

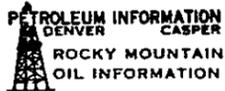
MOUNTAIN STATES #1-A STATE  
NE NE 29-19S-18E PIMA CO.

219

P-M



ARIZONA  
PIMA CO.  
WILDCAT (W)



Twp 19s-18e  
Section 29  
ne ne  
300 s/n 610 w/e

219000  
OPR: Mountain States Exploration

WELL #: 1-A State

ELEV: 4861 DF.

DSTS. & CORES:

SPUD: 11-24-62

COMPL: 1-28-64

TOPS: Log-Sample

No cores or tests.

TD: 4410

PB:

No logs run.

CSG: 12-3/8" @ 23 w/75  
8-5/8" @ 846 w/225  
7" @ 850 w/175

Cretaceous-surface to TD.

PERF: Sli show oil @ 1260, 1370, 1400  
& 1435. Show oil 1500-12. Sli  
show oil @ 1745. Squeezed hole  
in 8-5/8" csg.

PROD. ZONE:

INIT. PROD: D & A w/fish in hole.

Contr: Durant.

Ariz. 2-468120

**WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG**

DESIGNATE TYPE OF COMPLETION:

New Well  Work-Over  Deepen  Plug Back  Same Reservoir  Different Reservoir  Oil  Gas  Dry

DESCRIPTION OF WELL AND LEASE

Operator **Mountain States Exploration Company** Address **6544 East Indian Bend Road Scottsdale, Arizona**

Lease Name \_\_\_\_\_ Well Number **1-A** Field & Reservoir **Wildcat**

State \_\_\_\_\_ Location **4950' from N. 610' West of USGS Survey Pine Corners of (NENE) Sec. 29-19S-18E** Sec.—TWP—Range or Block & Survey

County **Pima** Permit number \_\_\_\_\_ Date Issued \_\_\_\_\_ Previous permit number \_\_\_\_\_ Date Issued \_\_\_\_\_

Date spudded **Nov. 24, 1962** Date total depth reached **Sept. 20, 1963** Date completed, ready to produce \_\_\_\_\_ Elevation of casing hd. **4850** feet Elevation of casing hd. **4852** feet

Total depth \_\_\_\_\_ P.B.T.D. \_\_\_\_\_ Single, dual or triple completion? \_\_\_\_\_ If this is a dual or triple completion, furnish separate report for each completion.

Producing Interval (s) for this completion \_\_\_\_\_ Rotary tools used (interval) **0-4410** Cable tools used (interval) \_\_\_\_\_

Was this well directionally drilled? **No** Was directional survey made? **No** Was copy of directional survey filed? **No** Date filed \_\_\_\_\_

Type of electrical or other logs run (check logs filed with the commission) **None** Date filed \_\_\_\_\_

CASING RECORD

Casing (report all strings set in well—conductor, surface, intermediate, producing, etc.)						
Purpose	Size hole drilled	Size casing set	Weight (lb./ft.)	Depth set	Sacks cement	Amt. pulled
Surface	9	7		940	260	None

TUBING RECORD

LINER RECORD

Size in.	Depth set ft.	Packer set at ft.	Size in.	Top ft.	Bottom ft.	Sacks cement	Screen (ft.)

PERFORATION RECORD

ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD

Number per ft.	Size & type	Depth Interval	Am't. & kind of material used	Depth Interval

INITIAL PRODUCTION

Date of first production \_\_\_\_\_ Producing method (indicate if flowing, gas lift or pumping—if pumping, show size & type of pump:)

Date of test	Hrs. tested	Choke size	Oil prod. during test bbls.	Gas prod. during test MCF	Water prod. during test bbls.	Oil gravity ° API (Corr)

Tubing pressure	Casing pressure	Cal'ed rate of Production per 24 hrs.	Oil bbls.	Gas MCF	Water bbls.	Gas—oil ratio

Disposition of gas (state whether vented, used for fuel or sold):

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the \_\_\_\_\_ of the \_\_\_\_\_ (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

*Feb. 6, 1964*  
Date

*Stanley Cedeno*  
Signature

STATE OF ARIZONA OIL & GAS  
CONSERVATION COMMISSION  
Well Completion or Recompletion Report and Well Log  
Form No. P-7 File two copies

219

**DETAIL OF FORMATIONS PENETRATED**

Formation	Top	Bottom	Description*
Cretaceous	0	4410	Sand and shale  Shows of petroleum @ 1300 plus; 1500; 1600-1700; 1900. From 2000 feet to total depth, we averaged 9.2 pound mud with average viscosity 55.

\* Show all important zones of porosity, detail of all cores, and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries.

**INSTRUCTIONS:**

Attach drillers log or other acceptable log of well.

This Well Completion or Recompletion report and well log shall be filed with the State of Arizona Oil & Gas Conservation Commission not later than thirty days after project completion.

**PLUGGING RECORD**

Operator <b>Mountain States Exploration Company</b>		Address <b>6544 East Indian Bend Road Scottsdale, Arizona</b>		
Name of Lease <b>State</b>		Well No. <b>1-A</b>	Field & Reservoir <b>Wildcat</b>	
Location of Well <b>4950' N, 610' W of U.S.G.S. Survey Pine Corners of (NE NE) Section 29-T19S-R18E</b>		Sec-Twp-Rge or Block & Survey	County <b>Pima</b>	
Application to drill this well was filed in name of	Has this well ever produced oil or gas	Character of well at completion (Initial production): Oil (bbls/day)      Gas (MCF/day)      Dry?		<b>Yes</b>
Date plugged: <b>January 28, 1964</b>	Total depth <b>3480 W.S. 4410</b>	Amount well producing when plugged: Oil (bbls/day)	Gas (MCF/day)	Water (bbls./day)
Name of each formation containing oil or gas. Indicate which formation open to well-bore at time of plugging	Fluid content of each formation	Depth interval of each formation	Size, kind & depth of plugs used. Indicate zones squeeze cemented, giving amount cement.	
<b>Cretaceous</b>	<b>Water</b>	<b>800</b>	<b>Set 7" w/260 sx.</b>	
	<b>Oil shows</b>	<b>1300-1500; 1600-1700 1900</b>		

**CASING RECORD**

Size pipe	Put in well (ft.)	Pulled out (ft.)	Left in well (ft.)	Give depth and method of parting casing (shot, ripped etc)	Packers and shoes
<b>7"</b>	<b>940</b>		<b>Yes</b>		

Was well filled with mud-laden fluid, according to regulations?  Indicate deepest formation containing fresh water.

**NAMES AND ADDRESSES OF ADJACENT LEASE OPERATORS OR OWNERS OF THE SURFACE**

Name	Address	Direction from this well:
<b>Poncho Boyce</b>	<b>Sonoita</b>	<b>Well site and adjoining land.</b>

In addition to other information required on this form, if this well was plugged back for use as a fresh water well, give all pertinent details of plugging operations to base of fresh water sand, perforated interval to fresh water sand, name and address of surface owner, and attach letter from surface owner authorizing completion of this well as a water well and agreeing to assume full liability for any subsequent plugging which might be required.

Use reverse side for additional detail  
File this form in duplicate with the State of Arizona Oil & Gas Conservation Commission

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the **Owner-Manager** of the **Mountain States Exploration** (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Date Feb. 6, 1964 Signature Stanley Adams

STATE OF ARIZONA OIL & GAS  
CONSERVATION COMMISSION

Form No. P-15

Plugging Record      File two copies

APPLICATION TO ABANDON AND PLUG

FIELD Wildcat
OPERATOR Mountain States Exploration ADDRESS 6544 East Indian Bend Road Scottsdale, Arizona
LEASE State WELL NO. 1-A COUNTY Pima
SURVEY SECTION 29 DRILLING PERMIT NO.
LOCATION 4950 feet north, 610 feet west of U.S.G.S. Survey Pine Corners of (NE NE) Section 29-T19S-R18E.
TYPE OF WELL Dry Hole TOTAL DEPTH 4410 P.B.T.D. 3450
ALLOWABLE (If Assigned) -- (Oil, Gas or Dry Hole)
LAST PRODUCTION TEST OIL -- (Bbls.) WATER -- (Bbls.)
GAS -- (MCF) DATE OF TEST --
PRODUCING HORIZON -- PRODUCING FROM -- TO --
1. COMPLETE CASING RECORD. 7" @ 940 w/260 s

2. FULL DETAILS OF PROPOSED PLAN OF WORK Present T.D. 3450. Plan to fill hole with heavy mud and place 15 foot cement plug at surface and erect a four inch marker pipe protruding vertical from hole four feet with six feet in the surface cement plug.

If well is to be abandoned, does proposed work conform with requirements of Rule 202? If not, outline proposed procedure above.

DATE COMMENCING OPERATIONS January 27, 1964
NAME OF PERSON DOING WORK Operator's crew ADDRESS Same as above
CORRESPONDENCE SHOULD BE SENT TO Stanley Adams, 6544 East Indian Bend Road Scottsdale, Arizona

NAME Stanley Adams
STANLEY ADAMS
TITLE Owner-Operator

Date Approved Jan 26, 1964

STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Application to Abandon and Plug
Form No. 15A File 2 Copies

319

Refers to: Mtn States Explor. Co  
#1 A State  
29-19s-18E Pima Co.  
Permit No. 219

April 29, 1963

Mr. H. B. Pixley  
Elgin Oil Company  
Box #85  
Sonoita, Arizona

Dear Mr. Pixley:

I am writing in regard to the samples that you gave to me when I visited the well site with Mr. John Petty. You gave me samples from the interval 3665-3735 feet.

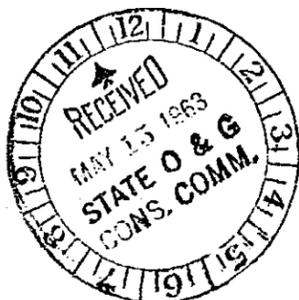
These samples contain three types of sedimentary rocks: (1) black to dark gray, pyritic, calcareous mudstone (shale), (2) light gray limestone, and light gray, very fine-grained sandstone. The gray rocks appear to increase towards the bottom of the interval. The interval appears to be confined to sediments of Cretaceous age. I would hesitate to try and guess the position of these samples within the overall sequence of such rocks in the area.

I hope that you have overcome the water problems and are now drilling below 4000 feet. If I might be able to assist you with basic sample identification, please do not hesitate to send small amounts of material to me.

Yours very truly,

H. Wesley Peirce

HWP/h



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

APPLICATION TO DRILL  DEEPEN  PLUG BACK

NAME OF COMPANY OR OPERATOR

DATE

**Mountain States Exploration Company**

**November 16, 1962**

Address

City

State

**6th Fl. Arizona Bank Bldg. c/o Otis Sullivan, Phoenix, Arizona**

DESCRIPTION OF WELL AND LEASE

Name of lease <b>State</b>	Well number <b>1-A</b>	Elevation (ground) <b>4,850</b>
Well location (give footage from section lines) <b>4,950 ft. North, 610 West of USGS Survey Pine corners of Sec. 29, 28, 33, 32</b>		Section—township—range or block & survey
Field & reservoir (If wildcat, so state) <b>Wildcat</b>	County <b>Pima (NE NE Sec. 29, T19S, R18E)</b>	
Distance, in miles, and direction from nearest town or post office <b>10 miles N.E. of Sonoita, Arizona</b>		
Nearest distance from proposed location to property or lease line: <b>330</b>	feet	Distance from proposed location to nearest drilling, completed or applied—for well on the same lease:  feet
Proposed depth: <b>5000'</b>	Rotary or cable tools <b>Rotary</b>	Approx. date work will start <b>Nov. 20, 1962</b>
Number of acres in lease: <b>320</b>	Number of wells on lease, including this well, completed in or drilling to this reservoir:	

If lease, purchased with one or more wells drilled, from whom purchased:

Name

Address

Status of bond

**Certificate of Deposit #211 VNB - \$2,500 in lieu of bond**

Remarks: (If this is an application to deepen or plug back, briefly describe work to be done, giving present producing zone and expected new producing zone)

\* Fill in Proposed Casing Program on other side

**President**

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the.....of the **Mountain States Exploration**.....(company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

**November 16, 1962**

Date

Signature

*George A. Hummer*

Permit Number: **219**

Approval Date: **11/21/62**

Approved By: *[Signature]*

Notice: Before sending in this form be sure that you have given all information requested. Much unnecessary correspondence will thus be avoided.

See Instruction on Reverse Side of Form

**STATE OF ARIZONA OIL & GAS  
CONSERVATION COMMISSION**

Application to Drill, Deepen or Plug Back

Form No. P-1

File two copies

Effective Feb. 28, 1962.

219

**INSTRUCTIONS**

**READ CAREFULLY AND COMPLY FULLY**

For the purpose of this determination attach hereto a neat, accurate plat, map or sketch of this lease, section, block or lot locating thereon the proposed site for this location. Plat shall be drawn to a scale which will permit the facile observation of all pertinent data. Show distances of the proposed well from the two nearest lease and section lines, and from the nearest wells on the same lease completed in or drilling to the same reservoir. If the location requested is not in conformance with the applicable well-spacing rules, show all off-setting wells to the proposed well, and the names and addresses of all adjoining lease or property owners.

In event plat is filed for the purpose of designating the drilling and producing unit, or proration unit, on which the proposed well is to be drilled, the boundaries of such unit shall be shown, also the boundaries of all other such units attributed to other wells on the same lease completed in or drilling to the same reservoir. The acreage contained within each unit shall also be shown.

Do not confuse survey lines with lease lines. The sketch or plat should show your entire lease if possible. If it is not practical to show the entire lease and the plat shows only a section, block or lot out of your lease, you should clearly show that same is only a part of the lease.

Designate scale to which plat or sketch is drawn. Also designate northerly direction on the sketch or plat.

**PROPOSED CASING PROGRAM**

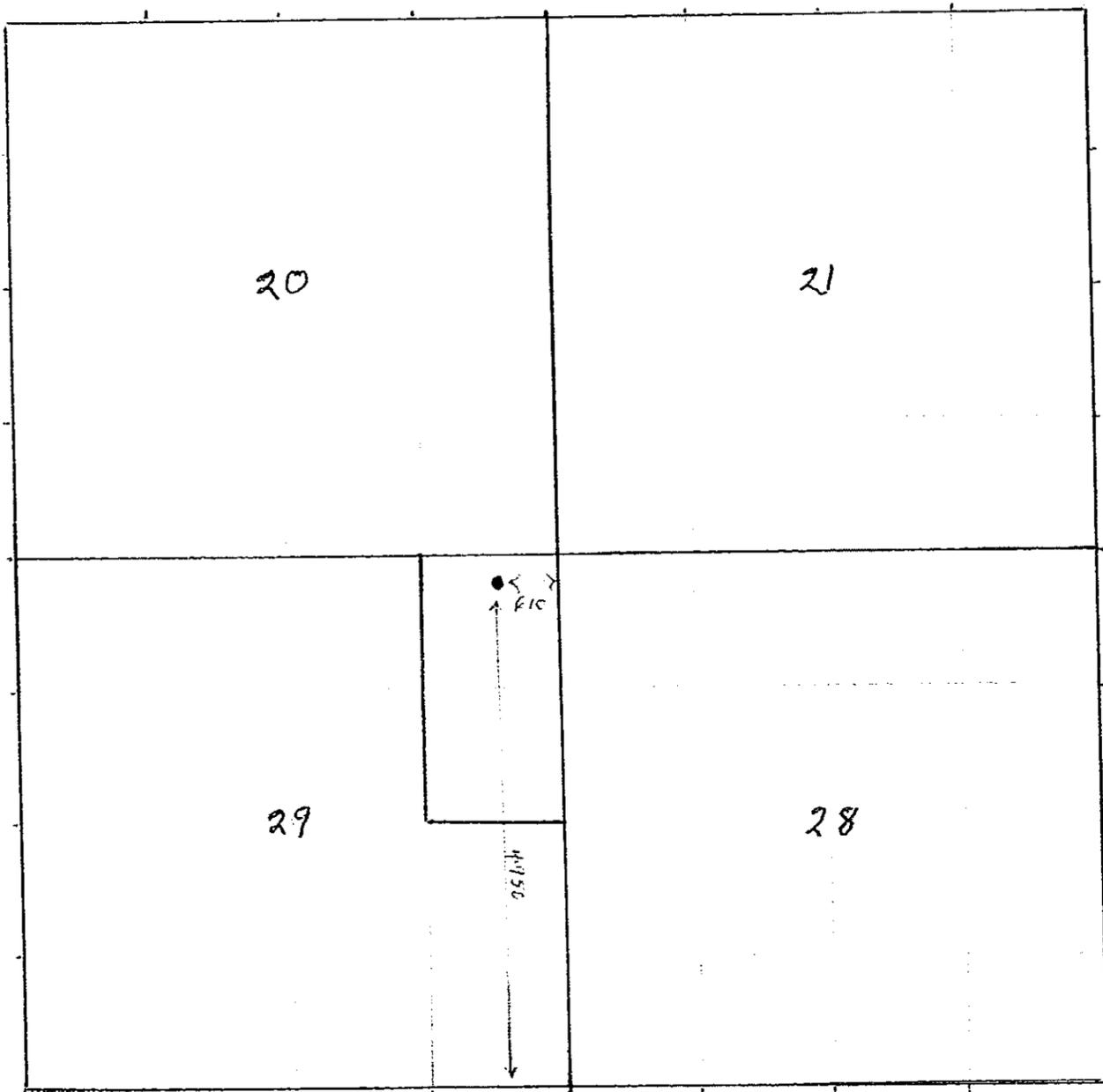
Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
9"						

**WE WILL BE CEMENTING BETWEEN 800 and 1000' of surface casing.**

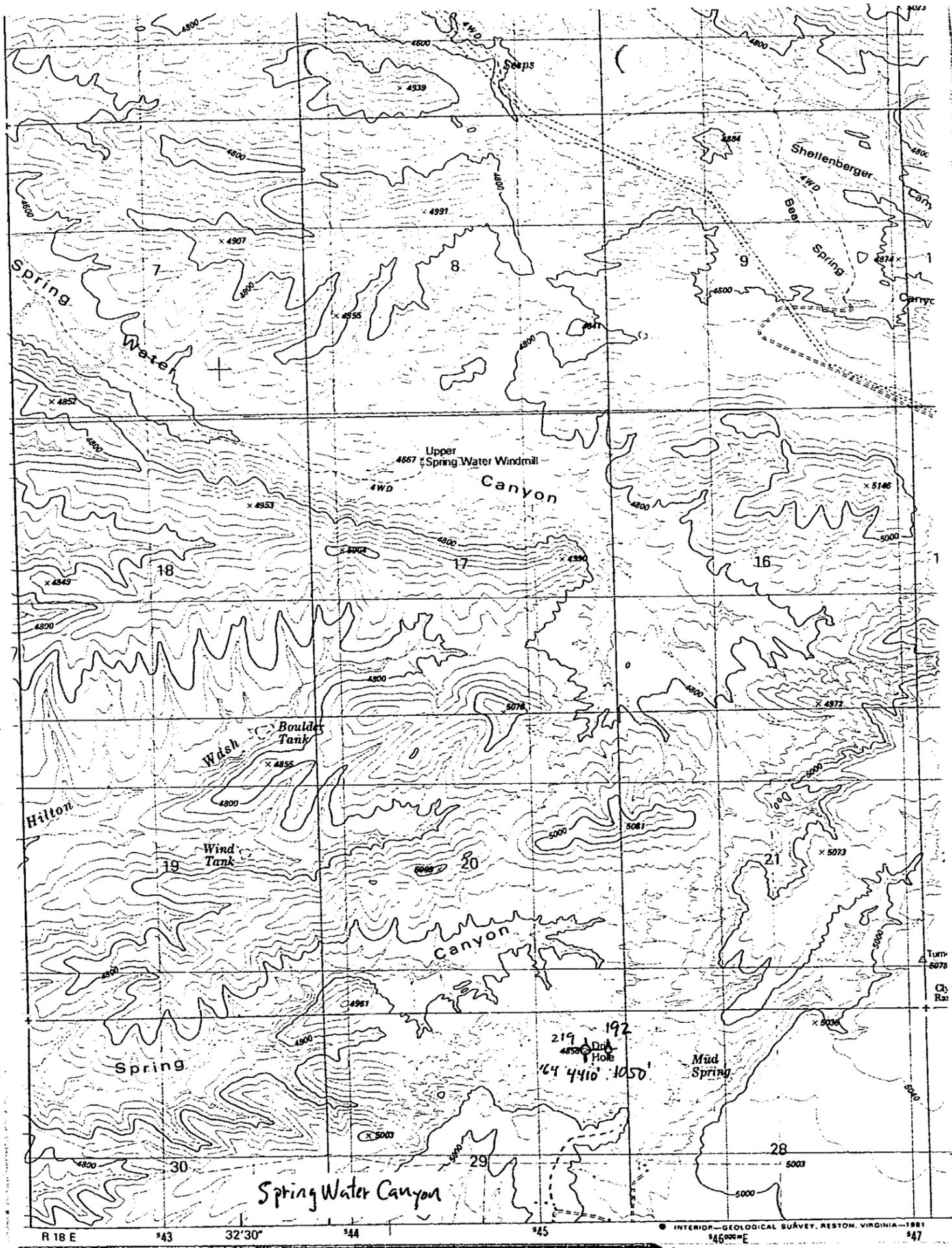
Form No. P-1

**WE WILL PROTECT ALL FRESH WATER STRATA.**

SEC. 29 T-19S, R-18E, PIMA COUNTY, ARIZONA



7603 Pifley  
L. A. Hummer



C



State of Arizona  
**Arizona  
Geological  
Survey**

845 N. Park Avenue #100  
Tucson, Arizona 85719





Oct 93  
Steve Rauzi at cuttings pile  
Mtn. States #1-A Clyne Anticline  
29-195-18 E  
Drilled 1964

PHOTOGRAPHS 29-195-18 E 12

P/W 219



Oct. 73  
Steve Rauzi at cuttings pile  
Mtn. States #1-A Clyne Anticline  
29-195-18 E  
Drilled 1964

PHOTOGRAPHED BY [illegible]

PN 219



Oct 93  
Steve Rauzi at Mtn. States # 1-A  
29-495-18E  
Test drilled 1964  
On Clyne Anticline  
Sample sack on top of well casing

PHOTODUPLICATIONS

11/11 219

# AMERICAN STRATIGRAPHIC COMPANY



# 217

Log No. **D-2903** Net Footage **3225'**

State **ARIZONA** County **PIMA**  
Well Name **MOUNTAIN STATES EXPLORATION  
NO. 1-A STATE**

### ELECTRICAL AND/OR RADIOACTIVITY DATA

ELECTRICAL	RUN 1	RUN 2
------------	-------	-------

Spot. **NE NE** Sec. **29** T. **19S** R. **18 E**

18 IB R 19S T 29 NE NE	MOUNTAIN STATES EXPLORATION NO. 1-A STATE	Area (W)			
		Commenced	Nov. 24, 1962		
		Completed	Jan. 28, 1964		
		Initial Production	D & A		
		Elevation:			
		KB	4862	Producing Fm.	
		GR			
		Total Depth	4410	Producing Intervals	
		Oldest Fm.	Bisbee group?	Casing 12 3/8" at 23'; 8 5/8" at 846'	
			7" at 850'		
		Mechanical Control Used To Adjust Lithology			
		Sample Quality:	? Good		
		Remarks:			
		Studied by No. 10		10-67	

Scale: S-P (MV) per division  
Scale: Resist and Spacing (OHMS M'/M)  
Mud Nature  
Mud Resistivity BHT  
Bit Size

RADIOACTIVITY	GAMMA RAY	NEUTRON
---------------	-----------	---------

Neutron Source, Strength and Type  
Source Spacing - Inches  
Time Constant - Seconds

Remarks:  
The mechanical control on this log is shown for correlation only and should not be used for engineering computations.

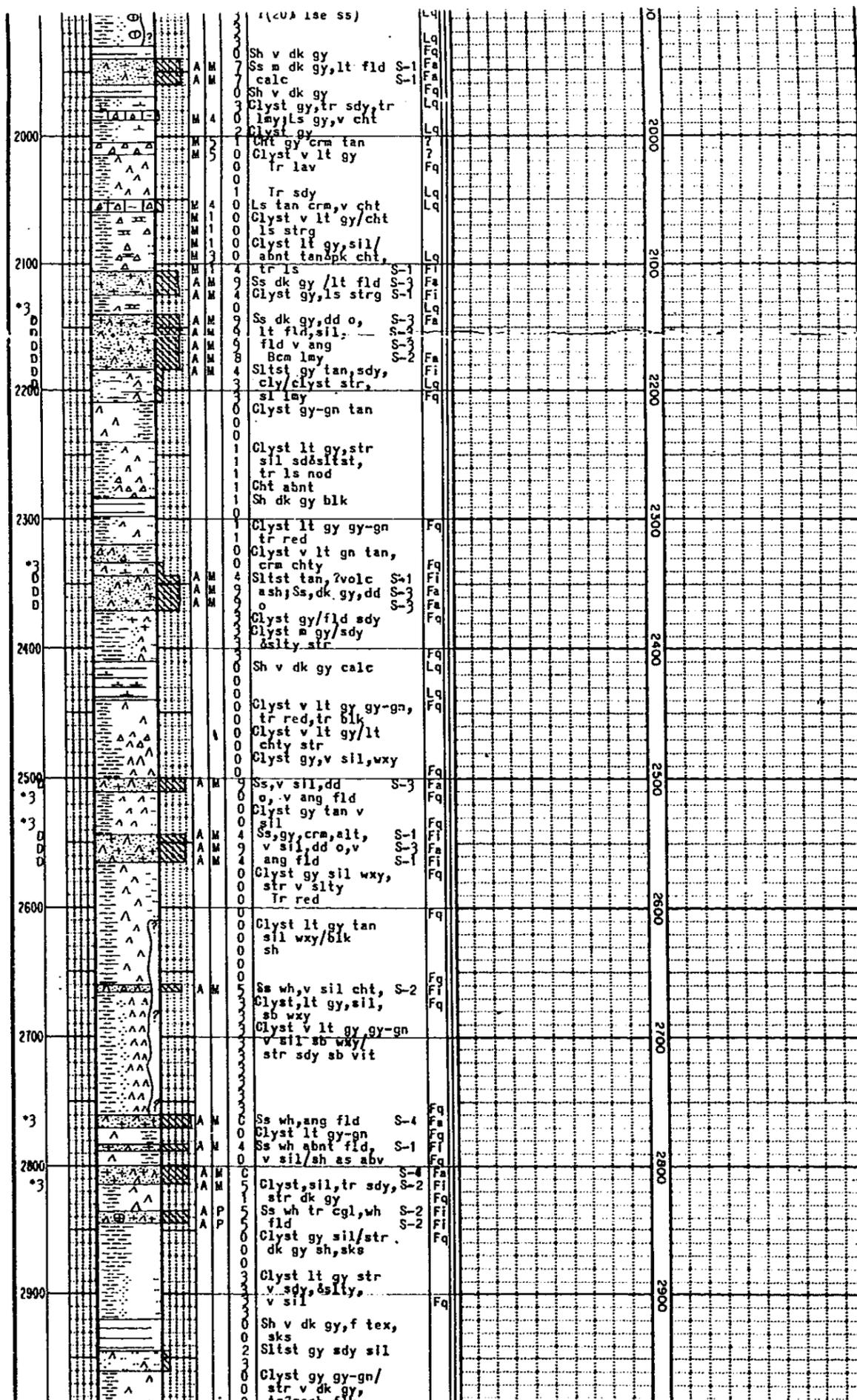
COPYRIGHT © 1967 BY THE AMERICAN STRATIGRAPHIC CO.  
NO PART OF THIS LOG MAY BE LOANED, REPRODUCED, SOLD OR  
GIVEN AWAY WITHOUT THE EXPRESS CONSENT OF AMERICAN  
STRATIGRAPHIC COMPANY

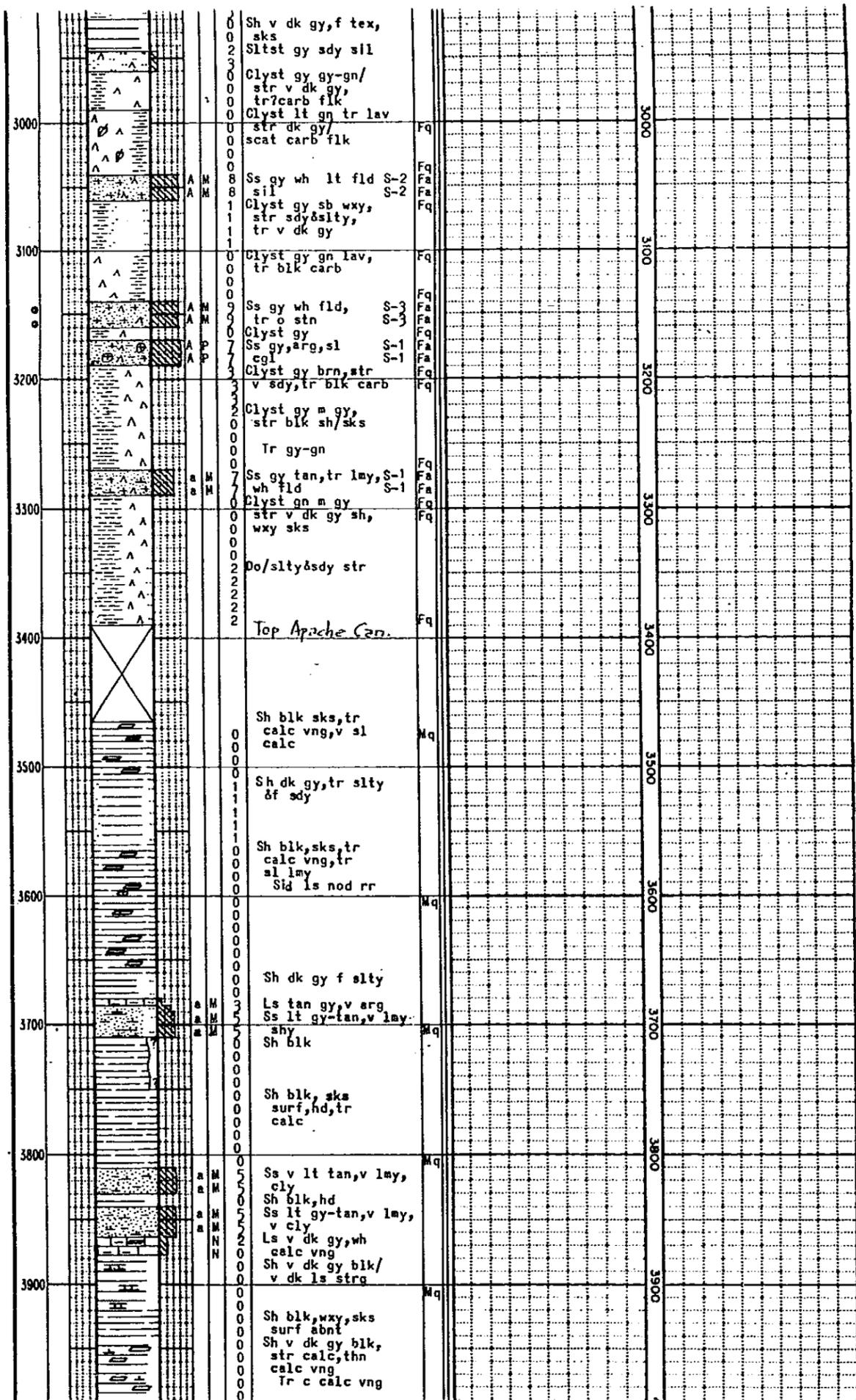
### LOG KEY AND SYMBOL LEGEND

FORMATION TOPS, FOOTNOTES, SHOWS	POROSITY TYPES	POROSITY GRADES	LITHOLOGY	CRYSTAL GRAIN OR FRAGMENT SIZE	ROUNDING, DIAG. TYPE	SORTING, DIAG. DEGREE	PERCENT OF FRAMEWORK	DESCRIPTION	SUSCEPTIBILITY DATA
1	2	3	4	5	6	7	8	9	10
COLUMN NO. 1									
<b>FOOTNOTES</b>									
... Geological discussions									
<b>FORMATION TOPS WITH INDICATED DEPTHS</b>									
... Known unconformity									
... Normal fault									
... Reverse fault									
... Overturned strata									
<b>SHOWS</b>									
... Oil, heavy stain									
... Oil, medium, poor or spotted stain									
... Oil, light, questionable stain or positive loss									
... Oil, dead or asphaltic									









		0	surf abnt		
		0	Sh v dk gy blk,		
		0	str calc, thn		
		0	calc vng		
		0	Tr c calc vng		
4000		0	Sh dk gy, str	Mq	4000
		0	lmy, scat carb		
		0	flk		
		0	Sh v dk gy, n. lmy/		
		0	str v lmy, scat		
		0	calc vng, cons		
		0	wxy sks surf		
4100		0	Do/tr dk gy-	Mq	4100
		0	brn ls nod or		
		0	strg		
		0	Sh dk gy blk, n		
		0	lmy/str calc,		
		0	scat calc vng,		
		0	sks		
4200		0	Sh do/occ carb	Mq	4200
		0	flk, sl decr		
		0	sks surf		
		0	tr dk ls strg		
		0	Sh dk gy blk,		
		0	str lmy, tr		
		0	calc vng, sks		
		0	surf		
4300		0	Sh as abv, scat	Mq	4300
		0	c calc vng		
		0	Sh as abv, tr		
		0	dk gy blk		
		0	dns ls strg/		
		0	calc vng		
4400		0		Mq	4400
			T.D. Spls 4410.		

Apache Can. at TD  
 INFORMATION SUMMARY

SUMMARY OF ABBREVIATIONS  
 ELEV. 4862 KB

CRETACEOUS  
 Kb Bisbee Group Spl Start

FOOTNOTES

- 40' The lithology drilled in this well is similar to the gross-out crop descriptions of the Bisbee Group of Cretaceous age. Correlation of this well to outcrop descriptions could not be established for certain. Slickenides and calcite veins are particularly abundant from 3300' to total depth. The section drilled may be further complicated by faulting.
- 1850'-2500' The over-all section is very siliceous and an over all impression from the samples suggests a volcanic source for most of the sediments. The chert and cherty sections, 1850'-2500', very possibly are the result of devitrification of fine volcanic rather than metasomatic chert secondary after carbonates.
- 1600'-2800' The sands composed of very angular white and gray feldspar almost appear to be primary igneous rock and this possibility cannot be completely ruled out. Some rounding, considerable variations in alteration of the feldspar grains and some oil stain suggests, however, that these are feldspathic (probably andesitic) sands.
- 1000' The basic environment of the section is also questionable. No fossils are present. The scattered lime beds and nodules could be either transitional, marine or lacustrine.

In K top to bottom

secondary alter carbonates.

3. 1600'-2800' The sands composed of ~~very~~ angular white and gray feldspar almost appear to be primary igneous rock and this possibility cannot be completely ruled out. Some rounding, considerable variations in alteration of the feldspar grains and ~~dark~~ oil stain suggests, however, that these are feldspathic (probably andesitic) sands.
4. 1000' The basic environment of the section is also questionable. No fossils are present. The scattered lime beds and nodules could be either transitional, marine or lacustrine. The very dark fine textured shale logged from 3465' to total depth is considered marine only because of a slight increase of lime content with depth.

DRILL STEM TESTS

None Reported

CORED INTERVALS

None Reported

MOUNTAIN STATES EXPLORATION #1-A STATE  
NE NE 29-19S-18E  
PIMA COUNTY, ARIZONA  
LOG NO. D-2903



Spot NE NE Sec. 29 Twp. 19 S Rge. 18 E

State ARIZONA County PIMA

Area (M) Amstrat Log No. D-2903

Operator #219 MOUNTAIN STATES EXPLORATION

Well No. NO. 1-A STATE

Formation Penetrated GRETAGOUS (BISBEE GROUP)

Date Issued 10-67

AMERICAN STRATIGRAPHIC COMPANY

324 E. YELLOWSTONE AVE. 1820 BROADWAY 1829 E. 5TH AVE. 17 N. 31 ST.  
CASPER, WYOMING DENVER 2, COLORADO ANCHORAGE, ALASKA BILLINGS, MONTANA

TRIM LINE FOR 3"x5" FILE

WED, FEB-19-97 3:56PM

PETROLEUM INFORMATION

505 334 3733

P. 02

71974

ARIZONA PIMA CO. WILDCAT (W) SE SE		Permit 219 PETROLEUM INFORMATION DENVER CASPER ROCKY MOUNTAIN OIL INFORMATION		219 Twp 19s-18e Section 29 ne ne 300 s/n 610 w/e	
OPR: Mountain States Exploration		WELL #: 1-A State			
ELEV: <del>4862</del> DP 4850 ft. TOPS: Log-Sample 4862 KB		DSTS. & CORES: No logs run. Cretaceous-surface to TD.		SPUD: 11-24-62 TD: 4413 CSG: 12-3/8" @ 23 w/75 8-5/8" @ 846 w/225 7" @ 840 w/225 PERF: Sli show oil @ 1260, 1370, 1400 & 1435. Show oil 1500-12. Sli show oil @ 1745. Squeezed hole in 8-5/8" csg.	
No logs run. Cretaceous-surface to TD.		No cores or tests.		COMPL: 1-28-64 PB:	
Delg Cretaceous @ 1725. Delg break @ 1500-12.		Lost fish @ 4413.		PROD. ZONE: J & A INIT. PROD: D & A w/fish in hole	
		Contr: Durant.		Ariz. 2-468120	

Delg who also had gas show @ 1007-1010 in the #1 state, 10500. Junk of 20th.

55'

T17 S.  
T18 S.

WHETSTONE MINING DISTRICT

WMSH  
T35'

\* Oil seep in black shale  
(Upper Kb?)

Oil seep  
shows in shale  
50'

TED JONES I JUANITA STATE 1954  
T.D. 2656

CIENEGA BASIN I STATE 1951  
T.D. 2760

T18 S.  
T19 S.

MOUNTAIN STATES EXPL. I STATE  
T.D. 1050

MOUNTAIN STATES EXPL. I-A STATE  
T.D. 4410

*file 219*

WHETSTONE MINING





**Amoco Production Company**

Denver Region  
Amoco Building  
17th & Broadway  
Denver, Colorado 80202  
303-830-4040

July 1, 1980

H. Wesley Pierce, Principal Geologist  
Bureau of Geology and Mineral Technology  
845 North Park Avenue  
Tucson, AZ 85719

Dear Wes:

Enclosed are the results of Amoco's source rock analyses of certain drill cuttings we borrowed from the Arizona Bureau of Geology. It is my understanding that only parts of the samples were used for the analyses.

The enclosed tables give detailed information on the analyses. A description and guide to interpretation of the analyses is also included.

The following is a brief summary of the results:

The Ted Jones No. 1 Juanita State samples are all past peak gas, but have high enough organic carbon content to have made good source rocks for gas (structured kerogen dominant).

2-07 Some tar encountered in the Waddell Duncan No. 1 McComb well was interpreted by our lab to be a refined petroleum contaminant.

219  
The Mountain States well contained rocks with fair to good petroleum generating capabilities, based on organic carbon contents, but the stage of diagenesis was peak gas to past peak gas. Presence of both amorphous and structured kerogen suggests the rocks were capable in the past of generating both oil and gas.

Several other wells with insufficient organic material to warrant complete source rock analyses were run for vitrinite reflectance to determine the stages of thermal diagenesis. The results are presented in Table I.

**CONFIDENTIAL**

H. Wesley Pierce  
July 1, 1980  
Page Two

We request that the information in this report be held confidential. That is, the data may be used internally by the Bureau of Geology, but it is not to be released to the public. Incorporation of this data into Bureau publications requires the written consent of authorized staff of Amoco Production Company.

We hope this information is helpful to your staff.

Respectfully yours,



Noel B. Waechter  
Senior Geologist

NBW:jl

Attachments

GZ320

CONFIDENTIAL

## DESCRIPTION AND EVALUATION OF SOURCE ROCK ANALYSES

Petroservices Group, 5-8-79

A variety of analyses on the extractable and nonextractable organic matter are used to determine the organic richness of source rock samples and their stages of petroleum generation. Ranges of values listed in the following pages are for ideal cases; such a listing does not include subtleties of interpretation necessary when analytical problems are encountered, or when the samples are weathered or contaminated.

### DESCRIPTION OF ANALYSES

Organic Carbon: Organic carbon is an easily measured index of the quantity of organic matter in a rock; it is determined by burning the carbonate-free rock in an oxygen atmosphere and measuring the evolved carbon dioxide. Percent organic carbon is one indicator of petroleum generation ability.

Thermal Evolution Analysis (TEA): TEA pyrolysis of powdered whole rock measures both the pre-existing volatile and oil-like hydrocarbons in the rock and the remaining ability of the sample to generate hydrocarbons. The volatile hydrocarbons are measured during low temperature heating of the rock, and the generated hydrocarbons are measured during higher temperature heating. The quantity of generated hydrocarbons is a primary measure of the source richness for thermally immature samples. The ratio of generated hydrocarbons to total organic carbon is an index of the liquid and/or gas generating ability of the kerogen. Temperature of the generated hydrocarbon peak maximum appears to indicate the thermal maturity of the kerogen.

Solvent Extraction: Organic matter in the rock sample that is removed by organic solvent extraction is called bitumen. The amount and character of the bitumen is a function of the quantity and quality of the kerogen and the stage of thermal maturity.

Bitumen is separated by liquid column chromatography into saturated and aromatic hydrocarbon fractions. Saturates are the most oil-like part of the bitumen.

Gas Chromatography: Gas chromatographic analysis (similar to a boiling point separation) of either the bitumen or saturated hydrocarbons gives the molecular distribution and relative proportions of paraffins and naphthenes, as well as the amounts of specific genetic marker hydrocarbons such as pristane and phytane. Odd-carbon predominance (C<sub>24</sub>-C<sub>30</sub> range), deficiency of normal paraffins, or erratic molecular distribution in the bitumen or saturated hydrocarbon chromatogram implies,

T.S. 799431CR

Proprietary - To Be Maintained In Confidence  
Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

Enclosure 2

depending on the appearance, thermal immaturity, biodegradation, or contamination.

Visual Kerogen Analysis: Microscopic examination of kerogen (insoluble organic matter) separated from the rock matrix by hydrochloric and hydrofluoroic acid treatment gives information about the morphology of the kerogen particles and hence the type of hydrocarbons generated. Structured type kerogens are usually associated with gas generation, whereas amorphous kerogens are associated with oil generation.

The color of the pollen and spores in the kerogen assemblage gives an indication of the level of thermal maturity of the kerogen. Palynomorphs change from yellow (immature), through various shades of brown (mature), to black (expended). These color changes have been subdivided into a seven-stage (1-7) visual carbonization scale.

Vitrinite Reflectance: The percentage of light reflected by microscopic vitrinite particles is another index of thermal maturity. This measurement is made using a photometer equipped microscope and polished slides of the kerogen embedded in plastic.

Elemental Analysis: This is a measurement of the four principal elements in kerogen-carbon, hydrogen, oxygen, and nitrogen. The concentrations of these four elements are normalized so that the values total 100%. The percent carbon and O/C are indices to thermal maturity; the hydrogen content and H/C ratio are indices to both thermal maturity and the liquid generating ability of immature kerogens.

RJH:ksb  
79129ART0004

PETROLEUM GENERATING CAPABILITY

Rating	Organic Carbon Wt. %	Generated Hydrocarbons PPM by TEAs
Nonsource	<0.4	< 600
Poor	0.4-0.6	600-1800
Fair	0.6-1.0	1800-3000
Good	1.0-1.5	3000-6000
Very Good	>1.5	>6000

\*Thermal evolution analysis on thermally immature samples

KEROGEN TYPE

Petroleum Type	Visual Kerogen Type	Generated Hydrocarbons*/ Total Organic Carbon	Elemental M/C**	Bitumen/Total Organic Carbon***
Gas	Structured	<.15	<0.8	<.05
Gas and condensate	Mixed	.15-.25	<1.0	<.05
Oil	Amorphous (sometimes mixed)	>.25	>1.0	>.05 <.30****

\*From thermal evolution analysis for thermally immature kerogens

\*\*For thermally immature samples

\*\*\*For uncontaminated samples, and where bitumens are not thermally cracked to gas

\*\*\*\*Values >.30 indicate non-indigenous oil or contamination; saturate hydrocarbon/bitumen ratio >.70 also indicates non-indigenous oil or contamination.

KEROGEN THERMAL MATURITY

Diagenesis Stage	Pregeneration	Early peak oil-early gas	Peak oil-early peak gas (Oil expulsion)	Past peak oil-peak gas	Advanced
Visual Scale	1-3	4	5	6-7	7
Vitrinite Reflectance %	<.5	.5-.8	.8-1.2	1.2-2.0	> 2.0
Elemental % C	<78	78-81	81-85	85-90	> 90
Elemental H/C	>1.0 (oil source)	>1.0 (oil source)	>.80 (oil source)	.40-.80	< .40
TEA Gen HC/TOC*	>.25 (oil source)	>.25 (oil source)	>.15 (oil source)	<.15	< .05
TEA Vol HC/TOC*	<.05	>.05 (oil source)	>.05 (oil source)	<.05	< .01
TEA Gen HC Max %C	460-490	480-510	490-530	510-540	> 540
Bitumen/TOC*	<.05	>.05 (oil source)	>.05 (oil source)	<.05	< .01
Bitumen Chromatogram	Immature (odd-carbon predominance; sterane hump)	Immature (odd-carbon predominance; sterane hump)	Mature, oil-like molecular distribution	Mature	Insufficient extract for analysis

\*Total organic carbon wt. %

Proprietary - To Be Maintained In Confidence  
Amoco Production Company

RJH:ash  
7/11/87

November 18, 1964

Mrs. James White telephoned, complaining that Mr. Bill Cooper's letter of 9-11-64 and Mr. John Petty's letter of 1-29-64, concerning File 192, contradicted each other.

In checking Petty had merely related the drilling difficulties and had not indicated that the well was completed as a water well; whereas Cooper's letter stated the well had been accepted as a water well in November 1962.

Mrs. White felt that Mr. Cooper was in error and still in contradiction with Mr. Petty because she knew there was drilling on the well in 1963. It then became apparent she was concerned and interested in another well of the same description, our File 219. When this was made clear to her she was satisfied-----but then wanted to know whether they should hold onto their leases on adjoining land.

Gave her no advice---didn't even tell her where to go for advice-- that was her decision to make----but did make sure that she understood this well was plugged and that a new application would be necessary for anyone to re-enter.

XXXXXXXXXXXX

XXXXXXXXXXXX

September 11, 1964

Mr. James J. White  
California Peanut Company  
P.O. Box 157, Point Station  
Richmond, California

RE: Your letter of September 5, 1964

Dear Mr. White:

In reply to the above referenced letter please be advised that the Mountain States Exploration Company's State #1 well, located in Section 29 Township 19S Range 18E was accepted on November 26, 1962, as a water well by the Empire Ranch, of Sonoita, Arizona. Mountain States also drilled another well in the same section as above and this well known as #1A was plugged and abandoned on January 28, 1964. These two transactions complete the files on these wells as far as this commission is concerned.

I hope that this information answers your letter and if I may be of further service to you, will you please advise.

Very truly yours,

Bill Cooper  
Records Section

cc/File

192

219



# VALLEY NATIONAL BANK

7th AVE. & THOMAS RD. OFFICE PHOENIX, ARIZONA

August 25, 1964

Oil and Gas Conservation Commission  
State of Arizona  
1624 West Adams, Room 202  
Phoenix, Arizona

Attention: John Bannister, Executive Secretary

Dear Mr. Bannister:

We are enclosing photostatic copies of the certificates of deposit you inquired about in your letter of August 20, 1964; namely, #204 dated December 21, 1961 payable to Mr. Stanley Adams and #211 dated June 21, 1962 payable to Mr. Stanley Adams.

Very truly yours,

*Grace K. Connelly*

Operations Officer

Grace K. Connelly  
mg

Enclosures

626-337-7747

192  
219 -



**VALLEY NATIONAL BANK**

7th AVENUE & THOMAS RD. OFFICE 2901 NORTH SEVENTH AVENUE

91-252  
1221

PHOENIX, ARIZONA June 21 1962 No 211

Mr. Stanley Adams - - - - - HAS DEPOSITED IN THIS BANK

VALLEY NATIONAL BANK \$2,500.00 DOLLARS \$ 2,500.00

PAYABLE TO THE ORDER OF Mr. Stanley Adams VALLEY NATIONAL BANK  
ON THE RETURN OF THIS CERTIFICATE, PROPERLY ENDORSED, NOT SUBJECT TO CHECK.

THIS CERTIFICATE IS HEREBY MADE PAYABLE SIX MONTHS AFTER DATE WITH INTEREST THEREON AT THE RATE OF 3 1/2 PER CENT PER ANNUM.

*Charles W. Green*

AUTHORIZED SIGNATURE

INTEREST CEASES AT MATURITY

TIME CERTIFICATE OF DEPOSIT



August 20, 1964

Valley National Bank  
7th Avenue and W. Thomas Road  
Phoenix, Arizona

Re: Mountain States Exploration, State No. 1  
and State No. 1A wells  
Our Files No. 192 and 219

Gentlemen:

In reviewing our files we find that your bank held certificates of deposit No. 204 and No. 211, both payable to Stanley Adams and endorsed by him in favor of this Commission.

These deposits were made available to the Commission for the captioned wells in lieu of a performance bond. In verification of this we are attaching thermofax copies of letters dated June 11, 1962 and November 16, 1962, both letters executed by Stanley Adams.

Would you please advise us as to the status of these certificates of deposit? We believe these deposits have been released; however we are unable to verify same.

If you have any questions would you please advise.

Very truly yours,

John Bannister  
Executive Secretary

nr  
enc.

cc: Mr. Stanley Adams  
6544 E. Indian Bend Rd.  
Scottsdale, Arizona

August 20, 1964

Mr. J.M. Tucker  
P.O. Box 638  
Willcox, Arizona

Re: Mountain States Exploration Company  
State Nos. 1 and 1A wells  
NE/4NE/4, Section 29, T19S, R18E, Pima County

Dear Mr. Tucker:

Pursuant to our verbal conversation of August 18, 1964, this is to advise that the Mountain States Number 1 well originally was scheduled to be the A & L Company Number 1 well. Operations were assumed by Mountain States.

Number 1 well is located 339 feet from the north and east lines of Section 29. As near as can be determined from our files this well reached a total depth of (1,413) feet and was in the cretaceous formation.

This well as subsequently been turned over to the Empire Ranch as a water well.

Our file does not reflect the depth to which water was encountered.

The 1A well is located 330 feet from the north and 610 feet from the east line of Section 29. This well reached a total depth of 4,410 feet and the completion report indicates water at 800 feet. It also indicates oil shows at 1,300 feet, 1,500 feet, 1,600-1,700 feet, and at 1,900 feet. This well has been plugged and abandoned.

According to the report, there are 940 feet of 7-inch pipe in the hole, which hole was set with mud and with 260 sacks of cement through the 7-inch casing.

If we may be of any further service, please advise.

Yours very truly,

John Bannister  
Executive Secretary

mr

172  
192

219

February 6, 1964

Mr. Stanley E. Adams  
6544 East Indian Bend Road  
Scottsdale, Arizona

Re: Mountain States Exploration Company #1-A State  
Section 29 - T19S - R18E, Pima County, Arizona

Dear Mr. Adams:

We wish to return your Check No. 221 dated 9/20/63 in  
the amount of two-thousand five-hundred (\$2,500.00)  
dollars posted for drilling bond for above well.

Since the plugging and abandonment of this well has  
been done in accordance with our rules and regulations,  
we are herewith releasing you of drilling bond and  
plugging and abandonment responsibility for this well.

Very truly yours,

John K. Petty  
Acting Executive Secretary

JKP:mkc  
Encl.

July 1, 1963

Mr. Stanley E. Adams  
6544 E. Indian Bend Road  
Scottsdale, Arizona

Re: Mt. States Exploration  
Co. #1-A State, Sec. 29,  
T19S, R18E, Pima Co., Arizona

Dear Mr. Adams:

We wish to acknowledge receipt of your Time Certificate of Deposit No. 219 in the amount of \$2,500 dated June 21, 1963 payable to your order, endorsed by you to this commission, payable in 90 days, which Certificate of Deposit, we agree, is in lieu of a drilling bond for the well designated in the caption. ?

When and if this well is completed as a producer or abandoned and plugged according to our regulations within the 90 day period, this Certificate of Deposit will be returned to you.

Yours very truly,

N. A. Ludewick  
Executive Secretary

December 21, 1962'

To: Mr. R. Keith Walden, Chairman  
From: John K. Petty, Petroleum Geologist  
Subject: E. B. Moncrief et al #1 Davis Clark Fee  
SW SW NE Sec 5 - T21S - R24E - Cochise County  
S. E. Tombstone

This test was shut down December 19. No shows of Petroleum reported; however, its a tight hole.

The tool pusher said the total depth is 3525 in Cambrian Sand. They've moved the rig to Sec. 17 - T21S - R23E where they have to spud in by January 1. #222

The Mountain States Exploration #1-A State, Sec. 29 - T19S - R18E, Pima County is drilling ahead at 958 in Frosty White Sand. #219

December 5, 1962

Mountain States Exploration Company  
c/o Mr. Otis Sullivan  
6th Floor - Arizona Bank Building  
1st Avenue and Monroe Street  
Phoenix, Arizona

Re: Mountain States Exploration Company State No. 1-A  
Sec. 29, T19S, R18E, Pima County, Arizona

Gentlemen:

Since we received the water well transfer form from  
Mr. Boice yesterday, we are enclosing your approved  
copy of application for permit to drill the above  
test.

We wish you the greatest success in this venture.

Yours very truly,

John K. Petty  
Petroleum Geologist

enc 1

219

~~3192~~

*Bill E. Woodard, President  
Seattle, Wash.*

November 16, 1962

Mr. John K. Petty, Petroleum Geologist  
Oil and Gas Conservation Commission  
3500 North Central Avenue  
Phoenix 12, Arizona

Re: Mountain States Exploration Company Permit No. ~~187~~

Dear Mr. Petty:

This will be your authority to transfer and hold Certificate of Deposit No. 211 of the Valley National Bank, Seventh Avenue and Thomas Road office, in the sum of \$2,500. This certificate is payable to Stanley Adams, the undersigned, and bears his endorsement to your commission.

I am herewith agreeing that this Certificate of Deposit be used as a bond for a new permit to be issued for a well to be located 50 feet east of the location contained in Permit No. 192; new location is as follows:

330 ft. FNL and 610 ft. FEL, Sec. 29, T19S  
R18E, Pima County, Arizona

As stated in a letter to Mr. D. A. Jerome dated June 11, 1962, the interest accruing on the certificate of deposit above named and the certificate of deposit itself is to be returned to Mr. Stanley Adams, the undersigned, as, if and when the Mountain States Exploration Company completes its well as a producer or said well is plugged and abandoned or Mountain States Exploration Company furnishes a bond in lieu of the said certificate of deposit.

It is my understanding that the new permit number to be issued to the Mountain States Exploration Company for the new location will be No. 219.

Yours very truly,

*Stanley Adams*  
Stanley Adams

~~#~~ 219

~~192~~