION DATA:

Date Well Completed *6-12-78* .....

Location Inspected .....

OW..... WW..... TA.....

Bond released

GW..... OS..... PA..... ✓

State or Fee Land .....

## LOGS FILED

Driller's Log..... ✓

Electric Logs (No.)

*No Logs Run*

E..... I..... Dual I Lat..... CR-N..... Micro.....

EMG Sonic CR..... Lat..... MI-L..... Sonic.....

CMLog..... CLog..... Others.....



**UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY**

**APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK**

1a. TYPE OF WORK  
 DRILL                       DEEPEN                       PLUG BACK   
 b. TYPE OF WELL  
 OIL WELL                       GAS WELL                       OTHER                       SINGLE ZONE                       MULTIPLE ZONE

2. NAME OF OPERATOR  
**Ari-Mex Oil & Exploration, Inc.**

3. ADDRESS OF OPERATOR  
**P. O. Box 249, Moab, Utah 84532**

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.\*)  
 At surface **NE. SW. Sec. 7, T25S, R21E, S. L. M.**  
 At proposed prod. zone **1557' from W-line & 1742' from S-line**

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*  
**Approx. 7 miles NW. of Moab**

15. DISTANCE FROM PROPOSED\* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)  
**500 ft.**

16. NO. OF ACRES IN LEASE  
**200 ac.**

17. NO. OF ACRES ASSIGNED TO THIS WELL  
**40 ac.**

18. DISTANCE FROM PROPOSED LOCATION\* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.  
**none**

19. PROPOSED DEPTH  
**2500 ft.**

20. ROTARY OR CABLE TOOLS  
**Rotary**

21. ELEVATIONS (Show whether DF, RT, GR, etc.)  
**4738' grd.; 4748' K.B.**

22. APPROX. DATE WORK WILL START\*  
**Jan. 3, 1977**

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
9 3/4"	7"	20.00	200'	100 sks.
6 1/2"	4 1/2"	9.50#	Thru Prod. zone; 300'+ cement	

It is planned to drill a well at the above location to test the oil-gas production potential of the Jurassic, Triassic, Permian and Pennsylvanian formations. A prognosis of the well is attached hereto. The well will be drilled to a depth of about 2500', which should be into the top part of the salt section in the Hermosa formation. Rotary tools will be used to drill the well with mud for circulation. About 150' of surface casing (7") will be set and cemented with returns to the surface. All good hydrocarbon shows will be tested. A blowout preventer will be installed on the casing head for well control. In the event of production, 4 1/2" casing will be run and cemented with sufficient cement to protection of all water sands. It is anticipated that the drilling of this well will take approx. two weeks.

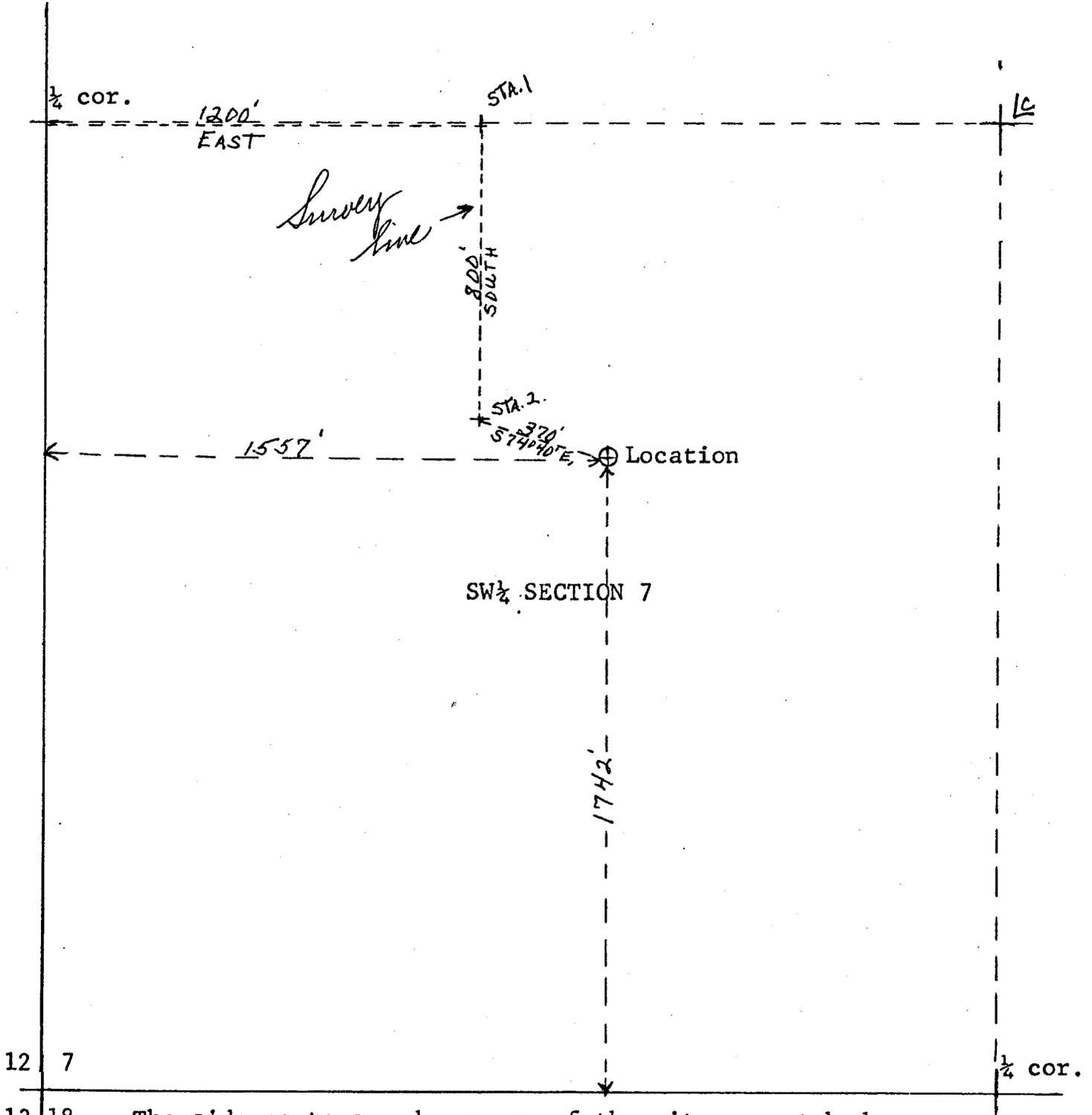
IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED *H. Rowley* TITLE **Cons. Gel.** DATE **Dec. 27, 1977**

(This space for Federal or State office use)  
 PERMIT NO. 43-019-30418 APPROVAL DATE \_\_\_\_\_

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
 CONDITIONS OF APPROVAL, IF ANY:

LOCATION PLAT FOR  
 RIMEX OIL & EXPLORATION, II  
 SKIP #1-7 WELL  
 NE.SW.SEC.7-25S-21E-SLM  
 GRAND COUNTY, UTAH  
 (1557' from W-line & 1742' from S-line)  
 Elev.: 4738' grd.



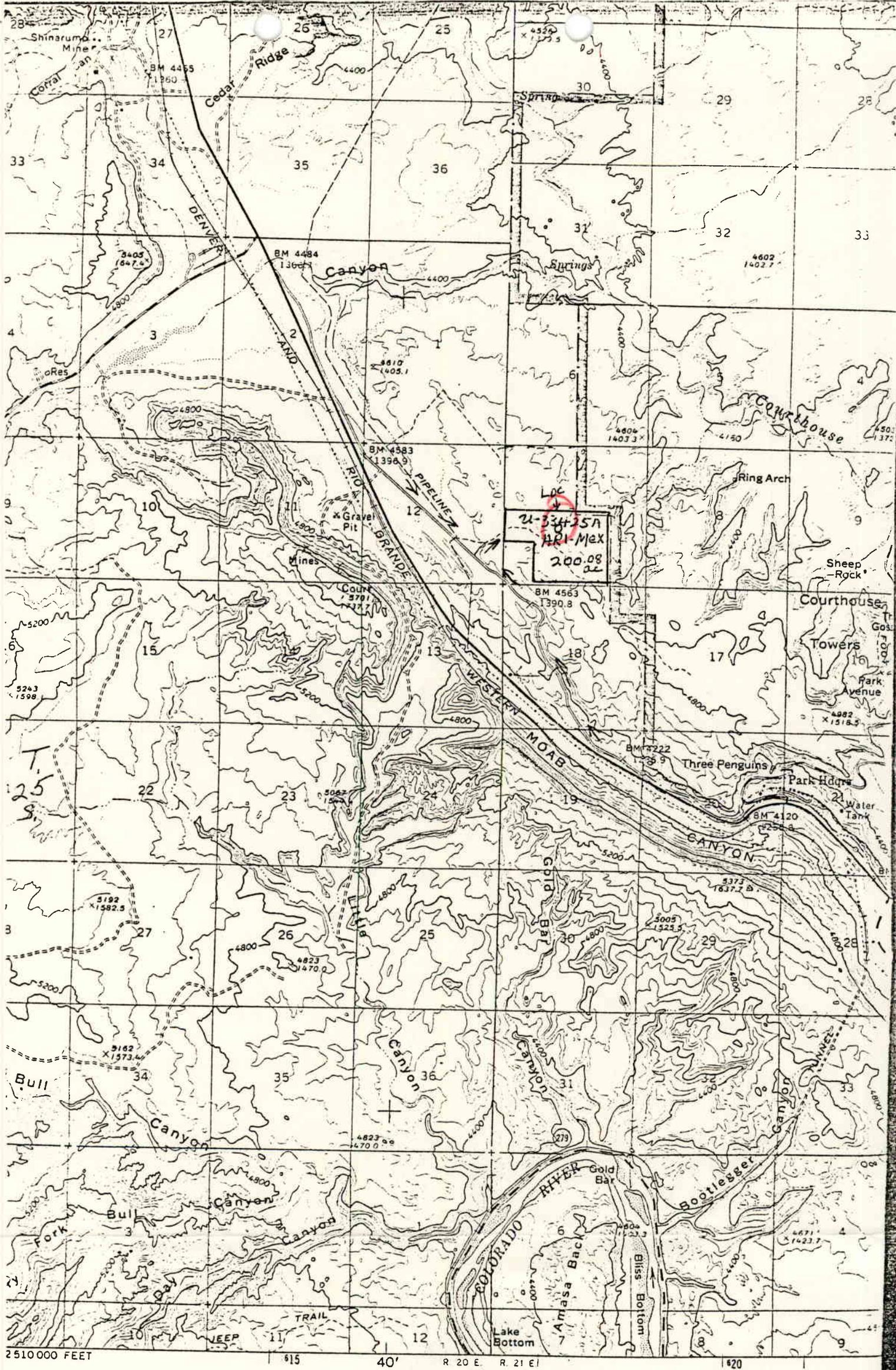
13 18 The side centers and corners of the site are staked.

I, W. Don Quigley, certify that this plat was plotted from notes of a field survey made by me on Dec. 3, 1977.

*W. Don Quigley*  
 W. Don Quigley

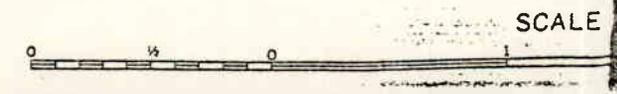
Scale: 1 in. = 400 ft.  
 Date: Dec. 16, 1977  
 Surveyed by: W. Don Quigley

PLAT NO. 1



MAP NO. 1

ey

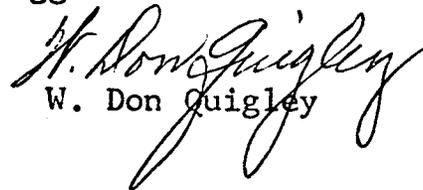


SCALE



and tested as soon as they are drilled to determine the productivity of the zone.

3. Samples of the cuttings will be taken at 20-ft. intervals from the bottom of the surface casing down to a depth of 1000'; then at 10-ft. intervals to total depth. These samples will be carefully examined, identified and logged. All good hydrocarbon shows will be tested as noted above.
4. The mud will be checked periodically and kept in good shape. A viscosity of about 45, a mud weight of about 9 lbs/gal., and a water loss of about 8-10 cc.per 15 min. will be maintained.
5. If good production is obtained at any depth before the scheduled total depth is reached, drilling will probably<sup>be</sup> discontinued at that point and production casing run. The production casing (4½") will be run and cemented with sufficient cement to cover the Navajo formation which may carry water, if not hydrocarbons.
6. After the total depth is reached, the well will be logged electrically using a IES log (if a minimum of salt has been drilled), a gamma-density log and a compensated-neutron-porosity log.
7. Standard completion techniques will be used to complete the well.
8. If the well is unsuccessful, it will be plugged and abandoned according to regulations.

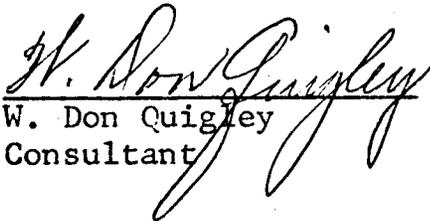
  
W. Don Quigley

SURFACE USE AND OPERATIONS  
PLAN FOR  
ARI-MEX OIL & EXPLORATION, INC.  
SKIP #1-7 WELL  
GRAND COUNTY, UTAH

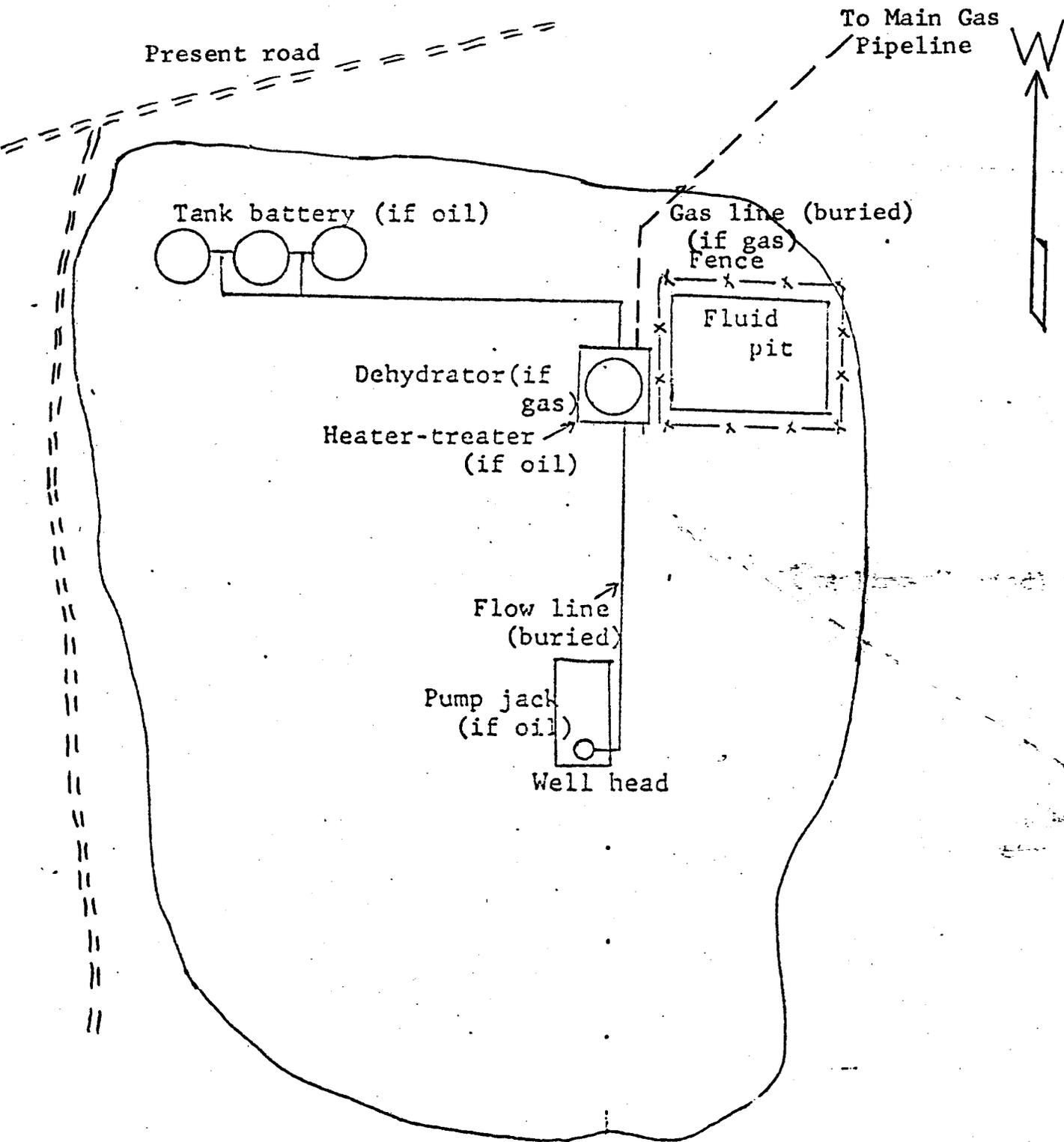
1. A survey plat showing the location of the proposed well is attached. (See Plat No.1). Map No.1 shows the route to the well site from Hwy 160. A number of secondary roads are shown on this map also. The well site is beside one of the secondary roads. The well site is approx. 7 miles northwest of Moab.
2. Planned Access Roads: Since the well site is beside a present road, no new roads need to be constructed. Some grading will be accomplished on the present roads to make them more passable. No culverts, cuts or fills will be required.
3. Location of Existing Wells: See attached map.
4. Location of Production Equipment: A plan for the anticipated production equipment, if the well is successful, is submitted on Plat No.2. When production ceases this equipment will be removed and the land surface graded, levelled and reseeded.
5. Water Supply: The water for rig use and drilling operations will be hauled from the Colorado River to the location by truck. This will be a distance of about 5½ miles.
6. Road Material: No additional road material, gravel, sand or culverts will be required.
7. Waste Disposal: A reserve pit and a burn pit will be constructed at the well site. See Plat No.3. All excess water, mud and cuttings will be deposited in the reserve pit. Burnable material and garbage will be put into the burn pit. This pit will be fenced with chicken wire to prevent the spreading of debris by the wind. A toilet will be furnished for human waste.
8. Camp Facilities and Airstrips: No camp facilities other than a couple of house trailers at the well site will be needed. No airstrips will be required.
9. Well Site Layout: A plan for the drilling equipment layout required for the drilling operations is submitted on Plat No.3. The approx. dimensions of the well site are shown. The site will be levelled for this equipment. There is a slight slope to the west, so a small cut (about 3-4 ft.) will be required on the east side. The reserve pit will be about 4 ft. deep with 4-ft. banks. Only sage brush and shad scale are present on the site.

10. Restoration: After the drilling operations have been concluded and the equipment removed, the well site area will be cleaned, levelled and restored to normal. The pits will be covered and the area reseeded, if the well is not successful. Otherwise the site will be levelled and prepared for the placement of the production equipment. The work will be accomplished within thirty days after the removal of the drilling equipment.
11. Land Description: The proposed well site is located on the side of a hill which slopes gently to the west, but more rapidly to the north, south and east. The hill is just wide enough for the drill site. A sandstone bench is just below the surface, but the site was chosen so that a minimum of cuts will be required and there should be enough loose material on top of the rock to build the pits and level the surface. Vegetation is limited to sage brush and shad scale.
12. Representative: The operator's representative at the well site will probably be W. Don Quigley of 57 West So. Temple, Salt Lake City, Utah. The location and restoration work will probably be done by C&W Construction Company of Moab, Utah.
13. Certification:  
I hereby certify that I, or persons under my direct supervision, have prepared this application and have inspected the drill site and access road; that I am familiar with the conditions which presently exist; that statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Ari-Mex Oil & Exploration, Inc. and its contractors in conformity with this plan and terms and conditions under which it is approved.

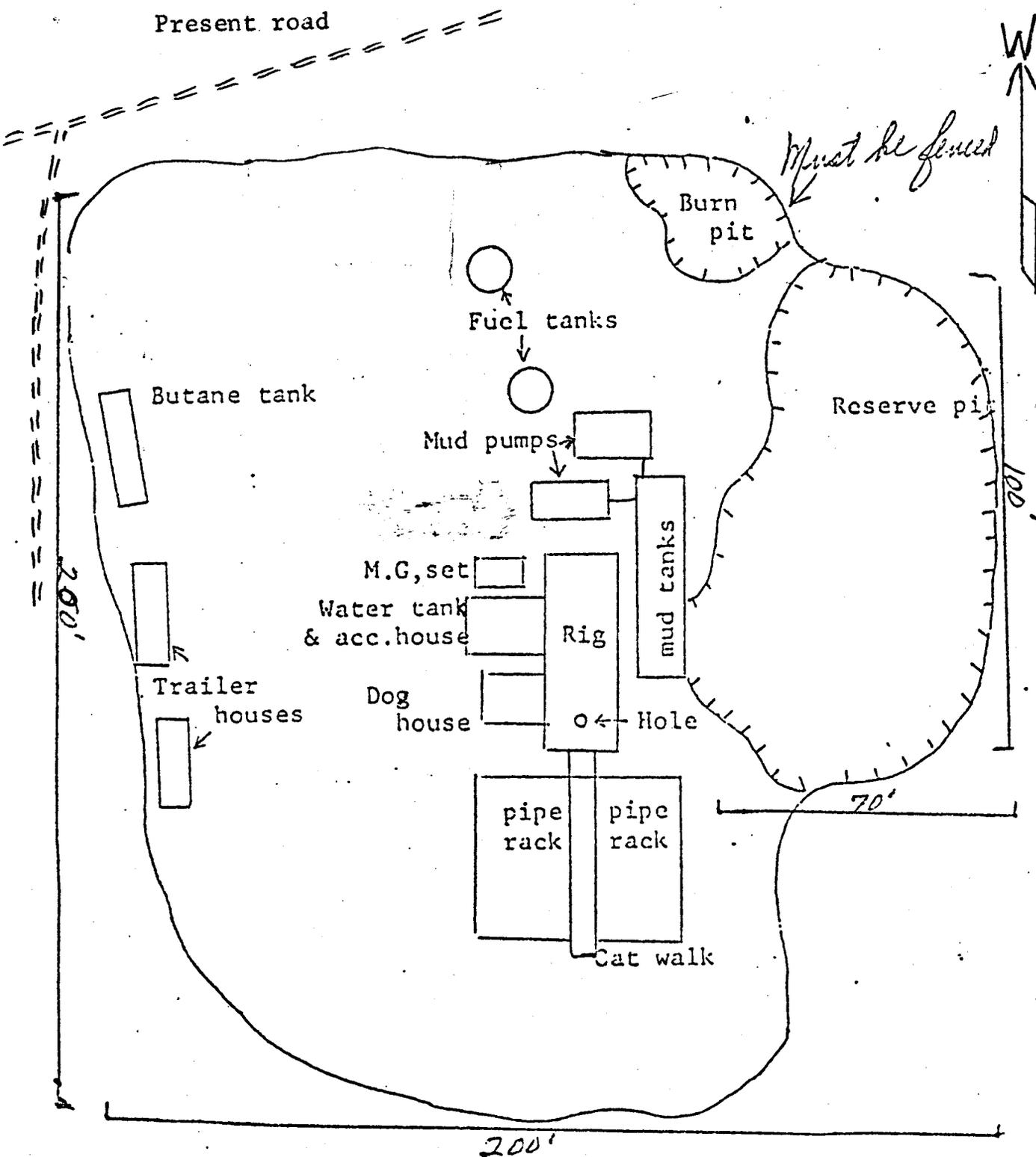
Date: Dec. 27, 1977

  
W. Don Quigley  
Consultant

PLAN FOR PRODUCTION EQUIPMENT  
ARI-MEX OIL & EXPLO., INC.  
SKIP #1-7 WELL  
GRAND COUNTY, UTAH



PLAN FOR DRILLING EQUIPMENT  
FOR  
ARI-MEX OIL & EXPLORATION, INC.  
SKIP 31-7 WELL  
GRAND COUNTY, UTAH



Scale: 1 in. = approx. 35 ft.

CONTROL EQUIPMENT FOR  
RI-MEX OIL & EXPLORATION, C.  
SKIP #1-7 WELL  
GRAND COUNTY, UTAH

The following control equipment is planned for the above designated well: (See attached diagram).

1. Surface Casing:

- A. Hole size for surface casing is 9 3/4"
- B. Setting depth for surface casing is approx. 150 ft.
- C. Casing specs. are: 7 1/2" D.D., J-55, 20.00#, 8 rd. thread, new or used.
- D. Anticipated pressure at setting depth is approx. 20 lbs.
- E. Casing will be run using three centralizers and a guide shoe, and will be cemented with 60 sks of cement with returns to the surface.
- F. Top of the casing will be at ground level.

2. Casing Head:

Flange size: 10", A.P.I. Pressure rating: 2000# W.P., Series 600; Cameron, OCT, or equivalent; new or used; equipped w/two 2" ports with nipples and 2", 2000# W.P. ball or plug valves. Casing head and valves set above ground level.

3. Intermediate Casing:

None.

4. Blowout Preventors:

- A. Double rams; hydraulic; one set of blind rams; one set of rams for 3 1/2" or 4" drill pipe; 10" flange; 2000# or greater W.P.; Series 900; equipped with mechanical wheels and rod for back-up; set on top of casing head flange and securely bolted down, and pressure tested for leaks up to 2000# p.s.i.

- B. Rotating Head: (Will not be required since air will not be used) Shaffer, Grants or equivalent; set on top of blowout preventor and bolted securely; complete with kelly drive, pressure lubricator; 3 1/2" or 4" rubber for 2000# W.P.; need not have hydril assembly on bottom.

C. Fill and Kill Lines:

The fill and kill lines (2" tubing or heavy duty line pipe) are to be connected thru the 2" valves on the casing head.

5. Auxillary Equipment:

A float valve is to be used in the bottom drill collar at all times A safety valve which can be stabbed into the drill pipe or collars will be kept handy at all times.

6. Anticipated Pressures:

The shut-in pressures of the potential productive zones in the subject well between the depths of 1000' and 2500' should not be greater than 400# to 1100# p.s.i. resp. & the 9 lb. mud planned for the hole should be sufficient to control this pressure.

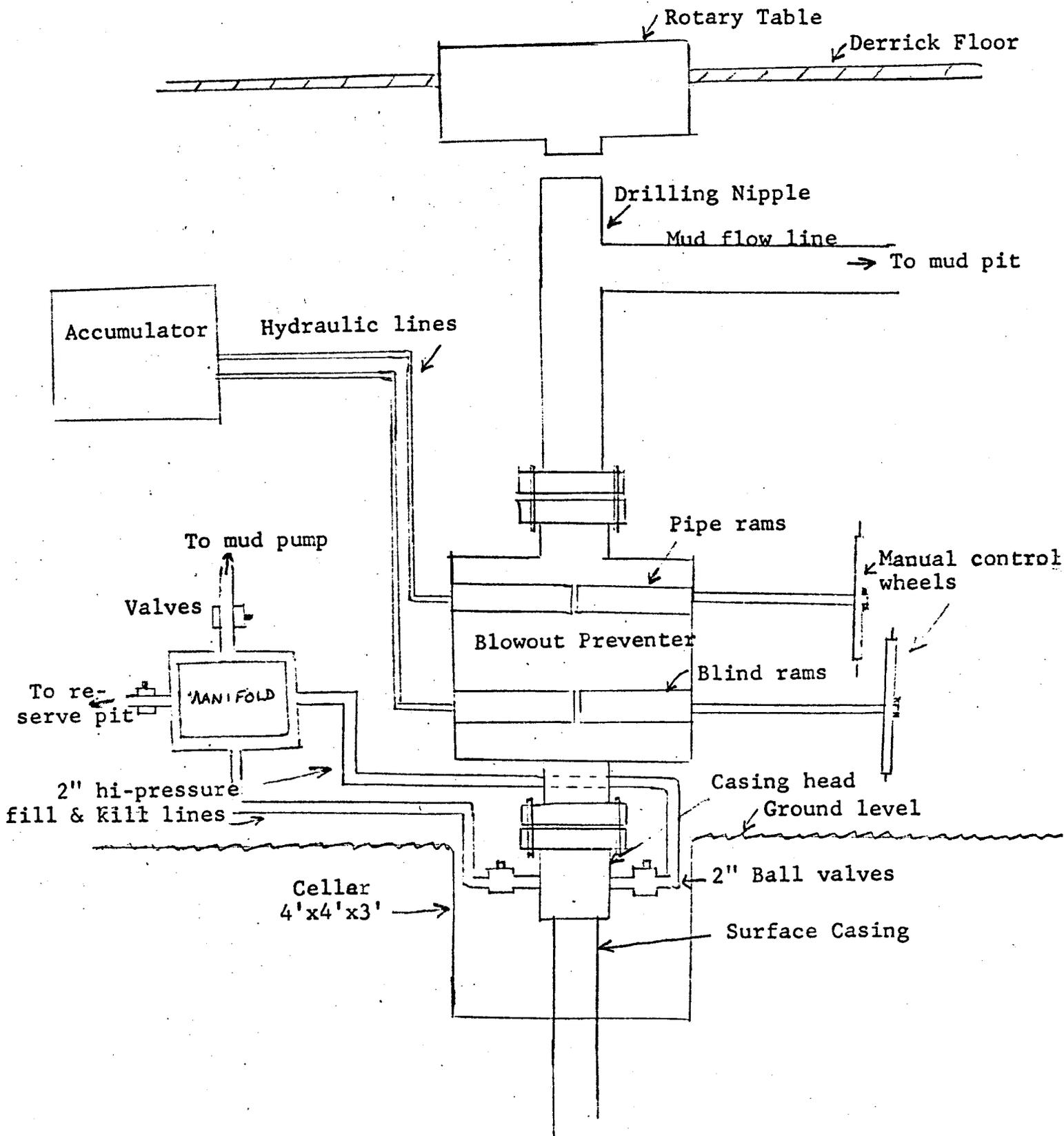
7. Drilling Fluids:

Ordinary fresh water-gel mud is to be used in the drilling of this well. The mud viscosity is to be kept at approx. 45 and the weight at approx. 9 lb/gal., and the water loss at 8-10 cc. per 15 min.

8. Production Casing:

- A. Hole size for the production casing will be  $6\frac{1}{4}$ ".
- B. Approximate setting depth will be about 2500'
- C. Casing specs. are:  $4\frac{1}{2}$ " O.D., J-55, 9.50#, 8-rd, LTC, new
- D. Anticipated pressures at setting depth should not be greater than 1100#p.s.i.

SCHEMATIC DIAGRAM OF  
CONTROL EQUIPMENT FOR THE  
SKIP #1-7 WELL  
GRAND COUNTY, UTAH



STATE OF UTAH  
DIVISION OF OIL, GAS AND MINING

\*\* FILE NOTATIONS \*\*

Date: Dec. 29-

Operator: Ari-Mex Oil & Exploration

Well No: Skyp Fed. 1-7

Location: Sec. 7 T. 25S R. 21E County: Grand

File Prepared:   
Card Indexed:

Entered on N.I.D.:   
Completion Sheet:

API NUMBER: 43-019-3041R

CHECKED BY:

Administrative Assistant [Signature]

Remarks: OK - No other wells in Township

Petroleum Engineer \_\_\_\_\_

Remarks:

Director [Signature]

Remarks:

INCLUDE WITHIN APPROVAL LETTER:

Bond Required: OK [Signature]

Survey Plat Required:

Order No.

Surface Casing Change   
to \_\_\_\_\_

Rule C-3(c), Topographic exception/company owns or controls acreage  
within a 660' radius of proposed site

O.K. Rule C-3

O.K. In \_\_\_\_\_ Unit

Other:

Letter Written/Approved

December 29, 1977

Ari-Mex Oil & Exploration  
P.O. Box 249  
Moab, Utah 84532

Re: Well No. Skip Federal 1-7  
Sec. 7, T. 25 S, R. 21 E,  
Grand County, Utah

Gentlemen:

Insofar as this office is concerned, approval to drill the above referred to well is hereby granted in accordance with Rule C-3(c), General Rules and Regulations and Rules of Practice and Procedure.

Should you determine that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

PATRICK L. DRISCOLL - Chief Petroleum Engineer  
HOME: 582-7247  
OFFICE: 533-5771

Enclosed please find Form OGC-8-X, which is to be completed whether or not water sands (aquifers) are encountered during drilling.

Further, it is requested that this Division be notified within 24 hours after drilling operations commence, and that the drilling contractor and rig number be identified.

The API number assigned to this well is 43-019-30418.

Very truly yours,

DIVISION OF OIL, GAS, AND MINING

CLEON B. FEIGHT  
Director

cc: U.S. Geological Survey

Oil and Gas Drilling

United States Department of Interior  
Geological Survey  
8440 Federal Building  
Salt Lake City, Utah 84037

EIA ~~1987~~ GEOLOGICAL SURVEY  
RECEIVED

MAR 7 1978

CASPER, WYOMING

UNUSUAL ENVIRONMENTAL ANALYSIS

Operator: Ari-Mex Oil and Exploration, Inc. Well No. Skip #1-7

Location: NE $\frac{1}{4}$ SW $\frac{1}{4}$  Sec. 7, T.25S., R.21E.

County: Grand State: Utah Field: Wildcat

Lease No. U-33425-A Surface Status: Federal

Joint Field Inspection Date: Friday, 13, January 1978

Participants and Organizations:

Don Quigley	Consulting Geologist for Ari-Mex Salt Lake City, Utah
Skip Nightingale	Ari-Mex Oil and Exploration, Inc.
Bill Baggett	Ari-Mex Oil and Exploration, Inc.
Dave Minor	BLM, Moab, Utah
Robert Barbour	BLM, Moab, Utah
Rocky Curnutt	BLM, Moab, Utah
John Evans	USGS, Salt Lake City, Utah

Environmental Analysis References:

1. Environmental Analysis Record--Proposed Oil & Gas Leasing in Grand Resource Area, Bureau of Land Management.
2. Unit Resource Analysis--Big Flat--Squaw Park, Bureau of Land Management.

Proposed Action:

On December 28, 1977, Ari-Mex Oil & Exploration, Inc. submitted for approval an Application for Permit to Drill Well Skip No. 1-7, an exploratory well on public land under Lease U-33425-A.

The proposed drill site is approximately seven miles northwest of Moab, Utah and is located 1,557' FWL and 1,742' FSL in NE $\frac{1}{4}$  SW $\frac{1}{4}$  of Section 7, Township 25 South, Range 21 East, SLM, Grand County, Utah. (See Exhibit No. 1.)

Operator proposes to drill a well at the above location to test oil-gas production potential of the Jurassic, Triassic, Permian, and Pennsylvanian formations utilizing rotary tools. The proposed total depth is 2,500'. Drilling Mud will be used as the circulating media. It is planned to drill a 9-3/4" surface hole to approximate depth of 150', set 150' of 7" O.D., J-55; 8 RD. LTC, new casing and cement with approximately 60 sacks of cement with returns to surface. A 10" casing head with 2,000# W.P., Series 600, Cameron, OCT or equivalent, equipped with two 2" ports with nipples and with 2,000# W.P. ball or plug valves will be installed above ground level. A 2,000# W.P. hydraulic, double rams blow-out preventor equipped with mechanical wheels and rods for backup will be installed on casing head. This control system will be tested for leaks up to 2,000# prior to drilling out surface plug. Operator

does not propose to set intermediate casing. If a hydrocarbon bearing zone capable of production is analyzed, production casing consisting of 4½" O.D., J-55, 9.50#, 8 RD, LTC new casing will be run and cemented. Mud, casing, cementing and blow-out prevention programs for well control have been checked by U.S. Geological Survey engineers and found to be adequate. It is anticipated that the drilling of this well will take approximately two weeks. Production of the well may take several years.

The operator has submitted a surface use plan for his proposed action which is on file with the Office of the District Engineer as summarized below:

- (1) To construct a drill pad 200' by 130'
- (2) To construct a reserve pit 70' by 100' X 8'
- (3) To construct access roads by upgrading existing jeep trails to 16' wide by 0.75 miles from existing improved road.
- (4) To construct oil and/or gas production facilities on the disturbed area of the drill pad. Oil production will be transported by tanker truck and gas production will be transported by pipeline.
- (5) Operator proposes to rehabilitate disturbed area upon completion of operations.

The concurrence of Bureau of Land Management of the proposed action is required prior to Geological Survey's Approval. A review by the Department of National Parks of the proposed action is recommended due to proximity of the operation to the Arches National Park boundary.

#### ENVIRONMENTAL CONSIDERATIONS OF THE PROPOSED ACTION:

##### Geology:

The well will be drilled in the Canyon lands geographic province of the Colorado plateau. The Canyon Land Section is south of the Uinta basin, whose southern boundary is marked by the first ridge of the Book Cliffs. The Canyon Lands are generally flat-lying rocks which have been cut by streams leaving intervening broad mesas and buttes. The effects of erosion have made some areas extremely rugged. The area has also been shaped by numerous large folds and Laccolithic mountains superimposed on an uplifted area. South of the Book Cliffs is the Grand Valley, an erosional feature in the thick Mancos shale. Toward the southwest end of Grand Valley, is an uplifted area known as the Uncompahgre Uplift. The Paradox Basin is typical prime example of the Canyon Lands topography as the area has been altered by flowage and solution of masses of salt and gypsum to form northwest-southeast oriented anticlinal structures which have eroded to form the deep valleys and flat top mesas of the area.

The proposed well will be drilled on the down dip side of one of these anticlinal structures and northeast of a fault structure known as the Moab fault. (See Exhibit No. 2.)

Minerals Exploration Company, Potash Test 2-7, NW¼ SW¼ Sec. 7, T.25S., R.21E., reported the following geologic tops:

Ground Reference 4,682'

<u>Formation</u>	<u>Depth</u>	<u>Formation</u>	<u>Depth</u>
Morrison	Surface	Navajo	740'
Summerville	150'	Kayenta	1,220'
Entrada	310'	Paradox	2,015
Carmel	570'	Paradox Salt	2,378'

Ari-Mex Oil & Exploration estimated formation tops appear reasonable. No abnormal pressure zones or temperatures are expected. No geologic hazards are known, however, fresh water could be encountered in the sands of Entrada, Navajo and Kayenta Formations. The Entrada may carry 1-10 gpm, Navajo and Kayenta Formations may carry 50-200 gpm of fresh water. Deeper formations may carry water, probably slightly saline to saline in quality. Potash may be encountered in Paradox Formation. Minerals Exploration Company reported 15.4% K2O in well #2-7 in the interval 2,466' to 2,542 feet. Logging programs would be adjusted to include identification of Potash in the test hole. Oil in test hole is

not expected at the proposed test depth. Uranium has been located in mossblack member of the Chinle formation in areas several miles to the northeast of the well. Anaconda has tested for Uranium within 300' of the proposed location; however, test results are not available. Vanadium has also known to be found in the Chinle Formation. The Morrison and Summerville Formations often carry manganese in sub-economic quantities. The seismic risk for the area is Zone One, as defined by Uniform Building Code of Utah, and is low. .

The area's surface geology is covered by U.S. Geological Survey map, I-116. (See Exhibit No. 2.)

The proposed action should have minimum effects on any potential mineral resources. Approval would be conditioned that adequate and sufficient electrical/radioactive/density logging surveys be made to locate and identify other mineral resources. The production casing and cementing programs would then be adjusted to assure no influence of the hydrocarbon zones on these minerals. In the event the well would be abandoned, cement plugs would be placed with the drilling fluid in the hole, to assure protection of any other mineral resources. Some contamination (filtrate) will occur in area of the drill hole and is unavoidable. This contamination will come from introduction of drill fluids and muds into formations. Under normal drilling, this loss is minimal and local in nature. No known loss circulation zones are known; however, if

encountered, large amounts of fluids and mud may be lost to the formation. Loss circulation drilling techniques and filler materials may control this situation if it were to occur.

Soils:

No detailed survey of soils is known to have been completed in area. A general soil map of Utah is available for area from U.S. Department of Agriculture. (See Exhibit No. 3.) The soil type listed for the area is called Rock Land, and the following is quoted in part from the above source: "...The bare rock in this land type is estimated to be from 50-75% of the area. Shallow and very shallow soils over sandstone bedrock comprises about 20 to 40%. The other 5 to 10% is deep and moderately deep soils. Runoff is high on this association. This land type includes some of the most colorful rock lands in the world. . ."

The project area is moderate to shallow soils over sandstone bedrock. The well site is on the side of a hill which slopes gently to the west. The general area however, slopes more to the north, south and east. The proposed action will disturb approximately two to three acres of land. Approximately one acre will be devoted to the drill pad and the balance to access roads. The soil will be stripped of existing vegetation and the surface foot will be stockpiled as top soil to aid in rehabilitation when spread back over the disturbed area of the drill pad. The route of

the access road will follow an existing trail to the well site. The road will be upgraded to handle rig and support traffic. Some widening of road is necessary to allow safe and orderly flow of traffic. Traffic over the road would be limited primarily to drilling operations in area. The area is in a grazing unit but is not being used at present. Recreational use of the road is limited by restricted access to Arches. No hunting signs are posted along Park's west boundary. Upgrading of road would contribute to safer operations in the area. The upgrading may also encourage more encroachment of the west boundary area of the Park. Erosion may increase and be accelerated along access road, however, with proper construction practice, installation of water bars, and construction of a drainage system, the effects or severity of soil movement may be less than the existing situation.

The existing road has been cut and eroded away in several places as the road is in a state of disrepair. Areas not needed for production will be rehabilitated per BLM specifications. Areas used in production will be stabilized as to not aggravate the existing environment. This may include, but not limited to, construction of water bars, reseeding of slope cut area, pit banks and top soil pile as the situation dictates. The operator agreed to a rehabilitation program with which the BLM concurs. The operator will maintain the access road during the lifetime of this project. Upon completion, this access road can be left for future use or ripped and rehabilitated.

Air:

Meteorology--The temperature varies from highs of approximately 100°F. during the months of June, July and August and lows of 0°F. and lower in December, January and February. The frost free period is generally between April 26, and October 24. This period is a relatively long growing season but is limited in overall effect by low precipitation in the area. Much of the eight to nine inches of annual precipitation comes in the form of short duration, high intensity storms during the extremely low humidity months of June through August. This precipitation is often lost to runoff and high evaporation rates. Beneficial moisture comes from snow fall, but the effectiveness is limited by runoff, evaporation and sublimation. Farming in the regional area is only successful with a supply of irrigation water to supplement natural moisture. No extensive study of air movement has been made in the project area. It is noted that short duration air inversions occur along the Green River and Colorado River during the winter. Ground fog is common during winter and often presents traffic safety hazards due to loss of visibility.

The combined effects of low humidity, high temperatures, and wind create a high fire index during much of the year. This is mitigated by the low density of combustable plants and materials through the general area.

### Air Quality:

The air quality is high due to low population density and limited manufacturing in the area. No detailed air quality data is available but judged to conform with National Ambient Air Quality Standards. A primary source of air pollution comes from dust storms and vehicle travel over dirt roads.

The proposed action will have little effect on air quality, however; minor air pollution will come from exhaust emissions from rig and support traffic engines. Minor air pollution from dust due to surface disturbance and vehicle travel over dirt roads would also occur. Operator proposes to burn burnable materials in burn pits. All materials would be hauled to sanitary fills and not burned due to possible visual impacts of this air pollution on the nearby Arches National Park.

### Noise Pollution:

Noise from the proposed operations will probably be audible under ideal conditions for several miles. This may cause some distraction to the "back country" back packer in the general area of the well. The National Park Service advises that this impact would be minor as very few of the 313,383 visitors of the park wander from existing trails. The noise level would increase during construction and drilling of well and return

to normal or near normal levels upon completion and production of well. Drilling operations would require 12-15 days to complete. Minor disturbance to wildlife and stock may occur in immediate area of the well over the life of the project. If drilling were to occur early in year before the tourist season the impact potential on Park activities would be reduced.

In the event of loss of control of well, noise and air pollution may occur that would be noticeable over a larger area. Loss of control of well is condition where there is uncontrolled loss of fluids or gas in or out of well. The extent of this impact would depend on severity and nature of the problem. The proposed well drilling program is designed to prevent this type of accident from occurring. A blow-out preventer valve would be installed and tested as required by stipulations in conditions for approval. Two test holes for minerals have blown out in this immediate area. Unconfirmed reports say no blow-out preventer valves were in place as these rigs were mineral test rigs and not equipped with the capability control pressure influxes. The proposed drilling program has been reviewed by the Geological Survey and considered to be adequate. General hydrology of the area is covered in Utah State Engineer Pub. No. 15. No Quantitative Study has been made in the project area. Some data is available from test hole drilling in area. Fresh water may be encountered in Navajo, Entrada and Kayenta. It is estimated that the combined flows from these formations may be in the order of 100 to 200 gpm. Slightly saline to saline water may be encountered from deeper

aquifers such as the Chinle. It would be doubtful if waters at this depth would be economical to produce as yields are estimated to be low and quality to be poor. Surface water in general area consists of emergence of springs in Sevenmile Canyon which have been developed for stock use. Intermittent flow from run off in small drainages join to the larger Sevenmile Canyon wash which drains to the Courthouse Wash and finally into the Colorado River at a point near Moab. The well site is near a \*\*\* surface water divide. Water should drain in to unnamed tributary to Courthouse Wash approximately one mile below Sevenmile Canyon. During rainfall events, flash flooding can occur, causing high flows with associated sediment transport. Flows in Courthouse Wash have, on occasion, stopped flow of traffic on Highway 160 and stranded Arches Park visitors for a few hours. The proposed actions should have minor effects on the Hydrology of the area. Some minor contamination in general area of well bore would occur as some loss of drilling fluids is unavoidable. Possibility of communication of aquifers through the well bore is possible. The mud program is designed to prevent this. Disturbance to the soil may increase soil erosion which eventually will be carried as sediment to Colorado River. The accidental breach of the reserve pit could occur, and under rare circumstance, this could introduce materials such as drilling muds to the drainage patterns of area and eventually be carried to Colorado River. The reserve pit would be constructed with at least 1/2 of its capacity in undisturbed soil which will add to its strength and safety. Reserve pit failure would generally be predictable

\*\*\* See National Park Memo April 7, 1978 for proposed stipulations.

and equipment could be ordered from Moab to correct any unusual or unexpected problem. The operator would be required to clean up any spills or leaks during his operations. If water is produced from well with production, a plan for disposal per NTL-2B will be submitted for approval.

#### Flora and Fauna:

The flora and fauna must adapt to the semi-desert environment in order to survive as species without the ability of adapt exist only for a short time or depend on artificial means such as irrigation, etc. This desert environment limits the total number of species that can live in any area. The project area is sparsely vegetated, varying from a few inches to several feet apart. The clay content is high enough in the soil to retain enough surface moisture to support a lichen type plant. Other species such as Pinyon-Juniper (*Pinus edulis* and *Juniperus osteosperma*), Mat Salt Brush, (*Artemisia tridentata*), and Mormon Tea, (*Ephedra*) are the dominant species in the project area. Native grasses such as curly grass (*Hilaria jamesii*), and Indian rice grass, (*Oryzopsis hymenoides*), three-awn grass, and Sand Dropseed, (*Sporobolus cryptandius*), are also present in project area. Bureau of Land Management, Moab, Utah provided the animal and plant inventory in this area. No known endangered plant species are known habitat in project area. The plants in area are the food supply for grazing and browsing animals. Between 140-800 pounds of forage per year is estimated to be produced per acre. The actual amount

would vary with soil conditions and moisture. The area is in 650 Unit range area that is stable and presently not being used. Grazing in the Arches National Park is discouraged and will be prohibited by the year 1982.

The proposed project will remove approximately one to two acres of vegetation. This would not effect the usefulness of the range to any large degree. Upon completion of project or areas not needed in production operations will be rehabilitated. Rehabilitation is necessary to retard erosion of the disturbed surface and to prevent encroachment of undesired species, such as, halogeton which is toxic to sheep.

Soil conditions in this area are favorable for successful rehabilitation when combined with sufficient moisture. Most of the surface disturbance effects of the proposed project should be mitigated by rehabilitation. BLM has requested waiver of the surface monument. Monuments or "dry hole" markers are attractive nuisances and attract observers who often drive upon the drill pad to satisfy their curiosity and destroy the efforts to rehabilitate the area.

Birds, small mammals, deer, coyotes and small reptiles are known to exist in the general area. Any existing burrows for small rodents, insects or mammals would be destroyed in the area of the drill pad. The disturbance of these animals would have little effect on the overall

rodent-reptile populations as no indication was present to dictate that the area is a major nesting or brooding area for any species.

It is reported that American peregrine falcon and the Bald Eagle are known to be observed on rare occasions in the region. It is felt that if any of these rare and endangered species were to be observed in the area of the project they would be of a transitory nature and be a very rare occurrence. It is also noted that reported sightings have been mainly in the major river bottoms. The pits would be overhead flagged as a precaution.

The Colorado River in this area is known to be prime habitat of the Humpback Chub and Colorado Squaw fish. The proposed action should have minor or no impact on these species. Transport of enough harmful pollutants through the existing drainage would be an extremely rare event to occur as complete failure of the reserve pit would have to be coupled with enough fluids or runoff to transport pollutants six miles to the Colorado River. Oil is not expected at the proposed test depth and reserve pits will probably contain formation cuttings, salts, drilling muds and small quantities of wasted petroleum products. Additional small amounts of chemical additives may be contained in the pit used in stimulation or production of well. The pits will be fenced to curtail encroachment by wildlife. When the pit is dry it will be covered with at least four feet of soil.

Animals in general area may move temporarily away from drilling operation due to disturbance from increased noise and traffic. Upon completion of drilling, activity will decrease to near pre-drilling levels and it is anticipated that wildlife patterns will return to near normal.

Social-Economics and Land-Use:

The lease hold is on Federal land subject to multi-use laws. Exploration for uranium and potash, grazing of livestock, and recreational use is the present utilization of the land. The development of this well should be in harmony with present environment and should improve access to the area for these activities by the upgrading of the existing access road. (See Exhibit 1.) The access routes to the area includes using an abandoned portion of a paved highway that has deteriorated from lack of maintenance. Pot or chuck holes are abundant. The road is narrow and would be especially hazardous under icy or snow covered conditions. It is felt that heavy truck traffic would deteriorate the road further, present a safety hazard under poor road conditions, and an alternate route should be used for rig and heavy truck support traffic. The alternate route is discussed in the operator's surface use plan and is a dirt road that is accessable from Highway 160 in the NW/4 of Sec. 12, T.25S., R.20E. Some additional air pollution may result locally from use of this road, but the safety of operations would be improved. The road is wide enough to allow room for opposing traffic. The road bed is a gravel stabilized crown road which should accomodate heavy truck

traffic under most conditions. Provisions would be made to require the operator to maintain all roads as conditions dictate. During extreme wet conditions the road may be damaged by heavy truck traffic. The road could be repaired but may involve extensive costs depending on damage. Prudent operating practice would mitigate this type of damage.

The upgrading of the existing jeep trail will be to a minimum level to accommodate the drilling operation. If commercial production is achieved the road may be upgraded possibly to the extent of an all weather gravel road meeting BLM specifications.

The access road will provide an improved access to the boundary area of Arches National Park. It is judged that any encroachment would occur \*\*\* regardless of the road conditions. The drill rig would be visible to observant travelers on Highway 160 at approximately 1.5 miles away. The well will be more noticeable at night due to beacon effect of rig lighting, but then only to traffic traveling south due to the line of sight. The potential for a short term test of the wells capacity to produce hydrocarbons may require flaring or venting of hydrocarbons. The gas flare may be visible especially at night. If either venting or flare testing is done, minor air pollution would occur during the test. Testing is required in order to determine production equipment types and sizes of transmission lines. Testing may take a few hours to several days. Particulate and gaseous by-products would be dispersed in the air which may effect air quality in immediate area until dispersed and judged to be minor. Upon

\*\*\* See National Park memo of April 7, 78 for proposed stipulations.

completion of drilling, production equipment if installed would be painted a color that will blend in with the environment. Until abandonment and rehabilitation is complete, there would be some disturbance to aesthetics. This is an individual value subject to individual interpretation, however, the impact is judged to be minor. The proximity of the well site to Arches National Park will have minor or no effect to the average visitor to the park. Most visitors will come and go and never know that the well exists. It may be noticed by the unusual few that may back pack into the area of the well. Noise from the drilling rig may disturb the tranquility in this remote area of the park during drilling. This may be significant to the back country back packer. Drilling of well will take about two weeks. The Park Service was contacted in regard to the proposed action and will be given an opportunity to review this environmental analysis prior to approval of the application to drill. The park service was concerned about pollution, or increased sediment load in the drainages in the Park.

Enforcement of the approved surface use plan should mitigate environmental damage in the project area. Public opinion was not solicited or received in regard to the proposed action.

A cultural resource clearance has been granted by BLM as required by public law. The region does have particular areas, such as in Sevenmile Canyon, that have significant sites of archeological value however; no potential archeological site was found upon examination of the project

area. It was noted that the drill pad is a chert area but never quarried or used.

The closest inhabited area is at the Park Headquarters approximately two miles away. The drill site should not be audible or visible to visitors or inhabitants of the Park Headquarters. The drilling or production of one well will have little or no effect on the economy of the area. Oil and Gas development and production in general in Grand County does contribute significantly to the economy in the form of tax revenues and employment. In Grand County, most of the leasable land has been leased but only about 3% has been explored. About one out of every 20 wells are not "dry holes," which is about half the national average, in Grand County.

If this well is successful, a commitment of unretrievable and irreplaceable resources would be made. In the event that commercial quantities of hydrocarbons are discovered, this would increase our petroleum and gas reserves. If a producing field were developed, it would improve the local and national economy and provide needed energy.

The potential for fire or accidental injury is always present with oil and gas operations. The use of sound safety practice is mandatory and enforced as required by the Oil and Gas Regulations. The potential for

leaks and spills are also present. If an accident or spill occurs, it would be reported and acted upon immediately.

A pipeline will have to be constructed to produce gas. No detailed plan has been submitted by the operator. The line will probably be surface laid creating minor surface disturbance and visual impacts. The line will probably be laid to the west of the drill site and will not cross any Park land. A detailed plan will be submitted to proper agencies for approval prior to construction.

#### Alternatives to Proposed Action

(1) Deny the proposed permit and breach the oil and gas lease which grants the lessee the right to drill, extract and dispose of all oil and gas deposits.

(2) Deny the proposed permit and select an alternate location to minimize environmental impacts. An alternate site on an existing drill pad 300' to SE was considered, but extensive blasting would have been required to construct the reserve pits. If the pits were to be accidentally breached, control of fluids would have been difficult as the flow would have been rapid off the solid dipping sandstone.

A second alternate site was considered; the site of the Union 1-7 potash hole. The drill pad is the site of two abandoned drill holes.

Overall impacts would probably be about the same as proposed location. Because of the chance that the formation may have been damaged in regard to gas and oil production and possible introduction of unusual drilling hazards due to drilling and plugging of these wells this site was not considered further. No alternate location on this lease that would significantly reduce environmental impacts could be selected.

Adverse Environmental Effects that Cannot be Avoided:

Approximately two acres of vegetation would be removed for the lifetime of the project. Erosion and air pollution would increase slightly over 11-15 day period due to construction and support traffic. Livestock and wildlife may be temporarily disturbed and be forced to relocate. Minor visual and auditory distraction from aesthetics over the life of the project would occur. Potential for subsurface damage to freshwater aquifers and potash formations would exist. Damage is also possible to other formations by loss of mud circulation. The potential for fires, oil or water spills, and gas leaks would exist. Noise levels would increase during construction and drilling periods. An additional surface disturbance would be required to construct a pipeline if well produces gas.

Determination:

In my opinion, the proposed action does not constitute a major Federal action significantly affecting the quality of human environment in the sense of NEPA, Section 102 (2) (C), and the environmental impacts of the proposed action are not likely to be highly controversial.

*E. S. ...* DISTRICT ENGINEER APR 07 1978  
Signature and Title of the District Engineer Date

I concur *[Signature]* 4/11/78  
Area Supervisor Date

I determine that preparation of an Environmental Impact Statement is not required.

*William N. ...* 4/13/78  
Asst Conservation Manager Date



Appendix 1

Reviews, Reports, or Other Information Received  
from Geological Survey

TO: DISTRICT ENGINEER, SALT LAKE CITY, UTAH

Well	Location	Lease No.
Ari-Mex Oil & Expl., Inc. Skip #1-7	1557' FWL, 1742' FSL, (NE $\frac{1}{2}$ SW $\frac{1}{2}$ ), Section 7, T. 25 S., R. 21 E., SLM, Grand Co., Utah GR. 4738	U-33425-A
<p>1. Stratigraphy and Potential Oil and Gas Horizons. Minerals Exploration Co. Potash test 2-7, (NW<math>\frac{1}{2}</math>SW<math>\frac{1}{2}</math> same section GR. 4682) reports the following tops:</p> <p>Surface- Morrison Fm. 150- Summerville 310- Entrada 570- Carmel 740- Navajo 1220- Kayenta 2015- Paradox 2378- Paradox Salt</p> <p>Map I-116 indicates surface of this test will be Summerville.</p> <p>2. Fresh Water Sands: Fresh water could be encountered in sands within the Entrada, Navajo, and Kayenta Formations.</p> <p>3. Other Mineral Bearing Formations. (Coal, Oil Shale, Potash, Etc.) Minerals Exploration Co. reports an assay of 15.4% K<sub>2</sub>O in well 2-7 in the interval 2466 to 2542 feet.</p> <p>4. Possible Lost Circulation Zones. Unknown</p> <p>5. Other Horizons Which May Need Special Mud, Casing, or Cementing Programs. Unknown</p> <p>6. Possible Abnormal Pressure Zones and Temperature Gradients. None expected</p> <p>7. Competency of Beds at Proposed Casing Setting Points. Should be competent</p> <p>8. Additional Logs or Samples Needed. Proposed logs should be adequate to identify potash in the drill hole.</p> <p>9. References and Remarks USGS Files, Salt Lake City, USGS Map I-116, Utah State Engineer Tech. Pub. No. 15.</p>		
Date: January 3, 1978		Signed: James C. Holden

Memorandum

To: District Oil and Gas Engineer, Edward Guynn  
From: Mining, Supervisor, Jackson W. Moffitt  
Subject: Application for Permit to Drill (form 9-331c) Federal oil and  
gas lease No. U-33425-A

1. The location appears potentially valuable for:

- strip mining.\*  
 underground mining.\*\*  
 has no known potential.

2. The proposed area is

- under a Federal lease for \_\_\_\_\_ under  
the jurisdiction of this office.  
 not under a Federal lease under the jurisdiction of  
this office.  
 Please request the operator to furnish resistivity,  
density, Gamma-Ray, or other appropriate electric  
logs covering all formations containing potentially  
valuable minerals subject to the Mineral Leasing Act  
of 1920.

\*If location has strip mining potential:

Surface casing should be set to at least 50 feet below the  
lowest strip minable zone at \_\_\_\_\_ and cemented  
to surface. Upon abandonment, a 300-foot cement plug should  
be set immediately below the base of the minable zone.

\*\*If location has underground mining potential:

The minable zones should be isolated with cement from a point  
100 feet below the formation to 100 feet above the formation.  
Water-bearing horizons should be cemented in like manner.  
Except for salines or water-bearing horizons with potential  
for mixing aquifers, a depth of 4,000 feet has been deemed  
the lowest limit for cementing.

Signed

Robert H. Campbell

Appendix 2 Surface Management Agency Concurrence



## United States Department of the Interior

3100  
(U-060)

BUREAU OF LAND MANAGEMENT

Moab District  
Grand Resource Area  
P.O. Box M  
Moab, Utah 84532

February 28, 1978

Mr. Ed Guynn, District Engineer  
USGS Conservation Division  
8440 Federal Building  
Salt Lake City, Utah 84138SUBJECT LOCATION: Ari-Mex Oil & Exploration Inc.  
Skip #1-7 Lease #U-33425-A  
NE SW Section 7, T. 25 S., R. 21 E., SLBM  
Grand County, Utah

Dear Mr. Guynn:

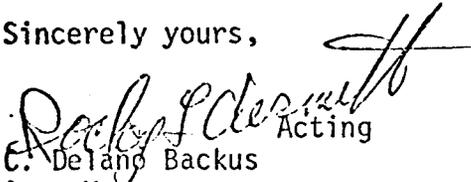
On January 13, 1978, a representative from this office met with John Evans, USGS, and Don Quigley, agent of the Ari-Mex Company for an inspection of the above referenced location. Subject to the following conditions, I am approving the surface management portion of the Application for Permit to Drill.

## Conditions:

1. Operator must contact this office at least 24 hours prior to beginning work.
2. Stockpile surface foot (1 ft.) of soil on the west end of the location.
3. This office requests waiving the dry hole marker (if production is not obtained). This action is requested due to the proximity of the location to Arches National Park.
4. All production facilities will be painted "desert gold" or a similar color approved by the Grand Resource Area Manager.

Please forward the enclosed rehabilitation information to the operator.

Sincerely yours,

  
Acting  
C. Delano Backus  
Area Manager
CONSERVE  
AMERICA'S  
ENERGYEnclosures (3):  
Rehabilitation Information*Save Energy and You Serve America!*

RECLAMATION PROCEDURES IN GRAND RESOURCE AREA

1. Disk or rip pads and access roads.
  - a. Overlap passes in order to insure complete treatment.
2. Contour pads and access roads.
  - a. Lay beams into centers.
  - b. Use cut material for fill areas.
  - c. Lay stockpiled surface soil over top of pads and spread evenly.
  - d. On highly erosive soils, it may be more beneficial to grade slopes to reduce steepness.
  - e. Do not smooth pads out, leave a roughened surface. On steeper slopes and slopes with clayey soils scarify or serrate the ground in order to increase water infiltration and reduce erosion.
  - f. Keep machinery runs over fill slopes at a minimum.
3. Water bar roads where required by this office.

* 2%	Grade	-	200 ft. intervals
2-4%	Grade	-	100 ft. intervals
4-5%	Grade	-	75 ft. intervals
>5%	Grade	-	50 ft. intervals

\* Actual spacing may vary according to soil stability. Lighter textured soils will require more frequent water bars. When natural drainage ways are present, water bars are to be constructed to make maximum use of them. Plan operations so that natural drainage ways do not become blocked.

4. Seed roads and pads in the fall (Oct.-through Nov.)
  - a. Use a rangeland drill or a drill of similar heavy construction in rough areas where agriculture drills are not suitable.
  - b. In highly critical areas where soils are heavy and precipitation is low it will be necessary to mulch with hay or straw at a rate of 1 to 1.5 tons per acre. Fifty percent of hay mulches by weight should be 10 inches or longer in length.

SEEDING MIXTURE

<u>SPECIES</u>		<u>RATE</u>
<u>Grasses</u>		<u>lb/acre</u>
Oryzopsis hymenoides	Indian Rice Grass	1
Agropyron desertorum (standard)	Crested Wheatgrass	1
Sporobolus cryptandrus	Sand Drop Seed	1
<u>Forbs</u>		
Sphaeralcea ambigua	Globe Mallow	1
<u>Shrubs</u>		
Atriplex canescans	Four Wing Saltbush	1
Atriplex confertifolia	Shadscale	1
Ephedra viridis	Green ephedra	1
Ephedra nevadensis	Nevada ephedra	1
		<hr/>
		8

Appendix 3 Cultural Resource Clearance

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
Moab District Office

Summary Report of  
Inspection for Cultural Resources

BLM Use Only: Use initials.

Case File No.

Report Acceptable Yes  No

Mitigation Acceptable Yes  No

Comments: \_\_\_\_\_

1. Project Name, Developer

Ari-Mex Oil and Exploration Co.

2. Legal Description of Project Area (Attach Map Also)

N1/4, SW1/4, Sect. 7, TWP 25S, R21E.

3. Institution Holding Antiquities

Y.Y. Felli TFW Specs

4. Antiquities Permit No.

77 Ut 116 (M-2)

5. Dates of Field Work

Dec. /3 1977

6. Description of Examination Procedures

Thorough on the ground by foot examination of proposed drill pad and surrounding area. Access road looked at also.

7. Description of Findings (Attach forms or detailed report, if appropriate)

Nothing found. Drill pad is chert area but never quarried or used. Lots of good old access roads. Drill pad to northeast of pad has been rehabilitated.

8. Actual/Potential National Register Properties Affected

nothing

9. Conclusions/Recommendations

Allow drilling.

10. Signature of Person in Direct Charge of Field Work

*[Handwritten Signature]*

11. Signature of Title of Institutional Officer Responsible

*[Handwritten Signature]*

Appendix 4 Relevant Correspondence

December 29, 1977

Ari-Mex Oil & Exploration  
P.O. Box 249  
Moab, Utah 84532

Re: Well No. Skip Federal 1-7  
Sec. 7, T. 25 S, R. 21 E,  
Grand County, Utah

Gentlemen:

Insofar as this office is concerned, approval to drill the above referred to well is hereby granted in accordance with Rule C-3(c), General Rules and Regulations and Rules of Practice and Procedure.

Should you determine that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

PATRICK L. DRISCOLL - Chief Petroleum Engineer  
HOME: 582-7247  
OFFICE: 533-5771

Enclosed please find Form OGC-8-X, which is to be completed whether or not water sands (aquifers) are encountered during drilling.

Further, it is requested that this Division be notified within 24 hours after drilling operations commence, and that the drilling contractor and rig number be identified.

The API number assigned to this well is 43-019-30418.

Very truly yours,

DIVISION OF OIL, GAS, AND MINING

CLEON B. FEIGHT  
Director

cc: U.S. Geological Survey

Conservation Division  
8440 Federal Building  
Salt Lake City, Utah 84133

January 23, 1978

Ari-Mex Oil & Exploration, Inc.  
P.O. Box 249  
Hoab, Utah 84532

Attn: Mr. Nightingale

Re: Skip No. 1-7  
NE/4 SW/4 Sec. 7-25S-21E  
Grand County, Utah  
Lease U-33425-A

Gentlemen:

This letter confirms a telephone conversation with John Evans on January 18, 1978 concerning a delay in the approval of your Application to Drill Skip #1-7 while an unusual environmental impact evaluation is prepared by this office due to wells quartermile proximity to Arches National Park boundary.

It is estimated that it will take at least sixty days to process and prepare this evaluation. This office will work diligently on your Application.

If we can be of assistance to you please feel free to contact this office.

Sincerely yours,

E. W. Guynn  
District Engineer

cc: Mr. Don W. Quigley

bcc: O&GS, NRMA, Casper  
Well File  
Lease File

JE:ch



# United States Department of the Interior

GEOLOGICAL SURVEY  
Conservation Division  
8440 Federal Building  
Salt Lake City, Utah 84138

U.S. GEOLOGICAL SURVEY  
RECEIVED

MAR 7 1978

March 6, 1978

CASPER, WYOMING

## Memorandum

To: Conservation Manager, Central Region, Denver

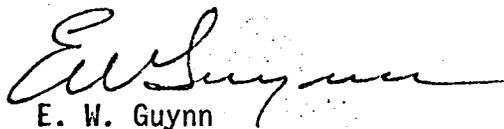
Through: Oil and Gas Supervisor, NRMA, Casper **NOTED - LINTON**

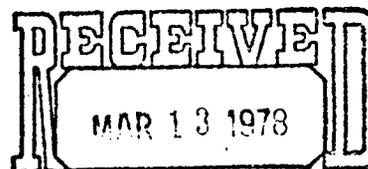
From: District Engineer, Salt Lake City

Subject: Transmittal - Unusual Environmental Analysis \*

Enclosed are three copies of the environmental analysis of the proposed action by Ari-Mex Oil and Exploration, Inc., for your review and administrative action.

One copy is to be retained by Conservation Manager and one signed copy each returned to the Oil and Gas Supervisor and Salt Lake District Engineer.

  
E. W. Guynn



OFFICE OF  
CONSERVATION MANAGER  
CENTRAL REGION



United States Department of the Interior

RECEIVED

MAR 13 1978

GEOLOGICAL SURVEY  
Conservation Division  
8440 Federal Building  
Salt Lake City, Utah 84138

CASPER, WYOMING

March 10, 1978

Memorandum

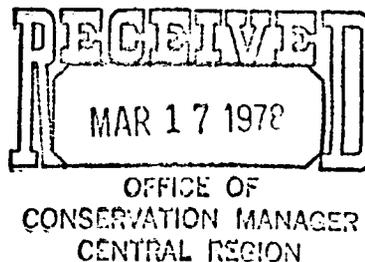
To: Conservation Manager, Central Region, Denver  
Through: Oil and Gas Supervisor, NRMA, Casper, WYOMING  
From: District Engineer, Salt Lake City  
Subject: Transmittal--Unusual Environmental Analysis

Enclosed is an attachment omitted by mistake from the three copies of the environmental analysis, transmitted under our memorandum of March 6, 1978, of the proposed action by Ari-Mex Oil and Exploration, Inc.

The enclosures should be attached to the back of the environmental analysis. Thank you.

  
E. W. Guynn

Enclosures





# United States Department of the Interior

GEOLOGICAL SURVEY

Box 25046

Denver Federal Center

Denver, Colorado 80225

IN REPLY REFER TO:

March 22, 1978

## Memorandum

To: District Oil and Gas Engineer, Salt Lake City

Through: Area Oil and Gas Supervisor, NRMA

From: Conservation Manager, Central Region

Subject: Unusual EA, Ari-Mex Oil and Exploration, Inc.,  
Well No. Ship #1-7, Lease U-33425-A

The Central Region office has reviewed the subject enclosed unusual EA. The proposed well site is one-fourth mile from the boundary of Arches National Park and two miles from the Park Headquarters.

We feel the USNPS should review and comment on this requested action. Page 14 (6)(e) of Instructional Memorandum No. 77-04-PR (EA Procedures and Guidelines - October 1977 - Onshore Oil and Gas Operations) must be adequately addressed as to nearby scenic and aesthetic sites which may be affected.

Please make available a copy of this unusual EA to Mr. James Isenogle, United States National Park Service, Assistant to the Regional Director, Utah, Federal Building, Salt Lake City, and ask for written comments from NPS for this proposed action. When you receive the NPS written comments, please return the unusual EA along with any modifications or stipulations back to Denver, through Casper.

George H. Horn

Enclosure





United States Department of the Interior

NATIONAL PARK SERVICE

UTAH STATE OFFICE

125 S. STATE STREET

SALT LAKE CITY, UTAH 84138

IN REPLY REFER TO:

April 7, 1978

Memorandum

To: Ed Gwinn, Geological Survey

From: Assistant to the Regional Director, Utah

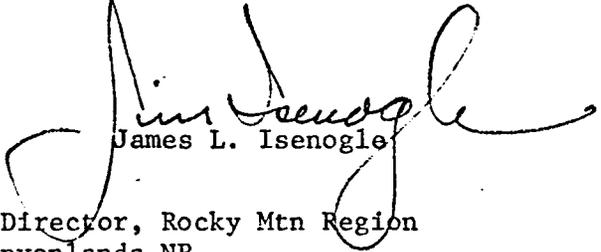
Subject: Environmental Analysis Comment: Ari-Mex Oil and Exploration, Inc.: Well No. Skip #1-7; NE1/4SW1/4 Sec. 7, T.25S., R.21E.

We are pleased that Arches National Park was consulted before the environmental analysis was prepared. Our concerns have been fairly considered. Our comments are as follows:

Page 8. Lines 6 and 7. The Park does not post "No Trespassing" signs. The sentence should read: "Boundary signs and No Hunting signs are posted along the Park's west boundary."

Page 12. Lines 7 and 8 read: "The well site is near a surface water divide." Drainage is into the Courthouse Wash system. The Park would prefer drainage into the Moab Wash system and this could be accomplished with little difficulty or adverse impact by diverting drainage along the access road when it is upgraded. The chances of contaminating the Courthouse Wash drainage with pollutants is remote, but could be precluded by this diversion. The National Park Service has examined the site and believes drainage could be diverted easily and with little adverse impact. The natural drainage could be easily restored when the project is completed.

Page 17. Lines 10, 11, and 12. As commentary, it should be added that increased encroachment into the Park may require fencing portions of the boundary to prevent unauthorized off-road vehicle use.

  
James L. Isenogle

CONSERVE CC:  
AMERICA'S  
ENERGY

Regional Director, Rocky Mtn Region  
Supt., Canyonlands NP



Save Energy and You Serve America!

Appendix 5 Proposed Stipulations and Conditions



# United States Department of the Interior

IN REPLY REFER TO

3100  
(U-060)

## BUREAU OF LAND MANAGEMENT

Moab District  
Grand Resource Area  
P.O. Box M  
Moab, Utah 84532

February 28, 1978

Mr. Ed Guynn, District Engineer  
USGS Conservation Division  
8440 Federal Building  
Salt Lake City, Utah 84138

SUBJECT LOCATION: Ari-Mex Oil & Exploration Inc.  
Skip #1-7 Lease #U-33425-A  
NE SW Section 7, T. 25 S., R. 21 E., SLBM  
Grand County, Utah

Dear Mr. Guynn:

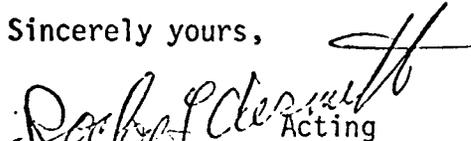
On January 13, 1978, a representative from this office met with John Evans, USGS, and Don Quigley, agent of the Ari-Mex Company for an inspection of the above referenced location. Subject to the following conditions, I am approving the surface management portion of the Application for Permit to Drill.

### Conditions:

1. Operator must contact this office at least 24 hours prior to beginning work.
2. Stockpile surface foot (1 ft.) of soil on the west end of the location.
3. This office requests waiving the dry hole marker (if production is not obtained). This action is requested due to the proximity of the location to Arches National Park.
4. All production facilities will be painted "desert gold" or a similar color approved by the Grand Resource Area Manager.

Please forward the enclosed rehabilitation information to the operator.

Sincerely yours,

  
C. Delano Backus  
Acting  
Area Manager



Enclosures (3):  
Rehabilitation Information

*Save Energy and You Serve America!*



# United States Department of the Interior

NATIONAL PARK SERVICE  
UTAH STATE OFFICE  
125 S. STATE STREET  
SALT LAKE CITY, UTAH 84138

IN REPLY REFER TO:

April 7, 1978

## Memorandum

To: Ed Gwinn, Geological Survey

From: Assistant to the Regional Director, Utah

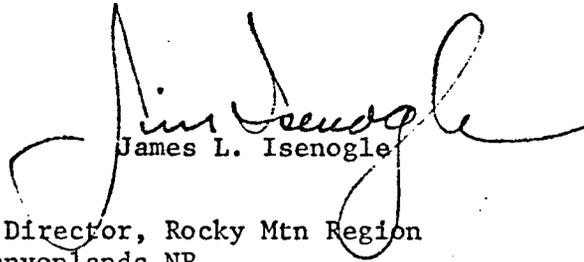
Subject: Environmental Analysis Comment: Ari-Mex Oil and Exploration,  
Inc.: Well No. Skip #1-7; NE1/4SW1/4 Sec. 7, T.25S., R.21E.

We are pleased that Arches National Park was consulted before the environmental analysis was prepared. Our concerns have been fairly considered. Our comments are as follows:

Page 8. Lines 6 and 7. The Park does not post "No Trespassing" signs. The sentence should read: "Boundary signs and No Hunting signs are posted along the Park's west boundary."

Page 12. Lines 7 and 8 read: "The well site is near a surface water divide." Drainage is into the Courthouse Wash system. The Park would prefer drainage into the Moab Wash system and this could be accomplished with little difficulty or adverse impact by diverting drainage along the access road when it is upgraded. The chances of contaminating the Courthouse Wash drainage with pollutants is remote, but could be precluded by this diversion. The National Park Service has examined the site and believes drainage could be diverted easily and with little adverse impact. The natural drainage could be easily restored when the project is completed.

Page 17. Lines 10, 11, and 12. As commentary, it should be added that increased encroachment into the Park may require fencing portions of the boundary to prevent unauthorized off-road vehicle use.

  
James L. Isenogle

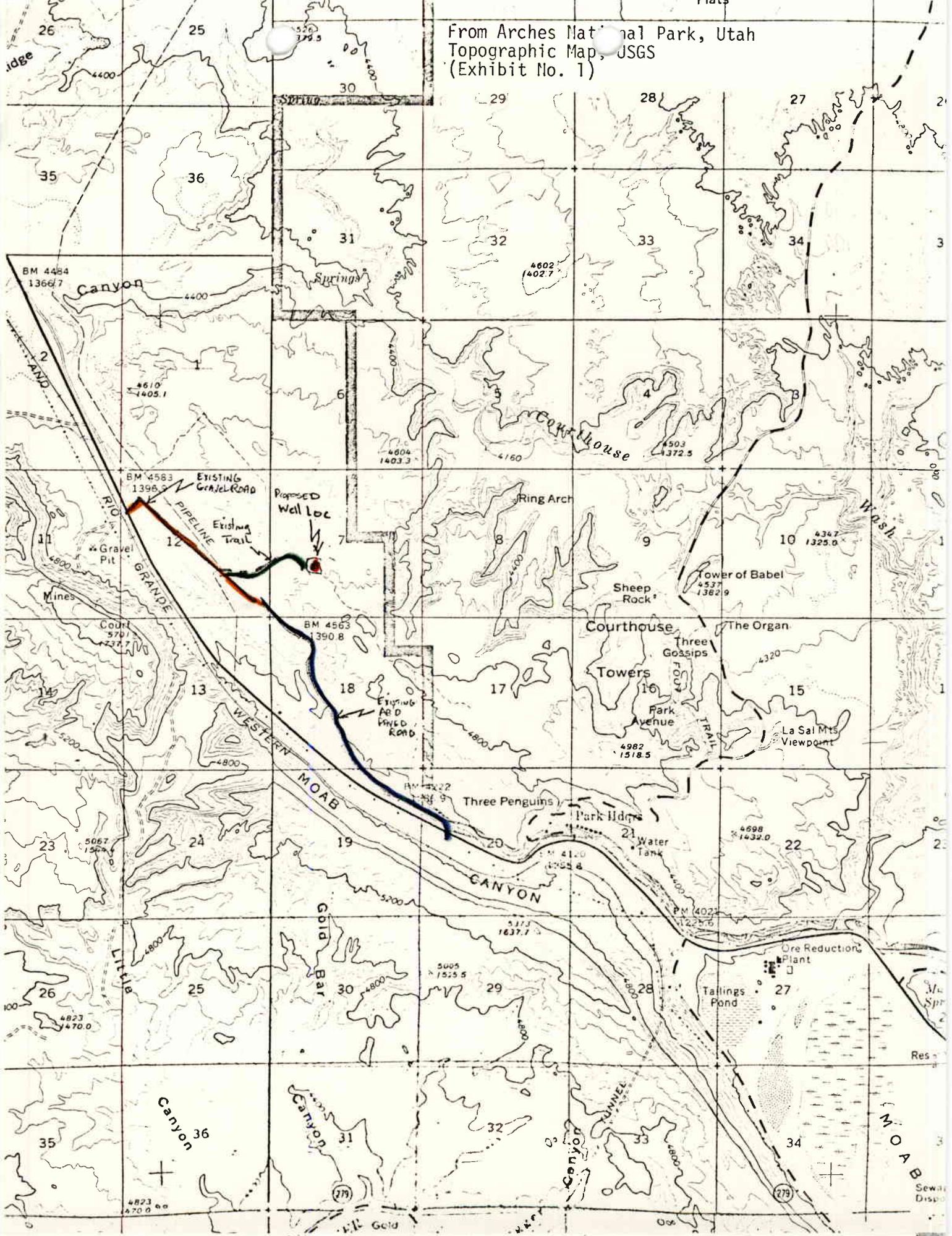


CONSERVE CC:  
AMERICA'S Regional Director, Rocky Mtn Region  
ENERGY Supt., Canyonlands NP

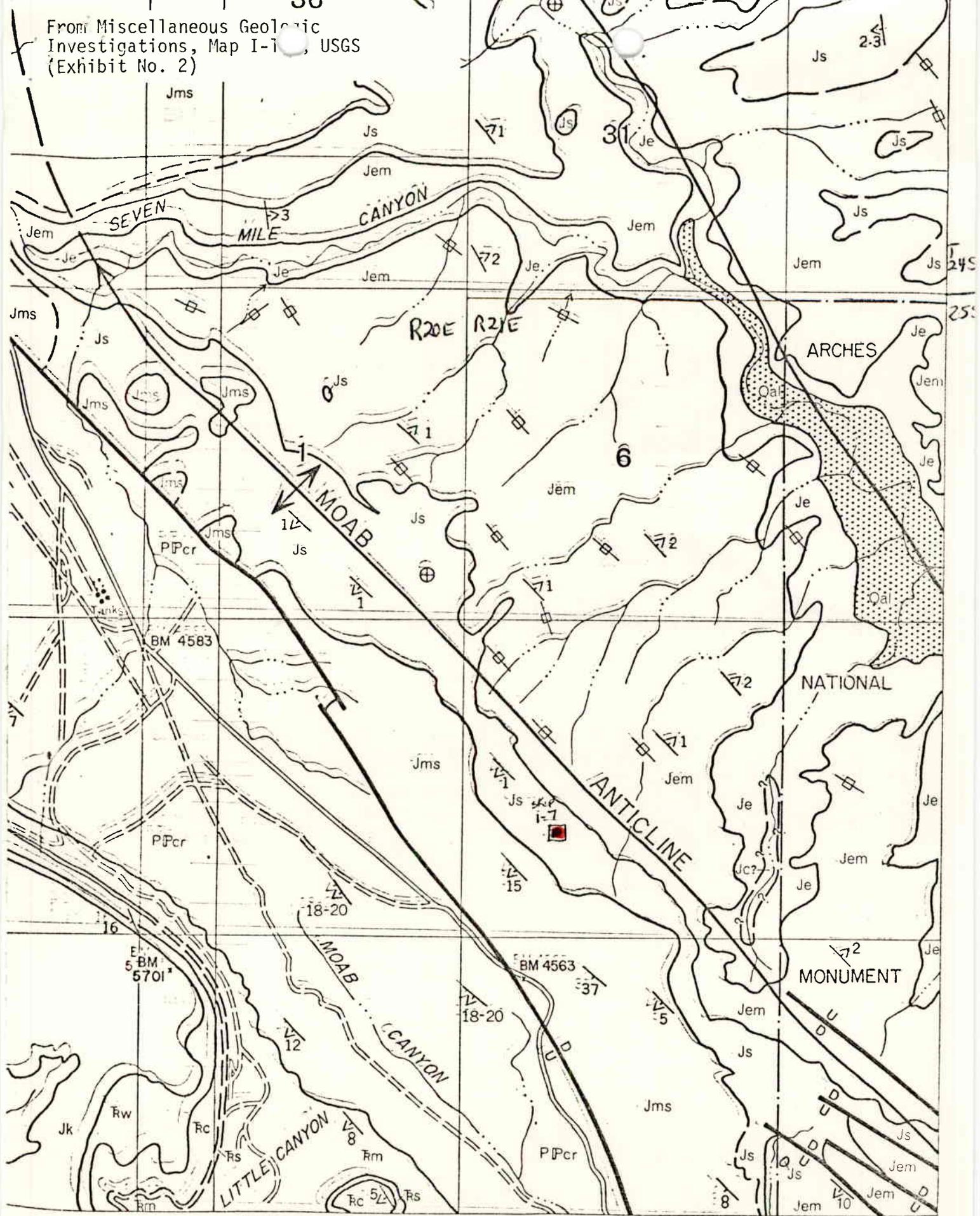
*Save Energy and You Serve America!*

Appendix 6 Maps and Exhibits

From Arches National Park, Utah  
Topographic Map, USGS  
(Exhibit No. 1)



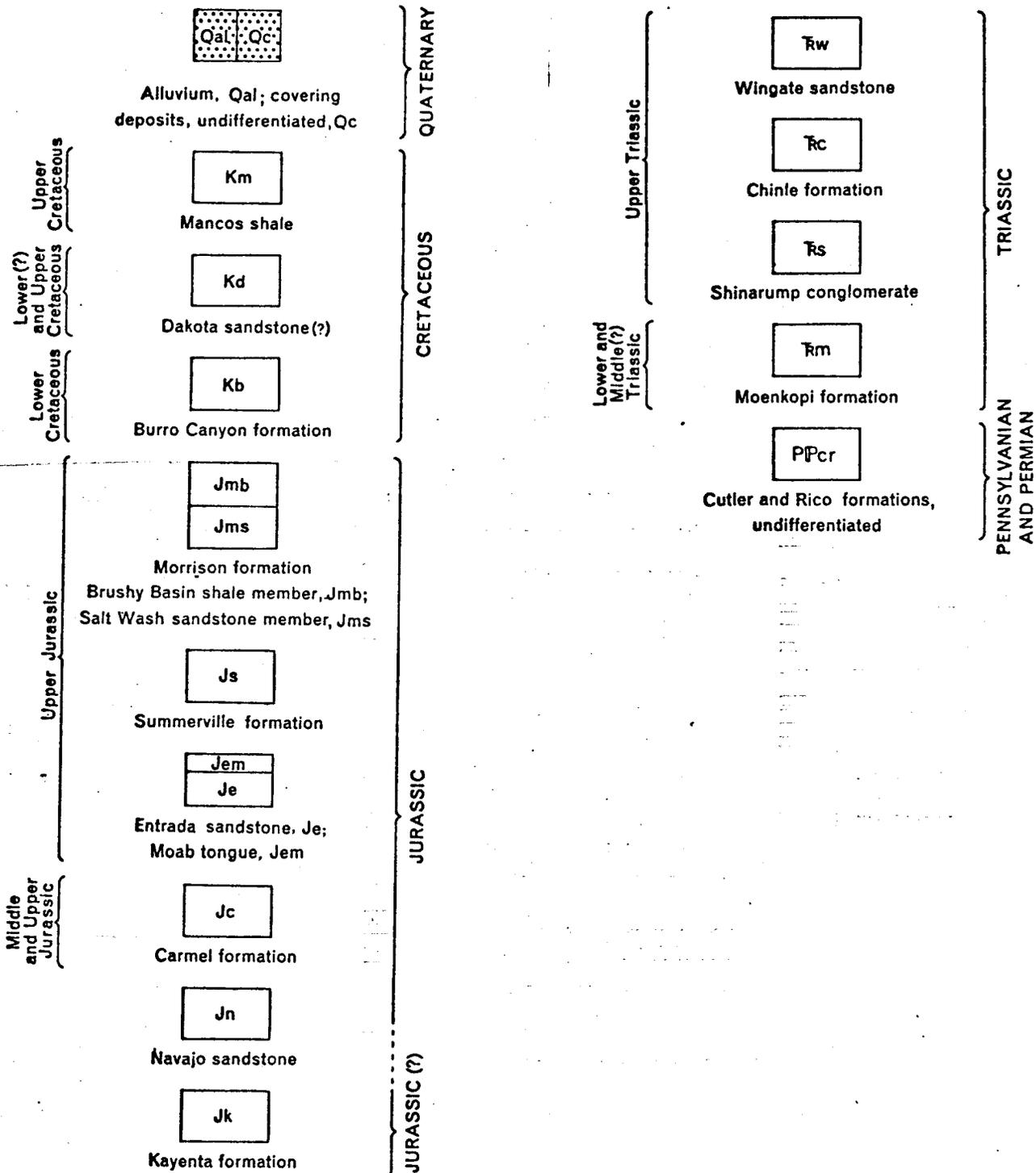
From Miscellaneous Geologic Investigations, Map I-1, USGS (Exhibit No. 2)



Roads as classified in this map series are as follows:  
 Primary roads are maintained and graded, traversable by two-wheel-drive vehicles; secondary roads are traversable

Stratigraphic column for this area modified from U. S. Geol. Survey Bull. 908, 1940. Geographic and geologic field data

# EXPLANATION



**DARK AND LIGHT-COLORED SOILS OF THE HIGH MOUNTAINS THAT ARE USUALLY MOIST HAVE AN AAP 1/ OF 45-100CM (18-40 IN.) AND MSST OF LESS THAN 15°C (59°F)**

- 1. Argic Cryoborolls-Pachic Cryoborolls-Cryic Paleborolls association
- 2. Argic Pachic Cryoborolls-Argic Cryoborolls association
- 3. Lithic Cryoborolls-Mollic Cryoborolls-Rock Outcrop association
- 4. Typic Cryorthents-Typic Cryochrepts-Mollic Cryoborolls association

**DOMINANTLY DARK-COLORED SOILS OF THE MOUNTAINS AND PLATEAUS THAT ARE USUALLY MOIST IN SOME PARTS DURING THE SUMMER, HAVE AN AAP OF 35-55CM (14-22 IN.) A MAST 3/ OF LESS THAN 8°C (47°F) AND A MSST OF MORE THAN 15°C (59°F)**

- 5. Typic Argiborolls-Lithic Argiborolls-Typic Haploborolls association
- 6. Typic Argiborolls-Typic Ustorthents association
- 7. Lithic Argiborolls association
- 8. Lithic Argiborolls-Typic Argiborolls association
- 9. Lithic Argiborolls-Rock Outcrop - Typic Argiborolls association
- 10. Typic Haploborolls-Typic Argiborolls-Typic Calciborolls association
- 11. Lithic Haploborolls-Lithic Argiborolls-Typic Haploborolls association
- 12. Lithic Haploborolls-Lithic Calciborolls association
- 13. Typic Ustochrepts-Cumulic Haploborolls association

**DOMINANTLY DARK-COLORED SOILS OF THE UPLAND PLAINS AND TERRACES THAT ARE USUALLY MOIST IN SOME PARTS DURING THE SUMMER, HAVE AN AAP OF 35-45CM (14-18 IN.), A MAST OF 8-15°C (47-59°F) AND A MSST OF MORE THAN 15°C (59°F).**

- 14. Udic Argiustolls-Typic Argiustolls association

**DOMINANTLY DARK-COLORED SOILS OF THE MOUNTAINS AND PLATEAUS THAT ARE USUALLY MOIST IN SOME PARTS DURING THE SUMMER, HAVE AN AAP OF 30-35CM (12-14 IN.), A MAST OF LESS THAN 8°C (47°F) AND A MSST OF MORE THAN 15°C (59°F)**

- 15. Lithic Haploborolls-Aridic Calciborolls-Borollic Calciorhids association
- 16. Lithic Haploborolls-Rock land-Aridic Argiborolls association
- 17. Petrocalcic Calciborolls-Aridic Calciborolls association

**DOMINANTLY DARK-COLORED SOILS OF ALLUVIAL FANS, TERRACES AND HILLS THAT ARE USUALLY DRY DURING THE SUMMER, HAVE AN AAP OF 30-35CM (12-14 IN.) AND HAVE A MAST OF 8-15°C (47-59°F), AND A MSST OF MORE THAN 15°C (59°F)**

- 32. Aridic Argixerolls-Xerollic Haplargids association
- 33. Aridic Calcic Argixerolls-Aridic Petrocalcic Paleixerolls association
- 34. Aridic Calcixerolls-Xerollic Calciorhids association

**DOMINANTLY LIGHT-COLORED SOILS OF THE VALLEYS, TERRACES AND MOUNTAINS THAT ARE USUALLY DRY BUT ARE MOIST IN SOME PARTS DURING THE SUMMER, HAVE AN AAP OF 20-35CM (8-14 IN.) A MAST OF LESS THAN 8°C (47°F), AND A MSST OF MORE THAN 15°C (59°F)**

- 35. Ustollic Torrifluents-Borollic Calciorhids association.

**DOMINANTLY LIGHT-COLORED SOILS OF THE VALLEYS, TERRACES AND MESAS THAT ARE USUALLY DRY BUT ARE MOIST IN SOME PARTS DURING THE SUMMER, HAVE AN AAP OF 20-35CM (8-14 IN.), A MAST OF 8-15°C (47-59°F) AND A MSST OF MORE THAN 15°C (59°F)**

- 36. Ustic Torrifluents-Ustic Torriorthents association
- 37. Ustollic Haplargids-Ustic Torrifluents association
- 38. Ustollic Paleorthids-Ustollic Calciorhids association
- 39. Ustollic Haplargids-Ustollic Calciorhids association
- 40. Ustollic Calciorhids-Ustollic Haplargids association
- 41. Lithic Ustollic Calciorhids-Lithic Ustic Torriorthents association
- 42. Ustic Torriorthents-Ustic Torrifluents association

**DOMINANTLY LIGHT-COLORED SOILS OF THE VALLEYS, TERRACES AND FANS THAT ARE USUALLY DRY, HAVE AN AAP OF 20-35CM (8-14 IN.), A MAST OF LESS THAN 8°C (47°F) AND A MSST OF MORE THAN 15°C (59°F)**

- 43. Aquic Calciorhids-Aquic Ustifluents association
- 44. Xerollic Calciorhids-Xeric Torriorthents association
- 45. Xerollic Calciorhids-Xerollic Paleorthids association

**DOMINANTLY LIGHT-COLORED SOILS OF THE DESERT MOUNTAINS, VALLEYS, TERRACES AND FANS THAT ARE USUALLY DRY HAVE AN AAP OF 20-35CM (8-14 IN.) A MAST OF 8-15°C (47-59°F) AND A MSST OF MORE THAN 15°C (59°F)**

- 46. Lithic Xeric Torriorthents-Xerollic Calciorhids association
- 47. Xerollic Haplargids-Xerollic Calciorhids association
- 48. Xeric Torrifluents-Xerollic Calciorhids association
- 49. Xerollic Calciorhids-Xeric Torrifluents association
- 50. Lithic Xerollic Calciorhids-Xerollic Calciorhids association

**DOMINANTLY LIGHT-COLORED SOILS OF THE DESERT VALLEYS, TERRACES AND FANS THAT ARE USUALLY DRY IN ALL PARTS, HAVE AN AAP OF LESS THAN 25CM (10 IN.), A MAST OF 8-15°C (47-59°F) AND A MSST OF MORE THAN 15°C (59°F)**

- 51. Aquic Xerofluents-Aquic Ustifluents-Typic Torrifluents association
- 52. Typic Torrifluents-Typic Torriorthents association
- 53. Typic Torriorthents-Typic Torrifluents association
- 54. Lithic Calciorhids-Typic Calciorhids association
- 55. Typic Calciorhids-Typic Torriorthents association

**DOMINANTLY LIGHT-COLORED SOILS OF DESERT VALLEYS, TERRACES AND FANS THAT ARE USUALLY DRY IN ALL PARTS, HAVE AN AAP OF LESS THAN 20 CM (8 IN.) AND A MAST OF MORE THAN 15°C (59°F).**

- 56. Typic Torrifluents-Typic Torriorthents association
- 57. Typic Torriorthents-Typic Torriorthents association
- 58. Lithic Haplargids-Lithic Calciorhids association
- 59. Typic Paleorthids-Petrocalcic Paleorgids association

**DOMINANTLY LIGHT-COLORED, SODIC-SALINE, SANDY AND HIGHLY ERODIBLE SOILS.**

**SODIC-SALINE SOILS ON VALLEY BOTTOMS AND FLOOD PLAINS**

- 60. Typic Natrargids-Xerollic Natrargids-Typic Calciorhids association
- 61. Typic Fluvaquents-Typic Salorthids association
- 62. Typic Natrustolls-Typic Natraqulls association

**DOMINANTLY DARK-COLORED SOILS OF THE UPLAND PLAINS AND TERRACES THAT ARE USUALLY MOIST IN SOME PARTS DURING THE SUMMER, HAVE AN AAP OF 30-35CM (12-14 IN.) A MAST OF 8-15°C (47-59°F) AND A MSST OF MORE THAN 15°C (59°F)**

- 18. Aridic Argiustolls-Typic Argiustolls association
- 19. Lithic Argiustolls-Aridic Argiustolls-Lithic Calciorhids association
- 20. Typic Ustorthents-Typic Calciorhids association

**DOMINANTLY DARK-COLORED SOILS OF THE MOUNTAINS, PLATEAUS, AND MOUNTAIN VALLEYS THAT ARE USUALLY DRY DURING THE SUMMER, AND HAVE AN AAP OF 35-55CM (14-22 IN.), A MAST OF LESS THAN 8°C (47°F) AND A MSST OF MORE THAN 15°C (59°F)**

- 21. Typic Argixerolls-Cumulic Haploqualls association
- 22. Typic Argixerolls-Typic Haploquerolls association
- 23. Calcic Haploquerolls-Calcic Argixerolls association
- 24. Lithic Haploquerolls-Typic Haploquerolls association
- 25. Pachic Argixerolls-Typic Argixerolls-Calcic Argixerolls association

**DOMINANTLY DARK-COLORED SOILS OF LAKE TERRACES, FANS AND VALLEY BOTTOMS THAT ARE USUALLY DRY DURING THE SUMMER, HAVE AN AAP OF 35-55CM (14-22 IN.), AND A MAST OF 8-15°C (47-59°F) AND A MSST OF MORE THAN 15°C (59°F).**

- 26. Calcic Argixerolls-Calcic Haploquerolls association
- 27. Typic Calcixerolls-Calcic Argixerolls association
- 28. Aquic Calciorhids-Typic Calcioqualls-Fluvaquentic Haplustolls association

**DOMINANTLY DARK-COLORED SOILS OF THE MOUNTAINS AND PLATEAUS THAT ARE USUALLY DRY DURING THE SUMMER, HAVE AN AAP OF 30-35CM (12-14 IN.), AND HAVE A MAST OF LESS THAN 8°C (47°F) AND A MSST OF MORE THAN 15°C (59°F)**

- 29. Aridic Calcic Argixerolls-Aridic Haploquerolls association
- 30. Lithic Argixerolls-Aridic Haploquerolls-Aridic Calcixerolls association
- 31. Aridic Calcixerolls-Xerollic Calciorhids association

**HIGHLY ERODIBLE SOILS**

- 63. Typic Torriorthents (Shallow)-Lithic Calciorhids-Lithic Natrargids association
- 64. Ustic Torriorthents (shallow)-Rock Outcrop association

**DOMINANTLY SANDY SOILS**

- 65. Typic Torriorthents-Typic Torriorthents association
- 66. Xeric Torriorthents-Lava Flows-Xerollic Calciorhids association
- 67. Ustic Torriorthents association

**MISCELLANEOUS LAND TYPES**

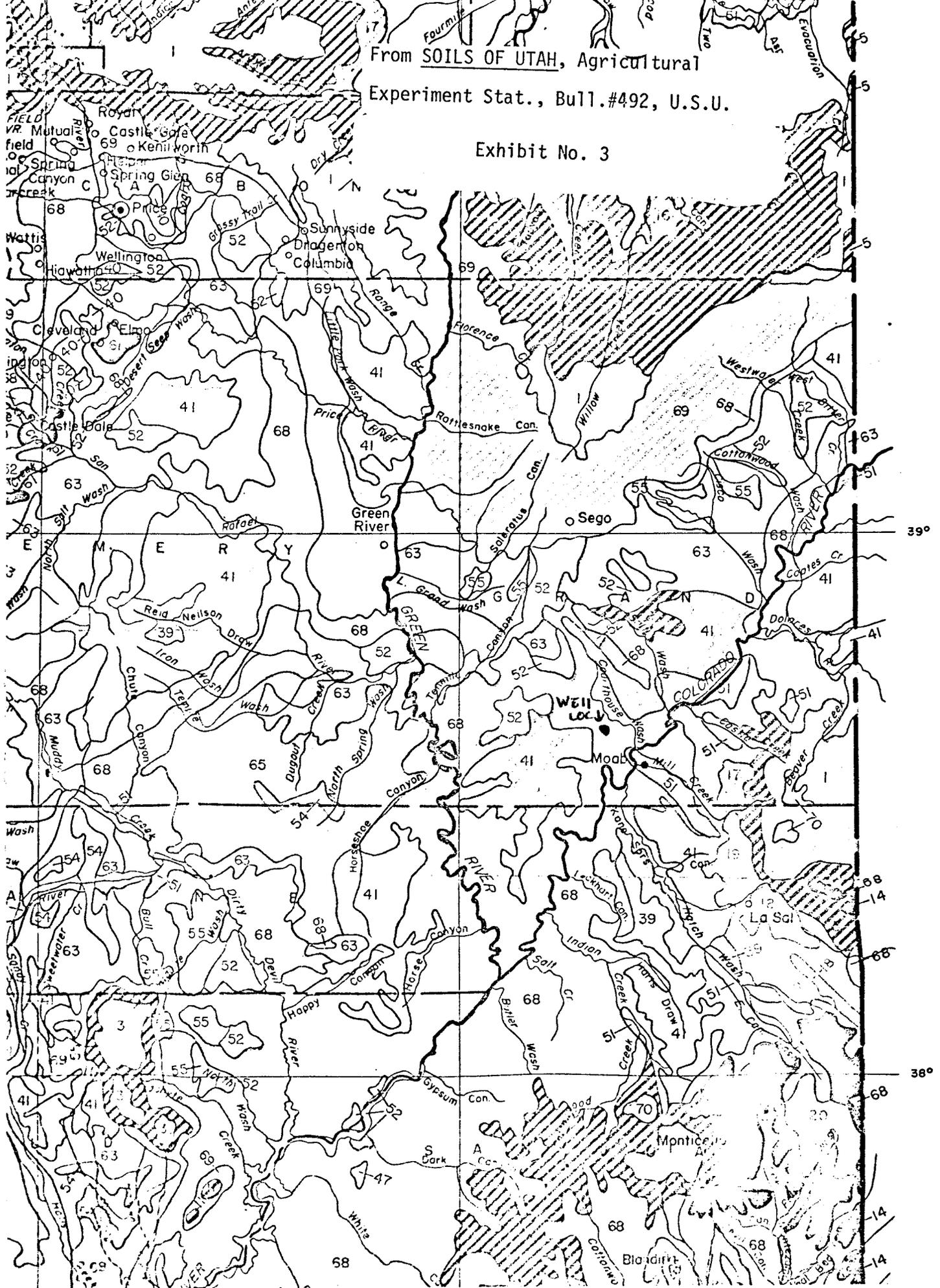
- 68. Rock land
- 69. Badland-Rock land association
- 70. Rock land of the High Mountains
- 71. Playas

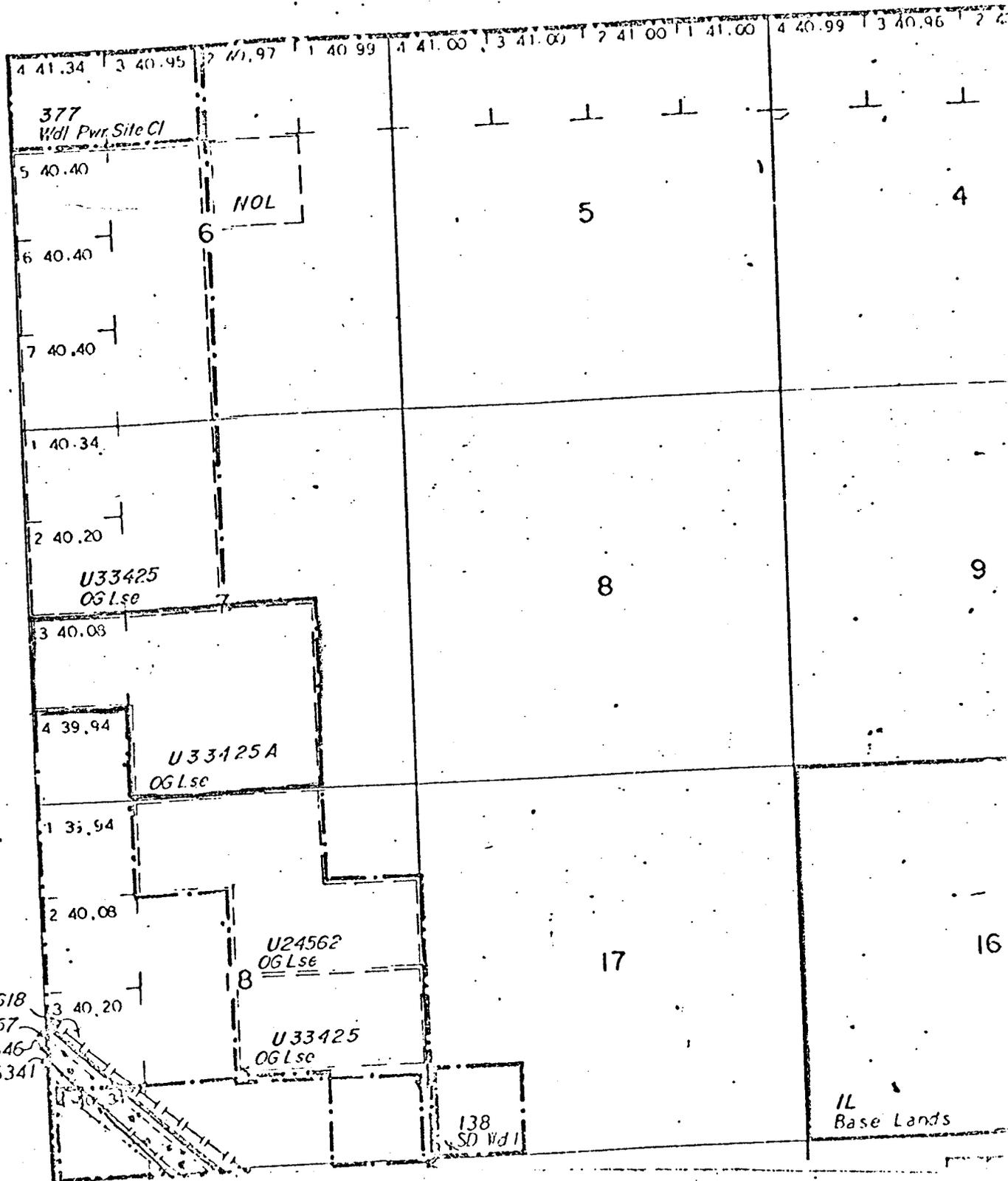
1/ AAP = AVERAGE ANNUAL PRECIPITATION  
 2/ MSST = MEAN SUMMER SOIL TEMPERATURE  
 3/ MAST = MEAN ANNUAL SOIL TEMPERATURE

From SOILS OF UTAH, Agricultural  
 Experiment Stat., Bull. #492, U.S.U.

From SOILS OF UTAH, Agricultural  
Experiment Stat., Bull. #492, U.S.U.

Exhibit No. 3





Appendix 7 Copy of Proposed Plan

U.S. GEOLOGICAL SURVEY, CONSERVATION DIVISION

FROM: DISTRICT GEOLOGIST, SALT LAKE CITY, UTAH

TO: DISTRICT ENGINEER, SALT LAKE CITY, UTAH

Well	Location	Lease No.
Ari-Mex Oil & Expl., Inc. Skip #1-7	1557' FWL, 1742" FSL, (NE $\frac{1}{2}$ SW $\frac{1}{2}$ ), Section 7 T. 25 S., R. 21 E., SLM, Grand Co., Utah GR. 4738	U-33425-A
<p>1. Stratigraphy and Potential Oil and Gas Horizons. Minerals Exploration Co. Potash test 2-7, (NW<math>\frac{1}{2}</math>SW<math>\frac{1}{2}</math> same section GR. 4682) reports the following tops:                      Surface- Morrison Fm.                      150- Summerville                      310- Entrada                      570- Carmel                      740- Navajo                      1220- Kayenta                      2015- Paradox                      2378- Paradox Salt                      Map I-116 indicates surface of this test will be Summerville.</p> <p>2. Fresh Water Sands: Fresh water could be encountered in sands within the Entrada, Navajo, and Kayenta Formations.</p> <p>3. Other Mineral Bearing Formations.                      (Coal, Oil Shale, Potash, Etc.)                      Minerals Exploration Co. reports an assay of 15.4% K<sub>2</sub>O in well 2-7 in the interval 2466 to 2542 feet.</p> <p>4. Possible Lost Circulation Zones.                      Unknown</p> <p>5. Other Horizons Which May Need Special Mud, Casing, or Cementing Programs.                      Unknown</p> <p>6. Possible Abnormal Pressure Zones and Temperature Gradients.                      None expected</p> <p>7. Competency of Beds at Proposed Casing Setting Points.                      Should be competent</p> <p>8. Additional Logs or Samples Needed.                      Proposed logs should be adequate to identify potash in the drill hole.</p> <p>9. References and Remarks USGS Files, Salt Lake City, USGS Map I-116, Utah State Engineer Tech. Pub. No. 15.</p>		
Date: January 3, 1978		Signed: James C. Holder

May 18, 1978

MEMO TO FILE

Re: Ari-Mex Oil Company  
Skip Federal 1-7  
Sec. 7, T. 25 S, R. 21 E,  
Grand County, Utah

This Division was notified on May 17, that the above referred to well had been spudded-in.

Drilling contractor on location was Bob Shumway, utilizing rig no. 1.

SCHEREE WILCOX  
Administrative Assistant

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE

(See instructions on reverse side)

Form approved.  
Budget Bureau No. 42-R355.5

5. LEASE DESIGNATION AND SERIAL NO.

U-33425-A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

NA

8. FARM OR LEASE NAME

Federal

9. WELL NO.

Skip #1-7

10. FIELD AND POOL, OR WILDCAT

Wildcat

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA

NE. SW Sec. 7-25S-21E  
S.L.M.

12. COUNTY OR PARISH

Grand

13. STATE

Utah

WELL COMPLETION OR RECOMPLETION REPORT AND LOG \*

1a. TYPE OF WELL: OIL WELL  GAS WELL  DRY  Other \_\_\_\_\_

b. TYPE OF COMPLETION: NEW WELL  WORK OVER  DEEP-EN  PLUG BACK  DIFF. RESVR.  Other \_\_\_\_\_

2. NAME OF OPERATOR  
Ari-Mex Oil & Exploration, Inc.

3. ADDRESS OF OPERATOR  
P. O. Box 249, Moab, Utah 84532

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)\*  
At surface NE. SW. Sec. 7, T25S, R21E, S.L.M.  
At top prod. interval reported below 1557' from W-line & 1742' from S-line  
At total depth

14. PERMIT NO. 30416 | DATE ISSUED

15. DATE SPUNDED May 15 '78 | 16. DATE T.D. REACHED June 2, '78 | 17. DATE COMPL. (Ready to prod.) none June 2, 1978 | 18. ELEVATIONS (DF, RKB, RT, GR, ETC.)\* 4738' grd.; 4743' K.B. | 19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD 2300' | 21. PLUG, BACK T.D., MD & TVD | 22. IF MULTIPLE COMPL., HOW MANY\* none | 23. INTERVALS DRILLED BY | ROTARY TOOLS | CABLE TOOLS | 10-2300'

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)\* none | 25. WAS DIRECTIONAL SURVEY MADE no

26. TYPE ELECTRIC AND OTHER LOGS RUN none | 27. WAS WELL CORED

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
7"	20.00	150'	9"	40 sks	none

29. LINER RECORD | 30. TUBING RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
none					none		

31. PERFORATION RECORD (Interval, size and number) none

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
none	

33.\* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)					
none	none	F&A					
DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
none							
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)	

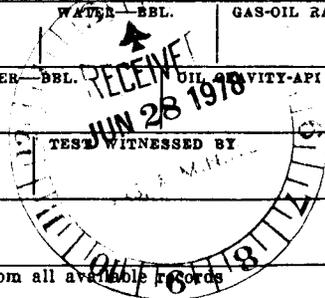
34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

35. LIST OF ATTACHMENTS  
Drilling History & Geologic Report

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED H. Now Geology TITLE Cons. Geol. DATE Jun 26, 1978

\*(See instructions and spaces for Additional Data on Reverse Side)



FILE IN QUADRUPLICATE

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL & GAS CONSERVATION  
1588 West North Temple  
Salt Lake City, Utah 84116

REPORT OF WATER ENCOUNTERED DURING DRILLING

Well Name & Number State ML-23591 No. 1-P-2

Operator Union Oil Company of California Address P.O. Box 2620 Phone 234-1563  
Casper, Wyoming 82601

Contractor Baker Drilling Co. Address P.O. Box 756 Phone \_\_\_\_\_  
Vernal, Utah

Location SE 1/4 SE 1/4 Sec. 2 T. 23 XX R. 21 E Grand County, Utah  
S XW

Water Sands:

Depth		Volume		Quality
From	To	Flow Rate or Head		Fresh or Salty
1. 0'	240'	5 BWPH	<sup>SP??</sup> 3.3	Salty
2. 240'	913'	50 BWPH	33.3	Salty
3. 913'	1817'	200 BWPH	133	Fresh to Salty
4. 1817'	1997'	300 BWPH	206	Fresh to Salty
5. 1997'	T.D.	5 to 15 BWPH	3.3-10	Salty

(Continue on reverse side if necessary)

Formation Tops:

Entrada	303'	Chinle	1895'
Carmel	839'	Moenkopi	2233'
Navajo	913' } - Fresh	White Rim	3243'
Wingate	1470' }	Cutler Arkose	3308'

Remarks:

- NOTE:
- (a) Upon diminishing supply forms, please inform this office.
  - (b) Report on this form as provided for in Rule C-20, General Rules and Regulations and Rules of Practice and Procedure, (See Back of form).
  - (c) If a water analysis has been made of the above reported zone, please forward a copy along with this form.

Entrada 46 474  
 Carmel 520 166  
 Navajo 680 890  
 Kayenta 1570 434  
 Wingate 2,004 250  
 Chinle 2,254 566  
 Shinarump 2,820 109  
 Moenkopi 2,929 299  
 Cutler 3,228 2216  
 Honaker 5,444

La Sa(?) 6,865  
 Salt 7,485

FORM OGC-8-X

FILE IN QUADRUPLICATE

STATE OF UTAH  
 DEPARTMENT OF NATURAL RESOURCES  
 DIVISION OF OIL & GAS CONSERVATION  
 1588 West North Temple  
 Salt Lake City, Utah 84116

REPORT OF WATER ENCOUNTERED DURING DRILLING

6-10-69

Well Name & Number \_\_\_\_\_ State (Corral Canyon) No. 1

Operator Union Oil Company of California Address Casper, Wyoming Phone 234-1563

Contractor \_\_\_\_\_ Address \_\_\_\_\_ Phone \_\_\_\_\_

Location sw 1/2 se 1/2 Sec. 36 T. 24 N. R. 20 E Grand County, Utah  
 S X

Water Sands:

Depth		Volume	Quality
From	To	Flow Rate or Head	Fresh or Salty
1. 149	621	12 barrels per hour 8.4 GPM	Fresh ENTRADA
2. 641	1270	12 barrels per hour 5.4	Fresh NAVAJO
3. 1270	1598	80 barrels per hour 56	Fresh NAVAJO
4. 1598	2025	180 barrels per hour 126	Fresh WINGATE
5. 2325	2516	200 barrels per hour 140	Fresh CHINLE-MOENKOP
6. 2516	3073	250 b/h FRESH (Continue on reverse side if necessary)	MOENKOP
7. 3073		300 b/h FRESH 210	CUTLER
8. 7185		HOLE FULL, UNABLE TO UNLOAD WITH 1200 PSI	VERY SALTY

Formation Tops:

Remarks:

- NOTE:
- (a) Upon diminishing supply forms, please inform this office.
  - (b) Report on this form as provided for in Rule C-20, General Rules and Regulations and Rules of Practice and Procedure, (See Back of form).
  - (c) If a water analysis has been made of the above reported zone,

REPORTING OF FRESH SANDS.

It shall be the duty of any person, operator or contractor drilling an oil or gas well or drilling a seismic, core or other exploratory hole to report to this office all fresh water sands encountered; such report shall be in writing and give the location of the well or hole, the depth at which the sands were encountered and the thickness of such sands, and the rate of flow of water if known.

If no fresh water sands are encountered, it is requested that a negative report to that effect be filed.

Estimated flow of 250 BWPH from 913' K.B. (Top of Navajo) to 1895' KB (top of Chinle).  
(167 gpm)

No tests were run.

Water samples were not taken.

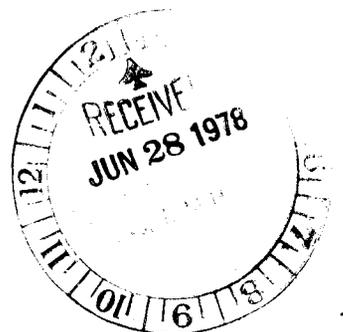
SEP 13 1971

DRILLING HISTORY  
AND  
GEOLOGIC REPORT  
ON  
ARI-MEX - SKIP #1-7 WELL  
GRAND COUNTY, UTAH

By

W. Don Quigley  
Consulting Geologist  
Salt Lake City, Utah

June 26, 1978



DRILLING HISTORY  
AND  
GEOLOGIC REPORT  
ON  
ARI-MEX SKIP #1-7 WELL  
GRAND COUNTY, UTAH



Operator: Ari-Mex Oil & Exploration Co., Inc.  
P.O. Box 249, Moab, Utah 84532

Contractor: Shumway Drilling Co.  
Moab, Utah

Location: NE. NW. Sec. 7, T 25S., R 21E., S.L.M. (1557' from  
W-line and 1742' from S-line)

Elevation: 4738' grd.; 4743' K.B.

Spudded-in: May 15, 1978

Surface Casing: 7", 20.00#, K-55, R-3 casing set at 150 ft.  
and cemented with returns to surface.

Finished Drilling: June 2, 1978

Total Depth: 2300'

Deepest Formation Drilled: Moenkopi

Production Zones: None

Plugged and Abandoned: June 12, 1978

Drilling History

May 15: Moved rig in (Shumway Drlg. Co. Rig #4-Koring-Speedstar-2500) and rigged up.

May 16-20: Drilled 9" surface hole with air to 155' and set 4 joints of 7", 20.00#, K-55 casing; landed at 150' K.B. and cemented with 40 sks cement. Had returns to surface.

May 21: Rigged up blowout preventers (hydraulic) and rotating head on top of casing. Drilled out cement plug with 6 $\frac{1}{4}$ " bit using air for circulation.

May 22-27: Drilled 150' to 600' (450'). Had lots of trouble with rotating head due to leaks and poor bearings. Had to order a second rotating head from Vernal and install same. Drilling real slow at rate of 20 ft/hour. Drilling only during daylight hours.

May 28-29: Drilled 600 to 800' (200'). Drilling only during daylight. Est. top of Navajo at 560 ft. Drilling slow at 20 ft/hr rate in sandstone.

May 30-June 3: Drilled 800 to 2300' (1500'). Drilling 24 hrs. per day. Have made 4 rd-trips for new bits. Had to ream considerable hole after one bit due to out-of-gauge by 1 in. Reduced hole size to 6". Torque on drill pipe increasing gradually. Poor returns on cuttings - getting only individual sand grains. Est. top of Chinle at 2010'. Had faint show - residual black oil in sandstone grains - at 1900-1910'. No gas or fluid oil. Drilled to 2300' and bearing on draw-works went out.

June 3-5: Repaired rig.

June 6: Obtained an Eastman-deviation survey instrument to check deviation of hole. Found deviation to be 11° at 1000' and 20° at 2300'. Decided to plug and abandon hole at present depth.

June 12: Plugged well as follows:

Plug No. 1: 2300'-2100' - 30 sks cement at bottom of hole.

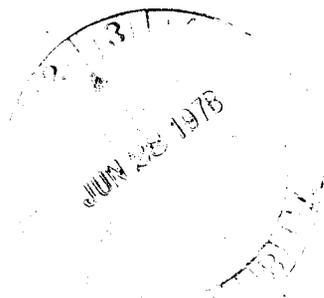
Plug No. 2: 1700'-1500' - 30 sks cement across top of Wingate and bottom of Navajo.

Plug No. 3: 575'-475' - 15 sks cement across top of Navajo.

Plug No. 4: 200'-100' - 15 sks cement across bottom of surface casing.

Plug No. 5: 10 sks cement at top of surface casing without well marker as per instructions from B.L.M.

Location will be cleaned contoured, and reseeded as soon as pits are evaporated.



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SKIP #1-7 WELL



Introduction

The Skip #1-7 well was designed and located so as to encounter previously reported Natural gas flows and shows found in adjacent wells drilled nearby. It had been reported that a well located about 1200 ft. west of the subject well and drilled in 1964 had encountered a large gas flow at a depth of around 1500' to 1600' which, due to lack of any control equipment, caught fire and burned down the rig. However, the hole was drilled to a depth of 4250'; so this meant that another rig must have been obtained to drill the hole deeper after the first rig had been destroyed. There was some merit in the information that gas had been encountered at 1500'-1600' because a log of this hole does show a sand zone in the Chinle at this depth that could have been charged with gas.

A second well drilled by Anaconda Corp. for potash at some later date (after the above well was drilled - maybe in 1967 or 1968) is located about 300 ft east of the subject well and was reported to have encountered gas at around 1400 ft., which depth could have also been in the Chinle unless some intervening faulting had occurred which was not evident in the surface rocks. Thus the subject well was located between these two wells and should have had an excellent chance of intersecting the same gas zone at a depth of approximately 1500 ft providing the information on the above two wells was correct.

The subject well is located on a small surface structural dome with doubtful closure on the south end. It is located just west of the Arches National Park boundary and just east, about one mile, of the highway U-160 from Crescent Junction to Moab.

Prior to drilling the well, it was decided to drill to a depth of about 2500 ft., which according to the log on the well to the west, Union Minerals Explor. Co. Mexico #2-7 well, would be deep enough to penetrate the upper Hermosa (Honaker Trail) section and about 100 feet below the top of the Paradox Salt section.

The subject well was drilled to a depth of 2300 feet and none of the prior information proved to be correct. The gas zone which was supposed to be at 1400-1600' was not present. The formation thicknesses were much thicker in the subject well than in the Mexico #2-7 well which was partly due to a crooked hole;

and the drilling was very hard and slow, again partly due to inadequate drilling equipment.

Further checking with some of the former Union Minerals Explor. Co. personnel revealed that the gas encountered in the Mexico #2-7 well actually occurred at about 700 feet which was at the top of the Navajo formation; and the rig was burned and a second rig was obtained to drill the well deeper. The further drilling was done with heavy mud for circulation. Likewise, it was determined that the somewhat questionable gas found in the Anaconda well to the east occurred at 4100' to 4400', which was probably down in the Paradox Salt section or lower part of the Honaker Trail and was entirely different from the occurrence in the Mexico #2-7 well. The gas in the Mexico #2-7 well was probably a pocket of gas accumulated in the top of the Navajo next to the large fault just west of the well and probably migrated up the fault zone or from a zone in the Paradox opposite the Navajo and on the west side of the fault. It also appears that this well crossed the fault at a depth of about 1850' and cut out most the Moenkopi formation, all of the Culter and Rico formations, and about 600 to 700 feet of the upper Hermosa formation.

#### Drilling Operations

The rig employed to drill the Skip #1-7 well was not a normal oil and gas drilling rig and was therefore not equipped to provide the normal functions and operations associated with usual oil field practices. The rig did not have drill collars to supply the weight for the bit and did not have a substructure and rotating table with slips which would allow the use of normal tools. The weight was supplied by a pull-down arrangement and was limited to the weight of the rig which was far less than the normal amount of weight used with a 6½ inch bit. Thus penetration rates were slow and averaged about 20 ft/hr. This type of rig with pull-down apparatus is not conducive to drilling a straight hole in areas with steep dips and hard rocks. The use of stabilizers, reamers, square collars, and such tools to keep the hole straight were precluded by the rig arrangement. The rig was not equipped with a deviation survey tool or geolograph.

The well was drilled with air supplied by a huge Joy Compressor (1600 cu. ft./min.) and booster. Water was encountered at about 400 feet and required mist-drilling with soap, water, and air from this point to total depth. Full circulation was impaired by a cavern or fracture zone at 420' to 500' which consumed part of the air and received a goodly portion of the cuttings.

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During the drilling operations, it became fairly obvious that the hole was sloping at a considerable angle since the formations were much thicker than normal and since the torque to rotate the bit gradually increased with depth. After the hole was finished, some deviation surveys were run and it was found that the hole was off  $11^{\circ}$  at 1000' and  $20^{\circ}$  at 2300'. From the differences of elevation on some of the formation tops between the subject hole and the Mexico #2-7 well, it is apparent that there is a  $10^{\circ}$  dip to the west in the strata; thus it is probable that the bit was sliding down dip which would account for some of the increased thickness in the formations as well.

Since the original objectives and reported depth and presence of gas were not found in the subject well, it was decided that the next and most likely potential productive zone would probably be found near the top of the Paradox section of the Hermosa at depths in excess of 4000' which was far beyond the capacity of the rig; so drilling was discontinued at a depth of 2300'.

#### General Geology

As noted previously the subject well is located on a small surface structural dome or nose which may not have closure at the south end. The axis trends nearly north-south and surface dips vary from  $30^{\circ}$  to the west on the west flank to approximately  $4^{\circ}$  north at the top of the dome. The subject well was located near the crest of the dome at the surface; but it is probable, based on the information from the well, that the dip is more pronounced and increasing with depth. It is also probable that some additional faulting may be present below the surface causing further distortion and complexity to the structural configuration of the sub-surface strata.

The top of the Navajo formation was encountered at about 560 ft. in the subject well, which was approximately 200 feet higher than anticipated; but the formation was about twice as thick as it should have been according to the log on the Mexico #2-7 well. It is obvious that there is some unconformities and/or faulting which is not evident at the surface.

There was no gas or hydrocarbon shows found in the subject well except at 1900' to 1910'. The samples at this point contained some pieces of sandstone with black residual oil that had scattered light-blue fluorescence. This was found near the base of the Wingate formation and was the only show encountered in the well.



Stratigraphy

Most of the strata encountered in the subject well was hard quartzitic sandstone and it was quite difficult to identify the various formations. This was due to the poor circulation of cuttings to the surface, the slow penetration rate, and the nature of the cuttings. The cuttings were composed almost entirely of individual sand grains and contained very few pieces of shale or other material. It is felt that most of the larger pieces were being lost and piled up in the cavern or fissures at 420 to 500 feet mentioned above.

Based on the best information that could be gleaned from a study of the cuttings on the subject well, the following formations with their tops, thicknesses, and datum points were encountered:

<u>Formation</u>	<u>Depth to Top</u>	<u>Thickness</u>	<u>Datum</u>
Morrison	Surface	100'	4743' K.B.
Entrada	100'	300'	4643'
Carmel	400'	160'	4343'
Navajo	560'	1020'	4183'
Kayenta	1580'	100'	3163'
Wingate	1680'	330'	3063'
Chinle	2010'	160'	2733'
Moenkopi	2170'	—	2573'
Total Depth	2300'		

A detailed sample log of the cuttings is attached hereto.

Comparison with the Mexico #2-7 well to the west reveals that the subject well was about 200' structurally higher on the top of the Navajo formation, but was about 325' lower at the base of the Navajo. Much of this difference, of course, was due to drilling partly down the dip of the beds.

Conclusion

The Ari-Mex - Skip #1-7 well was apparently drilled on false information regarding the position of certain amounts of gas found in nearby holes. After the hole was nearly to the scheduled depth, it was learned that the gas found in the nearby Mexico #2-7 well and in the Anaconda hole was not at 1400'-1600', as previously reported, but was actually found at 750' and about 4100'-4400' respectively. This, of course, changed the whole aspect and potential of the subject well. The 750' zone, which was the top of the Navajo in the Mexico #2-7 well was penetrated



in the subject well at 560 ft. and no gas was found. This suggests that the gas found in the former well was probably a relatively small accumulation trapped near the fault on the west side of the well. Certainly, it was not very large or else it would have been found at the top of the Navajo in the subject well, since it was about 200 ft. higher.

The possible gas zone in the Anaconda Well at 4100' to 4400' was beyond the reach of the drilling rig used on the subject well, so it was useless to drill much deeper than 2300 feet, which was the drilling depth at the time the correct information was obtained.

It should be noted that the crooked hole in no way effected the unsuccessful results of the well. If the gas had been present at the intervals indicated at the beginning, it certainly would have been found in the subject well. The 750 ft. zone was penetrated and no gas was found - as was the 1400'-1600' zone, thus leaving only the deep zone to explore. The hole thus accomplished its original objective, which was to ascertain whether or not gas existed in the area within the interval of 0' to 2500' in commercial amounts.

The best chances for hydrocarbon accumulations in the area are probably in the Hermosa sediments near the top of the salt section or in some of the clastic zones between some of the salt beds. To test these zones would require a well drilled to a depth of about 4500' to 5000', on the small structural dome described above. (There is some doubt as to closure at the south end.) This is a small and gentle structural dome or anticlinal nose on the surface, but it is quite obvious that the sub-surface is much more complicated and more intensely folded and/or faulted.

If any further drilling or exploration work is contemplated on the leased lands connected with the subject well, it is recommended that the Anaconda well be reopened, cleaned out, logged, and tested. This would establish the nature, extent and potential of the rumored gas obtained when this well was drilled, and the work could be accomplished with a minimum of expense.

*W. Don Quigley*  
W. Don Quigley  
Consulting Geologist  
A A P G Cert. #1296  
A P G S Cert. #3038



Drill Time

# Winnipeg - Skip # 1-7 Well

Min / ft.

E. 5th. Sec. 7 - 255-214

(1557' from W. line of 1742' fr. 5-line)

Elev. 4738' gnd.; 4742' R.B.

100'  
Je?

200'

300'

400'  
Jca  
HDD

500'

JN

600'

700'

800'

900'

1000'



TAN TO REDISH. Fg. nd'd qtz. ss.

Rd. Fg. nd'd qtz. ss.

Rd. c.g. - mg. sh. calc. nd'd qtz. ss.

Rd. spty. calc. sst.

TAN TO REDISH. Fg. calc. nd'd ss.  
Wh. TO LT. TAN. calc. spty. ss. (nd'd)

TAN TO REDISH. mg. nd'd calc. ss.

Rd. spty. nd'd calc. sst. ls. sh.  
Wh. calc. nd'd qtz. ss.

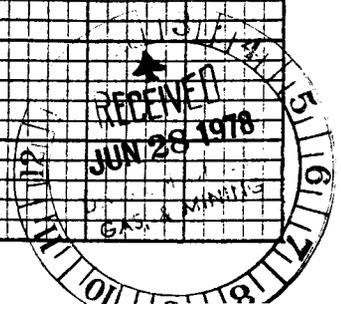
Rd. calc. sst. ls. sh.  
Rd. calc. Fg. nd'd ss.

Rd. calc. sst. ls. sh.

Rd. mg. - c. calc. nd'd ss.  
Rd. mg. calc. qtz. ss.

Wh. TO C. Fg. calc. nd'd ss. - qtz.

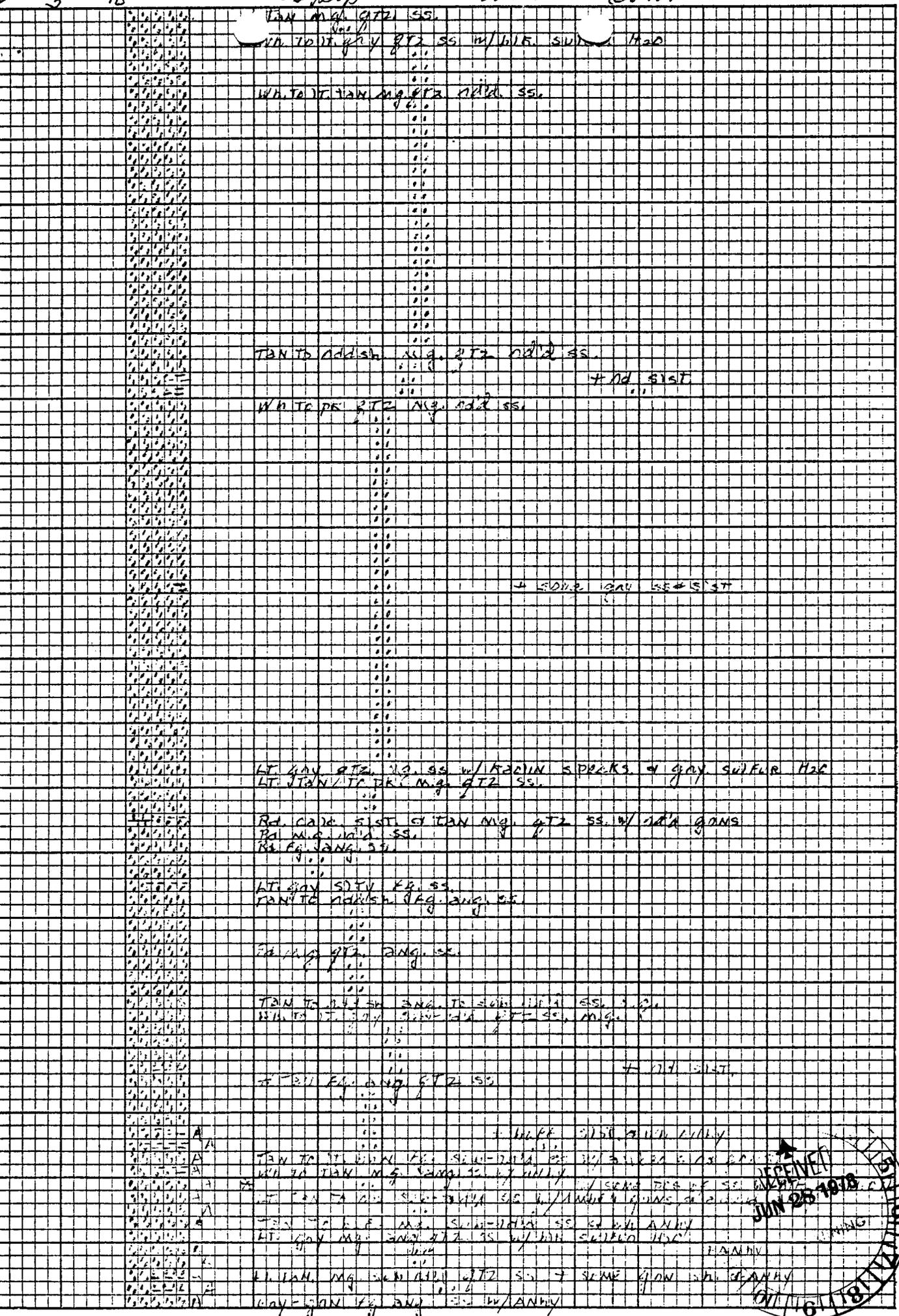
White cl. mg. nd'd qtz. ss.  
(NON-CALC.)



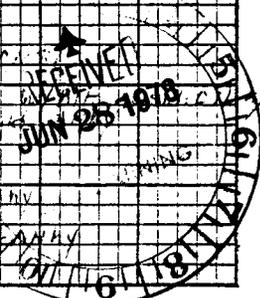
K&E  
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 MADE IN U.S.A.  
 KEUFFEL & ESSER CO.

WELL #1-1 WELL CORN

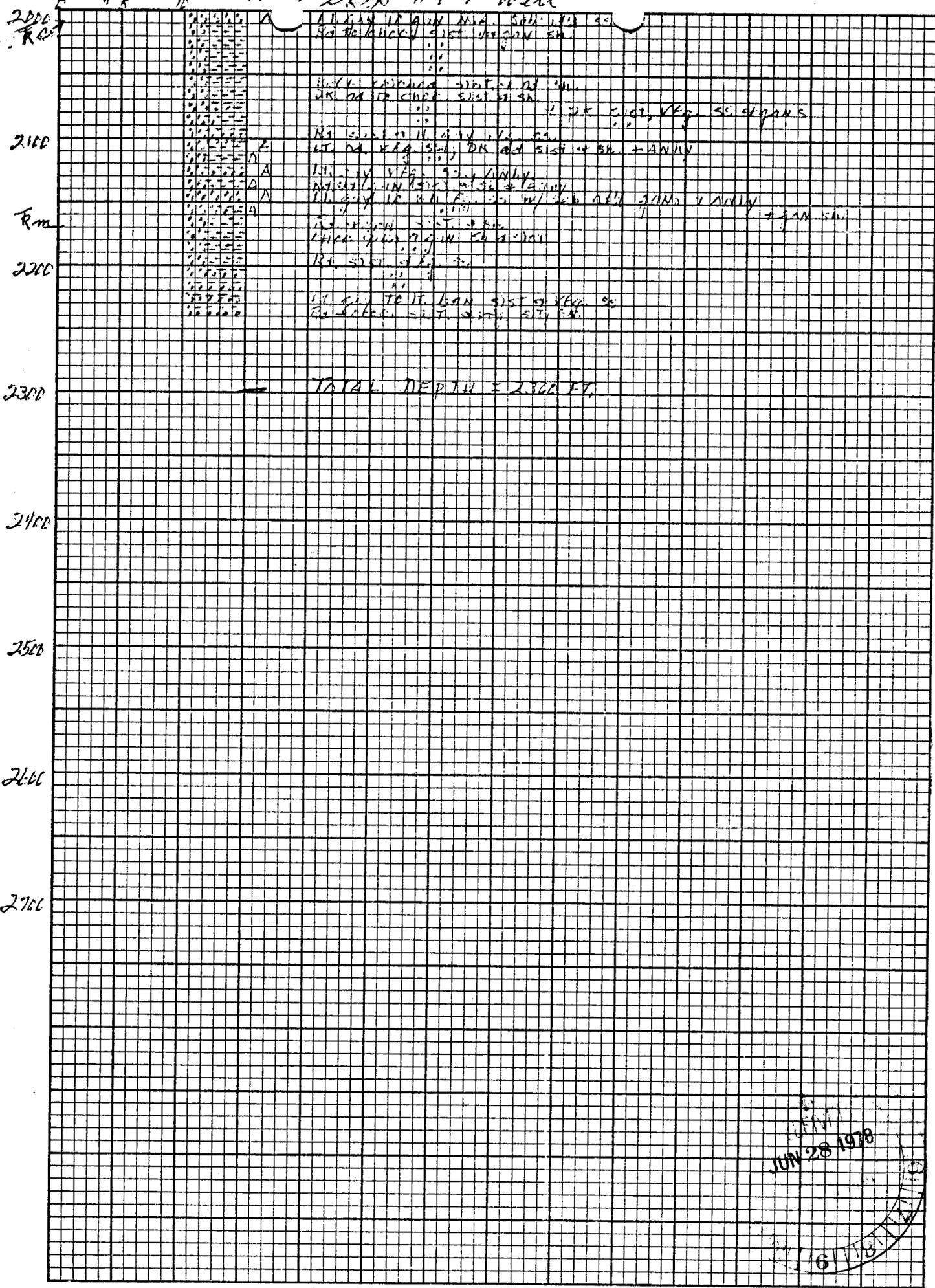
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 KEUFFEL & ESSER CO.  
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Shaly Sandstone Man/ft. Strip # 1-7 Well



K&E 5 X 5 TO 1/2 INCH 46 0863  
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JUN 28 1970  
 G. W. [unclear]