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O'BRIEN RESOURCES

## ARIZONA WELL INFORMATION

by  
H. Wesley Peirce, *Geologist Arizona Bureau of Mines*  
and  
James R. Scurlock, *Geologist Arizona Oil and Gas  
Conservation Commission*

## THE ARIZONA BUREAU OF MINES

Bulletin 185  
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H. Wesley Peirce and James R. Scurlock

## INTRODUCTION

This compilation results from a joint effort between the Arizona Bureau of Mines, University of Arizona, Tucson, and the Arizona Oil & Gas Conservation Commission, Phoenix, Arizona. It serves as a basic data companion piece to Arizona Bureau of Mines Bulletin No. 182 "Coal, Oil, Natural Gas, Helium, and Uranium in Arizona," and the Arizona Oil & Gas Conservation Commission's "Index of Well Samples." It represents the first attempt, in Arizona, to produce a compilation of geologic data acquired from studies of exploration holes drilled through 1971 principally in search of oil, natural gas, and helium. However, also included are selected holes associated with mineral (principally non-metals) and water exploration and development.

## PURPOSE AND SCOPE

The principal purpose of this publication is to provide a ready reference to facilitate basic geologic research. Inherent in this work is the history of drilling for oil, natural gas, and helium as well as exploration for potash. Much of this drilling was done in the Plateau portion of the State because it is characterized by a relatively undisturbed sequence of sedimentary rocks within which the only known Arizona reserves of oil, natural gas, and helium occur (Fig. 1).

We encourage critical analysis by users of this publication and request that omissions, errors, etc., be pointed out so that records might be improved.

## ACKNOWLEDGMENTS

Although this project was initiated and directed by the Arizona Bureau of Mines, it was greatly facilitated by the cooperation and contributions of the Arizona Oil & Gas Conservation Commission and by financial assistance from the Arizona Department of Economic Planning and Development.

The authors are deeply indebted to the American Stratigraphic Company for extending permission to use their excellent logs as a major source of stratigraphic tops.

Typing of this work deserves credit so we wish to recognize Laura Schwimmer and Katy Shirtcliff. Final assembly was by Joseph LaVoie of the Bureau staff.

## ARRANGEMENT AND ORGANIZATION

The format, arrangement, and order are the responsibility of the Arizona Bureau of Mines. Although it

is hoped that the information is systematically presented, the format does not necessarily conform to any particular industry practice.

Wells are grouped by counties but counties are not arranged alphabetically. The order of presentation is from east to west across the northern (Plateau) half of the State and from west to east across the central and southern parts of Arizona (Basin-Range). The placement of any given county can be readily determined by reference to the table of contents or to the index map (Fig. 1) which shows the text pages devoted to each county.

Within each county wells are arranged from north to south and from east to west. Thus the compilation begins in the northeast corner of Arizona. The basic land survey for Arizona and its relationship to counties is also shown in Fig. 1. Where quadrants or quarters are involved, the order of presentation is counterclockwise beginning in the northeast.

An appendix is included that contains some information acquired subsequent to the main compilation.

## NUMBERING

There are three possible identifying numbers included on the left side of the tables. SEQ is the sequence of presentation number, ABM is the Arizona Bureau of Mines identifying number, and OGC is the permit number assigned by the Oil & Gas Conservation Commission. An underlined ABM or OGC number indicates that samples are filed at these offices. Each hole has an SEQ number but not necessarily an ABM or an OGC number.

## STRATIGRAPHY

An attempt is made to show the depths below the surface of tops of numerous types of stratigraphic units and to present information regarding bottom hole material or stratigraphic unit. Frequently, more than one interest has picked tops in a test hole, so allowance has been made to present up to three sets of "picks." An attempt is made to designate the source of each pick: (A) - American Stratigraphic Company, (R) - reported, usually by the interest for which a hole is drilled, (PI) - Petroleum Information, (P) - Peirce of the Arizona Bureau of Mines, (S) or (K) - Scurlock or Koester of the Arizona Oil & Gas Conservation Commission; and, occasionally, (Sc) - scout, (D) - Denver Sample Log, (B) - Bureau of Reclamation, or (U) - U.S. Geological Survey.

For the most part the authors have not exhaustively attempted to standardize, unify, or correlate. They have inserted their ideas but not to the exclusion of the ideas of others. Perhaps the recognition that conflicts do exist will serve a constructive purpose in the long run.

The nomenclature here used to designate stratigraphic units gives no direct indication of lithologic character. Although references to Arizona stratigraphy are abundant, a helpful lithologic summary is included in Arizona Bureau of Mines Bulletin No. 182, Table F, pages 200-201.

#### RECORDS AND INFORMATION

The most complete file of information related to holes drilled for oil, natural gas, or helium in Arizona is kept in the offices of the Arizona Oil & Gas Commission, 4515 N. 7th Ave., Phoenix, Arizona 85013 - phone: (602) 271-5161.

The U.S. Geological Survey, Water Resources Division, has the most complete information pertaining to holes drilled for water exploration and development. The Arizona District office mailing address is P.O. Box 4070, Tucson, Arizona 85717. The offices are located at 2555 E. 1st St.,

Tucson, 85716 - phone: (602) 792-6391. Subdistrict offices are in Safford, Yuma, Blythe, Phoenix, and Flagstaff. With the exception of information from the Navajo-Hopi Reservations, a master file of Arizona water well data is kept in Tucson. The Navajo-Hopi Reservation's information is kept at the Flagstaff subdistrict office, U.S. Geological Survey, Water Resources Division, 2304½ Fourth St., Bldg. A. The mailing address for the latter is P.O. Box 253, Flagstaff, Arizona 86001 - phone: (602) 774-1429.

Both the Arizona Bureau of Mines and the Arizona Oil & Gas Conservation Commission maintain sample libraries. The Commission is arranged to acquire well samples from those wells falling within its jurisdiction (oil, natural gas, helium, and miscellaneous tests that penetrate important aquifer or reservoir rocks). The Arizona Bureau of Mines is arranged to receive duplicates of samples sent to the Commission and, in addition, stores water well samples collected by the U.S. Geological Survey. Too, the Bureau stores miscellaneous selected core. The Arizona Bureau of Mines is located at the University of Arizona, Tucson, Arizona 85721 - phone: (602) 884-2734. The offices are in Room 324 of the Geology building.

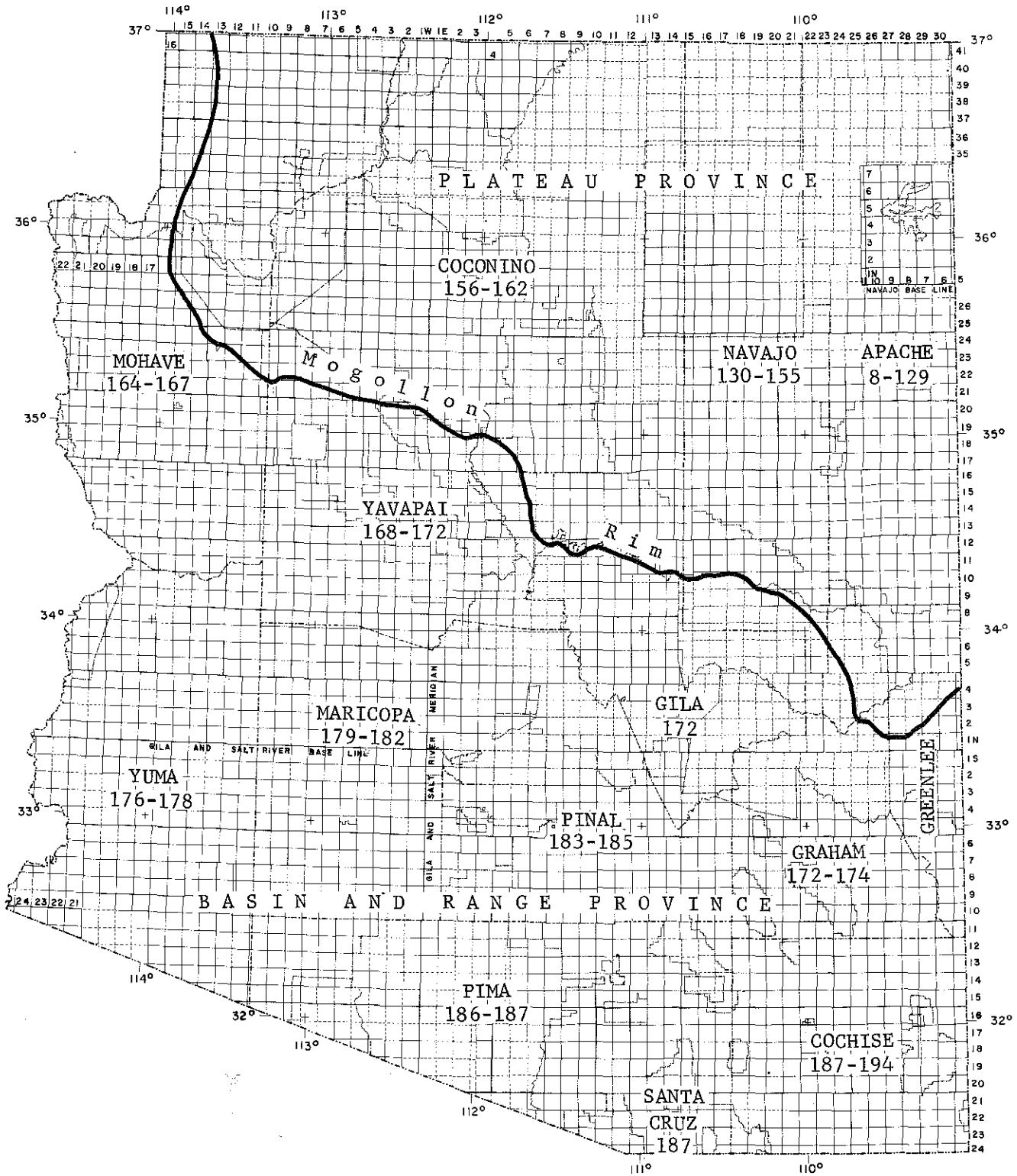


Figure 1. Index map of Arizona showing the two principal geologic provinces, counties, the land survey net, and the text pages devoted to each county.

ABBREVIATIONS

Abbreviations used in this work have not been standardized. They are largely used as reported therefore do not necessarily conform to any particular scheme. They are listed under the following major categories to facilitate reference: drill stem tests, logs, stratigraphy, and miscellaneous.

Drill stem tests

amt-----amount	GCO-----gas cut oil	O-----oil
AB-----air blow	GCSW----- " " salt water	OC-----oil cut
	GOM-----gassy oily mud?	OCM----- " " mud
BFPH-----barrels fluid per hour	GTS-----gas to surface	OCW----- " " water
BHP-----bottom hole pressure	gty-----gravity (density)	od-----odor
BHT----- " " temperature		Op-----open
bldg-----bleeding	HGC-----heavily gas cut	OTS-----oil to surface
blk-----black	HGCM----- " " " mud	
BO-----barrels oil	HGCO----- " " " oil	pkc-----packer
bwn-----brown	HGCSW----- " " " salt water	ppm-----parts per million
BWPH-----barrels water per hour	HO----- " oil	press-----pressure
	HOC----- " cut	
circ-----circulate	HP-----hydrostatic pressure	rec-----recover
ck-----choke	hr-----hour	
cond-----condensate	hrs-----hours	SGCM-----slightly gas cut mud
		SI-----shut in
dist-----distillate	IFP-----initial flow pressure	SIP----- " " pressure
DM-----drilling mud	IHP-----initial hydrostatic pressure	sli-----slightly
drlg-----drilling	immed-----immediately	strd pkr---straddle packer
	inflam-----inflammable	sul-----sulfur
emul-----emulsion	ISIP-----initial shut in pressure	surf-----surface
est-----estimate		SW-----salt water
	lt-----light	swbd-----swabbed
FFP-----final flow pressure		SWCO-----salt water cut oil
FHP-----final hydrostatic pressure	M-----mud	swtr-----salt water
fl-----fluid	max-----maximum	
fluor-----fluorescence	MC-----mud cut	tr-----trace
FP-----flow pressure	MCF-----thousand cubic feet	TSTM-----too small to measure
frs-----fresh	MCFGPD----- " " " gas per day	
FSIP-----final shut in pressure	MCO-----mud cut oil	V-----very
	MCSW----- " " salt water	VHGC-----very heavily gas cut
G-----gas, gassy, or good	mdy-----muddy	
ga-----gauged	min-----minutes	w-----with
GAB-----good air blow	MSW-----muddy salt water	WC-----water cut
gals-----gallons		WCM----- " " mud
GC-----gas cut		wk-----weak
GCM----- " " mud	NS-----no show	WPH-----water per hour
GCMSW----- " " muddy salt water		wtr-----water



Logs

AC-----  
ACS-----acoustic  
ACS-GR---- " gamma ray  
ACS-SON--- " sonic  
ACS-VEL--- " velocity  
AMP-----amplitude  
AMP-SON---amplitude sonic  
  
BHC/CAL---borehole compensated sonic caliper  
BHC/GR---- " " " gamma ray  
BHC/SP---- " " " spontaneous potential  
  
CAL-----caliper  
CBL-----cement bond log  
CBL-GR---- " " " gamma ray  
CON-CAL---contact-caliper  
  
DEN-----density  
DES-----  
DIL-----dual induction laterolog  
DM-----dip meter  
  
E-----  
ES-----electrical  
ES-LL----- " log laterolog  
  
FOR-DEN---compensated formation density  
FRF-MS----micro-seismogram  
FT-----formation tester  
  
GR-----gamma ray  
GR-I----- " " induction  
GR-LL----- " " laterolog  
GR-LL-LS-- " " " limestone  
GRN----- " " neutron  
GR-RES---- " " resistivity  
  
IES-----induction electrical  
IES-GR---- " " gamma ray  
  
LL-----laterolog  
LS-GR----limestone gamma ray  
  
MDT-----mechanical drilling time  
ML-----micro-log  
MLL-----micro laterolog  
ML-CAL----micro caliper  
MUD-----mud (hydrocarbons in mud)  
  
PDC-----perforating depth control  
PLM-----  
  
RES-----resistivity  
RT-----  
  
SG-----section guage  
SL-----sample log  
SMPL-----  
Smp1 Des---sample description  
SNP-----sidewall neutron porosity  
SON-----sonic  
SON-CAL--- " caliper  
SON-GR---- " gamma ray  
SON-SP---- " spontaneous potential  
Spl log---sample log  
SYN-----synergetic log systems  
  
TD-VEL-----  
TL-----  
TS-----temperature survey

Stratigraphy

Incomplete stratigraphic names are utilized in the tables because of space limitations. Listed below are the complete names as well as their ages.

Akah zone-----Pennsylvanian	Glen Canyon Group-----Triassic-Jurassic
Alkali Gulch zone-----"	Glorieta Sandstone-----Permian
Amos Wash Member-----Permian	Gothic shale-----Pennsylvanian
Aneth Formation-----Devonian	
	Hermit Shale-----Permian
Barker Creek zone-----Pennsylvanian	Hermosa Formation-----Pennsylvanian
Bidahochi Formation-----Tertiary	Hogback zone-----"
Big A Butte Member-----Permian	Holbrook Member-----Triassic
Bisbee Group-----Cretaceous	Honaker Trail Formation-----Pennsylvanian
Bluff Sandstone-----Jurassic	Horquilla Limestone-----"
Bolsa Quartzite-----Cambrian	Horseshoe Mesa Member-----Mississippian
Bouse Formation-----Tertiary	Hoskinnini Member-----Triassic
Bright Angel Shale-----Cambrian	
	Ismay zone-----Pennsylvanian
Callville Limestone-----Pennsylvanian	Kaibab Limestone-----Permian
Carmel Formation-----Jurassic	Kayenta Formation-----Triassic
Cedar Mesa Sandstone-----Permian	
Chinle Formation-----Triassic	Leadville Limestone-----Mississippian
Chimney Rock zone-----Pennsylvanian	Lukachukai Member-----Triassic
Church Rock Member-----Triassic	Lynch Dolomite-----Cambrian
Chuska Sandstone-----Tertiary	
Coconino Sandstone-----Permian	Madison Limestone-----Mississippian
Colina Limestone-----"	Mancos Shale-----Cretaceous
Corduroy Member-----"	Martin Formation-----Devonian
Cow Springs Sandstone-----Jurassic	McCracken Sandstone-----"
Cutler evaporites (informal)-Permian	Mesa Redondo Member-----Triassic
Cutler undifferentiated-----"	Mesa Verde Formation-----Cretaceous
	Moenave Formation-----Triassic
Dakota Sandstone-----Cretaceous	Moenkopi Formation-----"
De Chelly Sandstone-----Permian	Molas Formation-----Pennsylvanian
Desert Creek zone-----Pennsylvanian	Monitor Butte Member-----Triassic
Dinosaur Canyon Member-----Triassic	Montoya Dolomite-----Ordovician
Dripping Spring Quartzite---Precambrian	Mooney Falls Member-----Mississippian
	Moqui Member-----Triassic
Eager Formation-----Tertiary	Morita Formation-----Cretaceous
Earp Formation-----Pennsylvanian-Permian	Morrison Formation-----Jurassic
Elbert Formation-----Devonian	Moss Back Member-----Triassic
El Paso Limestone-----Ordovician	Muav Limestone-----Cambrian
Entrada Sandstone-----Jurassic	Mural Limestone-----Cretaceous
Escabrosa Limestone-----Mississippian	
Esplanade Sandstone-----Permian	Naco Formation-----Pennsylvanian
	Navajo Sandstone-----Triassic ?-Jurassic
Ft. Apache Limestone-----Permian	

continued on next page

Organ Rock Tongue-----Permian  
 Ouray Limestone-----Dev-Miss  
 Owl Rock Member-----Triassic

Pakoon Limestone-----Permian  
 Paradise Formation-----Mississippian  
 Paradox Formation-Member----Pennsylvanian  
 Petrified Forest Member-----Triassic  
 Pinkerton Trail Formation----Pennsylvanian

Queantoweap Sandstone-----Permian

Rattlesnake zone-----Pennsylvanian  
 Redwall Limestone-----Mississippian  
 Rico Formation-----Permian  
 Rock Point Member-----Triassic

Salt Wash Member-----Jurassic  
 San Andres Formation-----Permian  
 Shinarump Member-----Triassic

Shnabkaib Member-----Triassic  
 Sonsela Sandstone Bed-----"  
 Summerville Formation-----Jurassic  
 Supai Formation-----Penn ?-Permian

Table Mesa zone-----Pennsylvanian  
 Tapeats Sandstone-----Cambrian  
 Temple Butte Limestone-----Devonian  
 Thunder Springs Member-----Mississippian  
 Timpoweap Member-----Triassic  
 Todilto Limestone-----Jurassic  
 Toroweap Formation-----Permian  
 Tres Hermanos-----Cretaceous

Virgin Limestone-----Triassic

Whitmore Wash Member-----Mississippian  
 Wingate Sandstone-----Triassic  
 Wupatki Member-----"

Miscellaneous

A-----Amer. Stratigraphic Co.  
 ABM-----Arizona Bureau Mines  
 AOF-----absolute open flow  
 av-----average

(B)-----Bureau of Reclamation  
 BC-----barrels condensate  
 BO-----" oil  
 BP-----bridge plug  
 BW-----barrels water

calc-----calculated  
 CAP-----Central Ariz. Project  
 cmt-----cement

D&A-----dry and abandoned  
 drid-----drilled

evps-----evaporites  
 expl-----exploration

F-----fluid  
 FEL-----from east line  
 FSL-----from south line

GOR-----gas oil ratio  
 GR-----ground  
 gty-----gravity

Ig-----igneous  
 int-----interval  
 IP-----initial production  
 IFF-----" " flow  
 IPP-----" " pump

JRS-----J. R. Scurlock

K-----Koester  
 KB-----Kelly Bushing

L-----lower

LCR-----Lower Colo. River

M-----Mesa  
 MCF-----thousand cubic feet  
 Mio-----Miocene  
 Miss-----Mississippian

Nav-----Navajo  
 NE-----northeast  
 NW-----northwest

OGC-----Oil & Gas Comm.  
 OWWO-----oil well workover

P-----plugged or Peirce  
 PB-----" back  
 PD-----per day  
 perf-----perforated  
 Plio-----Pliocene  
 por-----porosity

Sc-----scout  
 sd-----sand  
 SI-----shut in  
 SEQ-----sequence  
 Sprgs-----springs  
 sqzd-----squeezed  
 strat-----stratigraphy  
 swbd-----swabbed  
 sx-----sacks

TA-----temporarily abandoned  
 TD-----total depth  
 Tn-----Tongue  
 TSTM-----too small to measure  
 Tws-----townships

wtr-----water

IDENTIFICATION	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS	
<u>Apache County</u>										
<u>Tws. North</u>										
<u>Ranges East</u>										
1	- 191	33-42N-29E SE SE 642 FSL 660 FEL	Davis #1 Nav	7/62 8/62	5146KB 5136GR	5784	Molas	Navajo Kayenta Wingate Lukachukai Rock Point Chinle Owl Rock Petrified For Moss Back Monitor Butte Shinarump? DeChelly Organ Rock* Cutler evps Up Hermosa Ismay Paradox sh Desert Cr Akah Barker Cr Pinkerton Trail Molas	230 A 378 A  394 A 880 A  1130 A 1700 A 1890 A 2050 A 2115 A 2233 A 2473 AR 3050 A 4052 AR 4840 AR  4972 R 4973 A 4983 R 5198 R 5320 R 5528 R 5752 AR	D & A  PIPE: 8 5/8" @ 262' w/150 sx  LOGS: IES, SON-GR, ML  * In this compilation "Cutler undiff" will be substituted for Organ Rock wherever the base of the Organ Rock has not been formally defined, e.g. whenever Cutler evps is used.
Drill Stem Tests										
-----										
5340-5417: Op 1 hr, SIP/30 min 1260#, rec 180' sli GCM w/sli cut blk sul wtr, FP 44-89#, FSIP/30 min 1068#, HP 2733-2723#.										
5003-5036: (Straddle Test) Op 1 hr, ISIP 30/min 1880#, rec 75' WCM, 75' salt wtr, FP 0-290#, FSIP/30 min 1880#, HP 2590-2390#.										
2	- 256	7-41N-31E SW SW 660 FSL 660 FWL	Zoller-Danneberg #1 Nav-161	10/63 11/63	4995DF 4983GR	5690	Akah	Chinle Shinarump Moenkopi DeChelly Cutler undiff Cutler evps Hermosa Ismay sh Ismay carb Paradox sh Desert Cr Akah	1720 R 2338 R* 2450 R* 2731 R 3065 R 3670 R 4610 R 5355 R 5390 R 5515 R 5542 R 5640 R	D & A  PIPE: 13 3/8" @ 173' w/130 sx 8 5/8" @ 1736' w/100 sx  LOGS: IES, SON-GR  * Shinarump probably mispicked; Moenkopi believed absent - likely confused with Monitor Butte Member, of the Chinle Formation - see Well No. 1.
Drill Stem Tests										
-----										
5310-5431: ISIP/60 min 326#, op 45 min, rec 30' OCM, FP 74-118, SIP/60 min 355#, HP 2936-2836#, BHT 122°F.										
5460-5517: ISIP/60 min 2328#, op 1 hr GTS in 1 hr TSTM, rec 5000' HGCSW, FP 548-2312#, SIP/60 min 2328#, HP 2941-2951#, BHT 122°F.										
5540-5582: ISIP/60 min 2465#, op 2 hrs, rec 15' OCM, 85' sli GC & MCSW sli H <sub>2</sub> S odor, FP 59-118#, SIP/60 min 2328#, HP 2997- 2982, BHT 123°F.										
3	<u>439</u> <u>35</u>	19-41N-31E SW NW 2130 FNL 550 FWL	El Paso Nat Gas #1 Bita Peak	6/56 8/56	5041DF 5031GR	5648	Pinkerton Trail	Bluff Summerville Entrada Carmel Wingate Rock Point Chinle	673 A 820 A 930 A 1105 A 1132 A 1597 A 1620 R	Gas producer 4/62 - 3/69 P & A 3/69; cumulative prod 2,292,443 MCF & 7,620 BC.  Producing zone 5080-5102 in L. Ismay (JRS), acidized; IP 20, 878 MCFPD & 1,000 BCPD.

Well No. 3 Cont'd

Drill Stem Tests

-----

4989-5049: Op 3 hrs, rec 45' mud, FP 115-121#, SIP 1166#/30 min, HP 2610-2698#.

5049-5105: Op 8 min, GTS in 2 min, inflam, mud in 7 min, blow out plug, reset packer, op 1 hr, GTS immed, inflam, built to 8000 MCF in 10 min, stabilized for 13 min, surged to 9300 MCF, decreased & stabilized 8300 MCF w/ spray condensate, no rec in tool, FP 1460-1620#, SIP 2210#/45 min, HP 2675#.

5104-29½: Op 2 hrs 10 min, GTS in 2 min, stabilized after 1 hr 50 min @ 1070 MCF, rec total 115' fluid: 25' O & GCM, 60' HO & GCM, 30' SWCM, SIP 2195/15 min, FP 110-150#, HP 2690#.

5136-70: Op 2 hrs 20 min, GTS in 1 hr 17 min. TSTM, rec 130' HO & sli GCM, SIP/30 min 600#, FP 90#, HP 2745-2700#.

5170-5223: Op 15 min, died in 14 min, rec 10' mud, SIP 80#, FP 60-60#, HP 2740#.

5283-5340: Op 2 hrs 10 min, GTS 1 hr 15 min TSTM, rec 100' GCM, SIP 400#/30 min, FP 140-160#.

5563-89: Op 1 hr 5 min, GTS in 15 min TSTM, rec 110' sli OC & HGCM, SIP 140#/45 min, FP 60-80#.

5588-5648: Op 2 hrs 40 min, died in 2 hrs 30 min, rec 40' sli GCM, FP 0#, SIP 525#/45 min, HP 3020#.

Owl Rock 1890 A 1600 P  
 Petrified For 2110 A 1890 P  
 L. Chinle\* 2542 A  
 undiff  
 Coconino 2735 A  
 Cutler undiff 2844 A  
 Cutler evps 3350 A  
 Rico 3995 R  
 Hermosa 4275 R  
 Paradox 4996 R  
 Pinkerton Tr 5418 A

PERFORATIONS:  
 5495-5504 (sqzd)  
 5352-5360 (BP)  
 5330-5345 (sqzd)  
 5160-5170 (BP)

CORE: 5049-5223; 5530-5645  
 PIPE: 13 3/8" @ 232' w/200  
 9 5/8" @ 1604' w/770  
 5 1/2" @ 5646' w/700

LOGS: ES, ML, GRN

\* Designation by P - interval largely sandstone.

6

4 960 44 10-41N-30E Superior #1 8/57 4885KB 6317 Miss  
 NW SW Nav "H" 10/57 4875GR

Drill Stem Tests

-----

5105-5177: Op 2 hrs, GTS 1 hr 20 min, TSTM, rec 450' GCSW & 4475' SW, ISIP/30 min 2500#, FP 800-2200#, HP 2700#.

5184-5237: Op 2 hrs, rec 195' GCM & 545' GC & MCSW, ISIP 2200#, FP 125-250#, FSIP 2000#, HP 2700#.

5550-5620: Op 2 hrs, no GTS, rec 460' muddy SW & 90' GCM, ISIP/30 min 2080#, FP 80-220#, FSIP 2080#, HP 2835#.

5620-5680: Op 2 hrs, rec 30' DM, ISIP/30 min 160#, FP 50-50#, FSIP 65#, HP 2820#.

5680-5810: Op 2 hrs, rec 20' DM, ISIP/ 30 min 60#, FP 45#, FSIP 60#, HP 2920#.

6256-6317: Op 2 hrs, rec 330' GC & MCSW & 2135' SW, ISIP/30 min 2283#, FP 170-1160#, FSIP 2025#, HP 3190#.

Morrison Surf A  
 Bluff 470 A  
 Summerville 620 A  
 Entrada 710 A  
 Carmel 800 A  
 Wingate 840 A  
 Chinle  
 Owl Rock 1408 A  
 Petrified For 1740 A  
 Moss Back 2090 A  
 Monitor Butte 2180 A  
 basal sndstn 2380 P  
 DeChelly 2380 A 2500 P  
 Cutler undiff 2707 AR  
 Cutler evps 2926 A  
 Hermosa 4246 AR\*  
 Lsmay 5017 A  
 Desert Cr 5168 AR  
 L. Hermosa 5500 A  
 Molas 5968 AR  
 Miss 6096 A  
 Leadville 6096 AR

D & A

PIPE: 10 3/4" @ 1018' w/560

LOGS: IES, GRN, LL, ML

CORE: 5120-5322; 5560-5680;  
 6290-6317

\* Company divided the Hermosa as follows:  
 Hermosa  
 Up Boundary Butte 5016  
 Desert Cr Tng 5168  
 L. Boundary Butte 5186  
 Chimney Rock 5344  
 1st Barker 5500  
 2nd Barker 5518  
 3rd Barker 5776  
 Molas

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	TOPS	REMARKS	
SEQ	ABM	OGC					BOTTOM				
5	2007	299	13-41N-30E	Duncan #1	11/64	5044KB	5400	Desert Cr	Wingate	Sp1s Start	D & A
			SE SE	El Paso-Nav	11/64	5031GR			Chinle	1623 AR	
			660 FSL						DeChelly?	2599 AR	PIPE: 13 3/8" @ 191' w/170
			660 FEL						Cutler undiff?	2890 AR	LOGS: IES, SON-GR
									Cutler?	3108 A	
									Hermosa	4356 AR	
									Ismay	5100 AR	
									Desert Cr	5255 AR	
Drill Stem Tests											
-----											
			5185-5203:	SI 30 min, op 1 hr, SI 1 hr, gas TSTM, rec 180' HO & GC & WCM, 270' sli OC & GC & MC salt wtr, FP 89-192#, SI 2085-2085#, HP 2814-2799#.							
			5265-5410:	SI 30 min, op 1 hr, SI 30 min, rec 50' mud, FP 89-104#, SIP 237-163#, HP 2875-2855#.							
6	1008	46	16-41N-30E	Superior	10/57	5126KB	6787	Pre-cambrian	Morrison	Sp1s Start	P & A 5/68
			SW SW	#2 Nav "H"	1/59	5112GR	PB to	Bluff	Summerville	605 A	
			660 FSL				5644	quartzite	Entrada	745 A	Gas producer; Twin Falls Cr
			810 FWL						Carmel	810 A	Field; cumulative prod 201, 963 MCF gas & 622 BO.
									Wingate	915 A	
									Chinle	980 A	
									Owl Rock	1410 A	Producing zone 4999-5071 in
									Petrified For	1720 A	Ismay and Desert Cr zones,
									Moss Back	2100 A	acidized; IP calc open flow
									Monitor Butte	2185 A	potential 12,500 MCFPD; GOR
									DeChelly	2363 AR	99,013.
									Cutler undiff	2695 AR	
									Cutler evps	2920 A	PERFORATIONS: 4999-5032;
									Hermosa*	4162 AR	5035-40; 5063-71
									Ismay	4879 A	
									Desert Cr	5041 AR	CORE: 4995-5115; 5325-5505
									L. Hermosa	5378 A	6075-6203; 6456-6786
									Molas	5781 AR	
									Leadville**	5900 R	PIPE: 10 3/4" @ 1054' w/500
									Madison	6122 R	7" @ 5697' w/600
									Ouray	6190 A	LOGS: GRN, LL, MLL
									Elbert	6295 A	
									McCracken	6445 A	* Company subdivided
									Aneth	6501 A	Hermosa similar to
									PC qtzt	6640 AR	Well No. 4.
											** Amstrat divides as follows:
											Mississippian
											D Zone 5900
											C Zone 6020?
											B Zone 6060
											A Zone 6118

7 1194 128 21-41N-30E Superior #23-21 10/60 5130KB 5991 Miss  
 NE SW Nav "M" 11/60 5118GR  
 2100 FSL  
 1840 FWL

Drill Stem Tests

-----  
 4945-4985: Op 1½ hrs, rec 100' GCM, FP 65-95#, SIP/1 hr 2025#, HP 2600#.  
 5018-5122: Op 1½ hrs, ISIP/1 hr 2035#, rec 200' GCM, FP 60-95#, FSIP/  
 1½ hrs 1960#.  
 5285-5809: Op 1½ hrs, rec 430' GCM, FP 85-95#, SIP/1½ hrs 1860#, HP  
 2885#.

Wingate  
 Lukachukai Spis Start  
 Rock Point 1415 A  
 Chinle  
 Owl Rock 1730 A 1415 P  
 Petrified For 1730 P  
 basal sndstn 2500 P  
 DeChelly 2555 P  
 Cutler undiff 2730 A  
 Up Hermosa\* 4220 A  
 Paradox  
 Ismay 4938 A  
 Desert Cr 5090 A  
 L. Hermosa 5437 A  
 Molas 5822 AR  
 Miss 5960 AR

D & A  
 PIPE: 10 3/4" @ 1003' w/550  
 LOGS: IES, GRN, MLL  
 CORE: 5935-5122  
 \* Company subdivided  
 the Penn as follows:  
 Hermosa 4220  
 Chimney Rock 5223  
 Barker 1 5390  
 Barker 2 5416  
 Barker 3 5636  
 Ismay 4938  
 Desert Cr 5096

8 1658 232 23-41N-30E Pan American 5/63 5088KB 6805 Pre-  
 SE SW (Clinton) 6/63 5076GR PB to cambrian  
 660 FSL #1 Nav "O" 5190 meta  
 1880 FWL

Drill Stem Tests

-----  
 5086-5152: SI 30 min, op 1½ hrs, SI 30 min, GTS 3 min, ga 1235 MCFGPD, rec  
 390' GCM, FP 175-230#, SIP 125-125#, HP 2500-2530#.  
 5164-5196: SI 30 min, op 2 hrs, SI 30 min, GTS 15 min TSTM, rec 960' HGCM  
 FP 580-325#, SIP 2095-2190#, HP 2760-2760#.  
 5457-5536: SI 30 min, op 1½ hrs, SI 30 min, GTS 30 min TSTM, rec 990'  
 VHCCM, 180' GC & WCM, FP 150-380#, SIP 2455-2100#, HP 3600-  
 3600#.  
 6068-6240: SI 30 min, op 2½ hrs, SI 30 min, GTS 10 min TSTM, flowed SW  
 in 1½ hrs, rec 6068' SW, FP 73-1623#, SIP 2175-1666#.  
 6625-6676: SI 30 min, op 1 hr 20 min, SI 30 min, rec 200' mud, FP 110-  
 110#, SIP 240-160#.  
 6676-6707: SI 30 min, op 35 min, SI 30 min, rec 130' mud, FP 40-95#, SIP  
 480-120#, HP 3400-3400#.  
 6706-6737: SI 30 min, op 1 hr 15 min, SI 30 min, rec 125' mud, FP 6-9#,  
 SIP 2890-1163#, HP 3498-3490#.

Morrison  
 undiff Spis Start  
 Bluff 415?A  
 Summerville 560?A  
 Entrada 620?A  
 Carmel 730?A  
 Wingate  
 Lukachukai 800?A  
 Rock Point 1090?A  
 Chinle  
 Owl Rock 1396?A 1520P  
 Petrified For 1798 A  
 Moss Back? 2235 A  
 Monitor Butte 2280 A  
 basal sand 2383 A 2500 P  
 DeChelly 2590 A  
 Cutler undiff 2800 A  
 Cutler evps 3044?A  
 Up Hermosa 4282 AR  
 Ismay 5018 AR  
 Desert Cr 5160 AR  
 Akah 5300 R  
 Barker Cr. 5504 R  
 L. Hermosa 5473 A 5638 R  
 Molas 5840 A 5896 R  
 Miss 6015 R  
 D Zone 6015 A  
 C Zone 6088 A  
 B Zone 6150 A  
 A Zone 6203 A  
 Ouray? 6264 A  
 Elbert 6326 AR  
 McCracken 6563?A 6250 R  
 Aneth 6630 A 6690 R  
 Cambrian 6756 A 6732 R  
 Precambrian 6792 AR

Oil & gas producer; cumulative  
 prod 66,850 BO & 387,265 MCF  
 gas through 1970.

Producing zone 5122-40 in  
 Ismay; LPF 4559 MCFGPD, 3/4"  
 ck

CORE: 5058-74; 5127-52; 6635-  
 6737

PIPE: 9 5/8" @ 1522' w/700  
 5 1/2" @ 6300' w/250

LOGS: IES, SON-GR

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
9	2518	425	30-41N-30E NE NW 660 FNL 1980 FWL	Miami #1 Nav 41-54	11/67 12/67	5353KB 5339GR	6637	Aneth?	Bluff Summerville Entrada Carmel Wingate Lukachukai Rock Point Chinle Owl Rock Petrified For Mossback? Monitor Butte basal sand? DeChelly Cutler undiff Up Hermosa Ismay Desert Cr L. Hermosa Molas Miss* Ouray Elbert McCracken McCracken congl Aneth Lynch dol	2672A 400?A 454?A 587?A 647?A 806?A 1410 R 1408?A 1672?A 1994 A 2013 A 2374 A 2462 A 2730 A 4204 AR 4888 AR 5014 A 5357?A 5752 AR 5860 AR 6097 A 6202 AR 6360 A 6485 R 6524 A 6546 R	D & A  PIPE: 10 3/4" @ 389' w/400  LOGS: IES, BHC/GR  * Amstrat divides the Mississippian as follows: Horseshoe Mesa 5857 Mooney Falls 5950? Thunder Springs 6020 Whitmore Wash 6077
-----											
Drill Stem Tests											
-----											
5010-5035:	SI 1½ hrs, op 1½ hrs, SI 1½ hrs, gas in 50 min - 3' flare - rec 35' GCM, FP 28-28#, SIP 1706-1398#, HP 2466-2437#.										
5157-5185:	SI 1 hr, op 2 hrs, SI 3 hrs, gas in 5 min, wtr in 1 hr, flowed 1000 MCFGPD & 2 BWP, rec 1290' salt wtr, FP 243-646#, SIP 1812-2524#, HP 2524-2524#.										
6422-6432:	SI 1 hr, op 2 hrs, SI 2½ hrs, rec 35' OCM, FP 29-29#, SIP 145-203#, HP 3485-3485#.										
6600-6635:	SI 1 hr, op 2½ hrs, SI 1 hr, rec 150' sli OCM, 2730 OC & GC salt wtr, FP 920-1283#, ISIP 2307# (FSIP not recorded), HP 3273-3273#.										
10	1189	113	36-41N-30E NW SW 1980 FSL 560 FWL	Texaco #1 Nav-Z	3/60 7/60	5291KB 5279GR	6997 PB to 6815	Pre-cambrian igneous	Wingate Rock Pt Chinle Owl Rock Petrified For Moss Back Monitor Butte basal sand? DeChelly Cutler undiff Cutler evps Hermosa Ismay Desert Cr Akah L. Hermosa* Molas Miss** D Zone C Zone B Zone A Zone Ouray Elbert McCracken	Spls Start 1890 A 2312 A 2350 A 2453 A 2742 AR 3070 A 3312 A 4468 AR 5143 AR 5277 AR 5405 R 5600 A 6025 A 6042 R 6164 R 6123 A 6250 A 6277 A 6330 A 6452 A 6490 A 6650 A	D & A  Former oil & helium well; cumulative prod 490 Bbls oil (40.7 gty) and 385,774 MCF gas with helium content 6.03%, the gas having been produced from 5/68-9/69.  2100 P  2742 P 2900?P  Production perms-originally 6758-6793 in Aneth for oil, IP pump 8 BOPD to 7 BSWPD. After workover Miss perf & acidized @ 6270-76, 6290-98, 6302-20 with resulting helium bearing gas, IPF 3202 MCFGPD, 3/4" ck TP 693#.  CORE: 5173-5274 (analyses on file)  PIPE: 13 3/8" @ 220' w/300; 9 5/8" @ 1583' w/1100; 5½" @ 6820' w/600  LOGS: IES, SON-CR, ML, GRN
-----											
Drill Stem Tests											
-----											
5135-5220:	Op 3 hrs, gas in 65 min, rec 185' sli GCM FP 65-65#, SIP/1 hr 695#, HP 2490#.										
5240-5350:	Op 4 hrs, rec 60' mud, FP 55-55#, SIP/30 min 440#, HP 2600#.										
6180-6299:	Op 6 hrs 43 min, gas in 7 min, turn to natural gas, CO2 & helium (6.2%) ga 1250 MCFGPD, rec 700' HGCM, FP 235-300#, SIP 2230#.										
6299-6334:	Op 5 hrs, gas in 6 min, mixture of helium CO2 & natural gas, ga 670 MCFGPD (5.1% helium), rec 90' HGCM, FP 45-110#, SIP 2165#, HP 3225#.										
6334-6387:	Op 1½ hrs, rec 1710' SW & MC/CO2 gas, FP 140-600#, SIP/30 min 2150#, HP 3225#.										



## Well No. 10 Cont'd

6520-6591: Op 3 hrs, rec 1654' flam gas, 70' HOC & GCM, 4' free O, FIP 70-85#, SIP/30 min 1820#, HP 3380#.

6586-6615: Op 2 hrs, rec 10' sli OC & GCM, FP 0-0#, SIP/1 hr 0#, HP 3260#.

6615-6620: Op 1 hr, SI 1 hr, rec 10' mud, FP 0-0#, SIP/1 hr 10#, HP 3350#.

6760-6800: Op 4 hrs, rec 90' HOC & GCM, 120' free oil (44 gty), FP 70-100#, SIP/30 min, 2380#, HP 3395#.

6810-6997: Op 3½ hrs, gas in 2 hrs, rec 5602' SW, FP 1330-2405#, SIP/3 min 2420#, HP 3355#.

Aneth 6775 A 6758 R  
PC igneous 6918 A 6930 R

\* Company reports Barker Creek.

\*\* Company reports Leadville.

11 2068 367 3-41N-29E Champlin 11/66 5208KB 5287 Desert  
SE NE #1 Nav 190 12/66 5197GR Creek  
1980 FNL  
660 FEL

Wingate D & A  
Lukachukai Spls Start  
Rock Point? 1150 A  
Chinle  
Owl Rock 1575 A  
Petrified For 1840?A  
Moss Back 2106 A  
Monitor Butte 2180 A  
basal sand 2345 A  
DeChelly 2393 A 2345 R  
Cutler undiff 2660 AR  
Up Hermosa 4212?A 4212 R  
Paradox 4836 R  
Ismay 4995 AR  
Desert Cr 5155 AR

PIPE: 8 5/8" @ 550' w/350

LOGS: ES, ACS-VEL

Drill Stem Tests  
(Chart on file)

5088-5146: SI 1 hr, op 1 hr, SI 1½ hrs, gas immed @ 6 MCF/GPD, rec 275' sli OC & GCM, 3595' salt wtr, w/trace oil, FP 536-1868#, SIP 2001-2001#, HP 2669-2669#.

12 2506 434 4-41N-29E Champlin 10/67 5218KB 6173 Miss  
NE SE #1 Nav 335 4/68 5203GR PB to  
1980 FSL 6139  
660 FEL

Entrada Spls Start  
Carmel 63 A  
Navajo 310 A  
Kayenta 494 A  
Wingate 681?A  
Chinle  
Church Rock 933 A  
Owl Rock 1160 A  
Petrified For 1493 A  
Moss Back 1750 A  
Monitor Butte 1854 A  
basal Trias 2143 A  
DeChelly 2286 A 2205 R 2355?P  
Cutler undiff 2520 A  
Cutler evps 3090 A  
Up Hermosa 4065?A  
Ismay 4818 AR  
Desert Cr 4958 AR  
Akah 5197 AR  
Molas 5815 A  
Miss 5922 R  
Horseshoe M. 5922 A  
Mooney Falls 6014 A  
Thunder Spgs 6130 A

P &amp; A

Akah zone perforated 5360-75, acidized, flowed 15 BO, ½ BW, 19½ hrs, 26/64" ck, GOR 2540, TP 110#; squeezed perfs; Desert Creek zone perforated 4990-5004, acidized, swabbed some oily fluid. During test 563 BO & 2562 MCF gas were produced.

PIPE: 8 5/8" @ 552' w/300  
4½" @ 6173' w/500LOGS: DIL, SNP, FOR-DEN,  
BHC/CR

## Drill Stem Tests

4912-4957: SI 45 min, op 1 hr 32 min, SI 3 hrs, rec 35' GCM, FP 54-54#, SIP 727-1503#.

5050-5100: SI 45 min, op 1½ hrs, SI 3 hrs, rec 210' GC & OCM, 610' salt wtr, FP 110-374#, SIP 1987-1987#.

5350-5413: SI 45 min, op 1½ hrs, SI 3 hrs, gas in 5 min, mud in 8 mins, oil in 14 mins, rec 720 oil, 44 gty, FP 588-420#, SIP 1833-1763#, HP 2494-2494#.

5415-5465: SI 45 min, op 1½ hrs, SI 3 hrs, rec 100 GCM, FP 40-53#, SIP 921-1425#.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
13	946	18	6-41N-29E SE SE 660 FSL 660 FEL	Shell #1 Navajo	12/53 3/54	5248KB 5236GR	6490	Cambrian	Wingate Chinle Church Rock Owl Rock Petrified For Moss Back Monitor Butte basal sand DeChelly Cutler undiff Cutler evps Hermosa Ismay Desert Cr Molas Miss Horseshoe M. Mooney Falls Thunder Spgs Whitmore Wash Ouray? Elbert McCracken Aneth Cambrian undiff	Spls Start 665 A 860 A 1168 A 1605 A 1696 A 1880 A 2016 A 2239 A 2850?A 3783 A 4578?A 4681?A 5451 A 5535 A 5600 A 5726 A 5790 A 5846?A 5892?A 6157 A 6270 A 6372 A	D & A Gas shows and minor oil (497 Bbls) from Hermosa. PIPE: 13 3/8" @ 907' w/800 5 1/2" @ 5350' w/350 LOGS: ES, ML, GRN, GR-JL-LS, SG, Mud CORE: (analyses on file) 4862-4943; 4944-4973; 4983-5057; 5358-5396
----- Drill Stem Tests -----											
			4619-4670:	Op 2 hrs, rec 100' sli GC & OCM, FP 0#, SIP (30 min) 365#, HP 2500#.							
			4670-4774:	Op 2 1/2 hrs, GTS 60 min TSTM, inflam, rec 300' sli GC & OCM, 450' GCO & WCM w/H2S odor, 400' GCO & MCW, FP 250-600#, SIP (1 1/2 hrs) 1575#, HP 2650#.							
			4910-4973:	Op 15 min, packer failed, gas in 13 min (inflam).							
			4886-4978:	Op 2 hrs 45 min, ga 100 MCFPD (inflam), rec 520' sli GC & OCM, FP 150-400#, SIP (90 min) 1625#, HP 2500#.							
			4985-5057:	Op 1 1/2 hrs, rec 5' mud, FP 0#, HP 2450#.							
			4993-5108:	Op 3 hrs, rec 10' drlg fluid.							
			5100-5204:	Op 3 1/2 hrs, GTS 2 hrs 20 min TSTM, rec 80' GCM, 90' GCM w/H2S odor, 70' GCM w/H2S odor & trace bwn oil, FP 150-225#, SIP (1 1/2 hrs) 1250#.							
			5200-5304:	Op 3 hrs, GTS 47 min est 66 MCFPD, rec 930' fluid, 140' GCM, 340' GCO & WCM, 450' gassy muddy wtr w/trace oil, FP 225-475#, SIP (1 1/2 hrs) 1525#, HP 2700#.							
			5305-5355:	Op 2 hrs, rec 185' very sli GC drlg fluid, FP 0-150#, SIP (30 min), 1550#, HP 2700#.							
			5738-5820:	Op 3 hrs, GTS 21 min ga 50 MCFPD, inflam, rec 275' GCM, 4005' salt wtr, FP 1020-1850#, SIP (90 min) 1950#, HP 3035#.							
			6014-6080:	Op 3 hrs, rec 3670' sli GC & MCW w/trace of oil, FP 425-1625#, SIP (90 min), 2050#, HP 3150#.							
			6136-6246:	Op 3 hrs, rec 600' GC & WCM, 1367' wtr, 90' GC & WCM, FP 175-975#, SIP (1 1/2 hrs) 2075#, HP 3200#.							
14	1357	168	22-41N-29E NE NE 660 FNL 660 FEL	La Rue #1 Toh Atin	11/61 12/61	5336KB 5325 GR	6301	Miss	Navajo Kayenta Wingate Lukachukai Rock Point Chinle	Spls Start 380 A 555 A 1234 A	D & A PIPE: 10 3/4" @ 127' w/100 7 5/8" @ 2885' w/30 LOGS: IES, GRN, CON-CAL

Well No. 14 Cont'd

Drill Stem Tests

5198-5229: Op 2 hrs, rec 15' OC & GCM, 180' sli OC emul mud & SW, FP 70-85#, SIP (30 min) 920#, HP 2375#.

5240-5427: Op 1 hr, gas in 30 min burned/3' to 4' flare, rec 450' HGC & sli OCM, reversed out 4000' sli sul cut wtr, FP 735-1720#, SIP (60 min) 1750#, HP 2680#.

5636-5683: Op 1 hr, rec 22' mud, FP 45-70#, SIP (1 hr) 485#, HP 2685#.

Owl Rock 1517 A  
 Petrified For 1865 A  
 Monitor Butte 2290 A  
 Shinarump 2513?A  
 DeChelly 2530 A 2513 R  
 Cutler undiff 2886 AR  
 Cutler evps 3455 A  
 Up Hermosa 4385 AR  
 Ismay 5053 AR  
 Desert Cr 5183?A 5190 R  
 Akah 5356 R  
 Barker Cr 5526 R  
 L. Hermosa 5478?A 5710 R  
 Molas 5945 AR  
 Miss 6070 R  
 D Zone 6070 A  
 C Zone 6200?A  
 B Zone 6245 A

15 1193 139 29-41N-29E Davis #1 1/61 5445KB 6749 Aneth?  
 SE SE Navajo "C" 2/61 5435GR  
 660 FSL  
 660 FEL

Drill Stem Tests

5216-5231: Op 2 hrs, gas in 25 min @ 100 MCFPD, rec 180' OCM, 1000' SW, FP 230-755#, SIP (30 min) 2005#, HP 2682#.

Chinle D & A  
 Owl Rock Spls Start  
 Petrified For 1750 P PIPE: 8 5/8" @ 237' w/200  
 Moss Back 2160 A LOGS: IES, ML, SON-GR  
 Monitor Butte 2193 A  
 Shinarump 2473 A CORE: 5054-5065  
 DeChelly 2660 A 2470 R  
 Cutler undiff 2773 AR  
 Cutler evps 3370 A \* Amstrat divides Miss:  
 Rico 3462 R D Zone 5900  
 Up Hermosa 4250 A 4268 R C Zone 5980?  
 Paradox B Zone 6100  
 Ismay 4940 A 4926 R  
 Desert Cr 5070 AR  
 Akah 5166 R  
 Barker Cr 5368 R  
 L. Hermosa 5470 A  
 Pinkerton Trail 5550 R  
 Molas 5780 AR  
 Miss\*  
 Leadville 5898 R  
 dolomite 6110 R  
 Ouray 6193 AR  
 Elbert 6262 AR  
 McCracken 6515 A 6430 R  
 Aneth 6590 AR  
 Tapeats? \*\* 6724 R  
 \*\* Amstrat suggests that bottom is in sandy dolomite of the Aneth.

16 2571 528 1-41N-28E Consolidated 2/70 5710KB 6156 Miss  
 SW SW #1-1 Nav 226 3/70 5698GR  
 825 FSL  
 670 FWL

Navajo Spls Start D & A  
 Kayenta 830?A  
 Wingate 915?A PIPE: 8 5/8" @ 515' w/250 sx  
 Chinle LOGS: IES, BHC/GR, AMP  
 Church Rock 1146?A  
 Owl Rock 1300 A

Cont'd next page

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS	

Well No. 16 Cont'd

Drill Stem Tests

5144-5199: Op 30 min, SI 30 min, op 3 hrs, SI 1 hr, rec 180' HGCM, 450' HG & OCM, 180' HOC & WCM, 180' sli OC, & HMCW, 900' sli OC & GCSW, 540' v sli OC & GCW, FP 133-467#, 2nd FP 493-1049#, SIP 1473-1354#, HP 2464-2425#.

5209-5250: Op 30 min, SI 32 min, op 3 hrs, SI 1 hr, rec 90' HWCM, 510 wtr, FP 132-132#, 2nd FP 132-308#, SIP 1274-1274#, HP 2492-2492#.

Petrified For 1676 A  
Moss Back 1907 A  
Monitor Butte 2063 A  
basal Trias 2362 A  
DeChelly\* 2480?A 2355 R  
Cutler undiff 2742?A 2600?P  
Cutler evps 3361 A  
Up Hermosa 4310 AR  
Ismay 5046 AR  
Desert Cr 5205 A 5170 R  
Akah 5477 A 5358 R  
Molas 5990 A 5940 R  
Miss 6047 R  
Horseshoe M. 6120 A

\* Company reports Coconino

17 2563 481 2-41N-28E Consolidated 12/68 5375KB 5900 Miss A\*  
SW SW #2-4-28-13 7/69 5363GR PB to Ouray R  
660 FSL Navajo 5865  
660 FWL

Drill Stem Tests

4649-4717: SI 60 min, op 60 min, SI 1 hr, rec 730' HGC & OCM, FP 44-263#, SIP 1746, 1486#, HP 2266-2266#.

4650-4782: SI 1 hr, op 90 min, SI 1 hr, rec 780' HC mdy wtr, FP 186-293#, SIP 1596-1331#, HP 2261-2261#.

4886-4907: SI 1 hr, op 1 hr, SI 2½ hrs, rec 720' GCM, 2230' GC salt wtr, FP 493-1464#, HP 2367-2314#.

5208-5255: SI 30 min, op 3 hrs, SI 1 hr, rec 270' oil, 90' MCW, 720 HOGW, FP 183-458#, SIP 1649-1649#, HP 2610-2519#.

Kayenta SpIs Start  
Wingate 503 A  
Chinle  
Church Rock 757 A  
Owl Rock 905 A  
Petrified For 1282 A  
Moss Back 1580 A  
Monitor Butte 1673 A  
basal Trias 1978 A  
DeChelly 2090 A 1950 R  
Cutler undiff 2351 A  
Cutler evps 2940 A  
Hermosa 3880 A 3906 R  
Ismay 4617 AR  
Desert Cr 4776 A 4726 R  
Akah 4982 A 4888 R  
Pinkerton Tr 5432 A  
Molas 5560 A 5512 R  
Miss\*\* 5670 R  
Horseshoe M. 5671 A  
Mooney Falls 5757 A  
Thunder Spgs 5862 A  
Ouray 5860 R

Minor oil producer-E. Boundary Butte Field, production zone SI 10/69; cumulative production 1,182 Bbls oil & 384 MCF gas; well now used to dispose of salt water in perfs: 4897-4909.

Producing zone 4739-43, IP 16 BO, 83 BWPd, gty 38, GOR 1720.

PERFORATIONS:  
5224-28 w/2 pf. Swbd 10 BFPD, 50-60% wtr.

4897-4909 w/2 pf. Swbd clean wtr, NS. Set BP @ 4820.

4739-43 w/50 pf. Re-perf 4739-43 w/4 pf, acidized, P 12 BO, 4 BSPD.

PIPE: 9 5/8" @ 320' w/200  
7" @ 5899' w/705

LOGS: SNP, BHC/GR, DIL, MLL, FOR-DEN

\* Most likely

\*\* Company reports Leadville.

18 377 22 3-41N-28E Shell 7/54 5307KB 6339 Dayon A  
 SE NW (Consolidated) 12/54 5297GR PB to Camb R  
 1980 FNL #2 Nav 4730  
 1980 FWL

Drill Stem Tests

-----  
 4535-4601: Op 2½ hrs, SI 1½ hrs, gas in 3 min @ 3450 MCFPD, rec 95' mud w/trace dist, FP 240-1325#, SIP 1390#, HP 2435#.  
 4620-4707: Op 2½ hrs, GTS 40 min @ 100 MCFPD, rec 177' gassy mud, FP 105-135#, SIP 1515#/1½ hrs, HP 2460#.  
 4740-4950: Op 2½ hrs, GTS 18 min, max blow 50 MCFPD, rec 960' fluid (540' very gassy oil, 420' blk sul wtr w/H<sub>2</sub>S odor, oil 38 gty), FP 825-1605#, SIP/70 min 1590-1605#, HP 2505#.  
 4973-5121: Op 2½ hrs, rec 3891 gassy wtr, 300' gassy mud FP 1240-1770#, SIP 2040#, HP 2620#.  
 4974-5003: Op 2½ hrs, GTS 90 min, rec 90' GC & 3680' wtr, FP 1285-1605#, SIP 1615# HP 2580#.  
 5190-5225: Op 2 hrs, 40 min, SI 1 hr 10 min, GTS 1 hr 40 min, rec 110' GCM, 3260' GCSW, 10' v gassy mud, FP 195-1485#, SIP 1670, HP 2725#.  
 5669-5693: Op 2½ hrs, SI 1½ hrs, rec 90' GC & OCM, 3330' wtr, 20' GCM, FP 190-1500#, SIP 1840#/1½ hrs, HP 2995#.  
 5768-5873: Op 2 hrs, 50 min, SI 45 min, rec 180 WCM, 90' gassy oily WCM, 690' WCM, 60' GCM w/pp of oil, FP 180-520#, SIP 1925#, HP 3015#.  
 5495-6032: Op 2½ hrs, rec 2250' GCSW w/trace oil (1%), FP 525-1025#, SIP 1970#/70 min, HP 2935#.  
 6250-6310: Op 2½ hrs, rec 330' sli GCM, FP 90-180#, SIP 1485#/70 min, HP 3270#.

Kayenta 143 A  
 Wingate 220 A  
 Chinle 630 A  
 Shinarump 1807 A 1555 R  
 Moenkopi\* 1600 R  
 DeChelly\*\* 1893 A  
 Cutler undiff 2200 A  
 Cutler evps 2800 A  
 Hermosa 3758 AR  
 Paradox 4746 R  
 Molas 5370 A 5347 R  
 Miss 5502 A  
 Leadville 5492 R  
 Devonian 5780 A  
 undiff  
 Cambrian 6325 R

Discovery well-East Boundary Butte Field-Gas and oil producer; Cumulative production 5,582 Bbls oil & 1,291,278 MCF gas.

Producing zones 4540-85, 4650-90 in Ismay & Desert Creek zones; IP: Flow 3150 MCFPD plus 3.6 BOPD (41 gty) plus 8.4 Bbls salt wtr thru 3/4" chk.

PERFORATIONS:  
 4540-4585  
 4650-4690  
 4745-4762  
 4767-4773  
 4782-4806  
 4842-4854

CORE: 4520-4539

PIPE: 10 3/4" @ 697' w/320 5½" @ 4930' w/350

LOGS: ES, SG, GRN, LL, ML

\* Probably Chinle

\*\* Reported as Coconino

17

19 2560 490 3-41N-28E Consolidated 3/69 5345KB 5708 Miss A  
 NE SW #3-41-28-4 5/69 5331GR PB to Ouray R  
 1980 FSL Navajo 5660  
 1915 FWL

Drill Stem Tests

-----  
 4612-4638: Rec 40' mud, sli trace oil, op 135 min, SI 90 min, HP 2227-2200#, FP 80.9-80.9#, SI 404-727#.  
 4760-4793: Rec 1100' fluid, 30' GC & OCM, 630' oil, 240' SWCO, 200' SW, op 135 min, SI 90 min, HP 2227-2227#, FP 135-163#/162-377#, SI 1342-1315#.

Wingate Spis Start  
 Chinle 6502A  
 Moss Back 1603?A  
 Monitor Butte 1663?A  
 Shinarump 1792?A  
 Coconino\* 1914 A  
 Cutler undiff 2238 A  
 Cutler evps 2827 A  
 Up Hermosa 3834 A 3805 R  
 Ismay 4580 A 4505 R  
 Desert Cr 4770 A 4610 R  
 Akah 4768 R  
 L. Hermosa 5023?A  
 Molas 5382 AR  
 Miss\*\*

Oil producer-East Boundary Butte Field; cumulative production 6,529 Bbls oil, 3,180 MCF gas, & 81,267 Bbls wtr.

Producing zone 4778-4782, IP-pump 25 BOPD (38.9 gty) 58 BWP, Gas TSTM

PERFORATIONS:  
 4810-4812 - squeezed (Akah)  
 4778-4782 - Akah

Cont'd next page

IDENTIFICATION SEQ ABM OGC	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
Well No. 19 Cont'd									
4840-4895:	Rec 810 cc total fluid: 70% oil, 22% wtr, 8% mud, op 135 min, SI 90 min, HP 2281-2281#, SI 1289-834#, FP 270-216.						Horseshoe M. Mooney Falls Ouray	5527 A 5620 A 5683 R	CORE: (analyses on file) 4626-4674 4775-4793 5095-5118
5228-5253:	Rec 360' GC & sli OCM & SW, & 1740' GCSW, op 195 min, SI 90 min, HP 2447-2447#, FP 346-957#, SIP 1647#.								PIPE: 8 5/8" @ 323' w/200 5 1/2" @ 5718' w/658
5675-5702:	Rec 270' GC & OCM & 2320' GCSW, op 105 min, SI 60 min, HP 2688-2688#, SI 1807-1807#, FP 293-1169#.								LOGS: DIL, MLL, TS, PDC, FOR-DEN, CBL, BHC/GR, SYN, SNF  * DeChelly is preferable, Coconino probably not this far east.  ** Company reports Lead- ville @ 5529.

20	<u>2583</u> <u>514</u>	3-4IN-28E SW SW 330 FSL 520 FWL	Consolidated #3-3 Navajo	8/69 10/69	5395KB 5383GR	4855 PB to 4825	Akah	Chinle Petrified For Moss Back Monitor Butte basal Trias DeChelly Cutler undiff Cutler evps Hermosa Ismay Desert Cr Akah	Spls Start 1536 A 1630 A 1945 A 2074 A 2324 A 2907 A 3870 AR 4566 AR 4688 AR 4838 AR	1944 R	Oil producer - East Boundary Butte Field; cumulative produc- tion 22,041 Bbls oil, 111,408 MCF gas, & 75,558 Bbls wtr.  Producing perfs: 4698-4708 & 4746-4756 in Desert Creek; IPP: 167 BO & 68 BWPD.  PERFORATIONS: 4837-4843 in Akah, acidized w/1000 gal, swabbed 16 BFPH w/6% oil, set BP @ 4825.  PIPE: 8 5/8" @ 320' w/165; 5 1/2" @ 4852' w/288  LOGS: IES, ACS-VEL, PRF-MS
Drill Stem Tests											
-----											
4681-4696:	SI 30 min, op 3 hrs, SI 1 hr, gas in 2 hrs TSTM, rec 1680' VHGC & OCM, FP 483-791#, SIP 1227-1227#, HP 2267-2267#.										
4725-4773:	SI 30 min, op 3 hrs, SI 1 hr, rec 120' HGCM, 700' oil, 200' SWCO, FP 175-395#, SIP 1227-1227#, HP 2267-2267#.										
4800-4851:	SI 30 min, op 2 hrs, SI 30 min, rec 394' HGC & OCM, 120' GC & OCM, 186' SGCM, 230' HGC & OCM, FP 307-439#, SIP 1401-1271#, HP 2354-2311#.										

21	<u>379</u> 28	4-4IN-28E NE SE 1980 FSL 990 FEL	Humble (Merrion & Bayless) #1 Navajo	7/55 11/55	5375DF 5363GR	6382 PB to 4746	Aneth	Shinarump DeChelly* Cutler undiff Hermosa Molas Miss Elbert Aneth	1848 A 1937 A 2250 A 3840 A 5380 A 5510 A 5815 A 6250 A		Oil & Gas producer - East Boundary Butte Field; cumulative production 41,905 Bbls oil, 1,454,798 MCF gas, & 65,607 Bbls wtr.  Producing perfs: 4806-4816; IPF: 4,141 MCFGPD, 47.41 Bbls oil, 2.18 Bbls wtr; 1/2" ck, GOR: 83,344. Workover perfs: 4596-4647, 4662- 4666, 4682-4712.
Drill Stem Tests											
-----											
4600-4629:	Op 1 hr, GTS 2 min @ 145 MCF, sour gas, rec 1500' HGCM, FP 194-410#, SIP 1070#, HP 2250#.										

## Well No. 21 Cont'd

4629-4689: Op 1 hr, GTS 2 min @ 9035 MCFPD, rec 300' HGC & sl sul wtr CM, FP 240#, SIP/30 min 1410#.

4683-4728: Op 45 min, GTS 2 min @ 1160 MCFPD, rec 30' HGCM w/ sul odor, FP 230#, SIP/30 min 1450#.

4778-4798: Op 1 hr, GTS 2½ min @ 2210 MCFPD, rec 370' MCO, est 50% oil, 90' OCM, 90' salty sul wtr, FP 230-510#, SIP/20 min 1440#.

4799-4831: Op 2 hrs 52 min, GTS 2 min @ 1800 MCFPD, fluid in 22 min, clr oil in 39 min fl/2.46 BO in 1 hr, 32 gty, rec 390' oil in pipe, 20' salty sul wtr, FP 390-530#, SIP/30 min 1370#.

4856-4902: Op 1 hr, rec 185' sli GCM w/tr oil, FP 0#, SIP/30 min 340#, HP 2340#.

5560-5595: Op 2 hrs 15 min, GTS 4 min @ est 4970 MCFPD, mud & sul wtr in 14 min, oil, mud, & sul wtr in 54 min, fl/@ 3 BFPH est 5-20% oil, 37.1 gty, rec 250' sul wtr, FP 500-950#, SIP/30 min 1875#.

5595-5616: Op 1 hr, rec 15' sli GCM, pressure 0#.

5651-5672: Op 1 hr, rec 10' sli GCM, no pressures.

5689-5720: Op 1½ hrs, rec 540' sli O & GC sul wtr, 2744' GC salty sul wtr, FP 150-1550#, SIP/30 min 1825#.

6119-6139: Op 2½ hrs, rec 3880' gassy, salty, sul wtr, FP 275-1850#, SIP/30 min 1950#, HP 3025#.

6319-6337: Op 1 hr 20 min, rec 90' MSW, 540' SW, FP 0-425#, SIP 2200#, HP 3125#.

## PERFORATIONS:

5570-5582 tested at rate 1,512 MCFPD, acidized w/500 gal-well flowed 4,261 MCFPD on 3/8" ck. Blew well to obtain gas samples - no further testing this zone.

## CORE: (analyses and description on file)

4608-4627; 4629-4728  
4782-4831; 4858-4902  
5606-5629; 5702-5720  
5974-5988; 6322-6338

\* Amstrat uses Coconino

## Gas analysis: 4806-4816

Hydrogen sulfide	1.53%
Carbon dioxide	11.97%
Nitrogen	9.71%
Methane	70.64%
Ethane	3.57%
Propane	1.54%

## Crude oil analysis:

Gravity 37.2; salt content 90.3# per thousand barrels.

## Distillation cuts:

Gasoline	28.7 %
Kerosene	14.17%
Diesel	14.67%
Bottom	42.46%

PIPE: 10 3/4" @ 909' w/650;  
5" @ 5670' w/610

LOGS: GRN, ES, ML MUD

22	<u>2582</u>	<u>515</u>	4-41N-28E	Humble (Merrion	8/69	5410KB	5010	Akah	DeChelly*	1952 R
			SW SE	& Bayless) #3	11/69	5400GR	PB to		Organ Rock	2334 R
			330 FSL	Navajo			4965		Cedar Mesa	2919 R
			1650 FEL						Hermosa	3914 R
									Ismay	4573 R
									Desert Cr	4737 R
									Akah	4839 R

Oil producer - East Boundary Butte Field; cumulative production 22,287 Bbls oil, 139,456 MCF gas, 67,707 Bbls wtr

PERFORATIONS: 4669-4682  
4717-4723 in Ismay; 4763-4768 in Desert Creek; 4848-4852, 4862-4866 in Akah. Gross producing interval 4717-4866.

IP pump 72 Bbls oil, 179 MCFGPD gas, 172 Bbls wtr. GOR 2487.

Cont'd next page





25 2581 483 9-41N-28E Globe (AAA 5/69 5410KB 5173 Akah  
 NE NE Fishing Tool) 6/69 5405GR PB to 1989 R  
 330 FNL #3 Nav "E" 5133  
 330 FEL

Chinle 782 R  
 Shinarump 1989 R  
 DeChelly 2045 R  
 Cutler undiff 2380 R  
 Up Hermosa 3955 R  
 Ismay 4532 R  
 Desert Cr 4696 R  
 Akah 4894 R

Oil Producer - East Boundary  
 Butte Field; cumulative produc-  
 tion 55,057 Bbls oil, 83,932 MCF  
 gas, & 31,737 Bbls wtr.

Producing perms: 4756-4760,  
 4810-4813, 4895-4898, 5044-5046;  
 IPP 576 BOPD, op tbg.

Drill Stem Tests

4730-4776: Op 20 min, SI 1 hr, op 1 hr, SI 1 hr, GTS 8 min, gauged 267  
 MCF, decreased to 100 MCF, rec 100' free oil, 715' HOCM, HP  
 2336-2336#, 1st FP 92-92#, SIP 1284-1284#, 2nd FP 92-138.

4800-4923: Op 20 min, SI 1 hr, op 1 hr, SI 1 hr, GTS 42 min TSTM, rec  
 90' GCM, 1165' HOCM, 270' MCO, HP 2279-2279#, 1st FP 183-  
 320#, SIP 1597-1415#.

5120-5173: Op 20 min, SI 1 hr, op 1 hr, SI 1 hr, rec 180' sli OCM & wtr,  
 1920' blk salty sul wtr, HP 2428-2428#, 1st FP 92-459#, SIP  
 1558-1558#, 2nd FP 505-1009#.

PIPE: 10 3/4" @ 332' w/225;  
 7" @ 5173' w/450

LOGS: SNP, DIL, FOR-DEN, PDC

26 3028 511 9-41N-28E AAA Fishing 10/69 5413KB 5000 Akah  
 NW NE Tool #1 Nav "E" 11/69 5400GR PB to  
 700 FNL 4907  
 1950 FEL

Entrada Surface R  
 Carmel 10 R  
 Navajo 105 R  
 Kayenta 275 R  
 Wingate 285 R  
 Chinle 966 R  
 Shinarump 2014 R  
 DeChelly 2068 R  
 Organ Rock 2396 R  
 L. Cutler 3135 R  
 Hermosa 3979 R  
 Ismay 4550 R  
 Desert Cr 4721 R  
 Akah 4940 R

Oil Producer-East Boundary Butte  
 Field; cumulative production  
 22,928 Bbls oil, 73,364 MCF gas,  
 & 136,398 Bbls wtr.

PERFORATIONS: 4940-4944 swb salt  
 wtr; production perms: Acidized  
 with 2500 gal 4782-4798, 4763-  
 4767, 4744-4748, 4732-4736 in  
 Desert Creek Zone; pumping 175  
 Bbls of 40 gty oil per day, gas  
 TSTM, plus 300 Bbls wtr per day.

PIPE: 10 3/4" @ 301' w/150;  
 5 1/2" @ 5000' w/200 sx

LOGS: DIL, FOR-DEN

27 959 65 9-41N-28E AAA Fishing 11/67 5537KB 6520 Elbert?  
 444 SW NE Tool #2 Nav "E" 12/67 5527GR PB to  
 Spl's? 1980 FNL (Formerly Humble) 4936  
 1980 FEL

Chinle  
 Owl Rock Spl's Start  
 Moss Back 1930 A  
 Monitor Butte 2010 A  
 Shinarump 2195 A  
 DeChelly 2336 A 2260 R  
 Cutler undiff 2620 A  
 Cutler evps 3200 A  
 Up Hermosa 4200 AR  
 Paradox 4912 R  
 Ismay 4875 A  
 Desert Cr 4987 A  
 L. Hermosa 5620 A  
 Molas 5876 A 5850 R

Former producer-East Boundary  
 Butte Field-original completion  
 9/58-now salt wtr disposal well  
 (10-2-68); cumulative production  
 577 Bbls oil & 4255 MCF gas.

PERFORATIONS: salt wtr injection  
 perms: 4286-4296, 4368-4372,  
 4456-4462, 4508-4512, 4890-4900

CORE: 4680-4772; 4802-4855

PIPE: 9 5/8" @ 1008' w/475;  
 7" @ 4949' w/250

Drill Stem Tests

4264-4330: Op 2 hrs, gas 41 MCFPD gas, rec 224' GCM, 120' GC filtrate wtr,  
 FP 71-126#, SIP/30 min 1367#.

4574-4629: Op 2 hrs, GTS 24 min, TSTM, rec 415 HOCM, FP 157-189#, SIP/ 30  
 min, 220#, HP 2303#.

Cont'd next page

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
Well No. 27 Cont'd											
			4680-4730:	Op 1½ hrs, rec 30' mud, FP 31#, SIP/30 min 37#, HP 2350#.				Miss*	5998 R	LOGS: IES, GRN, CON-CAL, PDC	
			4800-4855:	Op 1½ hrs, rec 140' O & GOM, FP 50-60#, SIP/30 min 300#, HP 2350#.				"D"	6000 A		
								"C"	6090 A	* Company reports Miss as	
								"B"	6180 A	Leadville.	
								"A"	6280 A		
			4799-4905:	Op 2 hrs, rec 10' HOCM, 95' OCM, FP 100#, SIP/30 min 700#.				Curay	6321 A	6180 R	
			4960-4985:	Op 1 hr, rec 50' mud.				Elbert		6322 R	
			4990-5025:	Op 1 hr, rec 80' s1 OCM, 100' mud, FP 50-75#, SIP/30 min 550#, HP 2500#.							
			5222-5240:	Op 2 hrs, rec 2900' s1 OCM, FP 350-1400#, SIP/30 min 1550#, HP 2600#.							
			5400-5425:	Op 2 hrs, GTS 15 min, TSTM, rec 180' mud, 4575' GC sul wtr, FP 400-1750#, SIP/30 min, HP 2750#.							
			6068-6120:	Op 1½ hrs, rec 30' mud, 4042' sul & GCSW, FP 500-1773#, SIP 1800#.							
			6450-6507:	Op 2 hrs, rec 510' mud, no show, FP 285-332#, SIP/30 min, HP 3309#.							
			6500-6520:	Op 2 hrs, rec 285' mud, 3313' sul wtr, FP 500-1500#, SIP/30 min 1550#, HP 2750#.							
28	2584	509	9-41N-28E	Globe (AAA	7/69	5559KB	5225	Akah	Shinarump	2164 R	Oil producer-East Boundary Butte
			NE NW	Fishing Tool)	8/69	5546GR	PE to		DeChelly	2245 R	Field; cumulative production
			420 FNL	#4 Nav "E" (597)			5170		Organ Rock	2550 R	29,136 Bbls oil, 39,903 MCF gas,
			2310 FWL						Hermosa	4214 R	& 121,829 Bbls wtr.
									Ismay	4739 R	
									Desert Cr	4924 R	Producing perfs: acidized 4958-
									Akah	5130 R	4962 in Desert Creek zone, 5131-
											5135 in Akah zone; IPF 341 BO,
											18 BW, 3/4" ck, 11 hr test, FTP
											50#; calc IPF 744 BO, 36 BWPD,
											gty 39.
											PIPE: 8 5/8" @ 339' w/175;
											5½" @ 5208' w/450
											LOGS: SNP, DIL, FOR-DEN
29	815	58	10-41N-28E	Humble (Merrion	8/58	5498KB	5410	L. Penn	Navajo	Surf A	Oil & gas producer-East Boundary
			SW NE	& Bayless)	10/58	5488GR	PB to		Kayenta	? A	Butte Field; cumulative production
			2310 FNL	#1 Navajo "E"			5200		Wingate	? A	204,145 Bbls oil, 498,666 MCF gas,
			1980 FEL						Chinle	1000 A	& 273,994 Bbls wtr.

Drill Stem Tests

- 
- 4204-4269: Op 2 hrs, GTS 34 min @ 20 MCFPD, rec 235' sli GCM, FP 64-96#, SIP 690#/30 min, HP 2092#.
- 4494-4556: Op 32 min, SI 30 min, rec 1530' HGC & SOCM, FP 64-664#, SIP 1606#.
- 4600-4675: Op 3 hrs, SI 30 min, GTS 15 min, OTS 19 min, total oil rec 118 BO, 42.5 gty, GOR 615, FP 252-663#, SIP 1417#, HP 2117#.
- 4733-4776: Op 2 hrs 19 min, SI 30 min, GTS 8 min, rec 2070' oil, 30' HOCM, FP 127-345#, SIP 1480#, HP 2240#.
- 4865-4893: Op 2 hrs, SI 30 min, GTS 1/2 min, 2840 MCFPD, rec 10' HGCM w/ sulfur, FP 505-364#, SIP 1480#.
- 4893-4943: Op 90 min, SI 30 min, rec 540' sli OC & HGCM, FP 100-250#, SIP 1900#.
- 4979-4986: Op 1 hr, SI 30 min, rec 2540' sli OC & HGCM, FP 250#, SIP 1900#.
- 4979-5024: Op 1 hr, SI 30 min, rec 120' O & WCM, 10' wtr, FP 50#, SIP 1500#.
- 5070-5115: Op 90 min, SI 30 min, rec 90' mud, 240' GC sulfur wtr, FP 175#, SIP 1600#.
- 5118-5143: Op 90 min, SI 30 min, rec 50' mud, 2630' sulfur wtr, FP 200-1100#, SIP 1600#.
- 5144-5185: Op 1 1/2 hrs, SI 30 min, rec 1700' mud, 610' sulfur wtr, FP 750-1250#, SIP 1600#.
- 5250-5305: Op 90 min, SI 30 min, GTS 2 min, 60 MCFPD, rec 240' HO & GC sulfur wtr, FP 100#, SIP 750#.
- 5339-5359: Op 90 min, SI 30 min, GTS 3 min, rec 90' HO & GCM, 3630' HGCM, FP 1500-2350#, SIP 1750#.

30	<u>2574</u>	<u>518</u>	11-41N-28E SW NW 1950 FNL 520 FWL	Consolidated #2-11 Nav 227	10/69 11/69	5486KB 5474GR	5057 PB to 5019	Akah
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Drill Stem Tests

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- 4550-4635: SI 30 min, op 3 hrs, SI 1 hr, rec 150' sli OCM, FP 106-133#, SIP 771-984#, HP 2126-2126#.

Cont'd next page

Shinarump	2130 A
DeChelly	2190 A
Up Hermosa	4010 A 4158 R
Ismay	4695 A
Desert Cr	4875 A

PERFORATIONS:  
4726-4772; producing perms:  
4594-4644; IP: 359 BOPD.  
After OWWO: 4500-4518, 4518-4558, 4594-4635, 4726-4774, 4878-4896, 4920-4930, 4942-4954.

PIPE: 8 5/8" @ 1015' w/450,  
5 1/2" @ 4893' w/333. 3 1/2  
O.D. liner set @ 5409 -  
top of liner at 4864.

LOGS: IES, GRN, ML, TS

Wingate	Spls Start	
Chinle	838?A	
Moss Back	1784 A	
Monitor Butte	1904?A	
Shinarump	2030?A	
DeChelly*	2090?A	2090 R 2160?P
Cutler undiff	2515 A	
Cutler evps	3083 A	
Up Hermosa	4063 AR	
Ismay	4772 AR	
Desert Cr	4890 AR	

Oil producer-East Boundary Butte  
Field; cumulative production  
18,869 Bbls oil, 64,780 MCF, &  
109,918 Bbls wtr.

PERFORATIONS:  
Producing interval  
4674-4905 (Gross)  
4674-4677, 4700-4708, 4725-4729,  
4736-4739, 4859-4862, 4871-4876,  
4899-4905.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS	
Well No. 30 Cont'd										
4661-4769:	SI 30 min, op 3 hrs, SI 1 hr, rec 120' HOCM, 120' HGC & SOCM, 180' HGCM, FP 133-186#, SIP 1855-1929#, HP 2226-2200#.							Akah	5030 R	IP: 85 BOPD, 366 BW & 537 MCF, 39 gty, GOR 6318.
4947-4963:	SI 30 min, op 3 hrs, SI 1 hr, gas in 41 min TSTM, rec 200' v sli OG muddy salt wtr, 1900' salt wtr, FP 160-970#, SIP 1328-1328#, HP 2287-2274#.									PIPE: 8 5/8" @ 319' w/165 5 1/2" @ 5053' w/200
5035-5057:	SI 30 min, op 3 hrs, SI 1 hr, gas in 9 min TSTM, rec 2994' salt wtr, FP 133-559#, SIP 1408-1408#, HP 2340-2340#.									LOGS: IES, ACS-VEL, PRF-MS * Reported as Coconino
31	<u>1012</u>	<u>69</u>	11-41N-28E NE SW 1980 FSL 1980 FWL	Shell (Consolidated) #23-11 Nav	3/59 5/59	5437KB 5425GR	5513 PB to 4859	L. Penn Chinle Owl Rock Moss Back Monitor Butte Shinarump DeChelly* Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr	Spis Start 1812 A 1898 A 2062 A 2130 A 2490 A 3066 A 4026 AR 4751 A 4860 A	Oil & gas producer-East Boundary Butte Field; cumulative production 41,258 Bbls oil, 2,688,475 MCF gas, & 111 Bbls wtr.  2200?P PERFORATIONS: Producing zone 4460-4608 (gross) 4460-4510, 4540-4596, 4603-4608; IPF 104 BO, 775 MCFGPD, 20/64" ck, TP 940#, GOR 8270.  PIPE: 8 5/8" @ 565' w/200 5 1/2" @ 5512' w/300  LOGS: IES, ML, GRN  * Reported as Coconino
Drill Stem Tests										
4177-4282:	SI 30 min, op 80 min, SI 1 hr, rec 852' HGCM, SIP 1348-1301#, FP 187-187#, HP 2148-2076#.									
4413-4435:	SI 30 min, op 1 hr, SI 1 hr, rec 330' sli GCM, FP 208-219#, SI 1282-1304#, HP 2117-2152#.									
4461-4511:	SI 30 min, op 1 hr, SI 1 hr, GTS 6 min, ga at 110' MCFGPD, rec 2850' (25 barrels) oil, FP 325-700#, SIP 1410-1380#, HP 2220#.									
4548-4635:	SI 30 min, op 1 hr, SI 1 hr, rec 500' sli O & GCM, FP 117-223#, SIP 1591-1161#, HP 2108#.									
4876-5040:	SI 30 min, op 1 hr, SI 1 hr, rec 1740' OG sul wtr, FP 492-836#, SIP 1530-1522#, HP 2283-2121#.									
5450-5513:	SI 1 1/2 hrs, op 90 min, SI 1 hr, rec 1140' sul wtr w/ trace oil, FP 219-698#, SIP 1797-1789#, HP 2610#.									
5062-5126:	(strd pkr) SI 30 min, op 1 hr, SI 1 hr, rec 3120' sul wtr, FP 357-1473#, SIP 1623-1615#, HP 2412-2396#.									
4708-4800:	(strd pkr) SI 30 min, op 1 hr, SI 1 hr, GTS 5 min TSTM, rec 10' sul wtr, FP 17-35#, SIP 190-2180#, HP 2180#.									
32	<u>442</u>	<u>32</u>	22-41N-28E SW NW 1980 FNL 660 FWL	Franco-Western (Consolidated) #1 Navajo	6/56 9/56	5446KB 5434CR	5902 PB to 5346	Miss Wingate Chinle basal Trias DeChelly Cutler undiff Cutler evps	Spis Start 1390 A  2278 A 2290 R 2742 A 2755 R 3320 P	Gas producer-North Toh Atin Field; cumulative production 289 Bbls oil, 893,475 MCF gas & 17 Bbls wtr.

Well No. 32 Cont'd

Drill Stem Tests

-----  
 5129-5179: Op 2 hrs, gas in 12 min, rec 185' O & GCM, est 5000 MCFGPD, ISIP/ 35 min 1620#, FP 140-180#, FSIP/60 min 1215#, HP 2730#.  
 5201-5285: Op 3½ hrs, GTS 2 min gauged up to 319 MCF, rec 90' GCM, 130' MC oil, 90' salty sul wtr, ISIP 2145#, FP 200-200#, FSIP/60 min 2145, HP 2880#.

Cedar Mesa 3503 A 3340 R  
 Hermosa 4233 A 4220 R  
 Paradox 5110 AR  
 Pinkerton Tr 5465 A  
 L. Hermosa 5485 R  
 Molas 5715 A 5750 R  
 Miss 5893 AR

PERFORATIONS: Original producing interval 5359-5367, 5380-5392; IPF 7,450 MCFGPD thru ½" ck, TP 1190 psi..  
 OWWO:  
 new producing interval 5138-5144, 5212-5220; IP: 140 MCFGPD, FTP 900 psi

PIPE: 9 5/8" @ 984' w/420  
 5½" @ 5466' w/1000

LOGS: ES, ML, GRN, FRF-MS

33 1361 205 27-41N-28E Franco Western 8/62 5494KB 6259 Ouray  
 SE NW #2 Navajo 9/62 5483GR  
 1980 FNL  
 1980 FWL

Salt Wash Spis Start  
 Bluff? 200?A  
 Summerville? 270?A  
 Todilto? 278?A  
 Entrada? 281?A  
 Navajo? 465?A  
 Kayenta? 625?A  
 Wingate

D & A

sli show gas rept at 5462.

PIPE: 8 5/8" @ 1012' w/500

LOGS: IES, ACS-VEL, CON-CAL

Drill Stem Tests

-----  
 6010-6150: Op 2 hrs, (strd pkr), rec 475' v sli OCM, 195' SW, ISIP/30 min 1970#, FP 555-335#, FSIP/45 min 1855#, HP 3010#.

Lukachukai 725?A  
 Rock Point 1098 A  
 Chinle 1393 A  
 Moss Back 2034 A  
 Monitor Butte 2080 A  
 DeChelly 2300 A  
 Cutler undiff 2780 A  
 Cutler evps 3440 A  
 Up Hermosa 4290 AR  
 Ismay 4990 A  
 L. Hermosa? 5581?A  
 Molas 5800 AR  
 Miss  
 "D" Zone 5930 A  
 "C" Zone 5996 A  
 "B" Zone 6082 A  
 "A" Zone 6173 A  
 Ouray 6210 A

34 1329 166 22-41N-27E La Rue 10/61 5454DF 6260 Molas  
 NE NE #2 Dinne 11/61 5444GR  
 660 FNL  
 660 FEL

Entrada? Spis Start  
 Chinle  
 Owl Rock ?  
 Moss Back 2080?A  
 Monitor Butte 2170 A  
 DeChelly 2470 A  
 Cutler undiff 2880 A  
 Cutler evps 3463 A  
 Up Hermosa 4562 A  
 Ismay 5362 A  
 Desert Cr 5513?A  
 L. Hermosa 6000 A  
 Molas 6215 A

D & A

PIPE: 10 3/4" @ 123' w/100 sx

LOGS: IES, ML, GRN

Drill Stem Tests

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 5600-5660: Op 1 hr, rec 100' mud, FP 45-55#, ISIP/30 min 1750#, FSIP/30 min 1640#, HP 2615#.  
 5680-5830: (strd pkr) Op 1 hr, rec 810' mud, 780' sul wtr, FP 405-740#, SIP/30 min 1800#, HP 3045#.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
35	406	31	29-41N-27E NE NW 995 FNL 1570 FWL	Hancock Oil #29-1 Dinne-Nav	5/56 7/56	5666KB 5653GR	6500	Ouray	Morrison Salt Wash Summerville Entrada Carmel Navajo Kayenta Wingate Chinle Rock Point Owl Rock Moss Back Monitor Butte Shinarump Moenkopi* Hoskinnini DeChelly Cutler undiff Cutler evps Cedar Mesa** Hermosa Paradox sh Paradox ls Molas Redwall*** Ouray	surf A 128 A 260 A 450 A 490 A 710 A 790 A 884 R 1290 R 1200 A 1490 A 2036 A 2153 A 2036 R 2174 R 2380 A 2380 R 2890 A 3400 A 3480 A 4400 R 5352 R 5379 R 6070 R 6170 AR 6480 A	D & A PIPE: 9 5/8" @ 438' w/350 sx LOGS: GRN, MUD * Probably not this far east ** Not clearly defined *** Redwall: Unit: "D" 6170 A "C" 6230 A "B" 6358 A "A" 6440 A
Drill Stem Tests											
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4431-4480: Rec small amt mud.											
36	1358	165	23-41N-26E NW NW 560 FNL 560 FWL	La Rue #1 Dinne	10/61 11/61	5505KB 5494GR	6332	Molas	Summerville Entrada Carmel Navajo Kayenta Wingate Lukachukai Rock Point Chinle DeChelly Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr Akah Barker Cr L. Hermosa Molas	Spls Start 293 A 420 A 530 A 677 A 820 A 1160 A 1480 A 2528 AR 2981 AR 3893 A 4630 AR 5460 R 5630 R 5737 R 5915 R 6034 R 6245 A 6275 R	D & A PIPE: 10 3/4" @ 127' LOGS: IES, GRN, CON-CAL
Drill Stem Tests											
-----											
5730-5800: Op 55 min, rec 60' sli GC & MC blk sul wtr, ISIP 1805#/30 min, FP 55-195#, FSIP 1565#/30 min, HP 2645-2645.											
37	1005	50	28-41N-26E SW SE 660 FSL 1980 FEL	Gulf #1 Walker Creek- Navajo	1/58 3/58	5202DF 5192GR	6421	Aneth	Navajo Kayenta Wingate Lukachukai	Spls Start 70 A 180 A	D & A PIPE: 20" @ 45' w/50 sx 10 3/4" @ 956' w/700 sx

Rock Point	530 A
Chinle	
Owl Rock	821 A
Petrified For	1138 A
Moss Back	1435 A
Monitor Butte	1495 A
Shinarump	1567 A
Moenkopi	1640 A
DeChelly	1778 A
Cutler undiff	2310 A
Cutler evps	3002 A
Up Hermosa	3893 A
Paradox	
Ismay	4630?A
Desert Cr	4780?A
L. Hermosa	5050 A
Molas	5436 A
Miss	5576 A
Ouray	5892 A
Elbert	5987 A
McCracken	6056 A
Aneth	6310 A

LOGS: IES, GRN, ML

CORE: 4861-4880, 4890-4899, 5114-5127

38 1679 260 31-41N-26E Mac Donald 11/63 5125KB 6500 Aneth  
 SW SW #1 Navajo 12/63 5113GR  
 520 FSL  
 610 FWL

DeChelly	1775 R
Cutler undiff	2300 R
Cutler evps	2840 R
Up Hermosa	3662 A 3805 R
Ismay?	4640 A 4500 R
Desert Cr?	4752 A 4778 R
Akah	4958 R
Barker Cr	5126 R
L. Hermosa	5050 A 5276 R
Molas	5506 A 5530 R
Miss	5597 AR
Ouray	5960?A 5985 R
Elbert	6108 AR
McCracken	6173 A 6330 R
Aneth	6440 AR

D & A

PIPE: 8 5/8" @ 789' w/500 sx

LOGS: IES, SON-GR

Drill Stem Tests

4781-4819: SI 30 min, op 30 min, SI 30 min, rec 5' mud, FP 75-75#, SIP 755-755#, HP 2275-2275#.

5075-5092: (strd pkr) SI 30 min, op 2 hrs, SI 1 hr, rec 1000' SW, FP 107-485#, SIP 1719-1719#, HP 2422-2422#.

39 2018 304 33-41N-26E Tenneco #1 1/65 5258KB 6606 Pre-cambrian?  
 SW SW Nav 4332 2/65 5244GR  
 661 FSL  
 660 FWL

Wingate	Spls Start
Chinle	
Owl Rock	835 A
Petrified For	1146 A
Moss Back	1422 A
Moenkopi	1597 A
basal sand	1816 A
DeChelly	1846 A
Cutler undiff	2334 AR
Cutler evps	3010 A
Up Hermosa	3880 AR
Ismay	4634 AR
Desert Cr	4752 AR
Akah	4849 A?R
Barker Cr	5096 A?R
Molas	5413 AR

D & A

PIPE: 9 5/8" @ 775' w/350 sx

LOGS: DEL, SON-GR

CORES: 4721-4781 - rec 1' Ls, scattered PPP, bleeding oil & gas

Drill Stem Tests

4722-4741: SI 1 hr, op 2 hrs, SI 2 hr, rec 1800' gas, 95' G & MCO, FP 10.8-10.8#, SIP 1235-1342#, HP 2178-2178#.

4883-5070: Op 25 min, SI 1 hr 40 min, op 2 hr, SI 2 hr, rec 195' WCM, 265' sli O & G cut WCM, 170' sli O & GCW, FP 108-270#, SIP 1504-1497#, HP 2300-2273#.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
Well NO. 39 Cont'd											
								Miss	5535 R		
								Horseshoe M.	5535 A		
								Mooney Falls	5685 A		
								Thunder Sprgs	5790 A		
								Whitmore Wash	5850 A		
								Ouray	5886 AR		
								Elbert	5973 AR		
								McCracken	6194 A	6131 R	
								Aneth	6310 AR		
								Bright Angel	6432 AR		
								Tapeats	6518 AR		
								PC		6600 R	
40	1656	226	16-41N-25E	Texaco #1	3/63	4870KB	6615	Pre-	Wingate		Devonian oil discovery-Walker
			NW SE	Navajo AG	5/63	4858GR	6559	cambrian	Rock Point	Spls Start	Creek Field; cumulative production
			1460 FSL					meta	Chinle		98,431 Bbls oil.
			1850 FEL						Owl Rock	962 A	P & A 3/70
									Shinarump	1495 A	
									Moenkopi	1740 A	PERFORATIONS: 6370-6384 w/20.
									DeChelly	1898 A	Acidized w/200. Swbd 108 BO, 22
									Cutler undiff	2383 A	hrs; IPP 182 BOPD, 5 BWPD from
									Cutler evps	3060 A	McCracken.
									Up Hermosa*	3950 AR	
									Ismay	4668 AR	OWWO: 1969
									Desert Cr	4776 AR	6395-6410 in Aneth acidized w/500
									Akah	4883 AR	gals-communications w/open Devonian
									Barker Cr		zone.
									L. Hermosa	5050?A	
									Molas	5443 AR	1903-1910 and 1948-1960 perf. in
									Miss	5604 R	DeChelly-tested no oil or gas.
									"D" Zone	5604 A	Pkr set at 5355 and well placed
									"C" Zone	5722 A	back on pump.
									"B" Zone	5780 A	
									"A" Zone	5890 A	PIPE: 10 3/4" @ 102' w/135;
									Ouray	5930 A	7 5/8" @ 899' w/350;
									Elbert	6050 AR	4 1/2" @ 6615' w/175.
									McCracken	6105 A	
									Aneth	6383 AR	LOGS: IES, SON-GR
									Precamb	6525 AR	* Company reports as Honaker
											Trail.
41	2015	295	17-41N-25E	Great Western	10/64	4860KB	6457	McCracken	Cutler evps	Spls Start	D & A
			NE NE	Drl #2 E1	11/64	4848GR			Up Hermosa	4020?A	4000 R
			660 FNL	Paso-Navajo					Ismay	4716?A	4730 R
			660 FEL						Desert Cr	4825?A	4840 R
									Akah	4930?A	4960 R
									Barker Cr	5116 A	5116 R
									Molas	5516 A	5526 R
									Miss		5657 R
											PIPE: 10 3/4" @ 161' w/150
											CORES:
											6336-6354, rec 15' dolo, very
											sandy. 6354-6358, rec 3' dolo,
											very sandy, highly fractured.



Well No. 41 Cont'd

				Drill Stem Tests (Chart on File)			LOGS: PDC
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6257-6330:	SI 1 hr, op 2 hr, SI 1 hr, rec 2150' WCM, FP 586-1015#, SIP 2737-2421#.	"D" Zone	5657 A				
		"C" Zone	5700 A				
		"B" Zone	5770?A				
		"A" Zone	5982 A				
		Ouray	6028 AR				
		Elbert	6165 AR				
		McCracken	6240 A 6443 R				

42	<u>2017</u>	<u>245</u>	20-41N-25E NE NE 800 FNL 330 FEL	Great Western Drl-Moncrief #1 El Paso- Navajo	9/63 10/63	4874KB 4860GR	7099	Pre-cambrian Meta	Chinle Moss Back Monitor Butte basal Trias DeChelly Cutler undiff Cutler evps Up Hermosa?* Ismay? Ismay Desert Cr? Desert Cr Akah? Akah Barker Cr? Barker Cr Molas Miss "D" Zone "C" Zone "B" Zone "A" Zone Ouray Elbert McCracken Aneth Bright Angel Tapeats Precambrian	Spls Start 1590 A 1700 A 1884?A 1930?A 2430 A 3178 A 4005 AR 4728 A 4728 R 4840 A 4842 R 4950 A 4950 R 5117 A 5118 R 5535 A 5574 R 5683 R 5682 A 5780 A 5830 A 6024?A 6060?A 6168?A 6432 AR 6533 AR 6690 A 6704 R 6815 A 6771 R 7037 A 7000 R	D & A  CORES: 6360-6380, rec 20' dolo, hard & tight; 6380-6390, rec 10' dolo, sandy, tight; 6390-6410, rec 20' dolo, dense tight, sandy in part.  PIPE: 13 3/8" @ 174' w/150  LOGS: IES, ACS-VEL, MUD  * Reported by company as Honaker Trail Fm.
				Drill Stem Tests (Chart on File)							
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6500-6535:	SI 30 min, op 1 hr, SI 30 min, rec 180' MC salt wtr, 720' salt wtr, SIP 2337-2051#, FP not available.										

29

43	<u>2005</u>	<u>266</u>	21-41N-25E NW NE 660 FNL 1980 FEL	Texaco #2 Navajo AG	2/64 3/64	4868KB 4857GR	6781	Pre-cambrian Meta	Chinle basal sand DeChelly Cutler undiff Cutler evps Up Hermosa* Ismay Desert Cr Akah Barker Cr L. Hermosa L. Paradox Molas Miss Horseshoe M. Mooney Falls	Spls Start 1925 A 1925 R 2426?A 3082 A 3985 AR 4710 AR 4830 A 4883 R 4900 R 5093 R 5123 A 5310 R 5568 AR 5653 R 5653 A 5748?A	D & A  Completed as a salt wtr disposal well  PIPE: 9 5/8" @ 905' w/300; 4 1/2" @ 6575' w/160  LOGS: IES, SON-GR  * Reported by company as Honaker Trail Fm.	
				Drill Stem Tests								
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6365-6465:	Op 1 1/2 hr, rec 560' salt WCM, 280' heavily MC salt wtr.											

Cont'd next page

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ARM	OGC						BOTTOM	TOPS		
Well No. 43 Cont'd											
								Thunder Sprgs	5787?A		
								Whitmore Wash	5966 A		
								Ourray	6004 AR		
								Elbert	6136 AR		
								McCracken	6377 AR		
								Aneth	6477 AR		
								Bright Angel	6636?A	6636 R	
								Precambrian	6732 AR		
44	1678	248	16-41N-24E	Gulf #1	10/63	5175DF	6769	Cambrian?	Navajo	Spis Start	D & A
			NE NE	Garnet Ridge-	1/64	5165GR			Kayenta	325 A	
			660 FNL	Navajo					Wingate		Drilled with air to 1914'.
			660 FEL						Lukachukai	465 A	
									Rock Point	814?A	CORES: 6647-6658, rec 11' dolo,
									Chinle		finely crys, dark bwn, low to
									Owl Rock	1000?A	no porosity, bleeding oil on
									Shinarump	1636 R	fracts 6653-6657.
									DeChelly	2030?A	1960 R
									Cutler undiff	2475 AR	PIPE: 13 3/8" @ 108' w/125;
									Cutler evps	3142 A	8 5/8" @ 1000' w/275
									Up Hermosa	4078?A	
									Hermosa	4057 R	LOGS: IES, ML, SON-GR
									Ismay	4790?A	4790 R
									Desert Cr	4902?A	4901 R
									Molas	5577 AR	
									Miss*	5738 R	* Reported as Redwall by
									"D" Zone	5738 A	company.
									"C" Zone	5845 A	
									A&B undiff	5975 A	
									Ourray	6121 A	6095 R
									Elbert	6214 AR	
									McCracken	6295 A	6510 R
									Aneth	6595 AR	
									Cambrian?	6741 A	
									Lynch	6742 R	
45	628	N	7-41N-23E	San Juan	11/23	4881 DF	2083	Miss?	Rico	430 PI*	D & A
			SE SW	(Midwest) Gypsum	?	4879 GR			Hermosa	690 PI	335 D**
			7900' S & 200'	Navajo					Molas	1580 PI	1590 D
			E of mile post						Miss		1680 D
			#229: Utah-Ariz								PIPE: 12 1/2" @ 40'; 10 3/4" @ 498';
			line.								6 1/2" @ 1425'; 4 3/4" @ 1786'
											LOGS: SL
											* Petroleum Information
											** Denver Sample Log Service

Drill Stem Tests

6602-6658: SI 1 hr 48 min, op 1 hr, SI 1 hr, rec 90' mud, FP 98-98#, SIP 2215-2215#, HP 3096-3096#.

46	<u>2046</u>	<u>290</u>	12-41N-22E 660 FWL 1980 FSL	Occidental #1 Monument- Navajo	9/64 10/64	4844KB 4834GR	3029	Cambrian	Up Hermosa? undivided Molas? Miss D Zone C Zone B Zone A Zone Ouray? Elbert? McCracken Aneth Cambrian Muav? Bright Angel? Tapeats	Spls Start  1446 A 1576 R 1576 A 1777 A 1910 A 1970 A 2057 A 2148 A 2225 A 2516 A 2698 R 2660 A 2697 A 2772 A	D & A  PIPE: 10 3/4" @ 210' w/150 sx  LOGS: IES, GRN, SON-CAL
Drill Stem Tests											
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938-1070:	SI 30 min, op 1 hr, SI 30 min, rec 1' mud, FP 66-66#, SIP 66-56#, HP 528-526#.										
2216-2246:	SI 30 min, op 1 hr, SI 30 min, rec 300' SGCM, 90' W & GCM, 300' MCW, FP 39-330#, SIP 456-458#, HP 1108-1108#.										
2768-2795:	SI 30 min, op 1 hr, SI 30 min, rec 5' mud, SIP 30-39#, HP 1370-1370#.										

47	<u>3029</u>	<u>546</u>	2-40N-30E NW SE 2130 FSL 2120 FEL	Depco, Inc. #1-2 Navajo	8/70 9/70	5383KB 5371GR	7230	Pre-cambrian granitic?	Moenkopi Monitor Butte basal sand DeChelly Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr L. Hermosa Molas Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Ouray Elbert McCracken Aneth Tapeats Precambrian	Spls Start   2760 AR 3098 AR 3355 R 4543 AR 5241 AR 5380 A 5710 A 6170 AR 6297 R 6297 A 6397 A 6432 A 6496 A 6598 R 6683 AR 6845 R 6990 AR 7138 A 7225 AR	D & A  2760?P 2840?P PIPE: 13 3/8" @ 287' w/300  LOGS: IES, FOR-DEN
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48	<u>1168</u>	<u>105</u>	5-40N-30E NE SW SW 990 FSL 990 FWL	British Ameri- can #1 Nav "C"	2/60 4/60	5545KB 5535GR	6419	Pre-cambrian meta	Jurassic undiff Wingate Chinle Owl Rock Petrified For Moss Back Monitor Butte Moenkopi* DeChelly?*** DeChelly** Cutler undiff	Spls Start  ?  1455 A 1970 A 2183 A 2214 A 2412 A 2435 A 2430 R 2500 P 2809 AR	D & A  CORE: 5356-5412  PIPE: 10 3/4" @ 1163' w/100  LOGS: IES, SON-GR, ML, GRN  * Probably not this far east
Drill Stem Tests											
-----											
4900-5067:	ISIP/30 min 1665#, op 1 hr, GTS 50 min, TSTM, rec 218' GCM, 150' GC & wtr CM, IH 2640#, ISIP 1665#, FP 78-157#, FSIP 1632#, FH 2610#.										

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IDENTIFICATION SEQ AEM OGC	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
Well No. 48 Cont'd									
5101-5338:	ISIP/30 min, 1632#, op 1 hr, GTS 9 min, TSTM, rec 370' HGCM w/some distillate cut, IHP 2735#, ISIP 1632#, FP 125-140#, FSIP 1632#, FHP 2735#.						Cutler evps Up Hermosa Ismay Bluff Desert Cr Akah Barker Cr L. Hermosa Molas Miss D Zone C Zone B Zone A Zone Devonian Ouray Elbert McCracken Precambrian	3368 A 4222 AR 4875 A 4875 R 5044 A 5200 R 5308 R 5306 A 5745 AR 5875 R 5868 A 5950 A 5975 A 6050 A 6115 R 6154 A 6195 A 6338 A 6376 A	** Shallower tops probably picked on a basal Triassic sandstone.
5984-6055:	ISIP/30 min, op 1 hr, rec 275' sli GCM.								
6059-6120:	ISIP/30 min, op 1 hr, rec 90' GCM & 1350' HGCSW.								

49	<u>1320</u> <u>146</u>	7-40N-29E SE SE 660 FSL 660 FEL	Atlantic #7-1 Navajo	5/61 7/61	6024DF 6015GR	5785	Pre-cambrian quartzite	Chinle DeChelly Cutler undiff Cutler evps Up Hermosa Paradox Ismay Desert Cr L. Hermosa Molas Miss D Zone C&B Zone A? Zone Ouray Elbert Precambrian	1213 R 2325 R 2370?P 2722 AR 3300?A 4066 AR 4640 R 4697 A 4848 A 5078 A 5373 A 5396 R 5465 R 5466 A 5565 A 5650 A 5710 AR 5733 A 5770 AR	Former oil producer, Dry Mesa Field, abandoned in 1962; cumulative production 6,898 Bbls of oil & 21,676 MCFG. Helium content 5.1%; converted to tribal water well in 1964.  Production perms: 5606-5616 in Miss;  IP: 84½ BOPD  CORES: 5583-5639  PIPE: 10 3/4" @ 638' w/600 5½" @ 5731' w/375  LOGS: IES, SON-GR
Drill Stem Tests										
2319-2388:	Op 40 min, rec 1550' muddy frs wtr, FP 540-650#, ISIP/30 min 650#, FSIP/30 min 650#, HP 1090#.									
4715-4736:	Op 1 hr, rec 30' mud, FP 15-15#, SIP failed, HP 2370#.									
5088-5107:	Op 82 min, gas in 6 min, ga 650 MCFPD after 70 min, no rec, FP 55-95#, ISIP/50 min 1435#, FSIP/50 min 1435#, HP 2645#.									
5250-5267:	Op 75 min, gas in 3 min, ga 714' MCFPD, ISIP/30 min 1505#, FP 70-110#, FSIP/35 min 1480#, HP 2495#.									
5575-5605:	Op 2 hr, gas in 3 min, ga 500 MCFPD thru 3/4" ck non-flammable, rec 50' O & GCM, ISIP/30 min 1520#, FP 40-65#, FSIP/60 min 1520#, HP 2925#.									
5606-5639:	Op 3 hr, rec 180' free oil, 120' OC & GCM, 660' SW (sli OC & GC), ISIP/40 min 1530#, FP 70-370#, FSIP/45 min 1515#, HP 2915#.									

50	<u>1356</u>	<u>176</u>	15-40N-29E NE SW 1980 FSL 2200 FWL	Pan American #1 Moko-Nav	3/62 4/62	6073DF 6063GR	5868	Pre- Cambrian quartzite	Chinle Owl Rock Petrified For Moss Back Monitor Butte Moenkopi* DeChelly** Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr Akah Barker Cr L. Hermosa Molas Miss D&G Zones B Zone A Zone Ouray Elbert Precambrian	Spis Start 1778 A 2148 A 2190 A 2360 A 2410 A 2788 AR 3300 A 4133 AR 4725 AR 4838 AR 4946 R 5100 R 5290 R 5497 AR 5591 R 5591 A 5650 A 5750 A 5813 AR 5852 A 5857 AR	D & A CORE: 5208-5264½; 5685-5739 PIPE: 8 5/8" @ 1425' w/550 LOGS: IES, GRN, ML, SON-GR * Probably not this far east - unit probably part of Chinle. ** Unit picked by A & R may include basal Chinle sandstone.
Drill Stem Tests											
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	4760-4880:	Op 2½ hr, gas in 35 min, rec 35' GCM, FP 75-81#, SIP/30 min 1290#, HP 2512#.									
	4881-5043:	Op 3 hr, gas in 6 min, ga 171 MCFPD after 1 hr; ga 186 MCFPD after 2½ hr, strong sul od, rec 548' GCM w/sul od, FP 107-186#, SIP/60 min 1380#, HP 2490#.									
	5340-5445:	Op 2 hr, gas in 9 min ga 188 MCFPD after 45 min, ga 108 MCFPD after 1 hr 45 min, strong sul od, rec 330' GCM, 180' G & WCM, FP 163-180#, SIP/30 min 1295#, HP 2680#.									
	5665-5739:	Op 2½ hr, gas in 30 min, TSTM, rec 240' GCM, 3100' SW, FP 365-1470#, SIP/30 min 1530-1515#, HP 2858#. Helium 7.5%.									
51	<u>1692</u>	<u>274</u>	18-40N-29E NE SE 1500 FSL 400 FEL	Marathon #1 Navajo	4/64 5/64	6602KB	6263	Miss	Wingate Rock Point Chinle Owl Rock Petrified For Moss Back Monitor Butte Moenkopi* basal Tri sdst? DeChelly Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr L. Hermosa Molas Miss	1805 A 2020 A 2504 A 2657 A 2732 A 2890 A 2950 A 3005 AR** 3360 AR 3850 A 4690?A 4690 R 5298 AR 5434 A 5406 R 5730 A 6050 AR 6114 AR	D & A CORES: 6200-6262 PIPE: 9 5/8" @ 724' w/640 LOGS: DIL, SON-GR, MUD * Probably not this far east. ** May include Triassic sandstone.
Drill Stem Tests											
-----											
	2967-2975:	SI 1 hr, op 1 hr, SI 30 min, rec 120' mud, FP 0-0#, SIP 1237-987#.									
	5806-5827:	SI 1 hr, op 1 hr, SI 1 hr, rec 60' mud, FP 21-43#, FSIP 649#, HP 2866-2866#.									
	6226-6262:	SI 1 hr, op 1 hr, SI 1 hr, rec 80' mud, 1000' SW, FP 73-510#, SIP 1570-1556#, HP 3039-3024#.									
52	559	21-40N-29E SE NE 1980 FNL 1050 FEL	Cities Service #1-A Monsanto Navajo	6/71	6383GR	Proposed 5700				Confidential status until February 28, 1972.	
53	<u>1653</u>	<u>213</u>	1-40N-28E SW SW 660 FSL 660 FWL	Pure #5 Navajo 138	9/62 10/62	5926KB 5913GR	5640	Miss	Navajo Kayenta Wingate? Lukachukai	445 A 525 A 590 A	D & A CORE: 5022-5064, 5490-5592

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IDENTIFICATION SEQ ABM OGC	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS	
Well No. 53 Cont'd										
							Rock Point	1080 A	PIPE: 13 3/8" @ 43' w/45 9 5/8" @ 1102' w/426	
							Chinle			
							Owl Rock	1507 A		
							Petrified For	1790?A	LOGS: IES, SON-CR	
							Moenkopi*	2170 A		
5019-5064:	Op 8 hrs, gas in 10 min, est 2500' MCF/DPD, rec 870' GC black sul wtr, FP 130-42#, SIP/30 min 1470#, HP 2440#.						DeChelly	2270 A**	2370?P * Not this far east?	
							Cutler undiff	2670 A		
							Cutler evps	3030 A	** May include basal Triassic sandstone.	
5473-5550:	Op 1 hr 30 min, rec 40' sli GCM, FP 55#, SIP/30 min 85-70#, HP 2735#.						Up Hermosa	4028 AR		
							Ismay***	4596 A		
							Desert Cr	4727?A	*** Company subdivides:	
5551-5592:	Op 1 hr, SI 30 min, rec 15' mud, FP 30-60#, SIP 60#.						L. Hermosa	4977 A	Paradox A 4600	
							Molas	5360 A	Paradox B 4727	
5592-5640:	Op 2 hrs, rec 180' mud, 3280' O & GC brackish wtr, FP 265-960#, SIP 1075#, HP 2780#.						Miss	5440 R	Paradox C 4740	
							'D' Zone	5440 A	Paradox D 4790	
							'C' Zone	5550?A	Paradox E 4805	
							'B' Zone	5587 A		
54	<u>1187</u> <u>115</u>	2-4ON-28E SW SE 760 FSL 2035 FEL	Texas Pacific (Monsanto) #3 Nav 138	5/60 7/60	5688KB 5674GR	5411 Miss	DeChelly* Up Hermosa Paradox Ismay Desert Cr L. Hermosa Molas Miss	2062 R 3780 A 3766 R 4347 A 4477 A 4707 A 5106 A 5122 R 5180 A 5180 R	Oil producer - Dry Mesa Field cumulative production 287,719 Bbbls oil, 4,783 MCF gas & 111,320 Bbbls wtr.  Perforations: acidized 5306-5329 in Miss; IPP 166 BO, 48 BWP, 39.3 gty, GOR 271-1.  CORE: 5332-5371  PIPE: 9 5/8" @ 987' w/600; 5 1/2" @ 5410' w/500  LOGS: IES  * Reported as Coconino.	
							D Zone C&B Zone A Zone	5180 A 5297 A 5395 A		
							Drill Stem Tests			
4577-4607:	SI 30 min, op 2 hrs, SI 30 min, GTS in 7 min, est 100 MCF/DPD, rec 270' GCM w/strong sul odor, IFP 100#, FFP 130#, ISIP 1415#, FSIP 1415#.									
4780-4831:	SI 30 min, op 55 min, SI 30 min GTS in 2 min, est 1,900 MCF/DPD, strong sul odor, rec 45' mud w/sul odor, IFP 295#, FFP 295#, ISIP 1482#, FSIP 1482#.									
4850-4878:	Op 70 min, SI 30 min GTS in 6 min, est 25 MCF/DPD, rec 50' GCM w/sul odor, IFP 65-22#, SIP 1515#.									
5282-5346:	SI 30 min, op 4 1/2 hrs, SI 30 min GTS 3 3/4 hrs, rec 350' OG & GCM, 150' HOC & GCM, IFP 48#, FFP 225#, ISIP 1555#, FSIP 1555#.									
5347-5371:	SI 30 min, op 2 hrs, SI 30 min weak blow, rec 865' gas in drill pipe, 35' OG & GCM, 450' HOC & GCM w/sul odor, IFP 77#, FFP 213#, ISIP 1558#, FSIP 1543#.									
55	<u>1360</u> <u>179</u>	6-4ON-28E NW SW 2275 FSL 430 FWL	Pan American #1 Nav F	4/62 7/62	6595KB 6582GR	7359 PB to 6468	Pre-cambrian quartzite	Wingate Lukachukai Rock Point Chinle Owl Rock Moss Back	Spls Start 2137 A 2458 A 3004 A	D & A  Discovery well-Akah Field - abandoned 3/65 as non-commercial; cumulative production 6,898 Bbbls oil & 21,676 MCF gas.

Well No. 55 Cont'd

Drill Stem Tests

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 6199-6300: Op 1 hr, rec 5' mud, FP 12-12#, SIP/30 min 25#, HP 3190#.  
 6320-6411: Op 1 hr 30 min, rec 30' sli GCM, FP 20-20#, SIP/30 min 145#, HP 3270#.  
 6409-6510: Op 2 hrs, gas in 5 min, ga 1065 MCFGPD, rec 112' sli GCM, FP 190-190#, SIP/30 min 1690#, HP 3305#.  
 6579-6640: Op 2 hrs, rec 60' 0 & GCM, FP 30-45#, (30 min) 1690#, HP 3350#.  
 6649-6773: Op 2 hrs, rec 50' sli GCM/rainbow of oil, FP 30-60#, SIP/30 min 1560#, HP 3400#.  
 6777-6880: Op 1 hr, rec 5' sli GCM, FP 30-30#, SIP/30 min 30#, HP 3435#.  
 7004-7080: Op 2 hrs, rec 5' sli GCM, FP 15-30#, SIP/1½ hrs 30#, HP 3485#.  
 7110-7142: Op 2 hrs, rec 90' GCM, 96' G & SWCM, 279' GCM, 1023' GCSW, FP 80-645#, SIP/30 min 1930#, HP 3595#.

Monitor Butte 3037 A  
 Moenkopi\* 3187 A  
 DeChelly 3383 A 3297 R 3383 P  
 Cutler undiff 3723 AR  
 Cutler evps 4260 A  
 Up Hermosa 5287 AR  
 Ismay 6100 AR  
 Desert Cr 6228 AR  
 Akah 6321 R  
 Barker Cr 6495 R  
 L. Hermosa 6613 A 6690 R  
 Molas 6906 AR  
 Miss 6999 R  
 D Zone 6999 A  
 C Zone 7128 A  
 B Zone 7150 A  
 A Zone 7205 A  
 Ouray 7254 AR  
 Elbert 7286 A 7295 R  
 Precambrian 7318 AR

Producing interval (acidized)  
 6422-6467 in Akah zone, IPF 50  
 BOPD & 28 BSWPD.  
 CORE: 7053-7080; 7128-7142  
 PIPE: 8 5/8" @ 1608' w/675  
 4½" @ 6504' w/150  
 LOGS: IES, GRN, SON-GR, ML  
 \* Probably not this far east.

56 2575 513 9-40N-28E  
 NW NW  
 790 FNL  
 790 FWL

Curtis Little 9/69 5849KB 6002  
 #1 W. Dry Mesa- 10/69 5837GR  
 Navajo

Pre-cambrian quartzite

Wingate  
 Lukachukai 683 A  
 Rock Point 1233 A  
 Chinle  
 Owl Rock 1557 A  
 Moss Back 2122 A  
 Monitor Butte 2183 A  
 Moenkopi\* 2274 A  
 basal Tri sdst 2363 A  
 DeChelly 2424 A 2360 R 2490 P  
 Cutler undiff 2827 AR  
 Cutler evps 3341 A 3442 R  
 Up Hermosa 4301 A 4204 R  
 Ismay 4813 A 4880 R  
 Desert Cr 4948 A 4928 R  
 Akah 5027 R  
 Barker Cr 5186 R  
 L. Hermosa 5148 A  
 Molas 5582 A 5600 R  
 Miss 5662 R  
 Horseshoe M. 5664 A  
 Mooney Falls 5706 A  
 Thunder Spgs 5814 A  
 Whitmore Wash 5867 A  
 Ouray 5926 A  
 Elbert 5955 A 5950 R  
 Precambrian 5985 AR

D & A  
 PIPE: 9 5/8" @ 195' w/110  
 LOGS: IES, BHC-GR  
 \* Probably not this far east.

Drill Stem Tests

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 5110-5163: SI 45 min, op 2 hrs, SI 1 hr, rec 200' SO & GCM, FP 129-124#, SIP 411-902#, HP 2475-2325#.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS	
SEQ	ABM	OGC										
57	<u>1047</u>	<u>77</u>	11-40N-28E NE NE 660 FNL 660 FEL	Texas Pacific (Monsanto) #1 Nav 138	5/59 7/59	5950KB 5940GR	6080 PB to 5634	Pre- Cambrian quartzite	Chinle Moss Back Monitor Butte Shinarump Moenkopi* DeChelly** Cutler undiff Cutler evps Cedar Mesa*** Up Hermosa Ismay? Desert Cr? L. Hermosa Molas Miss D Zone C Zone B Zone A Zone Ouray Precambrian	2019 A 2050 A 2196 A 2204 A 2300 A 2690 A 3250 A 3355 A 4032 AR 4600 A 4728 A 4967 A 5374 AR 5435 A 5540 A 5593 A 5650 A 5680 A 5738 AR	2287 R 2350 P 5435 R	Oil producer-discovery well Dry Mesa Field; cumulative production 155,803 Bbls oil, 1,483 MCF gas, & 217,110 Bbls wtr.  Perforations: 5649-5669 (acidized); produ- cing interval 5566-5589 in Miss (acidized) IPP 240 Bbls oil & 27 Bbls WPD, gty 38.  CORE: 4936-4956; 5052-5082; 5566-5590; 5592-5617; 5618-5638; 6070-6080.  * May not be present this far east.  ** Reported as Coconino.  *** Not easily defined.  PIPE: 10 3/4" @ 1200' w/1000; 7" @ 5824' w/450  LOGS: IES, GRN, ML, MLL
Drill Stem Tests												
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4280-4330:	Op 1 hr, wk blow air, rec 30' mud, FP 0#, SIP/30 min 475-50#, HP 2315#.											
5037-5080:	Op 1 hr 35 min, GAB immed, gas in 2 min, spray of mud in 55 min, clear in 1 hr 10 min, spray of distillate as fine mist, no pipe rec, FP 860-1050#, SIP/30 min 1565#, FSIP/1 hr 1460#, HP 2600-2590#.											
5550-5592:	Op 1 1/2 hrs, wk blow air, gas in 8 min, rec 1200' HG & MCO, 39 gty, no visible wtr, no salt taste, FP 55-470#, SIP/30 min 2815#, FSIP/1 hr 1540#, HP 2910#.											
5592-5618:	Op 1 hr 40 min, gas in 4 min, too wk to burn, died in 14 min, blow started again, increased to strong blow in 24 min & through-out test, rec 3095' fluid, 320' HGCM, 1540' OC & HGCM, 480' MC & WC & HGCO, 755' HGC & OCW, FP 160-1305#, SIP/30 min 2460#, 1 hr 1550#, HP 2835-2830#.											
5618-5638:	Op 1 hr, wk blow dying in 12 min, tool bypassed 30 min aft op, no blow, rec 35' mud, FP 40-55#, SIP/30 min 40#, 1 hr 920#, HP 2905-2905#.											
58	<u>1188</u>	<u>116</u>	11-40N-28E NE NW 660 FNL 1980 FWL	Texas Pacific #4 Nav-138	9/60 10/60	5957KB 5946GR	5800	Pre- Cambrian quartzite	DeChelly* Up Hermosa Ismay Desert Cr L. Hermosa Molas Miss Horseshoe M. Mooney Falls Thunder Spgs Whitmore Wash Ouray Precambrian	2367 R 4074 R 4166 A 4640 A 4778 A 5008 A 5428 A 5512 A 5566 A 5678 A 5737 A 5765 A 5788 A	2367 R 4074 R 5515 R	D & A  CORE: 5614-5669  PIPE: 9 5/8" @ 1094' w/800  LOGS: IES, ML  * Reported as Coconino
Drill Stem Tests												
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5050-5103:	Op 1 hr, rec 1395' brackish sul wtr, gas & mud cut, FP 155-580#, SIP/30 min 1425#, HP 2660#.											
59	<u>1186</u>	<u>106</u>	12-40N-28E SW NW 1980 FNL 660 FWL	Texas Pacific (Monsanto) #2 Nav-138	3/60 5/60	5976KB 5966GR	5771 PB to 5426	Pre- Cambrian	Morrison Salt Wash Bluff Summerville Entrada Carmel	Spls Start 154 A 180 A 242 A 337 A		Former oil producer & pres- ently SI gas well-Dry Mesa Field; cumulative production from original completion 19,831 Bbls oil.



Well No. 59 Cont'd

Drill Stem Tests

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 5049-5079: Op 45 min, GTS 3 min, est 1,350 MCFPD, strong sul odor, rec 120' mud w/strong sul odor, IHP/85#, FFP 185#, ISIP 1460#, FSIP 1460#, IHP 2645#, FHP 2615#.  
 5225-5253: Op 35 min, GTS 2½ min, est 185' MCFPD w/strong sul odor, rec 90' mud w/strong sul odor, ISIP 1510#, FSIP 1500#, IFP 125#, FFP 155#, HP 2665#.  
 5529-5618: Op 2 hrs, weak blow, died in 2 min, rec 25' GCM, IFP 0#, FFP 0#, ISIP 175#, FSIP 25#, IHP 2880#, FHP 2850#.  
 5620-5661: Op 4 hrs, no GTS, rec 372' gas in D.P., 827' fluid, 30' OCM, 269' sli 0 & GCM, 528' wtr sli salty, IFP 30#, FFP 345#, ISIP 1510#, FSIP 1493#, IHP 2928#, FHP 2928#.

Navajo 455 A  
 Kayenta 612 A  
 Wingate  
 Lukachukai 735 A  
 Rock Point 1215 A  
 Chinle  
 Owl Rock 1670 A  
 DeChelly\* 2305 A 2302 R 2400?P  
 Cutler undiff 2710 A  
 Cutler evps 3220 A  
 Up Hermosa 4046 AR  
 Paradox  
 Ismay 4623 A 4580 R  
 Desert Cr 4754 A  
 L. Hermosa 4987 A  
 Molas 5398 AR  
 Miss 5467 R  
 D Zone 5467 A  
 C Zone 5578 A  
 B Zone 5619 A  
 A Zone 5686 A  
 Ouray 5717 A  
 Precambrian 5750 A

Initial production perms:  
 5576-5590 & 5632-5647 in Miss; acidized; IP 40 BO & 206 BW, gty 40.5-- Re-worked in Hermosa 7/69, perms: 5053-5079 & 5085-5090, acidized, produced 126 BO, 2 BW, & 5,885 MCFG in 72 hrs. SI.

CORE: 4918-35, 5058-79, 5551-5686 (Analyses of 5662-5686 on file)

PIPE: 9 5/8" @ 1117' w/900 5½" @ 5766' w/550

LOGS: IES, GRN, GRN

\* Reported as Coconino

60 1315 138 17-40N-28E Western States 10/60 5762KB 6341 Pre-cambrian  
 NW NE #2 Navajo 12/60 5752GR  
 660 FNL  
 1980 FFL

Drill Stem Tests

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 5470-5575: (strd pkr) Op 1 hr, rec 180' WCM, FP 55-80#, SIP/30 min 575#.

Summerville Spl's Start  
 Entrada 347 A  
 Carmel 433 A  
 Navajo 507 A  
 Kayenta 627 A  
 Wingate  
 Lukachukai 700 A  
 Rock Point 1341 A  
 Chinle  
 Owl Rock 1850 A  
 Moss Back 2120 A  
 Monitor Butte 2160 A  
 Shinarump\* 2390 A  
 DeChelly 2410 A  
 Cutler undiff 2860 A  
 Cutler evps 3440 A  
 Up Hermosa 4300 AR  
 Paradox  
 Ismay 4982 AR  
 Desert Cr\*\* 5132 AR  
 L. Hermosa 5418 A  
 Pinkerton Trail 5490 R  
 Molas 5700 AR  
 Miss 5790 R  
 D Zone 5790 A  
 C Zone 5890 A  
 B Zone 5935 A  
 A Zone 5980 A  
 Ouray 6018 AR  
 Elbert 6045 A  
 McCracken 6095 A 6088 R

D & A

PIPE: 9 5/8" @ 205' w/50

LOGS: ---

\* basal Chinle sandstone may not be Shinarump.

\*\* Reported as Cliff Rock

IDENTIFICATION	LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	TOPS	REMARKS
SEQ ABM OGC						BOTTOM		

Well No. 60 Cont'd

						Cambrian	6315 A 6260 R			
						Precambrian	6330 A 6315 R			
61	<u>1021</u> <u>94</u>	18-40N-28E C-NW NW 660 FNL 660 FWL	E.B. LaRue, Jr. #1 Navajo	8/59 10/59	5592KB 5582GR	6916	Pre-cambrian quartzite?	Morrison Salt Wash Bluff Summerville Entrada Carmel Navajo Kayenta Wingate Lukachukai Rock Point Chinle Owl Rock Petrified For Moenkopi* DeChelly Cutler undiff Cutler evps Up Hermosa Paradox Ismay Gothic sh Desert Cr Chimney Rock Hogback Barker Cr L. Hermosa Molas Miss D Zone C Zone B Zone A Zone Ouray Elbert McCracken Precambrian	Spls Start 153 A 210 A 300 A 398 A 480 A 627 A 710 A 1260 A 1445 A 1780 A 2290?A 2380 A 2390 R 2910 AR 3560 A 4513 A 4555 R 5310?A 5313 R 5360 R 5470?A 5380 R 5470 R 5570 R 5650 R 5770 A 6053 AR 6145 A 6240 A 6280 A 6350 A 6420 A 6512 A 6464 R 6657 A 6865 AR	P & A  Perforations: 5840-5850, 5858-5868, 5874-5884, 5891-5901, 5913-5919 w/4 PF, acidized w/500 gals MCA. Swbd 3 BFPH, 85% SW, 15% oil. Set 3 hrs-Swbd 75-100 BFPD, 50% oil, 50% wtr. Set pkr 5905- Swbd 5913-5919, 85% wtr, 15% oil, wtr 44,000 BPH. Set bridge plug @ 5906, pkr at 5885, Swbd 5891-5901, 6 hrs, 10 BF, 15% oil, 85% SW.  CORE: See core description.  PIPE: 8 5/8" @ 87' w/200 5 1/2" @ 5985' w/225  LOGS: IES, GRN, PDC  * Probably not this far east.
		Drill Stem Tests (Core Description)								
		5484-5610:	Op 1 hr, rec 100' sli GCM & sli OCM, ISIP (30 min) 1660#, FP 35-70#, FSIP 1505#, HP 2845#.							
		5610-5750:	Op 2 hrs, rec 840' HOC & GCM, 50' watery OC & GCM, no free oil or wtr, ISIP 1575#/45 min, FP 70-400#, FSIP 1330#/45 min.							
		5882-5901:	Op 1 hr, gas in 36 min TSTM, rec 220' OC & GCM, FP 90-105#, SIP (45 min) 1780#.							
		6201-6351:	Op 2 hrs, rec 940' M, 900' SWCM, 2430' SW, FP 745-2015#, SIP (45 min) 2005#, HP 3250#.							
		6735-6900:	Op 2 hrs, rec 540' M, 2520' MSW, FP 190-1345#, SIP (30 min) 2150#.							
		5705-5750:	Rec 41', 20' ls, dense, NS; 2' ls, vugular, stain, bldg oil & SW, fract; 19' ls, dense, NS.							
		6290-6307:	rec 17', 17' dol, scattered vugular por, bldg SW.							
		6307-6321:	rec 14', 2' dol, gray, sucrosic, scattered vugs, NS; 1' dol, brn, sucrosic, dense, NS; 4' sol, gray, some vugs with calcite lining, few sh partings, NS; 1' dol; brn, w/red dol, dense, NS; 3' dol, gray w/sh partings, chert nodules; 3' dol, gray bwn, scattered calcite filling vugs.							
62	<u>1688</u> <u>261</u>	6-40N-27E NW NW 660 FNL 660 FWL	Occidental #1 Texaco-Nav	12/63 2/64	5294KB 5281GR	6795	Cambrian?	Chinle Moss Back Monitor Butte Shinarump Moenkopi basal Tri sdst	Spls Start 1742 A 1783 A 1930 A 1950 A 2083 A	D & A  PIPE: 10 3/4" @ 397' w/300  LOGS: IES, GRN, SON-CAL

Well No. 62 Cont'd

Drill Stem Tests

5925-5945: Op 5 min, SI 30 min, op 1½ hr, SI 30 min, rec 1240' GC brack-  
ish MCW, FP 134-1064#, SIP 2004-1902#.

DeChelly 2120 A 2085 R 2120 P  
Cutler undiff 2556 AR  
Cutler evps 3143 A  
Up Hermosa 4173 AR  
Ismay 4925 A  
Desert Cr 5070 A  
Akah 5150 A 5144 R  
L. Hermosa 5430 A  
Molas 5764 A 5793 R  
Miss undiff 5881 AR  
Ouray? 6167 A  
Elbert 6253 AR  
McCracken 6530 AR  
Aneth 6620 AR  
Cambrian? 6778 A 6748 R

63 1185 95 20-40N-26E Texas Pacific 9/59 5322KB 6424 Cambrian  
SE SE #1 Nav-190 11/59 5307GR  
660 FSL  
660 FEL

Navajo Surf D & A  
Kayenta? 248 A  
Wingate 281 A CORES: 4690-4790, 4930-4972,  
5155-5216, 6112-6132

Drill Stem Tests

5531-5624: Op 2 hrs, SI 30 min, rec 1815' fluid: 375' drilling mud, 1440'  
salt wtr, IHP 3050#, FHP 3040#, IFP 100#, FFP 820#, ISIP 1885#,  
FSIP 1785#, BHT 118°.

Owl Rock 798 A  
Petrified For 1075 A  
Monitor Butte? 1471 A  
Shinarump 1487 A  
Moenkopi 1526 A  
basal Tri sand 1768?P  
DeChelly? 1768 A 1950?P  
DeChelly

6066-6134: Op 1 hr, rec 4185' fluid: 270' drilling mud, 1400' muddy salt  
wtr, 2515' clear salt wtr; IHP 3155#, FHP 3155#, IFP 540#, FFP  
1865#, ISIP 2005#, FSIP 1920#, BHT 158°.

Cutler undiff 2350 A  
Cutler evps 2940 A  
Up Hermosa 3852 A  
Paradox  
Ismay? 4635 A  
Desert Cr? 4793 A  
Molas 5335 A  
Miss

4390-4460: (strd pkr) Op 1 hr 30 min, rec 2077' drilling mud, no show, pkr  
failed, IHP 2365#, FHP 2340#, IFP 720#, FFP 1275#, ISIP 1465#,  
FSIP 1330#, BHT 158°.

D Zone 5440 A  
C Zone 5538 A  
B Zone 5610 A  
A Zone 5712 A  
Ouray 5755 A  
Elbert 5797 A  
McCracken? 6035 A  
Aneth 6175 A  
Cambrian 6305 A

4389-4506: (strd pkr) Op 30 min, rec 1674' drilling mud, no show, pkr  
failed, IHP 2330#, FHP 2295#, IFP 500#, FFP 1110#, ISIP 1110#,  
FSIP 1200#, BHT 129°.

4136-4274: (strd pkr) Op 25 min, pkr failed, rec 1035' drilling mud, no  
show, IHP 2205#, FHP 2175#, IFP 325#, FFP 375#, ISIP 1705#, FSIP  
1400#, BHT 126°.

4136-4269: (strd pkr) Op 3 hrs, rec 712' drlg mud; IHP 2205#, FHP 2175#,  
IFP 205#, FFP 375#, ISIP 1585#, FSIP 850#, BHT 126°.

64 1327 145 30-40N-26E Bonanza #1 4/61 5346KB 6515 Cambrian?  
NW NW Navajo 7/61 5334GR  
660 FNL  
660 FWL

DeChelly Spls Start 1735 R\* 2000?P D & A  
Cutler undiff 2410 A  
Cutler evps 3044 A CORES: 4978-5070; 4830-5023;  
Hermosa 3912 A 5494-5513; 5543-74;  
Paradox 4552 R 6095-6146; 6220-40;  
Ismay 4672 A 6302-20.

Cont'd next page

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	TOPS		REMARKS
SEQ	ABM	OGC						BOTTOM			
Well No. 64 Cont'd											
								Drill Stem Tests			
-----								Desert Cr?	4815 A		PIPE: 8 5/8" @ 600' w/200
								Akah	4823 R		
4830-5023: Op 1 hr, rec 8' mud, FP 44-59#, SIP/45 min 949#, HP 2450#.								Pinkerton Trail	5148 R		LOGS: SON-GR
								Molas	5366 A	5332 R	
6265-6350: Op 2 hrs, rec 990' MCW, FP 133-504#, SIP/60 min 2355#, HP 3197#.								Miss		5432 R	* Probably top of basal Triassic sandstone.
								D Zone	5430 A		
								C Zone	5532 A		
								B Zone	5590 A		
								A Zone	5710 A		
								Ouray	5804 A		
								Elbert	5848 AR		
								McCracken	6043 A	6115 R	
								Aneth	6119 A	6220 R	
								Cambrian	6318 A	6323 R	
								Precambrian		6513 R	
65	<u>2011</u>	<u>271</u>	6-4ON-25E NE NE 890 FNL 730 FEL	Texaco #1 Navajo-AK	3/64 4/64	5016KB 5006GR	6750	Cambrian	Wingate Chinle	Spls Start 1018 A	D & A
								Petrified For	1428 A		CORES: 6375-6491; Bleeding oil & stain 6465-68.
								Shinarump	1940 A		
								Moenkopi	1971 A		
								DeChelly	1980 A*	1942 R* 2100 P	PIPE: 8 5/8" @ 918' w/315
								Cutler undiff	2493 AR		
								Cutler evps	3155 A		LOGS: IES, SON-GR
								Honaker Trail		4040 R	
5090-5240: Op 1 1/2 hr, rec 450' mud, 945' MC salt wtr (no press available).								Hermosa	4181 A		* Picks probably Triassic sandstones.
5466-5478: pkr failed.								Ismay	4750 AR		** Reported as Leadville.
								Desert Cr	4859 AR		
								Akah		4953 R	
5925-5992: Op 1 1/2 hr, rec 450' mud, 3560' salt wtr (no press available).								Barker Cr		5100 R	
								L. Paradox		5320 R	
6423-6491: Op 1 hr, rec 560' HG & sli OCM, 180' HOCM & sli OC salt wtr, 1180' GC salt wtr (no press available).								Molas	5579 AR		
								Miss		5659 R**	
								Horseshoe M.	5660 A		
								Mooney Falls	5760 A		
								Thunder Spgs	5842 A		
								Whitmore Wash	5955 A		
								Ouray	6000 AR		
								Elbert	6141 AR		
								McCracken	6374 A	6400 R	
								Bright Angel	6599 A	6638 R	
								Tapcats	6708 A	6664 R	
66	<u>1010</u>	<u>60</u>	11-4ON-25E NE SE 760 FEL 1980 FSL	Fan American Tohlacon-Nav #1	9/58 12/58	5308KB 5294GR	6598	Pre-cambrian meta	Navajo Kayenta Wingate	Spls Start 250 A	D & A-4/60
								Lukachukai	300 A		CORE: 4822-5022; 5102-5162
								Rock Point	630 A		PIPE: 17 1/2" @ 886' w/1020;
								Chinle			12 1/2" @ 2000' w/?;
											5 1/2" @ 6598' w/650

Well No. 66 Cont'd

Drill Stem Tests

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3025-3123: Op 1½ hrs, rec 10' v sli OC & GCM, ISIP/30 min 70#, FSIP 70#, FP 70#, BHT 108°F.

4027-4082: Op 1 hr, rec 20' drlg mud/no shows, SIP/45 min 65#, FP 45#.

4222-4340: Op 1 hr, rec 20' sli GCM, SIP/30 min 67#, FP 75#.

4336-4426: Op 1 hr, rec 15' drlg mud/no shows, ISIP/30 min 15#, FSIP/45 min 15#, FP 15#, BHT 134°F.

4422-4560: Op 1 hr, rec 10' drlg mud/no shows, ISIP/45 min 30#, FSIP/45 min 15#, FP 30#, BHT 128°F.

4558-4700: Op 1 hr, rec 10' drlg mud/no shows, ISIP/45 min 15#, FSIP/45 min 15#, FP 15#, BHT 129°F.

4696-4796: Op 1 hr, rec 5' drlg mud/no shows, ISIP/45 min 15#, FSIP/45 min 15#, FP 15#, BHT 132°F.

4795-4946: Op 3 hrs, rec 90' GCM & 25' free oil, ISIP/45 min 60#, FP 45-60#, FSIP 45/min 245#, BHT 136°F.

4946-4962: Op 4 hrs, rec 40' oil, 15' GCM, 120' salt wtr, ISIP/45 min 70#, FP 35-70#, FSIP/45 min 1385#.

4964-5102: Op 3 hrs, rec 480' GC & WCM/rainbow of oil, ISIP/ 45 min 2525#, FP 105-280#, FSIP/45 min 1745#, BHT 136°F.

5105-5197: Op 3½ hrs, rec 495' W & GCM, 1000' SW, ISIP/45 min 2505#, FSIP/45 min 1580#, BHT 140°F.

5195-5300: Op 2 hrs, rec 455' WCM & 1550' SW, ISIP/45 min 2520#, FP 175-935#, FSIP/ 45 min 1590#, BHT 142°F.

5295-5390: Op 1½ hrs, rec 30' drlg mud/no shows, ISIP/45 min 35#, FP 35#, FSIP/ 45 min 35#.

5460-5541: Op 4 hrs, rec 350' v sli WCM & 436' SWCM/sli show gas & rainbow of oil, ISIP/45 min 2555#, FP 105-385#, FSIP/45 min 1765#, BHT 143°F.

5583-5713: Op 3 hrs, rec 336' SWCM, 180' WCM, 180' SW/no shows, ISIP/ 30 min 1990#, FP 85-350#, FSIP/30 min 1750#.

5736-5890: Op 3½ hrs, rec 458' SWCM & 3622' SW, ISIP/45 min 1935#, FP 225-1875#, FSIP/45 min 1905#, BHT 154°F.

5901-6010: Op 3 hrs, rec 474' SWCM w/v sli show gas & lt rainbow of oil, 180' SW, ISIP/30 min 2800#, FP 110-365#, FSIP/30 min 2090#, BHT 155°F.

6070-6225: Op 3½ hrs, rec 1100' drlg mud/no shows, 2800' hvy SWCM, ISIP/30 min 2900#, FP 575-1825#, FSIP/30 min 2075#, BHT 152°F.

Owl Rock 906 A  
 Petrified For 1210 A  
 Moss Back 1430 A  
 Monitor Butte 1570 A  
 Shinarump 1607 A  
 Moenkopi 1670 A 1604 R  
 DeChelly 1820 A 1848 R 1900?P  
 Cutler undiff 2280 A 2356 R 2350 P  
 Cutler evps 3000 A  
 Up Hermosa 3879 AR  
 Paradox 4553 R  
 Ismay 4584?A  
 Desert Cr 4702 A 4640 R  
 Akah 4787 R  
 Barker Cr 4967 R  
 L. Hermosa 4940 A  
 Molas 5369 AR  
 Miss 5452 R  
 D Zone 5450 A  
 C Zone 5610?A  
 B Zone 5685 A  
 A Zone 5763 A  
 Ouray 5808 A  
 Elbert 5907 AR  
 McCracken 5960 A 6140 R  
 Aneth 6230 AR  
 Cambrian 6350 AR  
 Precambrian 6533 A 6524 R

LOGS: IES, GRN, MLL, SON-SP

Perforations:  
 6230-6253 (acidized-swbd some dead blk oil), 5489-5528 (acidized-swbd 5 Bbls oil-reacidized & swbd 32 Bbls heavy blk oil), 5296-5332 (acidized), 5194-5216 (acidized), 4942-60 (acidized-swbd 12 Bbls oil-reacidized & swbd 12 Bbls oil, 4826-36, 4866-74, 4890-96 (acidized), 4016-24 (acidized).

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IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
Well No. 66 Cont'd											
			6230-6286:	Op 4 hrs, rec 2' oil, 328' GO & WCM, ISIP/45 min 2075#, FP 35-175#, FSIP/45 min 1800#.							
			6286-6362:	Op 3½ hrs, rec 170' G & SWCM, 2625' SW, ISIP/45 min 2145#, FP 105-1295#, FSIP/30 min 2110#, BHT 1630F.							
			6430-6508:	Op 4 hrs, rec 1440' sll SWCM & 290' hvy SWCM/no shows, ISIP/45 min 3040#, FP 455-870#, FSIP/30 min 1835#, BHT 1560F.							
67	<u>2009</u>	<u>247</u>	8-40N-24E NE SW 2100 FSL 1950 FWL	Pan American #1 Nav-Q	9/63 11/63	5116KB 5104GR	6617	Cambrian	DeChelly Cutler undiff Cutler evps Hermosa Akah Barker Cr Molas? Miss Horseshoe M. Mooney Falls Thunder Spgs Whitmore Wash Ouray Elbert McCracken Aneth Camb undiff	Spls Start 2585 AR 3250 A 4163 A 4090 R 5099 R 5278 R 5520?A 5640 R 5612 A 5700 A 5840 A 5923 A 5960 A 5985 R 6074 AR 6331 A 6344 R 6460 A 6478 R 6585 A	D & A PIPE: 8 5/8" @ 999' w/700 LOGS: IES, SON-GR, ML
Drill Stem Tests											
			6322-6349:	SI 30 min, op 3 hrs, SI 1 hr, rec 1100' SW, FP 44-496#, SIP 2217-2188#, HP 3025-3052#.							
			6428-6525:	SI 30 min, op 2 hrs, SI 1 hr, rec 4' oil, 90' O & MCSW, 1210' SW, FP 89-617#, SIP 2199-1997#.							
			6526-6575:	SI 30 min, op 2 hrs, SI 1 hr, rec 600' SW, FP 29-262#, SIP 2303-2289#.							
68	<u>2523</u>	<u>467</u>	1-39N-30E SE SE 730 FSL 640 FEL	Odessa Natural Gasoline #1 Aircodessa-W. Beclabito	7/68 8/68	6650KB 6640GR	2317	Sill in Moenkopi*	Chinle Ig sill Moss Back Moenkopi* Ig sill	Spls Start 295 R 555 A 1009 A 1170 A 1320 A	D & A PIPE: 13 3/8" @ 311' w/325 LOGS: GRN * Probably Chinle.
69	<u>2572</u>	<u>503</u>	1-39N-29E SE SE 866 FSL 554 FEL	Monsanto #1 Carrizo-Navajo	7/69 10/69	8915KB 8895GR	8461	Sill in Ouray	Tert. intrusive Jur-Tri undiff 3 sills Chinle? 1 sill Moss Back Monitor Butte 1 sill basal sand DeChelly 1 sill Cutler undiff 2 sills Cutler evps 5 sills	Spls Start 563 A 1970?A 2593 A 2804 A 3037 A 3090 A 3036 R 3090 P 3463 A 3323 R 3463 P 3960 A	D & A Deepest hole in Arizona- penetrated 20 igneous sills PIPE: 16" @ 58' w/60; 11 3/4" @ 449' w/300 LOGS: IES, BHC-GR * Chart available
Drill Stem Tests											
			2975-3091:	SI 30 min, op 75 min, SI 1 hr, rec 270' mud, FP 80-107#, SIP 160-293#.							
			4345-4445:	SI 35 min, op 75 min, SI 2 hrs, rec 125' GCM, FP 88-132#, SIP 571-615#.							

Well No. 69 Cont'd

8236-8304\*: SI 30 min, op 45 min, SI 45 min, rec 5' mud, FP 74-77#, SIP 464-109#.

Up Hermosa	6020 A	6010 R
2 sills		
Ismay	6774 A	7034 R
Desert Cr	6915 A	7173 R
Akah		7309 R
Barker Cr		7428 R
L. Hermosa	7242 A	
1 sill		
Molas	7550 A	8126 R
1 sill		
Miss		8182 R
Horseshoe M.	8141 A	
Mooney Falls	8252 A	
Thunder Spgs	8307 A	
Whitmore Wash	8353 A	
Ouray	8370 AR	
Sill	8430 A	

70 NS 305 19-39N-26E Cactus Drlg 1/65 3575KB 6197 Pre-cambrian  
NW SW #1 Rock Point 2/65 3563GR quartzite  
1658 FSL  
960 FWL

Drill Stem Tests

5390-5640: Op 5 min, SI 30 min, op 1 hr, SI 30 min, rec 1400' mud, 400' sli MCSW, FP 468-612#, SIP 2467-2078#, HP 2928-2931#.

DeChelly	1850 R*
Cutler undiff Sp1s Start	2535 R
Cutler evps?	3285 R
Hermosa	4306?A 3932 R
Ismay	4640 R
Molas	5164?A 5250 R
Miss	5335 R
Horseshoe M.	
Mooney Falls	5332 A
Thunder Spgs	5490 A
Whitmore Wash	5530?A
Ouray	5570?A
Elbert	5679 AR
McCracken	5870 A 5890 R
Aneth	6008 A
Precambrian	6090 A

D & A  
PIPE: 13 3/8" @ 138' w/140  
LOGS: IES, SON-GR  
\* Probably includes Triassic sandstone.

71 2074 382 16-39N-25E J.C.M. Drlg Co. 3/67 5043KB 6031 Pre-cambrian  
NW NW #1 Nav-Mobil 4/67 5029GR meta  
1095 FNL  
865 FWL

Drill Stem Tests

5603-5700: SI 30 min, op 60 min, SI 60 min, rec 5' mud, FP 53-80#, SIP 53-80#, HP 2801-2721#.

Wingate?	Sp1s Start	
Chinle		
Moss Back	1166 A	
Monitor Butte	1214 A	
Shinarump	1304?A	
Moenkopi*	1390 A	
DeChelly	1585 A	1604 R 1700?P
Cutler undiff	2250?A	2212 R
Honaker Trail		3555 R
Up Hermosa	3613?A	3611 R
Paradox		4127 R
Molas	4945 AR	
Miss		5035 R
Horseshoe M.	5035 A	
Mooney Falls	5110 A	
Thunder Spgs	5180 A	
Whitmore Wash	5270 A	
Ouray	5296 A	5305 R
Elbert	5330 A	

D & A  
PIPE: 11 3/4" @ 336' w/125  
8 5/8" @ 1334' w/110  
LOGS: IES, BHC-GR  
\* Probably largely Chinle.

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IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	TOPS		REMARKS
SEQ	ABM	OGG							BOTTOM		
Well No. 71 Cont'd											
								McCracken		5560 R	
								Cambrian undiff	5360?A		
								Precambrian	5498 A	5715 R	
72	-	272	28-39N-25E	Mobil #1	3/64	4982KB	5644	Pre-cambrian	Wingate		D & A
			SE NW	Navajo-155	4/64	4970GR		meta	Lukachukai	Surf R	
			2310 FNL						Rock Point	290 R	CORE: 1460-1482; 1545-1605;
			2310 FWL						Chinle		4948-4965; 5448-5468;
									Owl Rock	537 R	5630-5640.
									DeChelly	1572 R* 1630?P	
									Cutler undiff	2204 AR	PIPE: 10 3/4" @ 373' w/250
									Cutler evps	2747 A	7 5/8" @ 2436' w/270
									Cedar Mesa	2750 R	
									Hermosa	3643 A 3575 R	LOGS: IES, SON-GR, GRN, MUD
									1st shale	4147 R	MDT, SL
									A Zone	4185 R	
									2nd shale	4264 R	* Probably picked on a
									Ismay**	4277 R	basal Chinle sandstone.
									3rd shale	4357 R	
									Desert Cr***	4405 R	** Also reported as Paradox
									4th shale	4447 R	"b" Zone.
									5th shale	4565 R	
									6th shale	4708 R	*** Also reported as Paradox
									Molas	4821 A 4870 R	"c" Zone.
									Miss	4945 R	
									Horseshoe M.	4944 A	
									Mooney Falls	5030 A	
									Thunder Spgs	5125 A	
									Whitmore Wash	5202 A	
									Ouray	5235 A 5260 R	
									Elbert	5263 A	
									McCracken	5364 A	
									Camb undiff	5520 A	
									Precambrian	5580 A 5602 R	
73	<u>2027</u>	<u>297</u>	7-39N-24E	Amerada #1	11/64	5195KB	6578	Cambrian	Navajo	Spls Start	D & A
			SE SE	Navajo 91	12/64	5185GR		Tapeats	Kayenta	225 A	
			660 FSL						Wingate		PIPE: 9 5/8" @ 823' w/400
			660 FEL						Lukachukai	295 A	
									Rock Point	690 A	LOGS: IES, SON-GR, GRN, MUD
									Chinle		
									Owl Rock	940 A	
									Moss Back	1700 A	* Underlying section
									Monitor Butte	1800 A	sandy-may reflect Cedar
									basal sand	1869 A	Mesa Sandstone influence.
									DeChelly	2013 A 1912 R 2013 P	
									Cutler undiff	2580 AR	
									Cutler evps*	3172 A	
									Hermosa	4330 A 3963 R	
									Paradox	4480 R	
									A	4493 R	
									B	4668 R	



Well No. 73 Cont'd

6040-6133: Op 4 hrs, SI 1½ hrs, rec 90' sli WCM, 3845' SW, SIP 2002#, FP 54-1787#, HP 2894-2881#.

C	4779 R
L. Hermosa	5110 R
Molas	5284 AR
Miss	5400 R
D Zone	5390 A
C Zone	5505 A
B Zone	5637 A
A Zone	5720 A
Ouray	5793 AR
Elbert	5888 AR
McCracken	6104 A 6073 R
Aneth	6224 AR
Bright Angel	6377 AR
Tapeats	6442 AR

74	<u>2548</u>	<u>292</u>	12-39N-23E SE NW 1980 FNL 1980 FWL	Superior #22-12 Nav "v"	10/64 11/64	5228KB 5216GR	6468	Pre- Cambrian	Wingate Lukachukai Rock Point Chinle Owl Rock Petrified For Moss Back Moenkopi* basal sand DeChelly Cutler undiff Cutler evps? Cutler Hermosa Ismay Desert Cr Chimney Rock Pinkerton Trail Molas Miss Horseshoe M. Mooney Falls Thunder Spgs Whitmore Wash Ouray Elbert McCracken Aneth Cambrian Precambrian	Spis Start  733 A  958 A 1194 A 1733 A 1810 A 1873 A 2124 A 2576 AR 3121?A  3163 R 3954 AR 4550 AR 4650 AR 4753 R 5094 A 5236 A 5262 R 5342 R  5343 A 5406 A 5515 A 5600 A 5649 A 5737 R 5780 AR 6008 A 5980 R 6107 AR 6222 R 6221 A 6402 R 6221 P	D & A  CORE: 5980-5986; 6080-6119; 6130-6119; 6172-6159; 6218-6252.  PIPE: 16" @ 77' w/150 10 3/4" @ 749' w/475  * Probably Chinle
Drill Stem Tests											
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	5982-6020:	SI 30 min, op 1 hr, SI 1 hr, rec 15' mud, FP 8-8#, SIP 1296-8#, HP 2798-2798#.									
	6097-6119:	SI 30 min, op 1 hr, SI 30 min, rec 30' very sli OCM, FP 28-28#, SIP 563-56#, HP 2996-2996#.									
	6097-6159:	SI 30 min, op 1 hr, SI 30 min, rec 15' mud, FP 28-28#, ISIP 926#, HP 3010-3010#.									
	6100-6216:	SI 30 min, op 1 hr, SI 1 hr, rec 4" oil, 100' mud, FP 28-56#, SIP 1797-1628#, HP 3010-3010#.									
75	-	265	12-39N-23E NW SE 1994 FSL 2017 FEL	Superior #33-12 Navajo "v"	2/64 5/64	5232KB 5220GR	6325	Pre- Cambrian	DeChelly Organ Rock Hermosa Ismay Desert Cr Akah	1725 R 2250 R 3810 R 4577 R 4690 R 4776 R	D & A  PIPE: 16" @ 78' w/85 10 3/4" @ 735' w/465  LOGS: IES, SON-GR, ML, FOR-DEN

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IDENTIFICATION SEQ ABM OGC	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
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Well No. 75 Cont'd

Drill Stem Tests									
5484-5549:	Op 7 min, SI 30 min, op 2 hrs, SI 1 hr, rec 120' muddy brackish wtr, 345' drlg mud, 350' SW, IHP 2689#, ISIP 1840#, IFP 146#, FFP 321#, FSIP 1840#, FHP 2660#.						Molas Miss Ouray Elbert McCracken basal sand Aneth	5150 R 5310 R 5670 R 5780 R 5955 R 5990 R 6060 R	CORE: 2961-3011; 4078-4123; 4521-4612; 4619-4668; 4693-4714; 4719-4747; 5413-5451; 5457-5549; 5680-5704; 6065-6080; 6081-6091.
5644-5704:	Op 10 min, SI 30 min, op 2 hrs, SI 1 hr, rec 90' mud, IHP 2802#, ISIP 1748#, IFP 65#, FFP 87#, FSIP 1576#, FHP 2759#.						Cambrian Precambrian	6193 R 6220 R	
5992-6009:	Op 10 min, SI 30 min, op 2½ hrs, SI 1 hr, rec 20' 30.2 gty blk oil, 325' sli OC & GC mud, & 205' SW, IHP 2876#, ISIP 2156#, IFP 145#, FFP 172#, FSIP 2012#, FHP 2876#.								
6071-6091:	Op 10 min, SI 30 min, op 3 hrs, SI 1 hr, rec 180' OC & GC mud, 445' sli OC & GC brackish wtr, 1825' v sli OC & GCSW, IHP 2935#, ISIP 2131#, IFP 133#, FFP 1065#, FSIP 2131#, FHP 2935#.								

76	-	412	24-39N-23E NW SW 1980 FSL 660 FWL	Horizon #1-24 Nav-Mobil	6/67 7/67	5237KB 5225GR	6452	Pre-cambrian	Kayenta, base Chinle Shinarump Moenkopi DeChelly Hermosa A Zone B Zone C Zone D Zone E Zone F Zone G Zone Molas Miss Ouray Elbert McCracken Aneth Bright Angel Tapeats Precambrian	630 R 885 R 1705 R 1763 R 1860 R 3967 R 4492 R 4596 R 4709 R 4833 R 4969 R 5096 R 5170 R 5266 R 5344 R 5685 R 5786 R 6017 R 6121 R 6265 R 6340 R 6443 R	D & A PIPE: 13 3/8" @ 369' w/150 8 5/8" @ 2571' w/440 LOGS: DIL, BHC/GR, SNP
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Drill Stem Tests									
6125-6153:	SI 30 min, op 65 min, SI 30 min, rec 5' mud, FP 5-5#, SIP 2065-1998#, HP 3203-3203#.								

77	2577	497	2-38N-30E NW NW 880 FNL 430 FWL	Depco, Inc. #4-2 Nav	5/69 6/69	6324KE 6314GR	5012	Tert. sili Chinle in Devonian	Owl Rock Petrified For Moss Back Monitor Butte Moenkopi* DeChelly Cutler undiff Cutler evps Hermosa	Spls Start 750 A 1028 AR 1089 A 1250 A 1333 AR** 1831 A 2372 A 3100 AR	657 R 1390?P	D & A PIPE: 13 3/8" @ 328' w/300 LOGS: IES, SON-GR, DM * Probably Chinle ** May include basal Triassic sandstone.
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Well No. 77 Cont'd

Molas 4403 AR  
 intrusive (sill) 4430 AR  
 Miss 4506 R  
 Horseshoe M. 4510 A  
 Mooney Falls 4587 A  
 Thunder Spgs 4637 A  
 Whitmore Wash 4664 A  
 Ouray 4710 AR  
 intrusive 4785 AR

78 2527 468 12-38N-30E Pan American 7/68 5881KB 4809 Miss  
 SE NW #1 Nav "Ar" 9/68 5868GR  
 1900 FNL  
 1900 FWL

Drill Stem Tests  
 (Charts on file)

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 2963-3040: Tool plugged, rec 60' mud, FP 0-110#, HP 1441-1441#.  
 2963-3040: Op 5 min, tool plugged, rec 120' mud, FP 0-110#, HP 1570-1570#.  
 2939-3120: SI 1 hr, op 1 hr, SI 1 hr, rec 15' mud, FP 27-27#, SIP 30-27#,  
 HP 1597-1597#.  
 4000-4049: SI 1 hr, op 3 hrs, SI 1 hr, rec 150' sll OCW, 1205' SW w/trace  
 oil; FP 88-570#, SIP 1786-1181#, HP 2174-2131#.

Chinle Spls Start  
 Petrified For  
 Moss Back 468 A  
 Monitor Butte 556 A  
 Moenkopi\* 650 A  
 basal Tri sand\*\* 785 A  
 DeChelly 851 A 786 R 851 P  
 Cutler undiff 1240 A 1052 R 1240 P  
 Cutler evps 1800 A  
 Hermosa 2497 AR  
 Ismay 3149 R  
 Akah 3279 R  
 Barker Cr 3383 R  
 Molas 3780 R  
 intrusive 3825 AR  
 Miss 4650 A\*\*4680 R

D & A  
 PIPE: 16" @ 30' w/40  
 10 3/4" @ 395' w/400  
 LOGS: IES, SNP, BHC/GR, AM  
 FOR-DEN  
 \* Probably Chinle.  
 \*\* Reported as Redwall.

79 2540 423 18-38N-30E Skelly #1 8/67 6713KB 5373 Devonian\*\*\*  
 NW NW Navajo "Q" 9/67 6704GR  
 660 FNL  
 660 FWL

Drill Stem Tests

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 3945-4146: SI 30 min, op 1 hr, SI 30 min, rec 15' mud, FP 0-0#, SIP 0-0#,  
 HP 1879-1879#.

Surface gravel Spls Start  
 Wingate 90 A  
 Rock Point 300 A  
 Chinle  
 Owl Rock 520 A  
 Petrified For 940 A  
 Moss Back 1211 A  
 Monitor Butte 1294 A  
 Shinarump 1355 A  
 Moenkopi\* 1366 A  
 basal Tri sand\* 1533 A  
 DeChelly 1630 A 1532 R  
 Cutler undiff 2095 A  
 Cutler evps 2600 A  
 Hermosa 3385 AR  
 Ismay 3864 R  
 Desert Cr 4030 R  
 Barker Cr 4390 R  
 Molas 4430?A 4430 R  
 Miss 4665 R  
 Horseshoe M. 4653 A  
 Mooney Falls 4735 A  
 Thunder Spgs 4782 A  
 Whitmore Wash 4850 A  
 intrusive 4956 R  
 Devonian 4988 A\*\*4950 R

D & A  
 PIPE: 10 3/4" @ 345' w/225  
 LOGS: IES, BEC/GR  
 \* Probably Chinle  
 \*\* Reported as Ouray  
 \*\*\* operator reports  
 Cambrian @ 5370-may be  
 continuation of McCracken  
 below intrusive.

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IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY			REMARKS	
SEQ	ABM	OGC						BOTTOM		TOPS		
Well No. 79 Cont'd												
									Elbert	5012 A		
									McCracken	5136 A	5145 R	
									intrusive	5230 A		
									Cambrian***		5370 R	
80	2052	316	32-38N-30E	Pure #1	5/65	5922KB	4404	Tertiary	Chinle	Spls Start	D & A	
			NE SE	Navajo 103	6/65	5910GR		intrusive	Petrified For			
			1980 FSL					in Devonian	Moss Back	437 A	PIPE: 13 3/8" @ 344' w/300	
			660 FEL					strata	Monitor Butte	512 A	LOGS: DIL, GRN, SON-GR	
									Moenkopi*	717 A		
									basal Tri sand		780 P	
									Drill Stem Tests		900 P	
									DeChelly	780?A	770 R	* Probably Chinle
									Cutler undiff	1330 A	1330 R	
									Cedar Mesa**		1815 R	** May not be appropriate
									Up Hermosa	2584 A	2546 R	terminology in this
									Molas	3600 AR		region.
									Red Wall	3697 AR		
									Ouray	3928 A	3886 R	
									Elbert		3932 R	
									intrusive	4000 AR		
									Elbert	4115?A		
									intrusive	4214 AR		
81	2514	415	16-38N-29E	Pan American	6/67	6595KB	4445	Tertiary	Chinle		D & A	
			NE SE	#1 Navajo V	7/67	6582GR		intrusive	Moss Back	Spls Start		
			1940 FSL					in Hermosa	Monitor Butte	630 A	PIPE: 16" @ 39' w/40	
			900 FEL						Moenkopi*	700 A	10 3/4" @ 603' w/550	
									basal Tri sand**	842 A		
									Drill Stem Tests			
									DeChelly	927 A	842 R	LOGS: IES, SNP, FOR-DEN,
									Cutler undiff	1340 A		BHC/GR
									Cutler evps	1830 A		
									Up Hermosa	2554 A	2467 R	* Probably Chinle
									intrusive	3363 A	3358 R	** Amstrat reports a
									(sill)			show of oil.
82	2012	280	20-38N-27E	Pan American	5/64	6258KB	5870	Pre-	Kayenta	Spls Start	D & A	
			SE SE	#1 Navajo "r"	6/64	6245GR		cambrian	Wingate			
			660 FSL					granitic	Lukachukai	50 A	PIPE: 9 5/8" @ 1019' w/500	
			660 FEL						Rock Point	530 A		
									Chinle			LOGS: IES, GRN, SON-GR
									Owl Rock	840 A		

Well No. 82 Cont'd

Drill Stem Tests

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 4887-4940: Op 5 min, SI 30 min, op 1 1/2 hrs, SI 30 min, rec 360' SWC mud, 1200' SW, SIP 1331-1331#, FP 106-2318#, HP 2318-2318#.  
 5251-5425: Op 5 min, SI 30 min, op 2 hrs, SI 30 min, rec 400' v sli GCM, 500' v sli GC & SWC mud, 1925' SW, SIP 1284-1284#, FP 754-1284#, HP 2535-2506#, BHT 122°F.  
 5490-5555: Op 5 min, SI 30 min, op 30 min, SI 30 min, rec 4650' mud, SIP 2420-2393#, FP 2150-2298#, HP 2555-2447#, BHT 120°F.  
 5590-5690: Op 5 min, SI 30 min, op 4 hrs, SI 30 min, rec 180' sli GCM v sli oil scum, 530' muddy SW, 2400' muddy SW, SIP 1665-1504#, FP 216-1504#, HP 2583-2556#.  
 5710-5771: Op 5 min, SI 30 min, op 2 hrs, SI 30 min, rec 720' MCSW, 2615' SW, SIP 1523-1523#, FP 751-1523#, HP 2672-2644, BHT 110°F.

Petrified For 1350 A  
 Moss Back 1543 A  
 Monitor Butte 1580 A  
 Shinarump\* 1694 A  
 Moenkopi\*\* 1725 A  
 basal Tri sand 1854 A  
 DeChelly 1865 A  
 Cutler undiff 2580 AR  
 Cutler evps 3076 A  
 Up Hermosa 3948 AR  
 Molas 5094 R  
 Miss 5172 R  
 D Zone 5164 A  
 C Zone 5210 A  
 B Zone 5270 A  
 A Zone 5347 A  
 Ouray 5396 AR  
 Elbert 5460 AR  
 McCracken 5606 AR  
 Aneth 5683 AR  
 Precambrian 5796 AR

\* Probably not Shinarump  
 \*\* Probably Chinle

83 2089 424 28-38N-24E Amer. Mining 8/67 5433KB 5807 Miss?  
 SE NW #1 Navajo 11/67 5423GR  
 1980 FNL  
 1980 FWL

Navajo? Sp1s Start  
 Kayenta 200?A 1005 R  
 Wingate  
 Lukachukai 265?A  
 Rock Point 795?A  
 Chinle 1290 R  
 Owl Rock? 890?A  
 Moss Back 1724?A  
 Monitor Butte 1786?A  
 basal sand 2110?A 2150 R  
 DeChelly 2240?A 2270 R  
 Cutler undiff 2790?A 2920 R  
 Cutler evps 3400?A  
 Hermosa 4605?A 4310 R  
 Molas? 5676?A  
 Molas 5325 R  
 Redwall 5400 R

D & A  
 PIPE: 10 3/4" @ 371' w/25  
 LOGS: MUD

84 2095 433 1-38N-22E McCulloch Oil 10/67 5650KB 5846 L. Hermosa?  
 NW NW #1-1 Nav 11/67 5640GR  
 500 FNL  
 500 FWL

Navajo 462 R  
 Kayenta 1234 R  
 Wingate  
 Lukachukai Sp1s Start  
 Rock Point 1314 A  
 Chinle  
 Owl Rock 1608 A 1587 R  
 Petrified For 1865 A  
 Moss Back 2452 A  
 Moenkopi 2472?A 2538 R  
 basal sand 2586 A  
 DeChelly 2680 AR  
 Cutler undiff 3312 AR  
 Cutler evps 3900 A  
 Hermosa 4890?A

Hole lost-rig skidded 150' north to drill well No. 1-1X which was also lost at 765'  
 PIPE: 16" @ 16' w/4  
 11 3/4" @ 296' w/140  
 8 5/8" @ 3391' w/150  
 LOGS: BHC/GR, MUD

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS	
SEQ	ABM	OGC										
85	2592	507	34-37N-30E NE NE 660 FNL 660 FEL	Gulf #1 Navajo "CS"	7/69 7/69	6057KB 6046GR	4600	Pre-cambrian granite	Chinle Sonsela Monitor Butte Moenkopi basal Tri sand DeChelly Cutler undiff Cutler evps Hermosa Ismay Desert Cr L. Hermosa Molas Miss Mooney Falls Thunder Spgs Whitmore Wash Ouray Elbert McCracken Aneth Tapeats? Precambrian	Spis Start 750 A 860 A 936?A 1083 A 1083 A 1714 A 2150 A 2866?A 3280 A 3447 A 3480?A 3836 AR 3930 R 3950?A 3990 A 4040 A 4097?A 4128 AR 4230 A 4322 R 4450 A 4422 R 4568 A 4533 R 4583 AR	D & A PIPE: 8 5/8" @ 362' w/200 LOGS: IES, SNP, BHC/GR	
Drill Stem Tests												
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3650-3710: Op 64 min, SI 60 min, nonflam gas to surf, TSTM, rec 95' sli GCM, SIP 1219-783#, FP 92-98#.												
50	86	2591	491	12-37N-29E NW NE 560 FNL 1920 FEL	Gulf #1 Navajo BS	4/69 5/69	5985KB 5971GR	4145	Pre-cambrian granitic	Chinle Moss Back Moenkopi* basal Tri sand DeChelly Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr L. Hermosa Molas Miss Ouray Elbert Igneous Cambrian? Precambrian	Spis Start 390 A 713 A 754 A 864 A 1350 A 1780 A 2692 A 2520 R 2892 A 3004 A 3194 A 3460 AR 3530 A**3530 R 3690 A 3700 R 3785 A 3720 R 3840 R 3847 A 3857 A	D & A CORE: 2863-2904 PIPE: 8 5/8" @ 368' w/200 LOGS: IES, SNP, BHC/GR * Probably Chinle ** Reported as Redwall
Drill Stem Tests												
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3200-3325: Op 5 min, SI 1 hr, op 1½ hrs, rec 300' GCM, SIP 891-599#, FP 80-187#, HP 1461-1475#.												
3570-3703: Op 2 min, SI 1 hr, op 1 hr, rec 390' mud, SIP 1541-1501#, FP 107-240#, HP 1754-1754#.												
87	3038	544	14-37N-29E NE SW 1800 FSL 1900 FWL	Union Texas #1-14 Lukachu- kai-Navajo	8/70	6220KB 6209GR	3705	Miss	DeChelly Cutler undiff Hermosa Ismay Desert Cr Molas Miss	1050 S* 1560 S 2850 S 3048 S 3162 S 3610 S 3648 S	TA perf 3428-3436, acidized and frac, Swbd 24 BO and 24 BW/24 hrs. CORE: 3426-3437 PIPE: 8 5/8" @ 202' 5½" @ 3699'	

Well No. 87 Cont'd

LOGS: IES, DIL, BHC/GR,  
SNP, AMP, PDC, CEL

\* First approximation  
correlations

88	3043	563	22-37N-29E NW NW 330 FNL 490 FWL	Curtis Little #1-22 Tsegehot- Tsane Nav	8/71 9/71	6451KB 6440GR	3765	Molas	Chinle DeChelly Cutler undiff Supai Hermosa Molas	Surf R 1103*R 1740 R 2166 R 2860 R 3735 R	D & A  CORE: 3535-3642 analysis on file for 3557-3601  PIPE: 9 5/8" @ 108' w/100 sx
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Drill Stem Tests

3536-3601: Op 10 min, SI 1 hr, op 90 min, SI 8 min, op 117 min, SI 105 min, rec 658' mud v sli OC & GC, FP 132-1180#, SIP 561-1187#, HP 1625-1585#.

3476-3650: Op 5 min, SI 70 min, op 5 hrs, SI 2½ hrs, rec 175' mud, FP 92-184#, SIP 1304-548#, HP 1724-1724#.

LOGS: DIL, SNP, PLM

\* Pick may be basal  
chinle sandstone

89	2557	489	33-37N-29E SE SE 330 FSL 330 FEL	Odessa #1 Aircodessa- Cove-Navajo	3/69 4/69	6440KB 6430GR	3605	Pre- Cambrian granitic?	Moenkopi* basal Tri sand DeChelly Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr L. Hermosa Molas Miss Ouray Elbert McCracken Aneth Cambrian Precambrian	Sp1s Start 406 A 547 A 404 R 1082 A 904 R 1500 A 2288 AR 2452 A 2627 A 2819 A 2927A 2906 R 3010 A**3008 R 3110 A 3140A 3160 R 3326 AR 3430 AR 3538A 3590 AR	D & A  PIPE: 9 5/8" @ 264' w/125  LOGS: DIL, FOR-DEN  * Probably Chinle  ** Reported as Redwall
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Drill Stem Tests

2630-2710: Op 5 min, SI 30 min, op 43 min, SI 30 min, rec 230' mud, FP 111-111#, SIP 236-262#, HP 1304-1285#.

2751-2860: Op 5 min, SI 30 min, op 30 min, SI 30 min, rec 300' mud, FP 160-188#, SIP 240-240#, HP 1355-1355#.

3100-3146: Op 5 min, SI 30 min, op 55 min, SI 30 min, rec 475' mud, FP 160-242#, SIP 1037-1037#, HP 1503-1503#.

90	2014	298	35-37N-29E NW NW 650 FNL 530 FWL	Blackburn #35-1 Nav	11/64 12/64	6257KB 6244GR	3657	Pre- Cambrian	Chinle? Moss Back Monitor Butte Moenkopi* basal Tri sand DeChelly Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr Molas Redwall Ouray	Sp1s Start 100?A 180?A 300?A 300 R 425 P 425 R 550?P 950?A 1020?P 1575 A 2280 AR 2455 A 2626 A 2973 A 3007 R 3008 A 3203A 3201 R	D & A  CORE: 3443-3563  PIPE: 13 3/8" @ 311' w/340  LOGS: DIL, GRN, SON-CAL  * Probably Chinle
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Drill Stem Tests

3415-3483: SI 30 min, op 1 hr, SI 30 min, rec 475' SW, 50' SWCM, FP 27-230#, SIP 1290-1263#, HP 1545-1545#.

3512-3563: SI 30 min, op 1 hr, SI 30 min, rec 90' SWCM, 410' SW, FP 14-203#, SIP 1330-1330#, HP 1612-1625#.

Cont'd next page

IDENTIFICATION SEQ ABM OGC	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
Well No. 90 Cont'd									
3578-3600:	SI 30 min, op 1 hr, SI 30 min, rec 100' WCM, FP 14-58#, SIP 1310-1310#, HP 1651-1651#.						Elbert McCracken Aneth Cambrian Precambrian	3234?A 3234 R 3414 AR 3516 AR 3600 A 3622 R 3639 A 3650 R	
3010-3115:	SI 30 min, op 1 hr, SI 30 min, rec 90' mud, FP 0-11#, SIP 1201-908#, HP 1468-1468#.								
3190-3330:	SI 30 min, op 1 hr, SI 1 hr 5 min, rec 10' mud, FP 0-0#, SIP 620-620#, HP 1470-1472#.								
91	<u>2596</u> <u>520</u>	24-37N-28E NE SE 1880 FSL 690 FEL	Buttes #1-24 Navajo	11/69 11/69	6677KB 6667GR	3920	Miss Redwall	Chinle Owl Rock Spis Start Petrified For 750 A Moss Back 908 A basal Tri sand 1260 A DeChelly 1386 A 1185 R* Cutler undiff 1880 AR Cutler evps 2285 A 2408 R Hermosa 3119 AR Molas 3826 A 3762 R Miss 3854 AR	D & A PIPE: 8 7/8" @ 224' w/105 LOGS: IES, SNP, BHC/GR * Probably picked too high.
Drill Stem Tests									
3647-3720:	Op 5 min, SI 60 min, op 12 hrs, SI 5 min, rec 120' mud, ISIP 736#, FP 13.2-26.4#, IHP 1676#-final HP not recorded.								
3728-3755:	Op 5 min, SI 60 min, op 3 hrs, rec ?, FP 13-13#, ISIP 329#, FSIP not measured, HP 1716-1716#, BHT 110°F.								
92	<u>3027</u> <u>538</u>	32-37N-28E NW NE 750 FNL 1930 FEL	Little #1 Aircodessa- Pete's Nose-Nav	6/70 6/70	6205KB 6192GR	3949	Miss	Wingate Chinle Owl Rock 221 A Petrified For 787 A Moss Back 917 A basal sand 1290 A DeChelly 1443 A 1288 R 1443 P Cutler undiff 1976 A 1988 R Cutler evps 2355 A 2350 R Hermosa 3140 A 3029 R blk shale 3616 R Tocito reef 3664 R L. Hermosa 3691 R Molas 3853 AR Miss 3930 A* 3926 R	D & A CORE: (Analysis on file) 3634-3675 PIPE: 9 5/8" @ 169' w/100 LOGS: IES, BHC/GR * Reported as Redwall.
Drill Stem Tests									
3645-3675:	Op 15 min, SI 60 min, op 75 min, SI 90 min, rec 1230' muddy wtr, FP 53-240#, 186-586#, SIP 1006-1036#, HP 1722-1751#.								
93	<u>2045</u> <u>311</u>	8-37N-27E SE SE 840 FSL 660 FEL	Vaughey-Vaughey & Blackburn #8-1 Navajo	4/65 5/65	5539KB 5527GR	4986	Pre- cambrian quartzite?	Chinle Owl Rock Spis Start Petrified For 550 A Moss Back 700 A Monitor Butte 836 A Moenkopi* 992 A basal Tri sand 1107 A DeChelly 1150 A 1107 R 1225 P Cutler undiff 1830 A 1700?P Cutler evps 2284 A Up Hermosa 3150 AR	D & A CORE: 4074-4143 PIPE: 13 3/8" @ 299' w/150 LOGS: IES, SON-GR, MUD * Probably Chinle
Drill Stem Tests									
4077-4143:	SI 30 min, op 1 hr, SI 30 min, rec 1356' muddy SW, FP 66-562#, SIP 1402-1345#, HP 1993-1993#.								



Well No. 93 Cont'd

Molas	4240 A	4272 R	** Amstrat reports white quartzite frags in bottom sample.
Miss		4340 R	
Horseshoe M.	4340 A		
Mooney Falls	4370 A		
Thunder Spgs	4410 A		
Whitmore Wash	4460 A		
Ouray	4505 A		
Elbert	4582 AR		
McCracken	4745 A	4783 R	
Aneth	4855 AR		
Cambrian undiff	4950 AR		
Precambrian**		4975 R	

94	<u>2556</u>	<u>476</u>	23-37N-27E	Buttes	11/68	5790KB	3800	Miss	Chinle		D & A
			SE SE	#1-23 Navajo	11/68				Owl Rock	Spls Start	
			660 FSL						Petrified For	325 A	PIPE: 9 5/8" @ 247' w/115
			660 FEL						Sonsela ss	656 A	
									Monitor Butte	918 A	LOGS: IES, SNP, FOR-DEN, BHC/GR
									basal Tri sd	1065 A'	
									DeChelly	1168 A	1068 R 1168 P
									Cutler undiff	1750 A	1779 R
									Cutler evps	2179 A	* Reported as Redwall.
									Hermosa	2945 AR	
									Molas	3648 A	3625 R
									Miss	3733 A*	3723 R

Drill Stem Tests

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3430-3630: Op 5 min, SI 60 min, op 90 min, SI 90 min, rec 2150' fluid: top 330' WCM, middle 1700' sli salty wtr, bottom 60' mud, no SIP recorded, FP 200-1051#, HP 1756-1756#, BHT 100°F.

95	<u>2097</u>	455	4-37N-25E	Champlin #1	3/68	5205KB	5268	Pre-cambrian	DeChelly	1474 R*	D & A
			NW SE	Navajo 171	4/68	5194GR			Organ Rock	2308 R	
			1900 FSL						Cutler	2729 R	PIPE: 13 3/8" @ 324' w/400
			2250 FEL						Hermosa	3648 R	
									Ismay	4087 R	LOGS: IES, BHC/GR
									Akah	4287 R	
									Table Mesa	4500 R	* Probably picked too high.
									Rattlesnake	4598 R	
									Molas	4721 R	
									Redwall	4760 R	
									Ouray	4968 R	
									Elbert	4999 R	
									Precambrian	5183 R	

96	<u>3036</u>	<u>545</u>	6-36N-30E	Union Texas	8/70	6620KB	3610	Miss	DeChelly	815 R*	D & A
			NW SW	1-6 Nav 2279	9/70	6610GR			Supai	1898 R	
			1950 FSL						Hermosa	2623 R	CORE: 3333-3368
			460 FWL						blk shale	3273 R	
									Barker Cr	3340 R	PIPE: 8 5/8" @ 248' w/175
									Molas	3504 R	LOGS: IES, SNP, BHC/GR, SL
									Miss	3565 R	* Probably picked too high.

Drill Stem Tests

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3337-3368: Op 5 min, SI 1 hr, op 1 3/4 hrs, SI 3 1/3 hrs, rec 90' GCM, FP 201.3-149.3#, SIP 872-865.5#, HP 1559.6-1533.4, BHT 105°F.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS		
SEQ	ABM	OGC						BOTTOM	TOPS			
97	--	517	19-36N-30E SE SW 780 FSL 1955 FWL	Continental #2x Nav "E"	10/69 10/69	8631KB 8620GR	2170	?	Chuska Redbeds	Surf R 797 R	D & A  PIPE: 13 3/8" @ 96' w/135  Hole abandoned because of lease expiration.	
98	--	398	20-36N-30E SE SE 740 FSL 660 FEL	Kerr-McGee #E-1 Nav	4/67 5/67	7027KB 7014GR	3868 PB to 3700	Pre- Cambrian	Chinle DeChelly Cutler undiff Hermosa Miss Elbert McCracken Cambrian Precambrian	Surf 634 R 1350 R 2519 R 3251 R 3454 R 3619 R 3827 R 3863 R	Salt water disposal well  CORE: 3033-43, 3636-3822 (analysis on file)  PIPE: 9 5/8" @ 253' w/340 4 1/2" csq @ 3650' w/500 Open hole 3650-3700  LOGS: IES, FOR-DEN, SON-GR, ML.	
Drill Stem Tests												
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3645-3695: (strd pkr) Op 5 min, SI 30 min, op 1 hr, rec 280' sli GCM, 180' SWCM, 60' MC salt wtr, FP 107-149#, ISIP 30 min/1000#, FSIP 30 min/868#, HP 1798-1798#.												
99	<u>2079</u>	<u>389</u>	29-36N-30E SE SW 590 FSL 1870 FWL	Kerr-McGee #7 Navajo	3/67 4/67	7508KB 7498GR	3270 PB to 3202	Hermosa	Chinle Monitor Butte basal Trias? DeChelly Cutler or Supai undiff Hermosa sill base sill	Spls Start 756 A 1045 A 1446 A 2586?A  3061 R	760 R* 1045 P      3133 S	Oil producer-Dineh bi keyah Field; cumulative production 566,614 Bbls oil, 48,313 MCF gas, & 187,696 Bbls wtr.  Perforated & producing from 3072-3112 in Tertiary igneous rock (sill), acidized and fractured.  IPP: 2578 BOPD 43.8 gty, GOR 107  CORE: 3089-3149 (analysis on file)  PIPE: 10 3/4" @ 474' w/500 7" @ 3270' w/150  LOGS: IES, BHC/GR  * Reported as Coconino.
<u>CORE</u>												
Igneous rock termed a minette containing vertical fractures and vugs with secondary crystallization.												
100	<u>2086</u>	<u>391</u>	29-36N-30E SE SE 440 FSL 690 FEL	Kerr-McGee #8 Navajo	7/67 7/67	7177KB 7164GR	3660	Pre- Cambrian	DeChelly* Hermosa Miss Devonian McCracken Aneth Granite	520 R 2372 R 3061 R 3269 R 3416 R 3515 R 3647 R	D & A  Sill not present.  PIPE: 9 5/8" @ 264' w/350  LOGS: IES, BHC/GR, MDT	

Well No. 100 Cont'd

Drill Stem Tests

3502-3409: Op 10 min, SI 60 min, op 65 min, SI 60 min, rec 60' sli GCM, IFF/10 min 31-39#, ISIP 630#, FFP/65 min 32-50#, FSLP/60 min 411#, HP 1623-1623#.

3517-3660: Op 10 min, SI 60 min, op 90 min, SI 60 min, rec 140' v sli GCM, FP/ 10 min 103-119#, SIP/60 min 1018#, FFP/90 min 103-155#, FSLP/60 min 1000#, HP 1759-1695#.

\* Reported as Coconino-  
probably picked in  
Chinle.

101	<u>2098</u>	<u>446</u>	30-36N-30E	Kerr-McGee	1/68	7370KB	3868	Pre-	DeChelly*	638 R
			SE NE	#10 Navajo	2/68	7356GR	PB to	cambrian	Cutler-Supai	
			1990 FNL						undiff	1372 R
			610 FEL						Hermosa	2504 R

Oil producer-Dineh bi keyah  
Field; cumulative production  
73,329 Bbls oil, 9,344 MCF gas,  
112,755 Bbls wtr.

Drill Stem Tests

3598-3680: SI 45 min, op 65 min, SI 45 min, gas in 15 min @ 2.1 MCFPD, incr to 2.99 MCFPD in 65 min, rec 180' HGCM, 360' HGC & MC salt wtr, FP 84-112#, SIP 672-448#, HP 1790-1790#.

3694-3868: SI 45 min, op 63 min, SI 45 min, gas in 15 min @ 19.3 MCFPD, flowed 42.7 MCFGPD in 30 min, rec 330' GCM, FP 171-200#, SIP 799-457#, HP 1880-1880#.

blk shale	2991 R
sill	3010 R
base sill	3070 R
Miss	3244 R
Devonian	3432 R
McCracken	3590 R
Aneth	3689 R
Precambrian	3850 R

Perforated and producing from  
3028-3048 in Tertiary sill,  
acidized and fractured.

IPP: 397 BOPD, 44 BWPD,  
40.4 gty, GOR 61.

CORE: 3020-3078

Core suggests av. porosity  
of igneous rock (minette)  
is approx 12%, permeability  
less than one millidarcy.

\* Reported as Coconino-  
probably picked in  
Chinle.

102	<u>2082</u>	<u>419</u>	30-36N-30E	Kerr-McGee	7/67	7571KB	3221	Hermosa	Chinle	Surf
			SE NW	#16 Navajo	8/67	7558GR	PB to		DeChelly*	796 R
			1970 FNL						Cutler-Supai	
			1890 FWL						undiff	1500 R
									Hermosa	3630 R
									sill	3150 R
									base sill	3217 R

Oil producer-Dineh bi keyah  
Field; cumulative production  
52,378 Bbls oil, 8,148 MCF  
gas, 5,492 Bbls wtr.

Producing from 3163-3212  
(op hole) in sill, sand-oil  
fract.

IPP: 217 BO, 14 BWPD, 1  
MCFGPD, 42 gty, GOR 60.

PIPE: 9 5/8" @ 265' w/300;  
7" @ 3163' w/150.

LOGS: IES, FOR-DEN

\* Reported as Coconino-  
probably picked in  
Chinle.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ARM	OGC									
103	<u>2083</u>	<u>417</u>	30-36N-30E SE SW 860 FSL 1980 FWL	Kerr-McGee #15 Navajo	6/67 9/67	7692KB 7679GR	3246 PB to 3241	Hermosa	Chinle DeChelly* Cutler-Supai undiff Hermosa sill base sill	Surf 794 R 1513 R 2630 R 3150 R 3217 R	Oil producer-Dineh bi keyah Field; cumulative production 55,097 Bbls oil, 10,628 MCF gas, & 5,065 Bbls wtr.  Producing from sill, open hole, 3159-3224, sand-oil fract. Deepened to 3246 TD, sand-water fract, PB 3241.  IPP: 118 BO, 20 BWP, 43 gty  PIPE: 9 5/8" @ 262' w/310 7" @ 3159' w/150  LOGS: IES-GR, BHC/GR, FOR-DEN.  * Reported as Coconino-probably picked in Chinle.
104	<u>2080</u>	<u>396</u>	30-36N-30E SE SE 640 FSL 550 FEL	Kerr-McGee #9 Navajo	4/67 5/67	7891KB 7878GR	3720	Miss?	Chinle Moss Back Monitor Butte basal Tri sd DeChelly Cutler-Supai undiff Hermosa sill base sill Molas Miss	Spis Start 712 A 826 A 1067 A 1206 A 1065 R* 1206 P 1765 A 1765?P 3410 R 3498 R 3613?A 3665?A	Oil producer-Dineh bi keyah Field; cumulative production 1,065,310 Bbls oil, 101,696 MCF gas, & 192,644 Bbls wtr.  Perforated & producing from 3420-3460 in Tertiary sill, acidized & sand fractured.  IPP: 2622 BOPD, 42.5 gty, GOR 140.  CORE: 3361-3386; 3408-3503  PIPE: 9 5/8" @ 405' w/525 7" @ 3712' w/150  LOGS: IES, BHC/GR  * Reported as Coconino
105	<u>2502</u>	<u>390</u>	31-36N-30E SE NE 1950 FNL 990 FEL	Kerr-McGee #6 Navajo	5/67 7/67	8330KB 8317GR	3835 PB to 3790	Hermosa	Chuska Glen Can Gp Chinle, in @ Moss Back Monitor Butte basal Tri DeChelly Cutler-Supai undiff	Surf Spis Start 503 A 500 R 980 A 1180 A 1360 A 1530 A 1360 R 1530 P 2083 AR	Oil producer-Dineh bi keyah Field; cumulative production 86,934 Bbls oil, 18,277 MCF gas, & 3,153 Bbls wtr.  Perforated & producing from 3672-3726 in Tertiary sill, acidized & sand fractured.

Well No. 105 Cont'd

Hermosa 3111 A 3183 R IPP: 163 BO, 4 BWPD, GOR 135  
 sill 3655 A  
 base sill 3779 R PIPE: 9 5/8" @ 567' w/525  
 7" @ 3657' w/150  
 5 3/4" liner 3530-3585  
 w/125 sx  
 LOGS: IES, GRN, BHC/GR

106 -- 416 31-36N-30E Kerr-McGee 6/67 8568KB 3920 Sill in Chuska Surf Oil producer-Dineh bi keyah  
 SE NW #14 Navajo 7/67 8555GR Hermosa Chinle 730 R Field; cumulative production  
 2020 FNL DeChelly\* 1548 R 113,360 Bbls oil, 52,310 MCF  
 2060 FWL Cutler-Supai gas, & 4,337 Bbls wtr.  
 undiff 2260 R Production from 3829-3920 in  
 Hermosa 3358 R open hole, sill sand fractured.  
 sill 3824 R  
 IPF: 301 BO, 390 MCFGPD,  
 43/64" ck, 42.9 gty,  
 GOR 1296.  
 PIPE: 9 5/8" @ 754' w/600  
 7" @ 3829' w/150  
 LOGS: IES-GR, IES, FOR-DEN,  
 BHC/GR  
 \* Reported as Coconino-  
 probably picked in  
 Chinle.

107 -- 420 31-36N-30E Kerr-McGee 7/67 8919KB 4444 Miss Chuska Surf Oil producer-Dineh bi keyah  
 SE SW #13 Navajo 9/67 8906GR PB to Chinle 1070 R Field; shut in 6-1-68 cumu-  
 500 FSL DeChelly\* 1815 R lative production 2,076 Bbls  
 2200 FWL Cutler-Supai oil, 1,479 MCF gas, 1,468  
 undiff 2550 R Bbls wtr.  
 Hermosa 3618 R Original completion in sill,  
 sill 4084 R open hole 4091-4217 w/IPP:  
 base sill 4221 R 31 BOPD, 42.6 gty. GOR 1130;  
 work over perms: 4182-4188,  
 4192-4196, 4202-4208, acid-  
 ized & fractured, IPP: 9  
 BOPD w/37 BWPD.  
 PIPE: 9 5/8" @ 1138' w/1000  
 7" @ 4091' w/150,  
 4 3/4" liner 4014-4440'  
 w/75 sx.  
 LOGS: BHC/GR, IES  
 \* Reported as Coconino-  
 probably picked in  
 Chinle

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	REMARKS		
SEQ	ABM	OGC						BOTTOM	TOPS		
108	--	392	31-36N-30E SE SE 960 FSL 910 FEL	Kerr-McGee #5 Navajo	5/67 7/67	8534KB 8521GR	4620	Cambrian?	DeChelly* Hermosa sill base sill Miss Elbert McCracken Aneth Cambrian	1484 R 3290 R 3772 R 3908 R 4075 S 4237 S 4385 S 4480 S 4600?S	TA 6/21/67  Perforated 3776-3820, acid- ized, sand-oil fractured; 3856-3900 sand-oil fract: sill too tight to produce.  CORE: (analysis on file) 3760-3909  PIPE: 9 5/8" @ 735' 7" @ 4616' w/250  LOGS: IES, FOR-DEN, BHC/GR  * Reported as Coconino- may be picked too high.
Drill Stem Tests (Charts on file)											
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4473-4369: Op 5 min, SI 30 min, op 55 min, SI 45 min, rec 90' mud, IFF 84-111#, ISIP 819#, FFP 103-142#, FSIP 819#.											
109	2081	384	32-36N-30E SE NE 1720 FNL 870 FEL	Kerr-McGee #4 Navajo	6/67 7/67	7374KB 7361GR	2960	Sill	Chinle Moss Back Monitor Butte basal Tri DeChelly Cutler-Supai undiff Hermosa sill base sill	Surf R Spls Start 306 A 552 A 762 A 565 R* 1320 A 1294 R 2409 AR 2887 R 2959 R	Oil producer-Dineh bi keyah; cumulative production 1,791,305 Bbls oil, 64,913 MCF gas, 498,331 Bbls wtr.  Production from open hole 2898-2960 in sill-sand-oil fracture.  IPP: 3,249 BOPD  PIPE: 9 5/8" @ 262' w/385 7" @ 2898' w/150  LOGS: IES, FOR-DEN, BHC/GR, MDT.  * Reported as Coconino.
110	2077	379	32-36N-30E SE NW	Kerr-McGee #2 Navajo	2/67 3/67	7614KB 7604GR	3275 PB to 3209	Hermosa	Chinle Moss Back in @ Monitor Butte DeChelly in @ Cutler-Supai undiff Hermosa sill Hermosa	Spls Start 390 A 440 A 810 A 705 R* 920?P 1400 A 1440 R 2560 A 2494 R 3058 A 3154 A	Oil producer-Dineh bi keyah Field; cumulative production 1,502,819 Bbls oil, 124,485 MCF gas, & 102,730 Bbls wtr.  Perforated & producing from 3060-3114 in Tertiary sill, sand-oil fract. Swbd 463 BG, 10 1/2 hrs.  IPP: 2856 BOPD, 44 gty.  CORE: (analysis on file) 3000-3178

Well No. 110 Cont'd

PIPE: 9 5/8" @ 389' w/200  
7" @ 3295' w/150

LOGS: IES, FOR-DEN, BHC/GR  
PDC.

\* Reported as Cocouino-  
probably picked in  
Chinle.

111	<u>2042</u>	<u>377</u>	32-36N-30E SE SW 660 FSL 2000 FWL	Kerr-McGee #1 Navajo	1/65 6/65	7577KB 7564GR	3864 PB to 3050	Pre- cambrian igneous	Chinle? basal Tri sd DeChelly Cutler-Supai undiff Cutler evps Up Hermosa Ismay Desert Cr sill base sill Redwall Ouray Elbert McCracken Aneth? Tapeats Precambrian	Spis Start 570 A 600 A 573 R 1303 A 1538 A 2413 A 2597 A 2735 A 2857 R 2983 R 3170 A 3127 R 3300 A 3324 R 3322 A 3485?A 3563?A 3656 A 3690 R 3690 A 3830 R 3690 P	Oil producer-Discovery well Dineh bi keyah Field; cumu- lative production 728,405 Bbls oil, 62,726 MCF gas, 14,250 Bbls wtr.  Perforated and producing from 2860-2885 Tertiary sill, acidized and sand- oil fracture.  IPP: 634 BOPD, 43.5 gty.  PIPE: 10 3/4" @ 323' w/200 7" @ 3159' w/700  LOGS: IES, GRN, SON-GR, CBL
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59

112	<u>2580</u>	<u>506</u>	32-36N-30E NW SE 2310 FSL 2070 FEL	Kerr-McGee #11 Navajo 8823	7/69 8/69	7413KB 7402GR	2893	Tertiary Sill	Chinle Monitor Butte basal sand DeChelly Cutler-Supai undiff Cutler evps Up Hermosa Ismay Desert Cr sill base sill	Spis Start 492 A 588 A 482 R 1227 A 1607 A 2347 A 2328 R 2531 A 2672 A 2788 A 2800 R 2893 R	Oil producer-Dineh bi keyah Field; cumulative production 386,094 Bbls oil, 81,769 MCF gas, & 25,433 Bbls wtr.  Production from 2831-2893 in open hole in sill, sand-oil fract.  IPP: 456 BOPD, GOR 366  PIPE: 9 5/8" @ 272' w/200 7" @ 2831' w/150  LOGS: IES, FOR-DEN  The Dineh bi keyah Field was drilled on 160 acre spacing. This well is an authorized exception making 5 wells in this section.
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IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
113	<u>2085</u>	<u>380</u>	32-36N-30E SE SE 950 FSL 350 FEL	Kerr-McGee #3 Navajo	2/67 3/67	8017GR	1853	Permian	DeChelly*	1000 R	D & A  w/junk in hole. Twisted off- could not retrieve fish. Skidded rig 35 feet to north- east to drill #3x.  PIPE: 10 3/4" @ 407' w/475  * Reported as Coconino.
114	<u>2078</u>	<u>386</u>	32-36N-30E SE SE 980 FSL 330 FEL	Kerr-McGee #3x Navajo	3/67 4/67	8002KB 7992GR	3600 PB to 3501	Hermosa	Chuska Chinle Moss Back Monitor Butte basal Tri sd DeChelly Cutler-Supai undiff Hermosa sill base sill	Spls Start 285?A 716 A 840 A 1095 A 1327 A 1095*R 1840 AR 2992 A 2894 R 3417 A 3484 A	Oil producer-Dineh bi keyah Field; cumulative production 1,550,287 Bbls oil, 199,889 MCF gas, & 189,633 Bbls wtr.  Perforated & producing from 3427-3457 in Tertiary sill, acidized & sand-oil fract.  IPP: 2865 BOFD, 43.5 gty, GOR 128  CORE: 3427-3480 rec 53' minette, fair to good porosity, sat, horiz & vert fractures.  PIPE: 10 3/4" @ 411' w/325 7" @ 3583' w/150  LOGS: IES, BHC/GR  * Reported as Coconino- probably picked in Chinle.
115	<u>2087</u>	<u>422</u>	33-36N-30E SE NW 2310 FNL 1650 FWL	Kerr-McGee #2 Navajo "C"	8/67 9/67	7981KB 7968GR	4371 PB to 4261	Cambrian?	Chuska Chinle Moss Back Monitor Butte basal Tri DeChelly Cutler-Supai undiff Hermosa in @ Miss Horseshoe M. Mooney Falls Thunder Spgs Whitmore Wash	Surf Spis Start 903 A 1120?A 1280 A 1437 A 1243 R* 1985 AR 3110 R 3317 A 3792 R 3810 A 3850 A 3883 A 3900 A	Shut in helium well in Devonian.  PERFORATIONS: 4327-4336, 4351-4361, acid- ized, sqzd 4327-61. perf 4134-4140, 4154-4159, 4179- 4187, 4212-4220, sand-water fract.  Production zone in McCracken sand.  IPP: 220 MCFGPD, 20/64" ck, TP 100#.
Drill Stem Tests											
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4109-4196: SI 45 min, op 1 hr 30 min, SI 45 min, gas in 5 min @ 132' MCFGPD, rec 285' GCM, FP 78-119#, SIP 884-875#.											



Well No. 115 Cont'd

Ouray 3926 A 3978 R  
 Elbert 3942 A  
 McCracken 4129 AR  
 Aneth 4230 AR  
 Cambrian  
 undiff 4292-A\*\*  
 Precambrian 4368 R

PIPE: 9 5/8" @ 345' w/350  
 5 1/2" @ 4371' w/225

LOGS: IES, BHC/GR

\* Reported as Coconino

\*\* Report clastics to TD

NOTE: igneous sill, pay zone  
 in Dineh bi Keyah Field,  
 not present in this well.

116	<u>2562</u>	<u>484</u>	33-36N-30E NW SW 2310 FSL 330 FWL	Kerr-McGee #1 Navajo "C"	2/69 6/69	7952KB 7939GR	3590 PB to 3547	Hermosa	Chinle Monitor Butte basal Tri sd DeChelly Cutler-Supai undiff Hermosa sill base sill	Spls Start 270 R 1154 A 1152*R 1858 AR 2974 R 3452 R 3501 R
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Oil producer-Dineh bi Keyah  
 Field; cumulative production  
 1,435 Bbls oil, 834 MCF gas,  
 494 Bbls wtr.

Perforated, sand-oil fract,  
 acidized, & producing from  
 3459-3496 in Tertiary sill.

IPP: 14 B0, 1 BWPD

CORE: 3460-3508

PIPE: 9 5/8" @ 328' w/200  
 7" @ 3590' w/150

LOGS: IES, BHC/GR

\* Reported as Coconino-  
 probably picked in  
 Chinle.

117	<u>3040</u>	<u>549</u>	4-36N-29E SE SE 660 FSL 550 FEL	Union #1-P-4X Navajo	3/71 3/71	6584KB 6571GR	3022	Miss Redwall	Chinle basal Tri* DeChelly Supai Ismay** Desert Cr Akah Up Barker Cr L. Barker Cr Alkali Gulch Molas Redwall	Spls Start 400 R 507 R 1116 R 2276 R 2376 R 2428 R 2612 R 2772 R 2924 R 2932 R 2948 R
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D & A

PIPE: 8 5/8" @ 343' w/250

LOGS: DIL, SNP, FOR-DEN

\* Reported as Shinarump.

\*\* Reported as "top Penn".

Drill Stem Tests

2786-2830: Op 10 min, SI 1 hr, op 1 hr, SI 2 hrs, rec 30' mud, IFP 39#,  
 ISIP 143#, FFP 39#, FSIP 312#.

2783-2820: Op 240 min, SI 130 min, op 90 min, rec 30' mud, IHP 1331#,  
 IFP 26-39#, ISIP 188#, FFP 39#, FHP 1318#, BHT 90°.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OCG									
118	3030	519	11-36N-29E SE SW 660 FSL 1656 FWL	Union 1-N11 Nav-Lukachukai	10/69 11/69	7197KB 7183GR	3896	Pre-cambrian granitic	Chinle Moss Back Monitor Butte basal Tri sd Shinarump DeChelly Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr L. Hermosa Molas Redwall Ouray Elbert McCracken Aneth Precambrian	Sp1s Start 300 A 500 A 717 A 735 R 940 A 897 R 1425 A 1419 R* 1791 A 2553?A 2578 R 2790?A 2927?A 3111 A 3238 A 3248 R 3297 AR 3398 A 3440 R 3453 AR 3500 A 3621 R 3762 AR 3840 A 3880 R	D & A PIPE: 8 5/8" @ 358' w/220sx LOGS: DIL, FOR-DEN, SNP * Reported as Supai
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Drill Stem Test											
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3095-3200: Op 10 min, SI 30 min, op 1 hr, SI 90 min, rec 20' mud, IFP 320-373#, ISIP 878#, FFP 320-373#, FSIP 878#, HP 1501-1475#, BHT 95°.											
119	3031	522	17-36N-29E SW SW 702 FSL 777 FWL	Union 1-17 Nav 2346	11/69 12/69	7705KB 7693GR	5057	Miss	Entrada? Navajo Kayenta Wingate Chinle Moss Back Monitor Butte basal Tri sd DeChelly Cutler undiff Hermosa Molas Redwall	Sp1s Start 521 AR 871 AR 1100 AR 1453 AR 2110 A 2170 A 2452 A 2452 R* 2599 AR 3176 A 3176 R** 4304 AR 4996 A 4937 R 5038 AR	D & A PIPE: 8 5/8" @ 490' w/275 LOGS: DIL, SNP, FOR-DEN * Reported as Shinarump ** Reported as Supai
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Drill Stem Test											
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4742-4880: SI 30 min, op 30 min, SI 30 min, rec 120' mud, FP 79-79#, SIP 198-105#, HP 2344-2344#.											
120	2091	401	23-36N-29E SE NE 1830 FNL 880 FEL	Humble #1 Nav 87	4/67 10/69	8980KB 8960GR	5505	Pre-cambrian granite	Chuska Wingate Chinle Moss Back Monitor Butte basal Tri slt DeChelly Cutler-Supai undiff Hermosa Ismay Desert Cr Akah sill base sill Molas	Sp1s Start 1190 A 1257 A 2003 A 2091 A 2354 A 2568 A 2352 R* 3052 AR 4195 AR 4396 R 4503 R 4559 R 4846 A 4864 A 4864 A	D & A Helium show in McCracken, ran pipe, completion attempt never made. PIPE: 9 5/8" @ 1350' w/1100 4 1/2" @ 5505' w/325 LOGS: IES, FOR-DEN, SON-GR CORE: 5232-5245; 5268-5351 * Probably picked on basal Triassic. ** Reported as Redwall
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Drill Stem Tests											
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5225-5505: Misrun, packer failed.											
5195-5505: Misrun, packer failed.											
5231-5505: SI 1 hr, op 2 hr 40 min, gas in at 605 MCFD, FP 242-87#, SIP 1597-960#, HP 2409-2396#.											

Well No. 120 Cont'd

Miss 4932 A\*\*4909 R  
 Elbert 5075 AR  
 McCracken 5229 A 5212 R  
 Aneth 5348 AR  
 Cambrian 5443 A  
 Precambrian 5467 AR

Gas analysis from 5223:

Nitrogen 78.80%  
 CO2 10.60%  
 Helium 5.58%  
 Methane 3.10%  
 Argon 0.80%  
 Ethane 0.40%  
 Oxygen 0.30%  
 Propane 0.20%  
 Normal Butane 0.10%  
 Total 99.88%

121 -- 427 24-36N-29E Kerr-McGee 11/67 8499KB 4465 Miss Wingate Surf  
 SE SE #1 Navajo F 7/69 8485GR Chinle 718 R  
 550 FSL Coconino 1792 R\*  
 740 FEL Cutler 2514 R  
 Hermosa 3641 R  
 sill 4222 R  
 base sill 4261 S  
 Miss 4401 R

D & A

Well produced 141 Bbls oil & 1,395 MCF gas during 3 mos testing.

Perforated 4226-4251 w/1 pf, acidized, sand-oil fract; sqzd perf 4226-4238, perf 4239-4245 w/2 pf, sand fract.

PIPE: 9 5/8" @ 751' w/490;  
 7" @ 4462' w/150

LOGS: IES, BHC/GR

\* Probably picked in Chinle-DeChelly more appropriate terminology.

122 2515 431 25-36N-29E Humble 9/67 8512KB 4821 Pre- Chinle Spis Start  
 SE NE #2 Navajo 88 11/67 8503GR PB to cambrian Moss Back 1329 A  
 2150 FNL 4365 granitic Monitor Butte 1415 A  
 660 FEL basal Tri 1675 A  
 DeChelly 1836 A 1675 R  
 Cutler-Supai 2394 AR  
 undiff  
 Hermosa 3500?A 3511 R  
 Ismay 3720 R  
 Desert Cr 3820 R  
 Akah 3878 R  
 sill 4054 R  
 base sill 4110 S  
 Molas 4245 A  
 Miss 4305 A 4278 R  
 Elbert 4425 AR  
 McCracken 4586 AR  
 Aneth 4692 AR  
 Camb undiff 4795 A  
 Precambrian 4817 AR

Drill Stem Tests

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 4045-4075: SI 1 hr, op 2 hr, SI 2 hr, rec 120' sli GCM w/scum oil, 30 hvy GC & sli OCM, FP 112-112#, SIP 615-615#, HP 1959-1959#.  
 4045-4095: SI 1 hr, op 2½ hr, SI 2½ hr, rec 105' GC & sli OCM, FP 53-80#, SIP 641-668#, HP 1997-1997#.  
 4543-4659: SI 1 hr, op 1 hr, SI 2 hr, gas immed, flowed max 3244' MCFGPD, rec 900' GCM, FP 588-671#, SIP 1314-839#, FP 2240-2240#. Helium content in McCracken 5.16%, nitrogen 78.1%.  
 4692-4821: SI 1½ hr, rec 30' sli GCM, FP 45-91#, SIP 732-503#, FP 2256-2256#.

Oil producer-Dineh bi Keyah Field; cumulative production 430,835 Bbls oil, 47,993 MCF gas, 74,305 Bbls wtr.

Perforated, sand-oil fract, acidized, & producing from 4045-4105 in Tertiary sill.

Perforated 4626-4686, flowed 1500 MCFPD non flam gas-22/64" ck, TP 605#.

IPP: 1631 BOPD, GOR 67-1

CORE: 4560-4821

PIPE: 9 5/8" @ 736' w/800  
 7" @ 4817' w/200

LOGS: IES, BHC/GR

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS	
SEQ	ABM	OGC										
123	2516	447	25-36N-29E SE NW 1980 FNL 1980 FWL	Humble #4 Navajo 88	1/68 3/68	8670KB 8660GR	4500 PB to 4464	Miss Redwall	Chuska (sill) Chinle Moss Back Monitor Butte basal Tri DeChelly Cutler-Supai undiff Hermosa Ismay Desert Cr Akah black shale sill base sill Molas Miss	Spis Start 837 A 1523 A 1608 A 1856 A 2062 A 2599 AR  3714 AR 3924 R 4030 R 4081 R 4200 R 4384 AR  4422 A 4454 AR	1850 R              4422 S	Salt water disposal well thru perfs 4373-4420.  Perforations 4373-4420 tested gas at 89 MCFPD- failed to recover 799 Bbls load & frac oil; 4286-4322, after swabbing several days, tested 33 MCFPD-failed to recover 642 Bbls load & frac oil.  PIPE: 9 5/8" @ 928' w/900 7" @ 4500' w/155  LOGS: IES, BHC/GR
124	2520	421	25-36N-29E SE SE 660 FSL 660 FEL	Humble #1 Navajo 88	8/67 9/68	8175KB 8166GR	3850 PB to 3800	Miss Redwall	Chuska Chinle? Moss Back Monitor Butte basal Tri DeChelly Cutler-Supai undiff Hermosa Ismay Desert Cr sill base sill black shale sill base sill Molas Miss	Spis Start 425?A 874 A 949 A 1215 A 1410 A 1950 AR  3056 AR 3252 R 3350 R 3400 R 3460 R 3578 R 3734 R 3754 R 3766 AR 3798 AR	1215 R	Small oil producer-Dineh bi Keyah Field. Cumulative production 1100 Bbls oil, 2,318 MCF gas.  Perforations 3734-3754 (oil) in lower sill and 3448-3463 (gas) in upper sill.  IPP: flowed 2522 MCGPD; pumped 7 BOFPD.  CORE: 3437-3660, 3776-3786  PIPE: 16" @ 40' w/50 9 5/8" @ 603' w/550 7" @ 3844' w/150  LOGS: IES, BHC/GR  Gas analysis:  Methane 23.90% Ethane 3.80% Propane 2.20% Normal Butane 0.70% Nitrogen 63.80% Helium 4.04%

125 2515B 443 36-36N-29E Humble 12/67 8334KB 3875 Miss Glen Canyon Spls Start Oil producer-Dineh bi Keyah  
 SE NE #3 Navajo 88 4/68 8324GR PB to Redwall Chinle 528 A Field. Cumulative production  
 2070 FNL Monitor Butte 1045 A Moss Back 954 A 75,834 Bbls oil, 111,584 MCF  
 550 FEL basal Tri 1311 A DeChelly 1444 A 1320 R gas, 21,622 Bbls wtr.

Drill Stem Tests

3687-3712: wk blow throughout-no GTS, no oil, rec 100' GCM, IFP 132#, SIP  
 440-615#, FHP 1 & 32#.

Cutler-Supai 2027 AR  
 undiff  
 Hermosa 3125 A 3110 R  
 Ismay 3300 R  
 Desert Cr 3392 R  
 Akah 3444 R  
 black shale 3563 R  
 sill 3692 R  
 base sill 3782 R  
 Miss 3831 AR

Production from perms 3725-  
 3770 in sill, acidized &  
 sand-oil fract.

IPP: 150 BOPD, 41.5 gty,  
 GOR 1500-1

PIPE: 16" @ 30' w/95  
 9 5/8" @ 696' w/650

LOGS: IES, BHC/GR

Gas analysis:

Methane 30.20%  
 Ethane 4.50%  
 Propane 3.20%  
 Normal Butane 1.30%  
 Nitrogen 53.80%  
 Helium 3.74%

65

126 2028 300 6-36N-28E Vaughey-Vaughey 11/64 5993KB 4347 Pre- Chinle D & A  
 NW NW Blackburn 12/64 5980GR cambrian meta Owl Rock Spls Start  
 660 FNL #6-1 Navajo 8805 meta Petrified For 425 A CORE: 3648-3773, 3833-3883,  
 660 FWL Monitor Butte 721 A 721 R\*\* 4038-4066, 4185-4209  
 basal Tri 954 A Moenkopi\*\*\* 855 A PIPE: 13 3/8" @ 276' w/330  
 DeChelly 970 A 950 R 1200?P LOGS: IES, GRN, SON-CAL  
 Cutler-Supai 1724 A undiff \* Reported as Shinarump.  
 Up Hermosa 2856 AR \*\* Reported as Moenkopi.  
 Molas 3507 AR \*\*\* Probably Chinle.  
 Miss 3600 R Horseshoe M. 3604 A  
 Mooney Falls 3644 A  
 Thunder Sprgs 3706 A  
 Whitmore Wash 3747 A  
 Ouray 3804 AR  
 Elbert 3852 AR  
 McCracken 4044 AR  
 Aneth 4170 AR  
 Cambrian 4263 AR  
 Precambrian 4313 A 4300 R

Drill Stem Tests

3640-4708: SI 30 min, op 2 hr, SI 1 hr, rec 220' mud, 528' SW, FP 56-309#,  
 SIP 1178-1150#, HP 1769-1769#.

3773-3883: SI 30 min, op 1 hr, SI 30 min, rec 60' WCM, 720' MCSW, FP 28-  
 310#, SIP 1235-1150#, HP 1797-1797#.

4033-4066: SI 30 min, op 1 hr, SI 30 min, rec 200' mud, 225' sli sulfur  
 WCM, FP 95-216#, SIP 1693-1357#, HP 1895-1895#.

4220-4347: SI 30 min, op 1 hr, SI 30 min, rec 960' mud, 2340' SW, FP 356-  
 1451#, SIP 1451-1451#, HP 2052-2052#.

4150-4210: SI 30 min, op 30 min, SI 30 min, rec 250' mud, 1560' SW, FP 183-  
 723#, SIP 1385-1278#, HP 1984-1984#.

3335-3406: SI 30 min, op 15 min, SI 30 min, rec 60' mud, FP 66-66#, SIP  
 921-658#, HP 1584-1584#.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
127	2558	495	30-36N-27E SW NW 2105 FNL 676 FWL	Riddle-Gottlieb #1 Navajo 8841	4/69 5/69	5363KB 5352GR	3460	Miss	Chinle DeChelly Cutler undiff Cutler evps Up Hermosa Ismay Desert Cr Akah Barker Cr L. Hermosa? Molas Miss Horseshoe M.	Surf 650?A 405 R* 1250?A 1265 R 1556 A 2470 A 2800 AR 2980 A 2905 R 3010 R 3182 R 3222 A 3336 A 3408 R 3426 R 3430 A	D & A PIPE: 8 5/8" @ 260' w/175 LOGS: IES, BHC/GR * Probably picked in basal Chinle sandstones.
Drill Stem Tests											
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3158-3255: SI 20 min, op 1 hr, SI 20 min, rec 20' mud, FP 52-66#, SIP 92-92#, HP 1597-1597#.											
128	2504	435	30-36N-27E SE SW 660 FSL 1869 FWL	Simmons #1 Navajo	10/67 1/68	5403KB 5394GR	3313	Aneth	Chinle basal Tri sand DeChelly Cutler undiff Cutler evps Up Hermosa Molas Miss Ouray Elbert McCracken Aneth	Spis Start 232 A 350 A 233 R 400?P 1017 A 1265 R 1017 P 1336 A 1970 AR 2500 A 2565 R 2600 AR 2780 AR 2880 AR 3100 AR 3219 A 3190 R	D & A Perforated 2404-2425 in probable Ismay-Desert Cr interval, acidized w/5000 gal acid, pumped 3-4 Bbls fluid per day (15-20% oil). Too tight to produce. PIPE: 10 3/4" @ 235' w/200, 4 1/2" @ 2605' w/200 LOGS: IES, ACS-VEL, FRF-MS, PDC NOTE: Interesting shortage of section compared to SEQ 127 short distance away.
129	2048	345	23-36N-24E SW NE 1980 FNL 1980 FEL	Cactus #1 Navajo 8816	3/66 4/66	5604KB 5593GR	5720	*Pre-cambrian meta	Navajo Kayenta? Wingate Lukachukai? Rock Point Chinle Owl Rock? Petrified For DeChelly Cutler undiff Hermosa Ismay Molas Miss Ouray Elbert McCracken Aneth Lynch Cambrian	Spis Start 200 A 285 A 560 A 808 A 1380?A 2075 A 2170 R 2850 A 2815 R 4300 A 3775 R 4435 R 4921 A 5070 A 5232 A 5250 R 5310 A 5304 R 5502 A 5510 R 5539 A 5564 R 5608 R	D & A PIPE: 10 3/4" @ 328' w/275 LOGS: IES, SON-GR * Amstrat identifies as Cambrian chert. Rock is very fine-grained & siliceous-appears more likely to be meta-Pre-cambrian.
Drill Stem Tests											
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5540-5595: SI 30 min, op 20 min, SI 45 min, rec 75' GCM, 20' WCM, FP 11.5-18#, SIP 1892#, HP 2749-2749#.											

130	<u>2030</u>	<u>325</u>	14-36N-22E	Cactus #1	9/65	5923KB	6689	Pre-	Entrada	Spis Start	D & A
			NW NW	Navajo 8515	10/65	5910GR		cambrian	Carmel	350 A	
			660 FNL					granitic	Navajo	442 A	PIPE: 10 3/4" @ 350' w/215
			660 FWL						Kayenta	893 A	LOGS: IES, GRN, ML, FT, BHC/GR
									Wingate		

Drill Stem Tests

6302-6350: SI 30 min, op 30 min, SI 45 min, rec 3' mud, FP 44-44#, SIP 875-459#, FHP 3058#.

Lukachukai	1006 A		
Rock Point	1281 A	1241 R	
Chinle		1533 R	
Owl Rock	1555 A		
Petrified For	2095 A		
Shinarump		2590 R	
DeChelly	2906 A	2650 R	2906 P
Cutler undiff	3553 A	3665 R	3553 P
Hermosa	5017 A	4585 R	5017 P
1st chert		5015 R	
2nd chert		5160 R	
Molas	5667 A	5610 R	
Miss		5723 R	
Horseshoe M.	5743 A		
Mooney Falls	5862 A		
Thunder Sprgs	5900 A		
Whitmore Wash	5910 A		
Ouray	5950 A		
Elbert	6050 A	6005 R	
McCracken	6283 A	6302 R	
Lynch		6376 R	
Aneth	6422 A		
Muav	6509 A		
Bright Angel	6538 A	6531 R	
Tapeats	6610 A	6604 R	
Precambrian	6648 A		

131	<u>2075</u>	<u>395</u>	3-35N-30E	Anadarko	4/67	8143KB	4242	Pre-	Volcanics	Spis Start	D & A
			NW NW	#1-135 Navajo	5/67	8130GR		cambrian	Chinle in@	480 A	
			440 FNL					granitic	Moss Back	631 A	PIPE: 9 5/8" @ 427' w/250
			950 FWL						Monitor Butte	730 A	LOGS: IES, BHC/GR, FOR-DEN, MDT
									basal Tri?	982 A	
									DeChelly	1132 A	980 R 1132 P
									Cutler-Supai	1720 A	
									Hermosa	2865 AR	NOTE: Igneous sill of Dineh bi Keyah Field not present.
									Molas	3529 A	
									Miss	3564 A	3590 R
									Elbert	3773 A	3769 R*
									McCracken	3917 AR	* Reported as Devonian.
									Aneth?	4010 A	4010 R**
									Cambrian?	4100 A	** Reported as Aneth.
									Precambrian	4115 AR	

4014-4242: SI 45 min, op 45 min, SI 45 min, flowed 30 MCFGPD (inert-6% Helium), rec 425' GCM, FP 199-232#, SIP 975-975#, HP 2051-2051#.

Drill Stem Tests

132	<u>2589</u>	<u>525</u>	4-35N-30E	Mesa #1	12/69	8433KB	3972	Hermosa	Chuska	Spis Start	D & A
			NW NW	Navajo "B"	1/70	8420GR			Chinle?	736 ?A	770 R
			330 FNL						Moss Back	1207 A	PIPE: 9 5/8" @ 850' w/400
			330 FWL						Monitor Butte	1326 A	7" @ 3865' w/150
									basal sand	1577 A	LOGS: IES, FOR-DEN, GRN
									DeChelly	1733 A	1576 R
									Cutler-Supai	2280 AR	
									Hermosa	3392 A	3340 R
									intrusive		3859 R
											NOTE: Amstrat does not report the intrusive recorded by the operator.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	AEM	OGC						BOTTOM	TOPS		
133	385		5-35N-30E SE NE 1820 FNL 640 FEL	Kerr-McGee #2 Navajo B	4/67 5/67	8509KB 8496GR	4565 PB to 4311	Pre- Cambrian	Chuska Chinle DeChelly Hermosa Miss Elbert McCracken Aneth Precambrian	Surf 840 R 1622 R* 3413 R 4057 R 4229 R 4367 R 4460 R 4540 R	TA  Shut in gas with 4% helium; productive zone perf: 3904- 3907 & 3924-3935.  IPF: 12.2 MCFPD, TP 105#.  Other perfs: 4514-4533, 4439-4444, acid- ized & fract; 3924-3935 & 3904-3907 flowed 154 MCF w/ 5 Bbls wtr on 2 hr test; ¼" chk.  PIPE: 9 5/8" @ 910' w/800; 5½" @ 4565' w/450  LOGS: IES, FOR-DEN, BHC/GR  NOTE: Sill not present.  * Reported as Coconino- probably picked on basal Tri sandstone.
Drill Stem Tests (Charts on file)											
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	3885-3982:	Op 1 hr, v wk blow throughout test, rec 10' drlg mud, IPF 82#, FFP 79#, FSIP 96#.									
	4417-4480:	Op 1 hr, strg blow throughout test, rec 191' GCM, IPF 143#, FFP 182#, FSIP 895#.									
	4514-4565:	Op 1½ hr, strg blow throughout test, rec 100' drlg mud, IPF 80#, FFP 146#, FSIP 888#.									
134	2529	445	5-35N-30E NW NW 700 FNL 470 FWL	Kerr-McGee #1x Navajo B	12/67 1/68	7741KB 7727GR	3165 PB to 3085	Hermosa	Chuska Chinle Monitor Butte basal Tri DeChelly Cutler-Supai Hermosa sill base sill	Spls Start Surf R 370 A 645 A 792 A 1383 AR 2470 A 2950 R 3088 R	Oil producer-Dineh bi Keyah Field; cumulative production 852,589 Bbls oil, 65,481 MCF gas, 16,872 Bbls wtr.  Producing zone in sill, perfs 2953-2983, 3062-3084, acidized w/1500 gals 10% acetic acid & frac w/21,670 gals oil & 22,000 sand-ran Reda pump.  IPF: 1800 BOPD, 40 gty, GOR 66-1  PIPE: 9 5/8" @ 233' w/220; 7" @ 3165' w/200  LOGS: IES, BHC/GR
CORE (Analysis on file)											
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	2952-3011:	rec 1' dolo, 58' minette w/fair to good por, saturated.									
	3012-3091:	rec 78' minette w/fair to good por, saturated, 1' limestone.									
135	2501	381	5-35N-30E SE NW 1980 FNL 2160 FWL	Kerr-McGee #1 Navajo B	3/67 6/67	8503KB 8491GR	4130 PB to 3700	Miss	Glenn Can Gp Chinle Moss Back Monitor Butte basal Tri DeChelly	Spls Start 760 A 1120 A 1293?A 1492 A 1624 A	TA  PERFORATIONS: 3427-3457 acidized & fraced, no prod.



Well No. 135 Cont'd

Cutler-Supai 2193 A  
 Hermosa 3290?A  
 sill 3662 A  
 base sill 3753 A  
 Miss 4030 A  
 3710-3746 (sill) acidized  
 & fraced, no prod.  
 3664-3690 (sill) acidized  
 & fraced, no prod.  
 shot 340 quarts nitroglycerin  
 from 3664-3752 (sill)-  
 too tight to produce.

CORE: 3678-3762  
 (analysis on file)  
 PIPE: 10 3/4" @ 321' w/430;  
 7" @ 3850' w/150  
 LOGS: IES, BHC/GR

136	<u>2524</u>	<u>388</u>	6-35N-30E SE NE 1900 FNL 800 FEL	Humble #1 Navajo 138	4/67 5/67	8278KB 8266GR	4280 PB to 3640	Pre- Cambrian	Chuska Chinle Moss Back Monitor Butte basal Tri DeChelly Cutler-Supai Hermosa Ismay Desert Cr Akah sill* base sill Molas Miss Curay Elbert McCracken Aneth Precambrian	Spls Start 535?A 535 R 792 A 930 A 1202 A 1353 A 1202 R 1870 A 3078 A 2720 R 3173 R 3264 R 3312 R 3340 R 3627 R 3735 A 3627 R 3753 AR 3892 A 3910 R** 3950 A 4054 AR 4140 A 4152 R 4270?A 4270 R	Oil producer-Dineh bi Keyah Field; cumulative production 639,677 Bbls oil, 117,587 MCF gas, 13,160 Bbls wtr.  Production zone in sill, perf 3342-3559 w/l pf, sand-oil frac.  IPP: 1420 BOPD on 24 hr test, 43 gty, GOR 212:1.  PIPE: 16" @ 40' w/50; 10 3/4" @ 537' w/525; 7" @ 3665' w/150  LOGS: IES, BHC/GR  * Multiple sills.  ** Reported as Devonian.
CORE											
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											3345-3383: Rec 38'-4 1/2' x'tline 19 ig, 4' altered sed rk, 22 1/2' x'tline 19 ig, 7' altered sed rk.
											3383-3388: Rec 5'-4 1/2' altered sed rk, 1/2' 19 ig.
											3388-3432: Rec 33'-1' x'tline 19 ig, 22' altered sed rk w/inclusions 19 ig, 10' 19 rks.
											3432-3462: Rec 25'-25' 19 ig.
											3462-3474: Rec 12'-11' 19 ig, 1' altered shale.

69

137	<u>2094</u>	<u>400</u>	6-35N-30E SE SE 690 FSL 790 FEL	Humble #2 Navajo 138	5/67 6/70	8374KB 8359GR	4607	Miss	Chuska Chinle Moss Back Monitor Butte basal Tri sd DeChelly Cutler-Supai Cutler evps Hermosa chert zone Ismay Desert Cr Akah Miss	Spls Start 695 R 1435 A 1525 A 1858 A 1893 A 1856 R 2000?P 2608 AR 2943 A 3809 A 3828 R 4020 R 4126 R 4188 R 4536 AR	D & A  PIPE: 9 5/8" @ 758' w/850  LOGS: IES, BHC/GR  NOTE: Sill of Dineh bi Keyah Field not present.
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IDENTIFICATION SEQ	ABM	OGC	LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
								BOTTOM	TOPS		
138	2093	393	8-35N-30E SE NE 1650 FNL 660 FEL	Humble #1 Navajo 140	4/67 5/68	8635KB 8623GR	4854	Pre- cambrian granitic	Glenn Can Gp Chinle Moss Back? Monitor Butte? basal Tri sd DeChelly Cutler-Supai Hermosa chert zone Ismay Desert Cr Akah Barker Cr Molas Miss Devonian McCracken Aneth Precambrian	Sp1s Start 1009?A 1123 A 1200 A 1464 A 1642 A 2240 AR 3310 A 3433 R 3623 AR 3746 AR 3810 AR 3979 A 4214?A 4232 AR 4397 AR 4534 AR 4643 AR 4730 A 4778 R	D & A  Originally completed as SI helium well-perfs 4580-4595 & 4611-4620 in McCracken Sand- stone, acidized & sand fraced. Initial pot. 1579 MCF-32 Bbls wtr-helium content approx 5%. No market available.  PIPE: 10 3/4" @ 1073' w/1050; 7" @ 4850' w/285  LOGS: IES, GR, BHC/GR  NOTE: Sill of Dineh bi Keyah Field not present.
Drill Stem Tests											
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4532-4633: SI 1 hr, op 2 hr, SI 2 hr, rec 320' mud, FP 145-218#, SIP 897-868#, HP 2246-2246#. Opened with immed blow of non combustible gas.											
4663-4806: SI 1 hr, op 2 hr, SI 3 hr, rec 500' mud, FP 56-169#, SIP 869-855#, HP 2270-2213#. Opened with fair blow in to max flow of 101 MCFGPD-non combustible.											
139	2565	501	10-35N-30E SW NW 1740 FNL 640 FWL	Odessa #1 Aircodessa- Navajo	6/69 7/69	9273KB 9260GR	4978	McCracken	Chuska Chinle Monitor Butte basal Tri DeChelly Cutler-Supai Hermosa black sh Molas Miss Elbert McCracken	Sp1s Start 1700 A 1955 A 2167 A 2720 AR 3845 AR 4302 R 4528 A 4466 R 4576 AR 4760 AR 4013 AR	D & A  PIPE: 9 5/8" @ 1608' w/430  LOGS: IES, BHC/GR  NOTE: Sill of Dineh bi Keyah Field not present.
140	2088	426	14-35N-30E NE NE 360 FNL 560 FEL	Kerr-McGee #1 Navajo H	8/67 9/67	9044KB 9031GR	5345	Pre- cambrian meta	Chuska Glenn Can Gp Chinle Moss Back Monitor Butte basal Tri DeChelly Cutler-Supai Hermosa Molas Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Ouray Elbert McCracken Aneth Cambrian Precambrian	Surf 457 A 1407 R 1859 A 1986?A 2219 A 2424 A 2978 AR 4002 A 4726 A 4750 R 4750 A 4784 A 4810 A 4838 A 4871 A 4918 R* 4900 A 5087 A 5085 R 5207 A 5202 R 5233 A 5281 R 5330 A 5326 R	D & A  PIPE: 9 5/8" @ 1460' w/1250  LOGS: IES, FOR-DEN  * Reported as Devonian.  NOTE: Sill of Dineh bi Keyah Field not present.
Drill Stem Tests											
(Charts on file)											
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5018-5153: SI 30 min, op 45 min, SI 30 min, rec 40' mud, FP 140-140#, SIP 1118-1048#, HP 2592-2592#.											
5170-5345: SI 45 min, op 30 min, SI 45 min, rec 10' mud, FP 140-140#, SIP 252-156#, HP 2662-2662#.											

141	452	15-35N-30E	Humble #1	2/68	8775KB	4213	Pre-	Cutler		1770 R	D & A
		SE SW	Navajo 146	7/68	8765GR		cambrian	Hermosa		2823 R	
		740 FSL						Ismay		3013 R	Originally completed as a SI
		1900 FWL						Desert Cr		3100 R	helium well. Perfs 3854-3864,
								Akah		3160 R	3882-3886, 3898-3901, 1 shot pf,
								black sh	3268 A		acidized and fraced.
								Barker Cr	3300 A		
								Miss	3462 A		IP: 370 MCFPD on 24 hr test,
								Devonian	3660 A		no wtr, TP 50#.
								McCracken	3826 A		
								Aneth	3930 A		PIPE: 9 5/8" @ 1210' w/1050;
								Precambrian	4038 A		5 1/2" @ 4152' w/215
											LOGS: IES, SON-GR

Drill Stem Tests

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3825-3936: Op 5 min, SI 1 hr, op 1 hr, SI 2 hr, GTS in 25 min, max rate 138 MCFPD, rec 100' mud, FP 44-87#, SIP 873-873#, HP 1789-1789#. Some helium indicated.

3944-4075: Op 5 min, SI 1 hr, op 1 hr, SI 2 hr, GTS in 21 min, max rate 12.4 MCFPD, rec 640' GCM, FP 131-218#, SIP 873-873#, IHP 1832#. Some helium indicated.

142	<u>2525</u>	<u>454</u>	35-35N-30E	Humble #1	3/68	8793KB	3963	Pre-	Chuska	Spls Start	D & A
			SE NE	Navajo 151	5/68	8780GR		cambrian	basal Tri	1040 A	
			1980 FNL					granitic	DeChelly	1182 A	Originally completed as a SI
			330 FEL						Cutler-Supai	1805 AR	helium well in Devonian McCracken
									Hermosa	2828 AR	sand-helium 3.1%, nitrogen 94.2%.
									Ismay	2996 R	
									Desert Cr	3078 R	PERFORATIONS:
									Akah	3140 R	3836-60, 3697-3700, 3702-07,
									black sh	3228 R	3710-12, 3717-20, 3730-40,
									Barker Cr	3258 R	3448-54, 3256-60, w/1 pf.
									Molas	3386 A	3312-18 acidized. Re-perf
									Miss	3422 A	3293-3302, 3306-18, 3325-32,
									Elbert	3546 A	acidized, sand oil-fract, sqzd
									McCracken	3696 AR	perf 3293-3302, 3306-18, 3325-
									Aneth	3785 AR	32 w/50, swbd 45' BLO.
									Cambrian	3886 R	
									Precambrian	3867 A	CORE: 3326-3386, 3689-3773
											PIPE: 9 5/8" @ 1110' w/600;
											7" @ 3960' w/160 &
											1500# gilsonite.
											LOGS: IES, SON-GR
											* Reported as Devonian.

143	<u>2528</u>	<u>463</u>	1-35N-29E	Pan American	6/68	8576KB	5742	Miss	Chuska	Spls Start	D & A
			SE NE	#1 Nav AE	7/68	8565GR			Wingate		
			1700 FNL						Lukachukai	890 A	PIPE: 16" @ 29';
			950 FEL						Rock Point	1277 A	9 5/8" @ 952' w/785
									Chinle	1467 A	890 R
									Moss Back	2403 A	LOGS: IES, SNP, BHC/GR, DM
									Monitor Butte	2497 A	
									basal sand	2878 A	2878 R*
									DeChelly	3036 AR	3120 P
									Cutler-Supai	3847 A	3888 R
									Cutler evps	4302 A	
									Hermosa	5055 A	* Reported as Shinarump.

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IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	TOPS		REMARKS	
SEQ	ABM	OGC					BOTTOM					
Well No 143 Cont'd												
								Ismay		5253 R		
								Desert Cr		5347 R		
								Akah		5396 R		
								L. Hermosa		5544 R		
								Molas	5698 AR			
								Miss	5711 A	5746 R		
144	2567	478	25-35N-29E	Little & Richardson	12/68	7076KB	3867	Pre-cambrian granitic?	Chinle Petrified For	Spls Start	D & A	
			SW SW	#1 Tohotso	12/68	7066GR			Sonsela	655 A	PIPE: 9 5/8" @ 1825' w/150	
			990 FSL	Navajo					basal Tri sand	975 A		
			610 FWL						DeChelly	1125 A	LOGS: IES, FOR-DEN	
									Cutler-Supai	1800 AR		
									Hermosa	2758 AR		
									Miss	3388 R		
									Horseshoe M.	3388 A		
									Mooney Falls	3422 A		
									Thunder Sprgs	3502 A		
									Whitmore Wash	3540 A		
									Elbert	3599 AR		
									McCracken	3740 A	3760 R	
									Aneth?	3808 AR		
									Cambrian	3828 R		
									Precambrian	3839 A		
145	2071	354	5-35N-28E	Buttes	7/66	5835KB	3030	Pre-cambrian meta	DeChelly?	Spls Start	D & A	
			SW NW	#1 Nav	8/66	5825GR			Cutler-Supai	760?A	850 R	760 P
			1980 FNL						Cutler evps	1176?A		PIPE: 13 3/8" @ 207' w/210
			660 FWL						Hermosa	1794 AR		LOGS: IES, SON-CR
									Molas	2302 AR		
									Miss			
									Horseshoe M.	2385 A		
									Mooney Falls	2426 A		
									Thunder Sprgs	2490?A		
									Whitmore Wash	2510 A		
									Ouray	2565?A	2570 R	
									Elbert	2600 A	2610 R	
									McCracken	2770 A	2795 R	
									Aneth	2870?A	2880 R	
									Cambrian	2975 R		
									Precambrian	2993 A	2990 R	
146	2539	461	25-35N-28E	Buttes	5/68	6359KB	3000	Pre-cambrian meta	Shinarump	Surf	D & A	
			SE SE	#1-25 Navajo	6/68	6348GR			DeChelly	Spls Start	203 R	
			600 FSL						Cutler-Supai	911 A	918 R	PIPE: 9 5/8" @ 271' w/210
			550 FWL						Cutler evps	1374 A		LOGS: IES, BHC/GR, SL
									Hermosa	1838 AR		
									Molas	2312 AR		

Well No. 146 Cont'd

Drill Stem Tests

2748-2810: SI 30 min, op 45 min, SI 90 min, rec 300' HGCM, 900' HGC & sli  
MCW, FP 230-563#, SIP 603-603#, HP 1306-1286#.

Miss  
Horseshoe M. 2353 A  
Mooney Falls 2400 A  
Thunder Sprgs 2470 A  
Whitmore Wash 2488 A  
Ouray 2555 AR  
Elbert 2568 A 2580 R  
McCracken 2703A 2770 R  
Aneth 2873 AR  
Tapeats 2970 R  
Precambrian 2970 A 2982 R

147 2595 526 31-35N-27E Buttes 12/69 5880KB 2482 Pre-  
NE NE #1-31 Nav 12/69 5866GR cambrian  
820 FNL 1576 granitic  
560 FEL

DeChelly Surf  
Cutler-Supai 854 AR  
Cutler evps 1078 A  
Hermosa 1393 A 1408 R  
chaetetes 1574 R  
Molas 1757 A 1655 R  
Miss 1802 R  
Horseshoe M. 1793 A  
Mooney Falls 1837 A  
Thunder Sprgs 1885 A  
Whitmore Wash 1928 A  
Ouray 2000 A  
Elbert 2060 A 2012 R  
McCracken 2212 AR  
Aneth 2352 AR  
Cambrian 2424 AR  
Precambrian 2448 A 2460 R

D & A  
PIPE: 8 5/8" @ 229' w/125  
LOGS: IES, BHC/GR

Drill Stem Tests

1907-1963: SI 1 hr, op 90 min, SI 90 min, rec 3' mud, FP 39-39#, SIP not  
recorded, HP 911-911#.

2224-2280: SI 1 hr, op 90 min, SI 90 min, rec 240' mud, 310' sli salty  
muddy wtr, 90' sli GCSW, FP 105-320#, SIP 599-579#, HP 1055-  
1055#.

Morrison Spis Start  
Cow Springs 155 A  
Entrada 350 A  
Carmel 495 A  
Navajo 580 A  
Kayenta 1000 A  
Wingate  
Lukachukai 1084 A  
Rock Point 1358 A  
Chinle 1360 R  
Owl Rock 1623 A  
Petrified For 2173 A  
DeChelly 2867 A 2760 R  
Supai 3750 AR  
Hermosa 5150 A 5000 R  
Miss 5817 R  
Horseshoe M. 5818 A  
Mooney Falls 5888 A  
Thunder Sprgs 5942 A  
Whitmore Wash 5970 A  
Ouray 6047 AR  
Elbert 6118 A  
McCracken 6348 A

D & A  
PIPE: 8 5/8" @ 803' w/325  
LOGS: DIL, BHC/GR

Drill Stem Tests

5605-5676: Packer failed.

5617-5676: Op 25 min, SI 1 hr, op 1 hr, SI 1 hr, rec 375' mud, FP 234-234#,  
SIP 395-322#, HP 2873-2770#, BHT 1170F.

5787-5875: Op 25 min, SI 1 hr, op 1 hr, SI 1 hr, rec 70' mud, FP 29-59#,  
SIP 1374-1057#, HP 2856-2899#, BHT 1050F.

6049-6131: Op 25 min, SI 2 hr, op 30 min, SI 2 hr, rec 40' mud, FP 29-29#,  
SIP 2135-1560#, HP 2914-2914#, BHT 1140F.

6498-6585: Op 25 min, SI 1 hr, op 1 hr, rec 45' mud and 486' salt wtr, FP  
17-230#, SIP 1944-1944#, HP 3231-3231#.

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IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
Well No. 148 Cont'd											
									Aneth	6459 A	
									Cambrian	6487 R	
									Muav	6560 A	
									Bright Angel	6590 A	
									Tapeats	6653 A	
149	2510	438	4-34N-28E SE SW 690 FSL 2040 FWL	Gulf #1 Navajo 4	11/67 11/67	6508KB 6498GR	2681	Pre-cambrian meta?	Chinle Shinarump DeChelly Cutler-Supai Cutler evps Hermosa Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Ouray Elbert McCracken Aneth Cambrian Precambrian	Spls Start 145?A 145 R 910 AR 1347?A 1672 A 1690 R 2000 R 1994 A 2030 A 2070 A 2090?A 2150?A 2207 AR 2404 A 2390 R 2486?A 2494 R 2603 AR 2630 AR	D & A PIPE: 9 5/8" @ 255' w/165 LOGS: IES, FOR-DEN, BHC/GR MUD
150	68	-	3-31N-23E SE SW NE	Amerada-Stanolind #1 Nav-Black Mt.	8/50 10/50	6333KB 6320GR	5765	Pre-cambrian granitic	Entrada Carmel Navajo Kayenta Wingate Lukachukai Rock Point Chinle Owl Rock Petrified For Moenkopi DeChelly Supai Hermosa Molas Miss D & C zones Elbert McCracken Cambrian Precambrian	Spls Start 103 A 245 A 270 A 325 A 800 A 1150 A 1280 A 2320 A 2360 A 3720 A 3225 P 4920 A 5103 A 5172 A 5271 A 5487 A 5553 A 5747 A	D & A CORE: 5324-5335; 5370-5375; 5441-5456; 5470-5477; 5493-5509; 5519-5533; 5598-5604; 5692-5697; 5756-5766. PIPE: 20" @ 78' w/28; 13 3/8" @ 521' w/425 LOGS: ES, GR-IL
Drill Stem Tests											
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5632-5766: Op 70 min, rec 2430' SW, pressure build up 1200-1700#.											
5437-5550: Op 90 min, rec 3640' SW.											
5115-5370: Pkr failed.											
2348-2455: Op 1 hr, rec 1110' SW, bottom hole pressure 600#.											

151	<u>2598</u>	<u>510</u>	21-29N-24E SE NW 1980 FNL 1980 FWL	Gulf #1 Navajo-CZ	8/69 8/69	6175KB 6163GR	4552	Pre- cambrian granitic	Wingate Lukachukai Rock Point Chinle Owl Rock Petrified For Sonsela sand Shinarump? Moenkopi? DeChelly Supai Hermosa Elbert McCracken Aneth Precambrian	Spls Start 337 A 652 A 740 A 1359 A 1825?A 1855?A 1880 AR 3385 AR 4204 A 4322 A 4370 A 4456 A 4496 AR	D & A PIPE: 8 5/8" @ 341' w/250 LOGS: IES, ACS-VEL, DEN
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Drill Stem Tests

1891-1945: Op 40 min, rec 180' WCM & 900' fresh wtr sli MC, IF-FF 240-373#, ISIP gauge failed, FSIP 373#, HP 93#.

4475-4552: Op 90 min, rec 380' M, 180' muddy brackish wtr, 2680' brackish wtr cut with gas (CO<sub>2</sub>), IF-FF 798-1515#, SIP 1515-1515#, HP 2114-2074#.

152	626	-	24-23N-30E NW NW 340 FNL 300 FWL	Hogback #1 Tufts	11/26 5/27	Approx 7200	1510	Pre- cambrian granitic	Moenkopi DeChelly* Supai Precambrian	P 170 P 375?P 1510 R	D & A LOGS: SL * Measured sections in region indicate DeChelly approx 200' thick.
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153	-	218	31-21N-29E SW NE 1650 FNL 1650 FEL	Eastern # 16 Santa Fe	10/62 11/62	6075GR	828	Coconino	Coconino*	760 R	D & A PIPE: 8 5/8" @ 90' w/20 LOGS: IES * Common useage although probably more closely allied to the DeChelly-Glorieta sequence.
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Drill Stem Tests

776-830: Rec 30' drlg mud.

769-830: Rec 5' drlg mud.

154	<u>1150</u>	<u>90</u>	22-21N-28E SW NE 1600 FNL 1980 FEL	Kerr-McGee #1 Natoni	2/63 5/63	5837?GR	460	Coconino	Chinle Shinarump Moenkopi Coconino*	140 R 250 R 290 R 420 R	D & A PIPE: 5 1/2" @ 200' w/50 LOGS: GR-RES * See remark under SEQ 153.
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155	-	227	25-21N-28E NE SW 2500 FSL 1700 FWL	Eastern #23 Santa Fe	2/63 5/63	5837?GR	590	Coconino	Coconino*	365 R	D & A PIPE: 8 5/8" @ 63' w/20; 4 1/2" @ 376' w/30 LOGS: IES, SON
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Cont'd next page

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
Well No. 155 Cont'd											
										Salt wtr reported 368-398 in Coconino.	
										* See remark under SEQ 153.	
156	990	84	26-21N-28E NW NW 990 FNL 660 FWL	Brown & Asso. #3 Chambers-Sanders	5/59 6/69	5808DF 5807GR	580	Coconino	Coconino*	418 S	D & A PIPE: 20" @ 12' w/50'; 16" @ 200' w/200; 13 3/8" @ 293'; 10 3/4" @ 421' LOGS: GRN * See remark under SEQ 153.
157	989	74	27-21N-28E SW NE 2010 FNL 1650 FEL	Brown & Asso. #2 Chambers-Sanders	4/59 6/59	5803DF	2135	Pre-cambrian granitic	Alluvium Chinle Petrified For Shinarump Moenkopi Coconino* Supai top evps dolomite Ft. Apache? Naco Precambrian	Spls Start 110 A 485 A 500 A 547 A 713 A 875 A 1000 A 1300 P** 1895?P*** 2105 A	D & A PIPE: 16" @ 123' w/220; 9 5/8" @ 1258' w/225; 13 3/8" @ 361' LOGS: GRN * See remark SEQ 153. ** Small chips of gilsonitic? material in thin spongy carbonate. *** Stratigraphic change from orange & brown colored clastics above to maroon finer grained clastics below.
Gas Analysis from Coconino											
158	988	70	28-21N-28E NE NE 660 FNL 660 FEL	Brown & Asso. #1 Chambers-Sanders	3/59 4/59	5791GR	1322	Supai	Chinle Shinarump Moenkopi Coconino* Supai top evps	783 P 790 P 827 S 1025 P 1200 P	D & A PIPE: 13 3/8" @ 185'; 10 3/4" @ 307'; 8 5/8" @ 851' LOGS: GRN * See remark SEQ 153.



159	<u>2579</u>	<u>504</u>	27-21N-26E NE SW 2023 FSL 1881 FWL	Thoureen (Eastern) #1 Santa Fe	6/69 8/69	5869GR	1237	Coconino	Chinle Shinarump Moenkopi Coconino	Surf 1042 PI 1088 PI 1202 R	D & A PIPE: 7" @ 32' w/6; 4 1/2" @ 1226' w/75
160	<u>1174</u>	<u>107</u>	35-21N-26E SE NW 2130 FNL 2095 FWL	Eastern #1 Santa Fe	2/60 3/60	6064KB 6060GR	1616	Coconino	Chinle Shinarump Moenkopi Coconino	197 A 1168 A 1247 A 1395 A	D & A CORE: 1468-1600 LOGS: IES

Drill Stem Tests

1494-1535: Op 125 min, rec 144' sli GC light drlg fluid, 26' sli GC heavy drlg fluid, FSIP 127#.

1541-1576: Straddle pkr test: Op 90 min, rec 60' sli GC drlg mud, 195' sli MC & GC salt wtr, FSIP 152#.

1403-1425: Op 210 min, rec 10' fresh wtr, 35' mud & 135' salt wtr.

1407-1429: Op 300 min-misrun.

1410-1432: Op 270 min, rec 330' drlg mud & 270' salt wtr, FSIP-none taken.

77

161	<u>2573</u>	<u>505</u>	25-21N-25E NE SW 1650 FSL 1650 FWL	Thoureen (Eastern) #1 Navajo	8/69 10/69	5868KB 5866GR	1272	Coconino	Chinle Shinarump Moenkopi Coconino	50 A 1018 AR 1120?A 1082 R 1252?A 1250 R	D & A PIPE: 7" @ 33' w/6 LOGS: IES
162	406		29-20N-29E SW SW 660 FSL 660 FWL	Kerr-McGee #4 Santa Fe Strat	5/67 5/67	6138GR	1113	Coconino	Chinle Coconino	500 R 1100 R	D & A Lost hole; left 633' pipe & collars in hole.
163	-	-	31-20N-29E NE NW 692 FNL 3668 FEL	Duval #17A Santa Fe (Strat)	2/64 3/64	6100GR	1916	Supai	Bidahochi Chinle Petrified For Moenkopi Coconino Supai marker anhy	Surf 530 R 992 R 1111 R 1340 R 1432 R	D & A Potash expl CORE: 1526-1759 No salt reported.
164	-	560	13-30N-28E NE SW 1966 FSL 1980 FWL	Eastern #1 Kiva Santa Fe Fee							Location status proposed depth 1300'.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
165	<u>1319</u>	<u>152</u>	19-20N-28E NE SW 1650 FSL 1650 FWL	Eastern #4 Santa Fe	8/61 8/61	5808GR	1479	Coconino	Shinarump Coconino	1260 S 1463 S	D & A  PIPE: 5½" @ 590' w/75  LOGS: ES
Drill Stem Tests											
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1459-1479: Op 5 hr, rec 30' mud, 420' salt wtr, no press reported.											
166		407	23-20N-28E NW NE 660 FNL 1980 FEL	Kerr-McGee #5 Santa Fe (Strat)	5/67 6/67	6140GR	1207	Coconino	Chinle Coconino	560 R 1171 R	D & A  PIPE: 7" @ 580' w/9  LOGS: IES, SON-SP
167	<u>1330</u>	<u>155</u>	25-20N-28E W/2 E/2 2640 FNL 2599 FEL	Eastern #6 Santa Fe	8/61 9/61	6113GR	1286	Coconino	Chinle Shinarump Moenkopi Coconino	310 A 1105 AR 1150?A 1153 R 1264 AR	D & A  PIPE: 8 5/8" @ 97'  LOGS: IES  Plans for re-entry at time of compilation.
Drill Stem Tests											
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1144-1161: Op 2½ hr, rec 65' frs wtr, 10' hvy mud (by swab).											
1187-1196: Op 4½ hr, no rec.											
1189-1196: Op 5 hr, rec est 15' mud (by swab).											
1262-1273: Op 6 hr, rec 145' drlg fluid (by swab).											
1266-1284: Op 7 hr, rec 95' sli salty mnd.											
168	-	282	29-20N-28E NE SW 1824 FSL 1763 FWL	Eastern #30 Santa Fe	7/64 7/64	5903GR	1352	Chinle*	No data		D & A  PIPE: 7" @ 97' w/10  LOGS: IES  * Possibly Shinarump.

169	552	30-20N-28E SE NW 1650 FNL 1650 FWL	Western Helium #1 Indian	4/71 6/71	5800GR	1310	Moenkopi	Chinle Shinarump* Moenkopi	1218 R 1270 R	D & A PIPE: 7" @ 287' w/100; 5½" @ 457' w/100 LOGS: SL, IES * Water bearing.
170	<u>3025</u> <u>537</u>	31-20N-28E NW NW 660 FNL 660 FWL	Eastern #21-1A Santa Fe	8/70 9/70	5833KB 5830GR	1232	Coconino	Shinarump Moenkopi Coconino	1060 R 1090 R 1216 R	Current helium producer-East Navajo Springs pool (Coconino); put on prod 10/70, cumulative prod 2,492 MCF raw gas. Production interval: open hole 1218-1232 in Coconino. IP: 470' MCFPD & 10 BW, TP 131#. PIPE: 7" @ 244' w/100; 4½" @ 1218' w/100 LOGS: IES, SL
CORE										
-----										
Shinarump cored 1075-1084-6' rec: 5' sandstone, 1' green shale.										
Analytical averages: Permeability 6.4 millidarcies, porosity 17.3%, water saturation 76.1%.										
171	<u>1663</u> <u>234</u>	31-20N-28E SE NW 1650 FNL 1650 FWL	Eastern #21 Ancon-Santa Fe	6/63 9/63	5832GR	1361	Coconino	Shinarump Coconino	1172 1326	Current helium producer-East Navajo Springs pool; put on prod 1969, cumulative prod 13,318 MCF. Perf 1172-1196 in Shinarump. Gas 8.71% helium & 80.5% nitrogen. Calculated AOF: 172 MCFPD. PIPE: 7" @ 228' w/20; 2 7/8" @ 1330' w/85 LOGS: IES, PDC
Drill Stem Tests										
-----										
1174-1194: rec 200' mud (no press reported).										
172	- *	33-20N-28E SE SE 4620 FNL 660 FEL	Duval #23 Santa Fe (Strat)	3/64 4/64	5945KB 5940GR	2068	Coconino	Dune sand Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino	Surf 60 R 390 R 1525 R 1550 R 1668 R	D & A Hole lost. LOGS: IES, SON * Have samples.
173	-	276 3-20N-27E SE NW 1667 FNL 1360 FWL	Eastern #28 Santa Fe	4/64 5/64	5732GR	1037	Coconino	Coconino	1027 S	D & A PIPE: 7" @ 65' w/5 LOGS: IES

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
174	1681	268	5-20N-27E SE NE 2016 FNL 629 FEL	Eastern #22 Santa Fe	2/64 2/64	5710GR	1022	Coconino	Coconino	1022 S	D & A  PIPE: 7" @ 52' w/6  LOGS: IES
175	1179	108	7-20N-27E SE NW 1980 FNL 1851 FWL	Eastern #2 Santa Fe	3/60 3/60	5769GR	1240	Coconino	Chinle Shinarump Moenkopi Coconino	35 R  975 AR 1005 AR 1130 AR	D & A  LOGS: IES  CORE: 1131-1238: porosity 15%, permeability 41.5 milli- darcies, water sat 75%.
Drill Stem Tests											
-----											
1135-1166: Op 120 min, rec 205' MC salt wtr, FP 17-110#, SIP/1 hr 110#.											
176	-	188	11-20N-27E NE SW 1650 FSL 1650 FWL	Eastern #12 Santa Fe	6/62 6/62	5892GR	1305	Coconino	Chinle Shinarump Moenkopi Coconino	906 R 1090 R 1152 R 1287 R	D & A  CORE: 1107-1112, rec 18" sand- stone, conglomeratic.  PIPE: 9 5/8" @ 97' w/40  LOGS: ES
Drill Stem Tests											
-----											
1094-1112: Op 15 min, rec 60' mud, BHP 0".											
1288-1303: Swab thru tool 3 hr, rec 10-15 gals muddy SW each pull, BHP 125#.											
177	-	237	13-20N-27E NE SW 2500 FSL 1750 FWL	Eastern #18 Santa Fe	6/63 8/63	5833GR	1353	Coconino	Coconino	1335 S	D & A  PIPE: 7" @ 218'; 4 1/2" @ 1241' w/60  LOGS: IES  Reported trace of helium in Shinarump.
Drill Stem Tests											
-----											
1333-1353: Open tool w/fair blow, died in 40 min, rec 312' SW & 60' salt mud.											
Three misruns in Shinarump.											

178 - 209 15-20N-27E Eastern #15 10/62 5743GR 1244 Coconino Coconino 1223 S D & A  
 SW NE Santa Fe 10/62  
 2600 FNL  
 1650 FEL  
 PIPE: 8 5/8" @ 98'  
 LOGS: IES

179 1171 112 19-20N-27E Crest #1 3/60 5662KB 1226 Coconino Chinle 200 Sc D & A  
 NE SW Santa Fe 3/60 5657GR  
 1980 FSL Shinarump 1031 Sc  
 1868 FWL Moenkopi 1072 Sc  
 Coconino 1196 ScR  
 CORE: 1083-1125, 1180-1226  
 LOGS: ES

Drill Stem Tests

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 1199?: 1212: Op 379 min, SI 60 min, rec 450' sli salty wtr, FP 58-180#,  
 SIP 180#, HP 590-590#.

180 1686 264 21-20N-27E Eastern #36 1/64 5705GR 1285 Coconino Coconino 1237 S D & A  
 NE SW Santa Fe 1/64  
 1650 FSL  
 1650 FWL  
 PIPE: 7" @ 152' w/15  
 LOGS: IES

181 - 414 22-20N-27E Kerr-McGee 5/67 5737GR 1283 Coconino Chinle 255 R D & A  
 NW SE #12 Santa Fe 6/67 Coconino 1248 R  
 1980 FSL (Strat)  
 1980 FEL  
 PIPE: 7" @ 255' w/9  
 LOGS: IES, BHC/SP

182 - 405 23-20N-27E Kerr-McGee 5/67 5754GR 1330 Coconino Chinle 250 R D & A  
 NW SW #10 Santa Fe 6/67 Shinarump 1085 Sc  
 1980 FSL (Strat) Coconino 1305 R  
 660 FWL

183 - 536 24-20N-27E Eastern #24 6/64 5792GR 1340 Coconino Coconino 1305 S D & A  
 S/2 N/2 Santa Fe 7/64  
 1650 FNL  
 2640 FWL  
 PIPE: 7" @ 315' w/60  
 LOGS: IES

184 1650 203 24-20N-27E Crest #9 9/62 5779GR 1330 Coconino Chinle 295 Sc D & A  
 NE SW Santa Fe 10/62 Shinarump 1110 Sc  
 1650 FSL Moenkopi 1160 Sc  
 1650 FWL Coconino 1297 Sc  
 PIPE: 8 5/8" @ 90' w/26;  
 4 1/2" @ 1289' w/41

Drill Stem Tests

-----  
 1098-1120: Op 10 min, rec 70' mud, FP 50-50#, SIP (30 min) 250#, HP 700#.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
185	<u>1173</u>	<u>134</u>	25-20N-27E SE NW 1980 FNL 1650 FWL	Crest #8 Santa Fe	11/60 6/61	5789GR	1372	Coconino	Chinle Shinarump Moenkopi Coconino	280 R 1154 R 1221 R 1351 R	P & A  Initially completed for 1582 MCFPD through Coconino perfs 1351-1355-well immediately began to make large amount of wtr on testing.

Drill Stem Tests

1359-1372: Op 35 min, strong blow est 1,000,000 CFGPD plus 48 BWP, rec 270' SW, FP 57-169#, FSIP (60 min) 204#.

1197-1203: Op 45 min, rec 50' drlg mud, FSIP 140#.

CORE: 1357-1367  
(analysis on file)

Gas Analysis:  
Nitrogen 88.90%  
Helium 9.68%  
Carb diox 0.70%  
Argon 0.70%  
Ethane 0.10%  
Methane Tr

PIPE: 8 5/8" @ 94' w/50;  
2 7/8" @ 1370' w/40

LOGS: IES, ML, TS, PDC

82

186	<u>2543</u>	<u>353</u>	25-20N-27E SE NW 1680 FNL 1650 FWL	Apache #1 Santa Fe-Crest	6/66 9/68	5781GR	1306	Moenkopi	Chinle Shinarump Moenkopi	280 R 1188 R 1234 R	P & A  Rept show of helium gas from Shinarump perfs 1193-1203, 1220-1230. Zone was fraced with dry ice-no production.
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PIPE: 7" @ 84' w/20;  
4 1/2" @ 1250' w/100

187	<u>2536</u>	<u>473</u>	25-20N-27E SE NW 2120 FNL 1800 FWL	Crest-Ariz Helium #8-X Santa Fe	10/68 10/68	5801GR	1358	Coconino	Alluvium Chinle Shinarump Moenkopi Coconino	Spls Start 300 A 1148 A 1215 A 1347 A	Shut in helium well-E. Navajo Springs Field-pay zone 1346-1358.
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Gas analysis:  
Nitrogen 89.0%  
Helium 10.0%  
Carbon diox 0.5%

Drill Stem Tests

1169-1204: Good blow air immed, rec 90' mud, FP 52-52#, SIP (30 min) 144-131#.

1344-1358: Test misrun.

CORE: 1149-1171, 1172-1204  
(analysis on file)

LOGS: IES

Well has water problems.

188 - 472 25-20N-27E Crest-Ariz 10/68 5811KB 1445 Coconino Chinle 310 R D & A  
 C SW Helium #2 11/68 5805GR Shinarump 1260 R Perf: 1290-93, 1294-1301,  
 1320 FSL Santa Fe Moenkopi 1319 R 1305-11 w/2 pf, Sd wtr  
 1320 FWL Coconino 1439 R frac, Swb wtr.  
 CORE: 1079-1096; Rec 11' shale.  
 PIPE: 8 5/8" @ 30' w/10;  
 4 1/2" @ 1435' w/50  
 LOGS: IES

189 2555 471 25-20N-27E Crest-Ariz 9/68 5820GR 1225 Coconino Alluvium Spis Start Shut in helium well-some prod  
 SE SE Helium #1 11/68 PB to Chinle 1969, 7,600 MCF, started making  
 660 FSL Santa Fe 1140 Petrified For 168 AR wtr. Tested 469.7 MCF/GPD &  
 660 FEL Shinarump 1036 AR 100 BWPD on 24 hr test, 2" chk.  
 Moenkopi 1112 AR Pay interval 1215-1225.  
 Coconino 1212 AR After workover a new pay zone,  
 1046-1060, 1100-1110, was compl  
 with IP: 51 MCF/GPD. Well  
 still SI.  
 PIPE: 7" @ 34' w/10;  
 4 1/2" @ 1171' w/70  
 LOGS: IES

190 - 182 26-20N-27E Crest #11 5/62 ? 1391 Coconino Chinle 285 R D & A  
 SW NE Santa Fe 5/62 Shinarump 1203 S PIPE: 8 5/8" @ 87' w/40  
 1650 FNL Moenkopi 1233 S LOGS: IES  
 1650 FEL Coconino 1380 S

Drill Stem Tests

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 1132-1165: Op 1 hr, rec 80' drlg mud, 60' sli GCM, FP 48-65#, SIP (30 min)  
 118-118#, HP 565-548#.

191 - \* 26-20N-27E Duval #21 2/64 5765KB 1978 Supai Dune sand Surf D & A  
 NW NW Santa Fe 3/64 5760GR evps Bidahochi 100 R Potash expl  
 4620 FSL (Strat) Chinle LOGS: IES, GRN, SON  
 660 FWL Petrified For 280 R \* Have samples  
 Moenkopi 1105 R  
 Coconino 1325 R  
 Supai 1500 R  
 Anhy marker 1676 R  
 Salt 1756 R

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
192	<u>1172</u>	<u>129</u>	26-20N-27E NE SW 1650 FSL 1650 FWL	Crest #5 Santa Fe	10/60 11/60	5754GR	1180	Coconino	Chinle Shinarump Moenkopi Coconino	940 R 1002 R 1138 R	D & A  CORE: 1100-1120 Perf 1138-1168 w/sli show gas  PIPE: 5½" @ 132' w/40; 2 7/8" @ 1169' w/41  LOGS: IES
193	<u>1316</u>	<u>151</u>	26-20N-27E NE SW 1350 FSL 1650 FWL	Crest #5-A Santa Fe	8/61 9/61	5759GR	1135	Coconino	Coconino	1126 S	D & A  Water at TD.  PIPE: 4½" @ 1120' w/50  LOGS: ES
194		289	26-20N-27E NE SW 1950 FSL 1950 FWL	Eastern #25 Santa Fe	8/64 9/64	5752GR	1223	Coconino	Chinle Shinarump Moenkopi Coconino	1000 S 1057 S 1204 S	D & A  PIPE: 7" @ 295' w/35  LOGS: IES
195	<u>3026</u>	<u>543</u>	26-20N-27E SE SW 1050 FSL 1980 FWL	Eastern #1-26 Santa Fe	7/70 11/70	5764GR	1161	Coconino	Chinle Sonsela "A" L. Pet. For Monitor Butte Shinarump Moenkopi Coconino	185 R 215 R 863 R 940 R 1010 R 1144 R	D & A  PIPE: 7" @ 218' w/85; 4½" @ 1135' w/200  LOGS: IES, CBL-CR, SL  Salt wtr rec from Coconino.
196	-	547	26-20N-27E SE SE 1050 FSL 1050 FEL	Eastern #2-26 Santa Fe	10/70 11/70	5773GR	1290	Moenkopi	Chinle Sonsela "A" L. Pet For Monitor Butte Shinarump Moenkopi	435 R 476 R 1088 R 1170 R 1243 R	D & A  PIPE: 7" @ 293' w/75  LOGS: IES, SL
197	-	263	27-20N-27E NE SW 1650 FSL 1650 FWL	Eastern #35 Santa Fe	1/64 5/64	5750CR	1072	Coconino	Coconino	1062 PI	SI helium well-Navajo Springs Field. Cumulative prod 8,782 MCF raw gas thru 1970.  IP: 133 MCFPD on 16/64 ck.  Gas analysis: Nitrogen 90.08% Helium 8.34% Carb diox 0.90%



Well No. 197 Cont'd

PIPE: 4 1/2" @ 1062' w/65;  
7" @ 64' w/10

198	<u>1684</u>	<u>258</u>	28-20N-27E NE SW 1650 FSL 1650 FWL	Eastern #32 Santa Fe	11/63 11/63	5755GR	1133	Coconino	Chinle Shinarump Coconino	850 S 1090 S	SI helium well. Navajo Springs Field.
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IPF: 98 MCFPD, 3/4" ck, thru perfs 1090-1100.

Drill Stem Tests

PIPE: 7" @ 63' w/8;  
2 7/8" @ 1133' w/75

1087-1093: Op 3 1/3 hr, rec 10' mud; tested 98 MCFPD, FP 112#.

LOGS: IES

199	<u>1683</u>	<u>255</u>	29-20N-27E N/2 SE 1650 FSL 1320 FEL	Eastern #31 Santa Fe	10/63 10/63	5680GR	1049	Coconino	Chinle Shinarump Moenkopi Coconino	210 R 730 R 816 R 992 R	SI helium well-Navajo Springs Field.
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IPF: 876 MCFPD

CORE: 1003-1017  
(analysis on file)  
av. por about 13%;  
perm 20-1369 millidarcies

PIPE: 7" @ 90' w/12;  
2 7/8" @ 1049' w/30

LOGS: IES

200	<u>1685</u>	<u>259</u>	30-20N-27E NW SE 1650 FSL 1650 FEL	Eastern #33 Santa Fe	12/63 12/63	5660GR	1265	Coconino	Coconino	1233 R	D & A
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PIPE: 7" @ 130' w/10

LOGS: IES

201	-	252	31-20N-27E Center W. line	Eastern Spurlock Core Hole #1	5/63 5/63	5670GR	156	?	?		LOGS: PDC
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202	-	251	31-20N-27E 1065' S. of NW corner	Eastern Spurlock Core Hole#2	5/63 5/63	5690GR	168	?	?		LOGS: PDC
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IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
203	194	31-20N-27E	Eastern #13	6/62	5786DF	1030	Coconino	Chinle	582 R		Current helium producer-Navajo Springs Field-cumulative prod since 1965, 752,606 MCF. Prod interval open hole 967-1030.
		NE SW	Santa Fe	6/62				Shinarump	761 R		
		1650 FSL						Moenkopi	802 R		
		2630 FWL						Coconino	964 R		
Drill Stem Tests (Chart on file)											
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1967-978:	Swabbed through DST tool, rec gas to surf gauge 1330 MCF by orifice test, 137.2# pressure on water gauge, IFP 35#, FFP 38#, FSIP 115#.										IP: Flowed 6290 MCFPD (calculated absolute open flow)
CORE: 984-1030 (have analysis)											
PIPE: 8 5/8" @ 92' w/40; 4 1/2" @ 967' w/50											
LOGS: ES											
204	2004	238	32-20N-27E	Kerr-McGee #1	7/63	5752KB	1087	Coconino	Chinle	200 R	Current helium producer-Navajo Springs Field-cumulative prod 195,937 MCF since 1964.
			NE SW	Barfoot-State	7/63	5745GR			Shinarump	714 R	
			1650 FSL					Moenkopi	805 R		
			1650 FWL					Coconino	984 R		
IPF: 1160 MCFPD (calculated absolute open flow) thru perfs 986-1008. SIP 108# (natural)											
CORE: 984-1087											
PIPE: 7 5/8" @ 195' w/70; 4 1/2" @ 1076' w/140											
LOGS: IES, ML											
205	-	110	33-20N-27E	Crest #2	5/60	5761KB	1140	Coconino	Chinle	20 R	SI helium well-Navajo Springs Field.
			NE SW	Santa Fe	5/60	5759GR			Shinarump	915 R	
			1980 FSL					Moenkopi	949 R		
			1980 FWL					Coconino	1062 R		
IP: 91 MCFPD (calculated open flow) thru perfs 1062-1072.											
CORE: 1075-1126											
PIPE: 4 1/2" @ 220' w/50; 2 7/8" @ 1107' w/50											
LOGS: IES, ML											
Drill Stem Tests (Chart on file)											
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1062 1/2-1075:	Op 60 min, GTS immed, 7.3% helium, rec 20' drlg mud, est BHT 85°F, FP 45-60#, FSIP (60 min) 105#, HP 500-500#										
1075-1106:	Op 104 min, rec 220' drlg mud, FP 15-105#, FSIP 105#, HP 635-605#, est BHT 85°F. Shut-in time: 30 min.										
1094-1106:	Op 120 min, rec 22' drlg mud, FP 105-105#, FSIP 105#, HP 550-550#, est BHT 85°F. Shut-in time: 15 min.										

206	<u>1192</u>	<u>140</u>	34-20N-27E SW NE 1650 FNL 1650 FEL	James Brown #1 Santa Fe	1/61 2/61	5846GR	1214	Coconino	Chinle Shinarump Moenkopi Coconino	130 R 1021 R 1088 R 1211 R	D & A CORE: 1168-1214 PIPE: 8 5/8" @ 152' w/50; 5 1/2" @ 1211' w/50 LOGS: GRN
207	<u>1687</u>	<u>269</u>	34-20N-27E SE NW 1650 FNL 1650 FWL	Eastern #37 Santa Fe	2/64 3/64	5842GR	1202	Coconino	Coconino	1172 R	D & A PIPE: 7" @ 113' w/12 LOGS: IES
208	<u>1318</u>	<u>130</u>	35-20N-27E NE NE 1000 FNL 1000 FEL	Crest #6 Santa Fe	8/61 9/61	5798GR	1231	Coconino	Chinle Shinarump Moenkopi Coconino	1040 A 1106 R 1099 A 1188 R 1220 AR	D & A CORE: 1217-1226 PIPE: 8 5/8" @ 92' w/50; 4 1/2" @ 1181' w/50 LOGS: ES, GR
Drill Stem Tests											
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1217-1226: Op 4 hr, rec 372' frs wtr, 300' GC sli brackish wtr, (press not reported).											
209	-	553	36-20N-27E NE NE 660 FNL 660 FEL	Western Helium #1 KM State	5/71 6/71	5834KB 5832GR	1160	Moenkopi	Chinle Sonsela L. Pet For Monitor Butte Shinarump Moenkopi	306 R 333 R 1031 R 1060 R 1088 R	Current Shinarump helium producer E. Navajo Springs pool PIPE: 7" @ 274' w/60; 5 1/2" @ 1152' w/80 LOGS: IES, DEN
210	-	147	9-20N-26E NW NW 660 FNL 660 FWL	Linehan & Stoltenberg #1-9 Spurlock & Wetzler	4/61 4/61	5745GR	1230	Coconino	Coconino	1194 S	D & A CORE: 1194-1208 PIPE: 5 1/2" @ 114' w/14
211	-	119	13-20N-26E SW SW 660 FSL 660 FWL	Wilson #1 Cody Harris	6/61 9/61	5632GR	1127	Coconino	Chinle Shinarump Moenkopi Coconino	812 R 941 R 994 R 1099 R	D & A PIPE: 8" @ 100' w/50; 2 7/8" @ 1260' w/100 LOGS: GRN, SL

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS	
212	<u>1307</u>	<u>136</u>	21-20N-26E SW SE 330 FSL 2310 FEL	Linehan & Stoltenberg #1-21 Spurlock & Wetzler	4/61 4/61	5600KB	1082	Coconino	Coconino	1056 S  CORE: 1057-1071 PIPE: 5½" @ 118' w/18 LOGS: IES
213	<u>1332</u>	<u>296</u>	23-20N-26E SE SW 660 FSL 1980 FWL	Eastern #1 Reese-Spurlock	10/64 11/64	5602GR	1098	Coconino	Coconino	1098 S  CORE: 1099-1100 PIPE: 7" @ 165' w/23 LOGS: IES
214	<u>1007</u>	<u>64</u>	27-20N-26E NE SE 1980 FSL 660 FEL	Kerr-McGee #1 Reese	9/58 10/58	5622KB 5616GR	1052	Coconino	Chinle Shinarump Moenkopi Coconino	733 R 852 R 978 R  D & A PIPE: 8 5/8" @ 160' w/150 LOGS: IES, ML Salt water in Coconino.
88	<u>1178</u>	<u>88</u>	28-20N-26E SE SE 660 FSL 660 FEL	Eastern #1-28 State	6/60 9/60	5690DF 5685GR	1091 PB to 1051	Coconino	Coconino	934 S  Current helium producer-Pinta Dome Field-cumulative prod 775,535 MCF. Perfs 937-1000; IPF 2140 MCFPD on 3/4" ck- 8.5% helium. CORE: 940-978 PIPE: 8 5/8" @ 48' w/50; 4½" @ 1051' w/100 LOGS: IES, ML
Drill Stem Tests										
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940-956: Op 2 hr, helium-nitrogen GTS immed, flowed 118' MCFPD after 120 min, rec 35' GCM, FP 14-16#, SIP (60 min) 59-89#.										
216	-	122	30-20N-26E NW SE 1880 FSL 1980 FEL	Sierra Drlg #3 State	7/60 7/60	5616GR	1036	Coconino	Chinle congl. Shinarump Moenkopi Coconino	654 R 821 R 840 FI 989 R  D & A PIPE: 8 5/8" @ 100' LOGS: IES, ML Salt water reported in Coconino.

217	<u>1323</u>	<u>137</u>	31-20N-26E SE NE 2500 FNL 660 FEL	Linehan & Stoltenberg #1- 31 Spurlock & Wetzler	4/61 4/61	5532GR	860 PB to 841	Coconino	Coconino	808 S	D & A  CORE: 807-852  Perf 809-818, wash w/acid, swbd 36 hr, rec 1 Bbl SW/hr & gas TSTM.  PIPE: 5½" @ 120' w/20; 2 7/8" @ 852' w/75  LOGS: IES
Drill Stem Tests											
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807-822:	Rec 180' GCM, FSIP 107#/30 min.										
822-837:	Rec 60' mud, SIP 75-35#/30 min.										
837-852:	Rec 90' HGCM & 180' GC salt wtr, FP 100-130#, SIP 130-130#/ 30 min.										
218	<u>817</u>	<u>38</u>	32-20N-26E SW NE 1650 FNL 2310 FEL	Kerr-McGee #4 State	5/57 5/57	5571DF 5567GR	836	Coconino	Coconino	828 S	SI helium well-Pinta Dome Field-cumulative prod 1961- 1967 48,245 MCF. Perfs 828- 832, est potential 420 MCFPD plus .8 gal wtr/hr, SIP 96.5#.  PIPE: 8 5/8" @ 167' w/100; 5½" @ 828' w/200  LOGS: GRN
219	<u>2084</u>	<u>378</u>	32-20N-26E NE SE 1400 FSL 330 FEL	Kerr-McGee #4A State	2/67 3/67	5555GR	834	Coconino	Chinle congl Shinarump Moenkopi Coconino	Surf 550 R 632 R 770 R 793 R	SI helium well-Prod short period 1967-277 MCF, Pinta Dome Field. Perfs 793-796, IPF 42 MCFPD (natural).  PIPE: 7 5/8" @ 207' w/125; 4½" @ 834' w/150  LOGS: IES
220	<u>212</u>	<u>10</u>	33-20N-26E SW SE 330 FSL 2310 FEL	Kerr-McGee #1 Fee (Macie) Formerly Colgrove #1 Hortenstine	5/51 6/51	5743GR	2517 PB to 1222	Supai	Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt dolomite	Spls Start 737 A 793 A 980 A 1350 A 1417 P 1725 A 2318 A*	Current helium producer-Pinta Dome Field-cumulative prod since 1961 483,131 MCF raw gas. Perfs 956-980. IP 216 MCFPD; calc absolute open flow 480 MCFPD; SIP 99.1#.  CORE: 1685-1690, 1695-1850, 1903-2013, 2018-2139, 2230-2517  PIPE: 10 3/4" @ 118' w/60; 7" @ 1253' w/275  LOGS: GR, GRN  * Some fluorescence reported.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
221	-		34-20N-26E SW SW 550 FSL 1255 FWL	Kerr-McGee #1 State	2/50 10/56	5780GR	1550 PB to 1200	Supai	Coconino Supai	1027 R 1350 R	Discovery well-Pinta Dome Field-current helium producer-cumulative prod since 1961 974,654 MCF raw gas. Perfs 1098-1100.  PIPE: 12" @ 15' w/7; 10" @ 640'; 8 5/8" @ 840' w/255; 6 5/8" @ 1530'-not cemented.  LOGS: GRN
-----											
Mass Spectrometer Analysis											
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				Nitrogen	89.8%						
				Helium	8.4%						
				Carbon Diox	1.1%						
				Hydrogen	Tr						
				Oxygen	Tr						
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222	438	36	34-20N-26E NW SE 2175 FSL 1700 FEL	Kerr-McGee #2 State formerly #3 Macie orig drilled by Apache Oil & Helium Corp.	1955 10/56	5779KB 5772GR	2502 PB to 1174	Supai	Coconino Supai anhydrite salt dolomite Ft. Apache?	994 S 1245 P 1415 P 1470 P 1670 P 2235 P	Current helium producer-Pinta Dome Field-cumulative prod since 1961 1,299,224 MCF raw gas. Perfs 1000-1020, 1120-1124. SIP in 36 hr 99.1#, 8% helium.  PIPE: 7" @ 1227' w/195; 8 5/8" @ 286'  LOGS: GR, MLL, ES-LL, GRN, TS
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223	1310	142	35-20N-26E NW NE 660 FNL 1980 FEL	Kerr-McGee #3 Fee	3/61 3/61	5645DF 5643GR	1086	Coconino	Coconino	1086 S	D & A  PIPE: 8 5/8" @ 171' w/100  LOGS: ACS, GR, IES
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224	818	39	35-20N-26E N/2 NW 660 FNL 1320 FWL	Kerr-McGee #2 Fee	4/57 5/57	5664DF 5662GR	1006	Coconino	Coconino	952 S	Currently SI helium well-former producer Pinta Dome Field-cumulative prod 1961-1967: 492,483 MCF. Open hole interval 959-1006.  PIPE: 8 5/8" @ 175' w/100; 5 1/2" @ 959' w/200  LOGS: GRN
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225	1152	91	36-20N-26E SW NE 1650 FNL 1650 FEL	Kerr-McGee #5 State	7/59 7/59	5665DF 5659GR	1200	Coconino	Chinle Moenkopi Coconino	Surf 982 R 1180 R	D & A  PIPE: 5 1/2" @ 205' w/45  LOGS: GR-LL

226	<u>1023</u>	<u>75</u>	22-20N-25E SE SE 660 FSL 1120 FEL	Texas American #1 Fitzgerald	4/59 10/59	5767DF	471	?	?			D & A	PIPE: 13 3/8" @ 130' w/180; 10 3/4" @ 170'	LOGS: SL
227	<u>1022</u>	<u>99</u>	22-20N-25E SE SE 760 FSL 1120 FEL	Texas American #2 Fitzgerald	10/59	5765DF 5763GR	1327	Coconino	Alluvium Chinle Petrified For 20 A Shinarump 1056 AR Moenkopi 1195 R Holbrook 1160 A Moqui 1192 A Wupatki 1290 A Coconino 1321 AR	Spis Start		D & A	PIPE: 16" @ 200'	LOGS: SL
228	-	408	9-19N-29E NW NW 560 FNL 660 FWL	Kerr-McGee #6 Santa Fe Strat	5/67 5/67	6244GR	1388	Coconino	Chinle 630 R Coconino 1370 R			D & A	PIPE: 7" @ 653'	LOGS: IES
229	<u>1657</u>	<u>195</u>	32-19N-29E NW NW 990 FNL 990 FWL	Desert Drig #1 State	6/62 8/65	6660GR	2660	?*	Alluvium Bidahochi Chinle 1595 PI Shinarump 1615 PI	Surf 140?P		D & A	PIPE: 24" @ 30'; 12" @ 1100'; 8" @ 1650'	LOGS: IES
<p style="text-align: center;">Drilled with cable tools.</p> <p style="text-align: center;">* No samples below 1600'.</p>														
230	<u>1322</u>	<u>150</u>	9-19N-28E SE NW 1362 FNL 2054 FWL	Eastern #5 Santa Fe	7/61 8/61	5960GR	1784	Coconino	Coconino	1770 S		D & A	LOGS: ES	

Drill Stem Tests

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1777-1789: Op 120 min, rec 4' mud.

231	-	403	19-19N-28E NW SE 2510 FSL 1830 FEL	Kerr-McGee #2 Santa Fe Strat	5/67 5/67	6121GR	1518	Coconino	Dune Chinle Coconino	Surf 140 R 1481 R		D & A	LOGS: IES, BHC/CAL
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IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
232	-	-	21-19N-28E NE SW 2510 FSL 3288 FWL	Duval #19 Santa Fe Strat	2/64 3/64	6125KB 6120GR	2135	Supai	Bidahochi Chinle Petrified For Shinarump Moenkopi Wupatki Coconino Supai anhydrite salt	Surf 300 R 1385 R 1455 R 1604 R 1880 R 1953 R 1968 R	D & A Potash expl. CORE: 1985-2114? LOGS: GRN, IES, SON
233	-	404	34-19N-28E SE NW 1980 FNL 1980 FWL	Kerr-McGee #3 Santa Fe	5/67 5/67	6198GR	1750	Coconino	Chinle Coconino	300 R 1713 R	D & A PIPE: None LOGS: IES, BHC/SP
234	-	273	1-19N-27E SE NW 1897 FNL 1709 FWL	Eastern #34 Santa Fe	3/64 4/64	5976GR	1440	Coconino	Coconino	1400 R	D & A PIPE: 7" @ 66" LOGS: IES
235	<u>1341</u>	<u>124</u>	3-19N-27E SW NE 1980 FNL 1980 FEL	Crest #3 Santa Fe	6/60 7/60	5906GR	1280	Coconino	Chinle Shinarump Moenkopi Coconino	120 R 1085 R 1122 R 1266 R	D & A PIPE: 5½" @ 130' w/40 LOGS: IES
236	<u>1680</u>	<u>236</u>	4-19N-27E W/2 W/2 2640 FNL 990 FWL	Eastern #17 Santa Fe	6/63 6/63	5775GR	1057	Coconino	Coconino	1022 S	Current helium producer-Navajo Springs Field-cumulative prod since 11/70, 2570 MCF raw gas. Prod zone 1037-1057; IPF 250 MCFPD, 1" ck, TP 112#. CORE: 1030-1060 (analysis on file) PIPE: 8 5/8" @ 67' w/10; 4½" @ 1057' w/65 LOGS: IES
Drill Stem Tests (Chart on file)											
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1046-1057: Gas to surf in 1½ min.											
237	<u>1651</u>	<u>206</u>	5-19N-27E SE NW 1650 FNL 1650 FWL	Eastern #14 Santa Fe	10/62 10/62	5801GR	1100	Coconino	Coconino	1030 S	Current helium producer-Navajo Springs Field-cumulative prod since 10/70, 7281 MCF raw gas. Perfs 1026-1056, acidized; IP 300 MCFPD, 1" ck, TP 110#.



Well No. 237 Cont'd

CORE: 1029-1100 Av porosity  
14% permeability 200  
millidarcies.

PIPE: 8 5/8" @ 92' w/40;  
4 1/2" @ 1100' w/100

LOGS: IES

238	-	204	6-19N-27E SW NE 1650 FNL 1650 FEL	Crest #7 Santa Fe	8/62 9/62	5840GR	1060	Coconino	Tertiary Chinle Shinarump Moenkopi Coconino	Surf R 115 R 716 R 870 R 1044 R	SI helium well-Navajo Springs Field. Perfs 1042-1052 acidized; IPF 185 MCF during 4 hr test, CP 115#.
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Drill Stem Tests

1040-1050: Op 10 min, SI 30 min, op 2 hrs, SI 30 min, gas flow to 185  
MCF-no rec-FP 15-28#, SIP 120-120#, HP 485-485#.

1039-1060: Op 10 min, SI 15 min, op 2 hr 12 min, SI 15 min, gas flow to 182  
MCF, rec 27' muddy wtr, FP 40-55#, SIP 125-125#, HP 525-515#.

CORE: (Description on file)  
1031-1050

PIPE: 8 5/8" @ 97' w/20;  
2 7/8" @ 1060' w/28

LOGS: ES

93

239	<u>1682</u>	<u>250</u>	8-19N-27E NE NE 330 FNL 330 FEL	Eastern #29 Santa Fe	9/63 10/63	5821GR	1101	Coconino	Coconino	1093 S	D & A
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PIPE: 7" @ 61'

LOGS: IES

240	<u>1666</u>	<u>216</u>	8-19N-27E SE NW 1650 FNL 1650 FWL	Eli #2 Santa Fe	10/62 11/62	5838GR	1138	Coconino	Chinle Shinarump Moenkopi Coconino	831 PI 975 PI 1127 S	D & A
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CORE: 1129-1137

PIPE: none

Salt wtr in Coconino & Shinarump.

241	<u>1665</u>	<u>185</u>	9-19N-27E NE NE 258 FNL 349 FEL	Eli #1 Santa Fe	5/62 6/62	5870GR	1208	Coconino	Chinle conglomerate Shinarump Moenkopi Coconino	936 R 1002 R 1053 PI 1193 R	D & A
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LOGS: IES, SL

Drill Stem Test

920-970: No rec, SIP 65#.

Cont'd next page

IDENTIFICATION SEQ ABM OGC	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
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Well No. 241 Cont'd

CORE

1012-1027: Rec 15' red shale.  
 1105-1118: Rec 13' red shale.  
 1147-1155: Rec 8' red shale, lost circ @ 1193.  
 1193-1207: Rec 14' sandstone-set packer-rec salt wtr from Coconino (65,000-75,000 ppm).

242	1180	109	9-19N-27E NE SW 1980 FSL 1980 FWL	Eastern #3 Santa Fe	4/60 4/60	5886GR	2933	Supai	Alluvium Chinle Petrified For Sonsela Shinarump Moenkopi Coconino Supai anhydrite salt potash zone Ft. Apache	Surf 15 583 A 1010 AR 1047 AR 1168 AR 1350 A 1480 R 1350 P 1564 AP 1584 R 1625?P 2470 P	D & A PIPE: 8 5/8" @ 91' w/65 LOGS: GR-LL
Drill Stem Test											
1171-1193: Op 1 hr, rec 240' SW, FP 32-125#, SIP (1 hr) 25#, HP 575#.											

CORE

1153-1193: Rec 40'-17' shale, 23' sandstone, buff, fine-grained, porous, sub-rounded to angular.

243	-	*	10-19N-27E NW NW 77 FNL 216 FWL	Duval #28A Santa Fe (Strat)	3/64 4/64	5892KB 5880GR	1894	Supai	Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt	Surf R 1023 R 1040 R 1176 R 1493 R 1576 R 1613 R	D & A Potash expl CORE: 1591-1908 LOGS: IES, SON, GRN * Have samples
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244	1661	229	12-19N-27E SW NE 1650 FNL 1650 FEL	Eastern #19 Santa Fe	6/63 7/63	5965GR	1422	Coconino	Alluvium Chinle Shinarump Moenkopi Coconino	Surf 220 P 1270 P 1300 P 1400 S	D & A PIPE: 7" @ 98' w/6 LOGS: ES
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Drill Stem Test

1405-1419: Rec 310' salt wtr.

245	-	402	14-19N-27E SW NW 1650 FNL 330 FWL	Kerr-McGee #1 Santa Fe (Strat)	5/67 5/67	6049GR	1417	Coconino	Chinle Coconino	130 R 1386 R	D & A LOGS: BHC/CAL, IES
246	-	*	19-19N-27E SW SW 4620 FNL 660 FWL	Duval #30 Santa Fe (Strat)	4/64 4/64	6046KB 6040GR	1890	Supai	Dume sand Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt	Surf R 19 R 196 R 1149 R 1224 R 1347 R 1672 R 1746 R 1778 R	D & A Potash expl CORE: 1735-1888 LOGS: GRN, SON * Have samples
247	-	*	22-19N-27E SW NE 1652 FNL 3760 FWL	Duval #15 Santa Fe (Strat)	1/64 2/64	6145KB 6140GR	1981	Supai	Dume sand Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R 85 R 170 R 1265 R 1303 R 1453 R 1760 R 1830 R 1848 R 1946 R	D & A Potash expl CORE: 1845-1981 LOGS: IES, SON, GRN * Have samples
248	<u>1662</u>	<u>230</u>	23-19N-27E C E/2 2640 FNL 1320 FEL	Eastern #20 Santa Fe	7/63 7/63	5890KB 5883GR	1557	Coconino	Bidahochi Chinle Petrified For Sonsela Shinarump Moenkopi Coconino	Spis Start 254 A 833 A 1327 A 1432 A 1542 A	D & A PIPE: 7" @ 97' w/7 LOGS: IES
249		413	24-19N-27E NE NE 800 FNL 800 FEL	Kerr-McGee #11 Santa Fe (Strat)	6/67 6/67	6111GR	1455	Coconino	Chinle Coconino	55 R 1422 R	D & A LOGS: BHC/CAL, IES
250	-	*	28-19N-27E SW SW 965 FSL 320 FWL	Duval #39 Santa Fe (Strat)	5/64 5/64	6115KB 6110GR	2001	Supai	Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt	Surf R 308 R 1295 R 1322 R 1468 R 1753 R 1855 R 1872 R	D & A Potash expl CORE: 1861-2001 LOGS: IES, GRN, SON-GR * Have samples

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OCG						BOTTOM	TOPS		
251	-	348	1-19N-26E SW NE 1642 FNL 1638 FEL	Eastern #2 Reese	1/66 2/66	5722CR	1067	Coconino	Coconino	1012 S	SI helium well-Navajo Springs Field. Perfs 1012-1016, flowed gas (8.6% helium) 250-300 MCFPD.  PIPE: 7" @ 35' w/8; 2 7/8" @ 1053' w/100  LOGS: ES, PDC
252	<u>1332</u>	<u>157</u>	1-19N-26E SW NW 1650 FNL 660 FWL	Eastern #1 Reese	10/61 11/61	5732KB 5726GR	1077	Coconino	Chinle Shinarump Moenkopi Coconino	140 R 814 R 852 R 1034 R	D & A  PIPE: 8 5/8" @ 125' w/43  LOGS: IES
Drill Stem Test											
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1038-1077: Rec salt wtr, no shows.											
253	<u>1177</u>	<u>81</u>	2-19N-26E NE SW 1980 FSL 1980 FWL	Eastern #1-2 State	6/59 6/59	5740KB	1054	Coconino	Chinle Shinarump Moenkopi Coconino	811 PI 819 PI 973 S	Current helium producer-Pinta Dome Field-cumulative prod 678,665 MCF raw gas. Perfs 974-991, 995-1000; IPF 2002 MCFPD; 1" ck, 1 hr test, CP 7#.  CORE: 987-1044  PIPE: 8 5/8" @ 76' w/75; 4 1/2" @ 1041' w/100  LOGS: IES, ML
Drill Stem Test											
-----											
970-991: Op 30 min, nitrogen-helium GTS immed @ 552 MCFPD, IPF 63#, SIP (60 min) 108-104#.											
254	<u>2067</u>	<u>349</u>	4-19N-26E NE NE 330 FNL 330 FEL	Kerr-McGee #3A State	4/66 4/66	5765GR	1005	Coconino	Chinle Petrified For Shinarump Moenkopi Coconino	Sp1s Start 780 R ?P 721 A 880?P 965 AR	Current helium producer-Pinta Dome Field-cumulative prod since 1966: 190,109 MCF raw gas. Perfs 965-980.  PIPE: 7 5/8" @ 200' w/125 4 1/2" @ 1004' w/100  LOGS: IES, PDC

255 816 37 4-19N-26E Kerr-McGee 4/57 5753GR 1198 Coconino Coconino 1012 R Former helium producer-Pinta Dome Field-cumulative prod 6,184 MCF raw gas to 1966 (started making water). Perfs 1010-1016, compl @ 140 MCFPD with 24 BWP.

PIPE: 8 5/8" @ 174';  
5 1/2" @ 1192'

LOGS: ES

256 - 196 5-19N-26E Ram #1-5 8/62 5672GR 948 Coconino Chinle D & A  
SW NE Hortenstine 12/63 conglomerate 687 R  
1645 FNL Shinarump 828 R  
1645 FEL Coconino 928 R  
PIPE: 7" @ 180' w/30  
4 1/2" @ 864' w/60

LOGS: IES, SON

Drill Stem Tests

838-841: No rec.

841-844: No rec.

844-849: No rec.

97

257 78 6-19N-26E Eastern 5/59 5664DF 1013 Coconino Chinle D & A  
SE NE #1-6 State 9/60 5659GR PB to 738  
1980 FNL Moenkopi 802 PI  
660 FEL Coconino 950 S  
CORE: 710-756, 940-965  
PERFS: 675-681, 686-690, 696-698, 703-719, w/2 per ft; sd wtr fract.

Drill Stem Test

685-756: (Chinle conglomerate) Rec 200' GCM.

PIPE: 8 5/8" @ 198' w/100;  
4 1/2" @ 772' w/100

LOGS: IES, ML

258 - 178 9-19N-26E Ram #1-9 3/62 5726GR 993 Coconino Coconino 971 S D & A  
SW NE Hortenstine 12/63  
1645 FNL  
1645 FEL  
PERFS: 732-734, 744-746, 754-764, 768-774.

PIPE: 7" @ 92' w/50;  
4 1/2" @ 932' w/100;  
2" @ 752'

LOGS: SON, IES

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
259	<u>1175</u>	<u>80</u>	10-19N-26E NE NE 660 FNL 660 FEL	Eastern #1-10 State	6/59 9/60	5743GR	1035	Coconino	Chinle conglomerate Shinarump Moenkopi Coconino	Surf R 699 R 817 R 831 R 974 R	Former helium producer-Now shut in-Pinta Dome Field-cumulative production 1962-1967: 43,387 MCF raw gas (8.56% helium), perfs 975-979.
Drill Stem Tests											CORE: 974-1000
-----											PIPE: 8 5/8" @ 98' w/50; 4 1/2" @ 1024' w/100
			973-980:	Rec 4' mud.							
			971-979:	Rec 20' GCM.							LOGS: IES, ML
260	<u>1183</u>	<u>123</u>	12-19N-26E NE SW 1980 FSL 1980 FWL	Sierra #2 State	7/60 9/60	5756GR	1100	Coconino	Chinle Shinarump Moenkopi Coconino	878 PI 903 PI 984 PI 1033 S 1033 P	D & A PIPE: 8 5/8" @ 100' LOGS: IES
261	-	*	12-19N-26E NE SE 1869 FSL 308 FEL	Duval #2 State (Strat)	10/63 12/63	5740KB 5735GR	1594	Supai	Dune Sand Chinle Petrified For Sonsela Shinarump Moenkopi Coconino Supai anhydrite salt	Surf R 50 R 455 R 907 R 947 R 1072 R 1385 R 1462 R 1483 R	D & A Potash expl CORE: 1470-1594 LOGS: GRN * Have samples
262	-	135	13-19N-26E SE NW 1980 FNL 1980 FWL	Linehan & Stoltenberg #1-13 Spurlock-Wetzler	7/61 7/61	5788GR	1083	Coconino	Chinle conglomerate Shinarump Moenkopi Coconino	853 R 900 R 917 R 1055 R	D & A LOGS: IES
263	-	177	14-19N-26E SE SW 500 FSL 1290 FWL	Ram #1A-14 State	2/62 3/62	5776GR	820	Chinle?	?		D & A LOGS: ES, SL
264	-	167	14-19N-26E S/2 SW 500 FSL 1320 FWL	Ram #1-14 State	11/61 3/62	5760GR	1005 PB to 805	Coconino	Chinle Shinarump Coconino	819 PI 1002 PI 995 R	SI helium well. Perfs 775-785, 798-810-flowed gas 25-50 MCFPD (5.56% helium, 93.9%N). Prod zone 775-814-IPF 800 MCFPD 1" ck, TP 147 #.

Well No. 264 Cont'd

Drill Stem Tests

PIPE: 4½" @ 795' w/87

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 997-1004: Rec salt wtr plugged back to 805-frac w/30 sx sand & 3,000  
 gals wtr.

LOGS: GRN, RES, SL

265	<u>2072</u>	<u>352</u>	15-19N-26E SE SE 660 FSL 660 FEL	Eli #1 Hortensine	5/66 6/66	5725GR	986	Coconino	Chinle Shinarump Moenkopi Coconino	Surf R 879 R 909 R 969 R	D & A  Perfs 884-906, sd wtr fract  PIPE: 4½" @ 986' w/300 LOGS: IES, SL
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266	<u>1312</u>	<u>121</u>	16-19N-26E SW NE 1980 FNL 1980 FEL	Sierra #4 State	7/60 9/60	5609?GR	1016	Coconino	Chinle Shinarump Moenkopi Coconino	750 PI 820 PI 840 PI 980 PI	D & A  PIPE: 8 5/8" @ 100'
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267	<u>2032</u>	<u>320</u>	17-19N-26E SW NE 1807 FNL 1930 FEL	Walker Bros #1 Lansdale	7/65	5553GR	865	Coconino	Chinle conglomerate Shinarump Moenkopi Coconino	Surf R 563 R 760 R 770 R 857 R	D & A  CORE: 851-865 PIPE: 8 5/8" @ 27' LOGS: ES
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Drill Stem Test

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 854-865: Op 1 hr, strg blow immed, dec to wk in 30 min, rec salt wtr.

268	<u>1693</u>	<u>262</u>	20-19N-26E SW NE 2100 FNL 1790 FEL	McCaughey #1 Sunland State	1/64 1/64	5571GR	862	Coconino	Chinle Petrified For L. Red Shinarump* Moenkopi Holbrook Moqui Wupatki Coconino	Surf R SpIs Start 600 A 688 R 714 R 660 A 749 A 837 A 852 AR	D & A  CORE: 856-857 PIPE: 8 5/8" @ 20' LOGS: ES  * Amstrat suggests absent
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Drill Stem Test

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 856-859: Rec salt wtr.

269		214	21-19N-26E NW SE 1645 FSL 1645 FEL	Fletcher #1-21 Spurlock	10/62 6/65	5651GR	926	Coconino	Chinle conglomerate Moenkopi Coconino	Surf 596 R 684 R 918 R	D & A  Reported show helium: perfs 672-683, sd wtr fract.
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Cont'd next page

IDENTIFICATION	LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	REMARKS
SEQ	ABM	OGC			BOTTOM	TOPS	

Well No. 269 Cont'd

Drill Stem Test

PIPE: 4½" @ 723' w/50

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Coconino: Rec salt wtr.

LOGS: IES

270	-	*	22-19N-26E SW SW 950 FSL 660 FWL	Duval #12 State (Strat)	1/64 1/64	5670GR	1583	Supai	Dune Sand Chinle Petrified For 48 R Sonsela 175 R Shinarump 730 R Moenkopi 802 R Coconino 951 R Supai 1257 R anhydrite 1347 R salt 1406 R potash 1518 R	Surf R	D & A Potash expl CORE: 1300-1582 LOGS: GRN * Have samples
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271	1694	143	22-19N-26E NE SE 1720 FSL 1010 FEL	Teil #1 State	3/61 2/62	5640DF	760	Moenkopi?	Moenkopi	752 R	D & A Perf 744-748, sd fract, tested 310 MCFPD. PIPE: 10 3/4" @ 130' w/20; 4½" @ 760' w/100 LOGS: ES, Spl Des, SL Drilled with cable tools.
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272	-	346	22-19N-26E NW SE 1690 FSL 1390 FEL	Apache #1-22 State	3/66	5725GR	1701 PB to 940	Supai?	Chinle Shinarump Coconino	688 R 936 R	D & A PIPE: 4½" @ 940' w/100; 7 7/8" @ 32' LOGS: ES
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Drill Stem Test

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936-941: Rec salt wtr, perforated & fraced "Chinle sand" - op flow 240  
MCF w/2½ gals wtr/min.



273	-	318	23-19N-26E SW NE 2222 FNL 1912 FEL	Apache #1 Spurlock-Wetzler	7/65	5836GR	1100 PB to 940	Coconino	Coconino	1075 S	D & A	CORE: 850-865 Perfs 878-893 w/show gas, made salt wtr.
Drill Stem Test												
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903-935: Steady blow (gas contained 6.2% helium), rec salt wtr.												
1090-1100: Rec wtr.												
274	-	148	23-19N-26E NW SW 1868 FSL 242 FWL	Linehan & Stoltenberg #1-23 Spurlock-Wetzler	7/61 7/61	5570GR	1100	Coconino	Coconino	985 R	D & A	PIPE: 5½" @ 120' w/18 LOGS: Sp1 Des
275	3024	465	26-19N-26E SE NW 2100 FNL 1950 FWL	Hallett #2 State	7/68 8/68	6000GR	1279	Coconino	Chinle conglomerate Shinarump Moenkopi Coconino	Surf R 1034 R 1106 R 1144 R 1268 R	D & A	LOGS: ES
Drill Stem Test												
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1250-1279: Rec salt wtr												
276	-	149	27-19N-26E NE NW 51 FNL 2545 FWL	Linehan- Stoltenberg #2-27 Spurlock-Wetzler	7/61 7/61	5715GR	957	Coconino	Coconino	925 S	D & A	PIPE: 5½" @ 150; 2 7/8" @ 957' LOGS: IES
277	3022	451	28-19N-26E SE NE 2168 FNL 703 FEL	Hallett #1 State 10602	4/68	5730GR	997	Coconino	Coconino	992 R	D & A	Perfs 810-820, 828-844, 847-870- swabbed dry. PIPE: 8" @ 40'; 4½" @ 888' w/100 LOGS: ES, GR, ES
Drill Stem Test												
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820-830: (Shinarump)-small flow gas, 5.23% helium.												

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
278	-	68	28-19N-26E NE SW 1650 FSL 2310 FWL	Wilkinson #1 Sunland-State	5/59 2/60	5630DF	1040	Coconino	Coconino	878 S	PIPE: 5½" @ 190' w/24; 3½" @ 977' w/70  LOGS: GRN, IES, CON-CAL
279	-	87	28-19N-26E NE SW 1800 FSL 2450 FWL	Wilkinson #2 Sunland State	6/59 2/61	5635DF 5634GR	960	Coconino	Coconino	885 S	D & A  LOGS: IES
280	-	*	36-19N-26E NE NE 1300 FNL 660 FEL	Duval #1-A State (Strat)	10/63 10/63	5987KB 5982GR	2005	Supai	Coconino Supai anhydrite salt	1360 R ? 1767 R 1798 R	D & A  Potash expl  CORE: 1785-2005  LOGS: GRN  * Have samples
281	<u>3023</u>	<u>449</u>	36-19N-26E NW NE 1295 FNL 1770 FEL	Hallett #1 State 10603	2/68	?	1376	Coconino	Chinle Shinarump Coconino	1167 S 1350 S	D & A  CORE: 1352-1357  PIPE: 8" @ 40'; 4½" @ 1376' w/130  LOGS: ES
Drill Stem Test											
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1328-1350: No gas show.											
282	<u>1182</u>	<u>120</u>	2-19N-25E SW NE 1980 FNL 1980 FEL	Sierra #1 State	7/60	5608KB 5599GR	1047	Coconino	Chinle Petrified For Shinarump Moenkopi Coconino	Spls Start ? 705?A 807 PI 730 A* 830 PI 972 A 973 PI	D & A  Perf 973-976, gas TSTM, swbd salt wtr.  PIPE: 8 5/8" @ 42' 4" @ 990' w/50  LOGS: IES, ML  * Probably Chinle.
283	<u>1667</u>	<u>210</u>	11-19N-25E NE NW 990 FNL 1650 FWL	M. Martin #1 Fitzgerald	9/62 9/62	5484GR	847	Coconino	Chinle Shinarump Moenkopi Coconino	663 R 682 R 829 R	D & A  LOGS: IES

284	-	153	13-19N-25E C 2640 FNL 2640 FEL	Armour Properties #1 Paulsell	9/61 9/61	5397KB 5394GR	812	Coconino	Coconino	776 S	D & A CORE: 776-796 PIPE: 8 5/8" @ 102' w/40 LOGS: IES, ML, Sp1 des
285	-	-	23-19N-25E NE	Armour Properties #4 Paulsell	?	5486GR	776	Coconino	Coconino	774 R	D & A No information
286	-	184	25-19N-25E C 2640 FNL 2640 FEL	Busby #1 Paulsell	5/62 5/62	5635GR	930	Coconino	Coconino	910 R	D & A LOGS: IES
287	<u>1648</u>	<u>189</u>	26-19N-25E SE NW 2612 FWL 2415 FNL	Busby #1 State	5/62 6/62	5581GR	879	Coconino	Coconino	852 S	D & A CORE: (Analysis on file) 755-768 PIPE: 4 1/2" @ 930' w/50 LOGS: ES
288	-	*	36-19N-25E NE NE 270 FNL 150 FEL	Duval #6 State (Strat)	11/63 11/63	5528GR	1342	Supai	Chinle Shinarump Moenkopi Coconino Supai anhydrite salt	Surf 602 R 623 R 788 R 1096 R 1214 R 1249 R	D & A Potash expl CORE: 1221-1342 LOGS: GRN * Have samples.
289	<u>1647</u>	<u>190</u>	36-19N-25E NE SW 2355 FSL 2560 FWL	Busby #2 State	5/62 6/62	5510?GR	758	Coconino	Coconino	730 R	D & A CORE: (Analysis on file) 738-757: Rec 19' ss, wet, no show-Av 14% por; 300 millidarcies permeability. LOGS: IES

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
290	624	-	6-19N-24E SE SE	Zuni #1 Arizona	1921	5400	950	Chinle	Alluvium Chinle	Surf 10 P	D & A  PIPE: 12" @ 87'; 10" @ 560'  LOGS: SL  Salt water reported at 932'. Drilled w/cable tools.
291	1664	180	16-18N-29E NE SW 1980 FSL 1980 FWL	M. Martin #1 State	4/62 5/62	6491GR	2070	Moenkopi	Bidahochi Chinle Petrified For Sonsela Ss Lower Red Mesa Redondo Shinarump Moenkopi Coconino*	Spls Start 623 A 1555 A 1740 A 1890 A 2003 A 2025 A 2050 PI	D & A  PIPE: 7½" @ 100'  LOGS: IES  * Probably not penetrated.
292	-	*	15-18N-28E SE SE 1311 FSL 1297 FEL	Duval #25 Santa Fe (Strat)	3/64 4/64	6525KB 6520GR	2789	Supai	Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino Supai salt anhydrite	652 R 1930 R 1965 R 2085 R 2370 R 2447 R 2467 R	D & A  Potash expl  CORE: (Description on file) 2430-2628  LOGS: IES, GRN, SON, ML  No potash.  * Have samples
293	-	*	19-18N-28E SW SE 752 FSL 2990 FWL	Duval #44 Santa Fe (Strat)	2/65 3/65	6470GR	2676	Supai	Bidahochi basal congl Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt	Surf R 722 R 730 R 1873 R 1906 R 2020 R 2300 R 2415 R 2433 R	D & A  Potash expl  CORE: 2351-2676  LOGS: ES, IES, GRN  * Have samples

294	- *	7-18N-27E NW NW 4645 FSL 668 FWL	Duval #34 Santa Fe (Strat)	4/64 5/64	6130KB 6120GR	1875	Supai	Dune sand Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R 100 R  195 R 1108 R 1147 R 1290 R 1493 R 1690 R 1708 R 1801 R	D & A  Potash expl CORE: 1696-1875 LOGS: IES, SON, ACS-VEL, GRN  * Have samples
295	- *	10-18N-27E NW SE 2200 FSL 1980 FEL	Duval #9 State (Strat)	12/63 1/64	6520KB 6515GR	2512	Supai	Dune Sand Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R 182 R  745 R 1785 R 1820 R 1978 R 2263 R 2341 R 2356 R 2463 R	D & A  Potash expl CORE: 2303-2512 LOGS: GRN  * Have samples
296	- *	35-18N-27E SE SE	Duval #43 A Santa Fe (Strat)	4/65 5/65	6431KB 6430GR	2445	Supai	Bidahochi basal congl Chinle Petrified For Shinarump Moenkopi Coconino Supai salt anhydrite	Surf R 538 R  551 R 1679 R 1688 R 1850 R 2157 R 2244 R 2262 R	D & A  Potash expl LOGS: IES, GRN  * Have samples
297	- *	4-18N-26E SE NE 2890 FSL 660 FEL	Duval #37 State (Strat)	5/64 5/64	5765KB 5760GR	1564	Supai	Chinle Petrified For Moenkopi Coconino Supai anhydrite salt potash	Spls Start  842 R 999 R 1327 R 1406 R 1430 R 1500 R	D & A  Potash expl CORE: (Description on file) 1390-1563 LOGS: GRN  * Have samples

IDENTIFICATION SEQ	ABM	OGC	LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
								BOTTOM	TOPS		
298	-	*	6-18N-26E SW SW 660 FSL 660 FWL	Duval #33 State (Strat)	4/64 4/64	5590GR	1206	Supai	Dune Sand Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R  10 R 475 R 522 R 720 R 925 R 1082 R 1112 R 1126 R	D & A  Potash expl  CORE: (Description on file) 1086-1206  LOGS: GRN  * Have samples
299	-	287	7-18N-26E NE SW 1980 FSL 1980 FWL	Walker Bros #1 Paulsell	7/64 8/64	5550GR	660	Coconino	Chinle conglomerate Shinarump Moenkopi Coconino	Surf R 430 R 537 R 555 R 650 R	D & A  CORE: 645-660  PIPE: 8 5/8" @ 24' w/5  LOGS: IES, SON-GR
Drill Stem Test											
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649-660: Op 1 hr, rec 345' salt wtr.											
300	-	*	10-18N-26E C W/2 W/2 2640 FSL 660 FWL	Duval #16 State (Strat)	1/64 2/64	5705GR	1414	Supai	Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt potash	30 R 550 R 652 R 838 R 1145 R 1249 R 1270 R 1351 R	D & A  Potash expl  CORE: (Description on file) 1233-1416  LOGS: GRN  * Have samples
301	-	355	13-18N-26E SW NE 1672 FNL 1761 FEL	Apache Drlg #13 Spurlock-Wetzler	1966	6122GR	1245	Coconino	Coconino	1245?R	D & A  Set 38' surf csg.  Tested salt wtr in Coconino.
302	-	*	16-18N-26E SE NE 2600 FNL 977 FEL	Duval #20 State (Strat)	2/64 3/64	5705GR	1440	Supai	Chinle Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R 675 R 705 R 833 R 1080 R 1259 R 1280 R 1341 R	D & A  Potash expl  CORE: (Description on file) 1250-1440  LOGS: GRN  * Have samples

303	-	*	18-18N-26E C W/2 W/2 NW 1320 FNL 330 FWL	Duval #24 State (Strat)	3/64 3/64	5530GR	1224	Supai	Chinle Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R 425 R 477 R 647 R 980 R 1061 R 1085 R 1131 R	D & A  Potash expl  CORE: (Description on file) 1049-1224  LOGS: GRN  * Have samples
304	-	*	19-18N-26E NW NW 1210 FNL 800 FWL	Duval #3 (Strat)	10/63 11/63	5604GR	1321	Supai	Chinle Petrified For Sonsela Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R 100 R 535 R 560 R 694 R 1035 R 1115 R 1127 R 1338 R	D & A  Potash expl  CORE: (Description on file) 1117-1321  LOGS: GRN  * Have samples
305	-	*	22-18N-26E 2640 FNL 2464 FWL	Duval #32 State (Strat)	4/64 4/64	6145KB 6140GR	1845	Supai	Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt	Surf R 185 R 1020 R 1110 R 1242 R 1540 R 1658 R 1678 R	D & A  Potash expl  CORE: (Description on file) 1708-1835  LOGS: GRN  * Have samples
306	-	*	24-18N-26E NE NE 391 FNL 277 FEL	Duval #11 State (Strat)	1/64 1/64	6135KB 6130GR	1739	Supai	Dune Sand Bidahochi Chinle Petrified For Moenkopi Coconino Supai anhydrite salt potash	Surf R 33 R 295 R 1125 R 1218 R 1516 R 1613 R 1655 R 1685?	D & A  Potash expl  CORE: (Description on file) 1597-1739  LOGS: GRN  * Have samples

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	REMARKS	
SEQ	ABM	OGC					BOTTOM		TOPS	
307	-	341	25-18N-26E SE NW 1650 FNL 1650 FWL	Apache DrIg #3 Spurlock-Wetzler	2/66	6100KB 6095GR	1234 PB to 770	Coconino Chinle Shinarump Coconino	948 R 1145 S	D & A CORE: 1236-1238 PIPE: 8 5/8" @ 30' 4 1/2" @ 910' w/51 LOGS: ES
Drill Stem Test										
-----										
In Coconino: Rec salt wtr.										
308	-	322	27-18N-26E NE SE 1650 FSL 990 FEL	Apache #2 Spurlock-Wetzler	7/65	5950GR	1147	Coconino Chinle Shinarump Moenkopi Coconino	892 S 933 S 1076 S	D & A PIPE: 8 5/8" @ 101' LOGS: ES
Drill Stem Test										
-----										
905-935: Made some gas: 5.4% helium- $\frac{1}{2}$ Bbl wtr per day.										
309	-	*	30-18N-26E NW SW 3630 FNL 660 FWL	Duval #26 State (Strat)	3/64 4/64	5742KB 5740GR	1496	Supai Chinle Petrified For Sonsela Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R 60 R 745 R 823 R 908 R 1245 R 1331 R 1344 R 1421 R	D & A Potash expl CORE: (Description on file) 1285-1495 LOGS: GRN * Have samples
310	-	*	34-18N-26E NE NW 4510 FSL 3024 FEL	Duval #13 A State (Strat)	1/64 3/64	5915GR	1548	Supai Chinle Petrified For Sonsela-base Moenkopi Coconino Supai anhydrite salt potash	155 R 840 R 977 R 1295 R 1390 R 1413 R 1479 R	D & A Potash expl CORE: (Description on file) 1356-1547 LOGS: GRN * Have samples



311	-	288	10-18N-25E SW NE 1650 FNL 1650 FEL	Walker Bros #1 State	8/64 8/64	5501GR	608	Coconino	Chinle Petrified For Surf A Shinarump 484 A Moenkopi 489 A Coconino 599 A		D & A CORE: 599-604 PIPE: 8 5/8" @ 21' w/5 LOGS: IES, SON-GR
Drill Stem Test											
-----											
599-604: Op 1 hr, swbd salt wtr.											
312	-	*	10-18N-25E NW NW 4620 FSL 660 FWL	Duval #18 State (Strat)	2/64 2/64	5520GR	1433	Supai	Chinle Petrified For Surf R Shinarump 340 R Moenkopi 412 R Coconino 578 R Supai 925 P anhydrite 1012 R salt 1051 R potash 1127 R		D & A Potash expl CORE: (Description on file) 1016-1130 LOGS: GRN * Have samples
313	-	*	14-18N-25E C 2640 FSL 2640 FWL	Duval #35 State (Strat)	4/64 5/64	5550GR	1147	Supai	Dune Sand Surf R Chinle Petrified For 5 R Shinarump 345 R Moenkopi 423 R Coconino 614 R Supai 963 R anhydrite 1045 R salt 1081 R potash 1083 R		D & A Potash expl CORE: (Description on file) 1040-1144 LOGS: GRN * Have samples
314		387	16-18N-25E SW NW 1546 FNL 571 FWL	Henderson #1 State 8665	3/67 ?	5410GR	510	Coconino	Chinle 15 R Moenkopi 268 R Coconino 418 R		D & A PIPE: 7" @ 30' w/10
Drill Stem Test											
-----											
418-425: Swbd salt wtr.											
315	-	*	18-18N-25E NE NE 200 FNL 200 FEL	Duval #8 Federal (Strat)	12/63 12/63	5394KB 5390GR	923	Supai	Chinle Surf R Petrified For Moenkopi 184 R Coconino 333 R Supai 622 R anhydrite 764 R salt 798 R potash 825 R		D & A Potash expl CORE: (Description on file) 776-923 LOGS: GRN * Have samples

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
316	2054*	-	20-18N-25E C W/2 W/2 2640 FNL 141 FWL	Kern County Land Co #6 State (Strat)	4/64 4/64	5418GR	1021	Supai	Coconino Supai anhydrite "B" bed salt	379 R 720 R 806 R 836 R	D & A  Potash expl  CORE: 811-1021  LOGS: GRN  * Have core
317	1014	63	21-18N-25E NE SE 1980 FSL 660 FEL	Kerr-McGee #2 Hortenstine	9/58 9/58	5478KB 5472GR	540	Coconino	Chinle Shinarump Moenkopi Coconino	203 A 212 PI 278 A 387 PI 387 P 515 A 516 PI	D & A  PIPE: 8 5/8" @ 146' w/150  LOGS: IES
Drill Stem Test											
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524-540: Op 1 1/2 hr, rec 345' fluid, 45' M 300' SW, FP 170#, SIP (15 min) 165#, HP 240#.											
318	1015	57	23-18N-25E NE NW 660 FNL 1980 FWL	Kerr-McGee #1 Hortenstine	8/58 9/58	5597KB 5587GR	3456	Pre- Cambrian granitic	Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt potash** salt zone dolomite Ft. Apache Amos Wash Naco Granite	Surf  620 A 350 P 670 A 425 P 760 A* 620 P 824 A 824 P  1048 P 1063 P 1100 P 1120 AP 1345 P 1982 P 2400 P 2840 AP 3404 AP	D & A  PIPE: 10 3/4" @ 175' w/150  LOGS: IES, ML, MLL, MUD, SL  * Designate as DeChelly.  ** Potash discovery hole- apparently not recognized until later date-shows on gamma ray log.
Drill Stem Test											
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3247-3277: Op 1 hr, rec 10' mud, FP 10#, SIP (20 min) 0#, HP 1720#.											
319	2053*	-	24-18N-25E SE SE 419 FSL 882 FEL	Kern County Land Co #8 State (Strat)	6/64 7/64	5710GR	1421	Supai	Coconino Supai anhydrite "A" bed "B" bed salt potash**	853 R 1190 R  1248 R 1283 R 1302 R 1352 R	D & A  CORE: (Description on file) 1285-1420  LOGS: GRN  * Have core  ** Sylvite, carnallite & some polyhalite identified. This hole verifies potash zone in SEQ-318.

320	-	-	28-18N-25E NW NW 660 FNL 660 FWL	Durval #22 State (Strat)	3/64 3/64	5510GR	1268	Supai	Dune Sand Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R 10 R 378 R 436 R 581 R 900 R 1022 R 1059 R 1076 R	D & A Potash expl CORE: (Description on file) 1051-1165 LOGS: GRN
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321	2055*	-	2-18N-24E C S/2 SW 660 FSL 1320 FWL	Kern County Land Co #1 State (Strat)	2/64 2/64	5342GR	1134	Supai	Coconino Supai anhydrite "E" bed salt	450 R 830 R 912 R 969 R	D & A Potash expl CORE: 905-1085 LOGS: GRN
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Gas Analysis

Nitrogen	95.10%
Helium	4.09%
Oxygen	0.58%
Methane	0.22%
	99.99%

\* Have core

Hole blew out at 965'-uncontrolled for 26 hrs. See gas analysis. See also ABM Bull 182, p. 68.

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322	<u>3042</u>	<u>554</u>	8-18N-24E NW NW 1170 FNL 100 FWL	Suburban #1 CORE TEST (Strat)	5/71 7/71	5310GR	1130	Supai	Coconino Supai anhydrite salt	315 R 726 R 808 R 840 R	665?P	Drd for geologic info regarding salt section-possible development of subsurface storage facility for LPG.
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PIPE: 8 5/8" @ 37'

LOGS: GRN, SON-CAL

323	<u>3045</u>	<u>557</u>	8-18N-24E NW NW 1054 FNL 600 FWL	Suburban #2 Fee (Strat)	7/71	5305GR	1112	Supai	Coconino Supai anhydrite salt	311 R 690 R 711 R 837 R	Salt solution well	PIPE: 13 3/8" @ 150' w/150; 9 5/8" @ 904' w/260; 7" @ 905' w/none; 4 1/2" @ 1092'-hung.
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LOGS: GRN

324	<u>3046</u>	<u>556</u>	8-18N-24E SW NW 1500 FNL 150 FWL	Suburban #1 Fee (Strat)	6/71 6/71	5299GR	1101	Supai	Coconino Supai evps* salt	313 R 681 R 786 R 900 R	Salt solution well	PIPE: 13 3/8" @ 141' w/155; 9 5/8" @ 890' w/260; 7" @ 899'-hung; 4 1/2" @ 1067'-hung
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Cont'd next page

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	TOPS		REMARKS
SEQ	ABM	OGC						BOTTOM			
Well No. 324 Cont'd											
											LOGS: GRN
											* "Salt with anhydrite"
325	-	-	12-18N-24E C S/2 SE/4 660 FSL 1320 FEL	Kern County Land Co #5 State (Strat)	4/64 4/64	5367GR	1012	Supai	Coconino Supai anhydrite "B" bed salt	375 R 742 R 821 R 847 R	D & A Potash expl LOGS: GRN
326	-	*	17-18N-24E NW NW 139 FNL 311 FWL	Duval #31 Santa Fe (Strat)	4/64 4/64	5300GR	955	Supai	Dune Sand Moenkopi Coconino Supai anhydrite salt potash	Surf R 52 R 291 R 700 R 787 R 817 R 845 R	D & A Potash expl CORE: (Description on file) 792-955 LOGS: IES, GRN, SON * Have samples
327	-	*	20-18N-24E SE SW 990 FSL 3300 FEL	Duval #36 Santa Fe (Strat)	5/64 5/64	5320GR	955	Supai	Bidahochi Moenkopi Coconino Supai anhydrite salt potash	Surf R 20 R 330 R 685 R 788 R 821 R 858 R	D & A Potash expl CORE: (Description on file) 795-955 LOGS: IES, GRN, SON-GR * Have samples
328	-	*	31-18N-24E SE SW 375 FSL 2140 FWL	Duval #27 Fed (Strat)	3/64 4/64	5390GR	1064	Supai	Bidahochi Chinle Shinarump Moenkopi Coconino Supai anhydrite salt potash	Surf R 63 R 142 R 160 R 438 R 800 R 902 R 924 R 1001 R	D & A Potash expl CORE: (Description on file) 790-1064 LOGS: GRN, GRN, * Have samples

329	-	*	27-17N-29E NE NE 710 FNL 623 FEL	Duval #38 Santa Fe (Strat)	5/64 5/64	6220KB 6210GR	2529	Supai	Bidahochi Chinle Petrified For Moenkopi Kaibab Coconino Supai salt anhydrite	Spls Start 290 R 1599 R 1655 R 1722 R 2035 R 2110 R 2113 R	D & A  Potash expl CORE: (Description on file) 2176-2539 LOGS: IES, GRN  * Have samples
330	-	*	34-17N-28E NE NE 1147 FNL 1290 FEL	Duval #42 Fed (Strat)	5/64 6/64	6050KB 6040GR	2107	Supai	Bidahochi Chinle Petrified For Moenkopi Kaibab Coconino Supai anhydrite salt no potash	Surf R 65 R 1130 R 1248 R 1290 R 1658 R 1752 R 1789 R	D & A  Potash expl CORE: (Description on file) 1735-2119 LOGS: GRN  * Have samples
331	-	*	15-17N-27E SW SE 825 FSL 2709 FEL	Duval #14 Santa Fe (Strat)	1/64 2/64	6395KB 6390GR	2347	Supai	Bidahochi Chinle Moenkopi Coconino Supai anhydrite salt potash	Spls Start 315 R 1588 R 1740 R 2080 R 2203 R 2135 R 2199 R	D & A  Potash expl CORE: (Description on file) 2140-2346 LOGS: GRN  * Have samples
332	-	*	1-17N-26E NW SE 1445 FSL 1685 FEL	Duval #5 (Strat)	11/63 12/63	5961KB 5959GR	1905	Supai	Dune Sand Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt	Surf 7 R 38 R 870 R 930 R 1077 R 1393 R 1465 R 1499 R	D & A  Potash expl CORE: (Description on file) 1465-1905 LOGS: GRN  * Have samples

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
333	2503	442	3-17N-26E SW NE 1980 FNL 1980 FEL	Crest #1 Spurlock	11/67 12/67	5971KB 5961GR	3784	Pre-cambrian granite	Chinle Owl Rock Petrified For Moss Back Monitor Butte Shinarump Moenkopi Coconino Supai anhydrite salt Ft. Apache L. Supai Naco Precambrian	Spis Start 280 A 420 A 563 A 808 AR 872 A 950 R 1020 AR 1277 A 1387 R 1225 P 1385 A 1478 A 1460 R 2410 P 2425 P 3250 A 3600 A	D & A PIPE: 10 3/4" @ 123' w/125; 4 1/2" @ 1600' w/50 LOGS: IES, BHC/CAL, MUD, TS
334	2031	*	16-17N-26E SE SE 330 FSL 330 FEL	National Potash #1 Navajo	5/64 5/64	5785KB 5780GR	1507	Supai	Coconino Supai salt 1st Kcl 2nd Kcl	960 1336 R 1408 R 1416 R	D & A Potash expl CORE: (Description on file) 1331-1507 PIPE: 7" @ 63' LOGS: Smp1 des * Also have samples
335	-	*	18-17N-26E NE NE 80 FNL 840 FEL	Duval #10 State (Strat)	? 1/64	5793KB 5790GR	1528	Supai	Dune Sand Chinle Petrified For sonsla Shinarump Moenkopi Coconino Supai anhydrite salt	Surf 10 R 97 R 658 R 675 R 917 R 1262 R 1348 R 1370 R	D & A Potash expl CORE: (Description on file) 1278-1528 LOGS: GRN * Have samples Potash not reported
336	-	*	36-17N-26E NW NW 330 FNL 330 FWL	National Potash #2 Navajo	5/64 5/64	5835KB 5830GR	1572	Supai	Coconino Supai salt	950 S 1418 S	D & A Potash expl CORE: (Description on file) 1341-1572 PIPE: 7" @ 33'; 4 1/2" @ 1341' * Have samples

337	2057	-	2-17N-25E NE NE 660 FNL 660 FEL	Kern County Land #7 State (Strat)	6/64 6/64	5800GR 1600	Supai	Coconino Supai anhydrite "A" bed "B" bed halite potash	1018 R 1350 R  1399 R 1433 R 1445 R 1525 R	D & A  Potash expl CORE: 1402-1600 Assay report on file (6' int av 11.51% K <sub>2</sub> O)  LOGS: GRN
338	2056	-	6-17N-25E N/2 NE 660 FNL 1320 FEL	Kern County Land #3 State (Strat)	3/64 3/64	5600GR approx	Supai	Coconino Supai anhydrite "A" bed "B" bed halite potash	775 R 1128 R  1184 R 1220 R 1234 R 1326 R	D & A  Potash expl CORE: 1164-1388 Assay report on file (4.3' int av 11.25% K <sub>2</sub> O)  LOGS: GRN
339	-	-	22-17N-25E C 2640 FSL 2626 FEL	Kern County Land #2 US Borax-Navajo (Strat)	3/64 3/64	5710GR approx	Supai	Coconino Supai anhydrite "A" bed "B" bed halite	821 R 1170 R  1220 R 1257 R 1245 R	D & A  Potash expl LOGS: GRN
340	2058*	-	29-17N-25E NW NW 660 FNL 660 FWL	Kern County #4 Phillips Pet 1-P Greer (Strat)	3/64 4/64	5630GR approx	Supai	Coconino Supai anhydrite "A" bed "B" bed halite potash	614 R 1010 R  1100 R 1133 R 1136 R 1258 R	D & A  Potash expl CORE: (Description on file) 1083-1305 (Assay report on file) Syvite & carnallite reported  * Have samples of potash zone  Low press gas rpt 800'
341	-	-	36-17N-25E SE SE	US Borax #B-1 (Strat)	? 2/64	5600GR	Supai	Coconino Supai	762 R ?	D & A  Potash expl LOGS: GRN
342	-	-	13-17N-24E NE NW 660 FNL 1976 FWL	ArkLa #11 NMA (Strat)	1965	5516GR	Supai	Coconino Supai anhydrite	625 P 1000 P 1095 P	D & A  Potash expl LOGS: GRN

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
343	-	*	34-16N-29E NE NE 660 FNL 660 FEL	Duval #7 Fed (Strat)	12/63 1/64	5868GR	1802	Supai	Dune Sand Bidahochi Chinle Petrified For Moenkopi Kaibab Coconino Supai anhydrite salt	Surf 5 R  45 R 978 R 1020 R 1146 R 1387 R 1491 R 1485 R	D & A  Potash expl  CORE: (Description on file) 1524-1802  LOGS: GRN  * Have samples  No potash reported
344	-	*	2-16N-26E NW NE 830 FNL 2290 FEL	Duval #4 State (Strat)	11/63 11/63	5758KB 5753GR	1641	Supai	Bidahochi Chinle Petrified For Shinarump Moenkopi Coconino Supai anhydrite salt	Surf  5 R 804 R 855 R 940 R 1280 R 1355 R 1374 R	D & A  Potash expl  CORE: (Description on file) 1368-1648  LOGS: IES, GRN  * Have samples  No potash reported
345	-	-	20-16N-26E NE NE 660 FNL 660 FEL	Phillips Pet #2-P Fed (Strat)	4/64 4/64	5640GR est	1449	Supai	Coconino Supai anhydrite salt	833 R 1190 R 1241 R ?	D & A  Potash expl
346	-	365	5-16N-25E NE SW 2001 FSL 2631 FWL	Eastern #1 NMA	10/66 1/67	5595GR	683	Coconino	Chinle Shinarump Coconino	464 R 612 R	D & A  Perf 464-478-no rec; 620-640: swbd fresh wtr.  PIPE: 7" @ 22' w/15; 2 7/8" @ 683' w/85  LOGS: IES, ES
347	-	-	6-16N-25E NW NW 660 FNL 715 FWL	ArkLa #27 NMA (Strat)	? 1965?	5681GR	1560	Supai			D & A  Potash expl  Data not released



348	-	373	9-16N-25E C	Eastern #3 NMA	11/66 12/66	5550GR	614	Coconino	Chinle Shinarump Coconino	434 R 566 R		D & A PIPE: 7" @ 34' w/25 LOGS: IES
349	-	-	27-16N-25E SE NE 2500 FNL 500 FEL	ArkLa #18 NMA (Strat)	1965	5778GR	1744	Supai	Coconino Supai anhydrite salt dolomite	885 P 1270 P 1350 P 1374 R 1718 R		D & A Potash expl LOGS: GRN
350	-	-	19-16N-24E NW NE 200 FNL 1750 FEL	ArkLa #1 NMA (Strat)	1965?	5502GR	2800	Supai	See Appendix Well No. 350			D & A Potash expl See Appendix
351	-	-	30-16N-24E SW NE 3277 FSL 3277 FWL	ArkLa #56 State (Strat)	1965	5398GR	1420	Supai	Coconino Supai anhydrite potash	522 P 935 P 1019 P 1140 P		D & A Potash expl LOGS: GRN
352	<u>2036</u>	<u>324</u>	32-16N-24E SW NE 2961 FSL 3190 FWL	ArkLa #1 State (Strat)	9/65 9/65	5450KB 5443GR	1450	Supai	Chinle Moenkopi Coconino Supai salt	Surf 347 R 542 R 1042 R 1077 R	840?P	D & A Potash expl PIPE: 9 5/8" @ 72'; 7" @ 1030' (cement circulated) LOGS: GRN
353	-	-	34-16N-24E SW NW 1900 FNL 450 FWL	US Borax #1 Holbrook (Strat)	1963	5365GR	1813	Supai	Coconino	496 R		D & A Potash expl LOGS: GRN
354	-	-	32-15N-30E SE SE	CA Hinkson #3	1946	6100	1300	Coconino	Tertiary? Kaibab Coconino	Surf 1092?PI 1223 PI		Water well
355	-	49	21-15N-29E NW SE 1760 SE of center	Harrison #1 Townsend	2/58	5707KB 5705GR	750	?	Chinle?	Surf		D & A PIPE: 13 3/8" @ 296'; 10" @ 700'

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
356	7	-	22-15N-29E NE NE 660 FNL 660 FEL	Argo #1 State	6/43 ?	5900GR	2639	Pre- Cambrian quartzite	Alluvium? Chinle Shinarump Moenkopi? *Kaibab *Coconino *Supai sulfate halite dolomite halite **carbonate Ft. Apache dark mudst congl Quartzite	Surf P 12 P 220 P 241 P 249 P 435 P 647 P 727 P 823 P 1025 P 1125 P 1330 P 1643 P 2230 P 2312 P 2350 P	D & A  LOGS: Spl des  * New Mexico nomenclature applicable e.g. Sam Andres Ls, Glorieta Ss, Yeso-Abo formations.  ** Has been referred to the Ft. Apache by other workers.
357	-	-	22-15N-29E NW NE 550 FNL 2100 FEL	Phillips Pet #3-P State (Strat)	9/64 9/64	5755GR	1024	Supai	Coconino Supai anhydrite	403 R 721 R* 729 R	D & A  Potash expl  * Probably picked too low
358	-	*	18-15N-27E SE SE 470 FSL 4285 FWL	Duval #41 Fed (Strat)	5/64 6/64	5731DF 5730GR	1514	Supai	Bidahochi Chinle Petrified For Sonsela Moenkopi Kaibab Coconino Supai anhydrite salt	Surf  40 R 619 R 757 R 785 R 1143 R 1259 R 1312 R	D & A  Potash expl  CORE: (Description on file) 1253-1514  LOGS: GRN  Potash not reported.  * Have samples
359	-	339	31-15N-26E SW NW 3213 FSL 700 FWL	Grimm #1 Platt	12/65 1/66	5472GR	1817	Supai	Coconino Supai anhydrite salt Ft. Apache	488 R 910 R 965 P 1030?P 1750 R	D & A  CORE: (analysis on file) 1085-1162  PIPE: 7" @ 63' w/100; 4½" @ 1023' w/160  LOGS: GRN, MUD

360	-	-	23-15N-24E NW SW 2548 FSL 428 FWL	ArkLa #2 NMA (Strat)	?	1965	5575GR	2570	Supai	See Appendix Well No. 360	D & A  Potash expl LOGS: GRN	
361	-	-	29-15N-24E NW NE 454 FNL 1544 FEL	ArkLa #42 NMA (Strat)	?	1965	5450GR	1410	Supai		D & A  Potash expl Data not released	
362	6	*	14-14N-26E SE NE 3212 FSL 388 FEL	Franco-Arizona #1 Gov't	9/39 11/39		5672GR	2595	Pre- Cambrian granite	Moenkopi Kaibab? Coconino Supai sulfate Ft. Apache Granite	Surf 153 P 200 P 550 P 685 P 1797?P 2545 P	D & A  CORE: (Description on file) 1749-1931, 1980-2345  PIPE: 13" @ 295'; 8 5/8" @ 2000'  LOGS: Spl des  Naco probably not present-not deposited.  * Samples at New Mexico Bureau of Mines.
363	-	-	18-14N-25E 642 FNL 2971 FEL	ArkLa #3 NMA (Strat)	?	1965	5472GR	2610	Supai	See Appendix Well No. 363	D & A  Potash expl LOGS: IES, GRN, SON-GR	
364	-	-	28-14N-25E SW SW 660 FSL 660 FWL	ArkLa #4-C NMA (Strat)	?	1965	5498GR	2488	Supai	See Appendix Well No. 364	D & A  Potash expl LOGS: GRN	
365	<u>5</u>	-	28-13N-27E N/2 NW NE	Rincon Drlg #1 State s/a Greer #1 State	?	1939?	6225	*	Kaibab?	Chinle? Kaibab	Surf 282?P	D & A  LOGS: Spl des  * Sample depth is 498. Other data suggest 685.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY			REMARKS
SEQ	ABM	OGC						BOTTOM		TOPS	
366	<u>1020</u>	<u>98</u>	12-13N-25E SE SE 660 FSL 660 FEL	Pan Am #1 New Mex & Ariz Ld Co "A"	8/59 9/59	5882KB 5875GR	3680	Pre-cambrian meta or dk ig.	Moenkopi Kaibab Coconino Supai anhydrite salt Ft. Apache Big "A" Amos Wash Naco Precambrian	Surf  203 AR 580 AR  920 R* 1460 A 1766 R 1766 P 1823 R 1823 P 2227 R 2227 P 3163?A 2669 R 3163?P 3634 A 3659 R	D & A  CORE: 1788-1838 rec 50.5' dolo & slst  PIPE: 8 5/8" @ 717' w/500  LOGS: GRN, LL  * Suggested by no returns. Lower Paleozoic not present.
367	-	100	9-12N-31E NE NW 660 FNL 1980 FWL	Townsend #1 Federal	10/59 12/59	6265KB 6258GR	585	Coconino	Chinle Coconino	Surf 577 R	D & A  PIPE: 8 5/8" @ 62'  LOGS: Spl des
Drill Stem Test											
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578-585: Op 35 min, rec 535' fresh wtr.											
368	-	159	29-11N-31E SE SE 330 FSL 330 FEL	Ram Oil #1 State	10/61 2/63	6602DF	830	Coconino?			D & A  PIPE: 10 3/4" @ 830' w/50  Drilled with cable tools.
369	<u>2073</u>	<u>375</u>	22-11N-28E SE NW 1980 FNL 1980 FWL	Tenneco #1 Fed C	2/67 2/67	6064KB 6053GR	1684	Supai	Moenkopi *Kaibab *Coconino Supai evps *Ft. Apache	Surf 150 AR 511 AR 813 A 721 R 710 P 940?P 1220?A 1440 R 1490 P	D & A  PIPE: 13 3/8" @ 68' w/125  LOGS: DIL, FOR-DEN, SNP  * Oil staining, dead oil, or some flor rpt.  No halite encountered-largely gyp & carbs in evaporite section.
370	<u>2064</u>	<u>371</u>	26-10N-30E SW SW 660 FSL 660 FWL	Tenneco #1 Merrill	1/67 2/67	6979KB 6968GR	1577	Supai	Moenkopi Kaibab Coconino Supai anhydrite Ft. Apache	Surf 183 AR 518 AR 754 AR 832 P 1446 AR 1446 P	D & A  PIPE: 13 3/8" @ 67' w/145  LOGS: DIL, FOR-DEN, SNP

371	1363	187	27-10N-30E SW NE 1764 FNL 2177 FEL	Eastern Pet #1 Coyote Cr.	5/62 6/62	6945GR	476							D & A PIPE: 8 5/8" @ 100' w/75 Hole lost-rig skidded 20' N.
372	1363	207	27-10N-30E SW NE 1744 FNL 2177 FEL	Eastern Pet #1-A Coyote Cr	? 7/62	6949KB 6945GR	2351	Pre- cambrian granite	Moenkopi Kaibab Coconino Supai evps Ft. Apache congl Granite	Surf 126 R 476 R 752 R 800?P 1420 P 2310 R 2321 R			D & A CORE: 1446-1466 PIPE: 8 5/8" @ 476' w/0; 4 1/2" @ 1130' w/73 LOGS: IES, ML, Spl des	
373	-	200 2	2-10N-25E SW NW 3810 FSL 210 FWL	Cities Service #204-A State (Strat)	7/62 7/62	6553GR	637	Glorieta?	Volcanics base Cretaceous Moenkopi? San Andres Glorieta	Surf 250 R 272 R 394 R 576 R 625?R			D & A LOGS: Spl des, ES Possible Tertiary sediments-not reported	
374	-	200 1	2-10N-25E SW SE 250 FSL 3670 FWL	Cities Service #204 State (Strat)	7/62 7/62	6497GR	287	Tertiary sediment	Volcanics Tertiary seds	Surf 257 R			D & A Lost circ @ 92' in lava (basaltic)	
375	2065	370	4-10N-24E SW NE 1980 FNL 1980 FEL	Tenneco #1 Fed B	11/66 1/67	6865KB 6852GR	4657	Pre- cambrian meta?	Volcanics Cretaceous Moenkopi Kaibab Coconino Supai anhydrite Ft. Apache Naco Molas Redwall Martin sandstone Schist	Surf 808 A 925 A 1022 A 1545 A 2032 A 3535 A 4339 A 4398 AR 4490 A 4570 A*	320 P 1000 R 1022 P 1420 P 1610 P 2220 P 3850 R 3580 P		D & A PIPE: 16" @ 45' w/125; 8 5/8" @ 1751' w/700 LOGS: DIL, SNP, FOR-DEN, LS-GR * Suggests Cambrian? Probably basal Paleozoic clastics- not necessarily Cambrian.	
Drill Stem Tests														
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3868-4023: SI 30 min, op 30 min, SI 30 min, rec 15' mud, FP 29-22#, SIP 870-865#, HP 1924-1922#.														
4422-4439: SI 1 hr, op 1 hr, SI 1 hr, rec 120' mud, FP 106-112#, SIP 1304-1166#, HP 2358-2347#.														
3891-3941: SI 30 min, op 1 hr 15 min, SI 1 hr, rec 460' mud, FP 173-283#, SIP 940-885#, HP 2087-2060#.														
3944-4044: SI 30 min, op 2 hr, SI 1 hr, rec 300' MC salt wtr, 2529' salt wtr, FP 976-1406#, SIP 1470-1449#, HP 2075-2075#.														
2230-2265: SI 30 min, op 1 hr, SI 1 hr, rec 120' mud, FP 18-62#, SIP 415-404#, HP 1172-1161#.														

IDENTIFICATION SEQ	LOCATION		NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS	
	ABM	OGC									
376	<u>1333</u> <u>1169</u>	66	20- 9N-31E SE NW 1980 FNL 1980 FWL	Mae Belcher #1 State	1/59 6/59	7274KB 7273GR	2921	Supai	Tertiary Baca Cretaceous Mancos Tres Hermanos Dakota San Andres Glorieta Supai evps Ft. Apache basal cgl	Surf A 235 A 372 A 684 A 775 AR 1070 AR 1343 A 1260 P 1343 P 2002 AR 2852 A*	D & A PIPE: 16" @ 320' w/100; 10 3/4" @ 698' Drld w/cable tools * Suggests that Precambrian in proximity. No halite-evp section character- ized by anhydrite and dolomite
377	-	197	22- 9N-27E SW SW	Cities Service #201 JH Colter (Strat)	7/62 7/62	7716DF 7712GR	1353	Cretaceous	Alluvial Egar Cretaceous	Surf R 37 R* 1038 R	D & A PIPE: 5 1/2" @ 29' w/10 LOGS: ES, Spl des * Reported as Cret. Perhaps includes Tertiary?
378	-	-	26- 9N-27E SE SE 100 FSL 250 FEL	Cities Service #203 State (Strat)	7/62 8/62	7681GR	1193	?	?		D & A LOGS: ES, Spl des
379	-	198 2	34- 9N-27E NE NE	Cities Service #13 State (Strat)	8/62 8/62	7671GR	1230	Dakota	Volcanics Tert seds Cretaceous	Surf 236 R 936 R	D & A PIPE: 4 3/4" hole-set 5 1/2" @ 98'- no cement-drld w/air. LOGS: Spl des
380	-	201 2	35- 9N-27E SW SW	Cities Service #10 State (Strat)	8/62 8/62	?	428	Basalt	Basalt	Surf	D & A 4 3/4" hole; drld w/air
381	-	199 1	6- 8N-28E NW NE	Cities Service #4 State (Strat)	6/62 6/62	7674GR	976	Cretaceous	Basalt Tert seds Cretaceous	Surf 188 R 860 R	D & A PIPE: 4 3/4" hole; set 5 1/2" @ 71'-no cement LOGS: ES, Spl des

382	-	199	15- 8N-28E	Cities Service	7/62	7333DF	1186	Cretaceous	Basalt	Surf	D & A
		2	SW SW	#202 Hall (Strat)	7/62	7324GR			Tert seds	28 R	
									Cretaceous	834 R	4 3/4" hole
											LOGS: ES, Spl des

Tws. North  
Ranges West  
Navajo Survey

383	<u>3035</u>	<u>529</u>	17- 7N-10W	Union Texas	1/70	5363KB	3970	Pre-	DeChelly	230 R	D & A
			SE SE	#1-17 Nav	2/70	5349GR		cambrian	Supai*	974 R	
			740 FSL					granitic	Hermosa	1557 R	PIPE: 8 5/8" @ 240' w/175
			800 FEL						Molas	3155 R	LOGS: IES, BHC/GR, SNP
									Miss	3226 R	
									Elbert	3418 R	
									McCracken	3630 R	* Reported as Organ Rock.
									Aneth	3792 R	
									Cambrian	3866 R	
									Precambrian	3944 R	

Drill Stem Tests

2420-2470: Op 50 min, SI 50 min, rec 3' drlg mud, IFP & FFP 3916#, FSIP 26.4#, HP 1198-1185#.

3050-3132: Pkr failure.

3040-3132: Rec 30' mud, ISIP/ 1 hr 183#, FSIP/3 hr 157#, FP 183#, HP 1486#.

384	<u>3034</u>	<u>531</u>	1- 7N-10W	Union Texas	2/70	5672KB	3435	Aneth	Supai*	1028 R	D & P
			NW NW	#1-1 Nav	2/70	5658GR			Hermosa	2285 R	
			950 FNL						chaetetes 1st	2615 R	PIPE: 8 5/8" @ 211' w/160
			640 FWL						chaetetes 2nd	2739 R	LOGS: IES, BHC/GR
									Mississippian	2913 R	
									Elbert	3060 R	
									McCracken	3250 R	* Reported as Organ Rock.
									Aneth	3380 R	

385	<u>2564</u>	<u>466</u>	14- 7N- 9W	Buttes	7/68	6307KB	2701	Pre-	DeChelly	Spls Start	PIPE: 9 5/8" @ 276' w/185
			SE SE	#1-14 Nav	7/68	6296GR		cambrian	Supai*	926 A 914 R	
			990 FSL					granitic	evps	1398 A	LOGS: IES, BHC/GR
			660 FEL						Hermosa	1620 AR	* Reported as Organ Rock.
									Molas	1990 A	
									Redwall	2036 AR	
									Ouray	2144 A	
									Elbert	2221 A 2209 R	
									McCracken	2396 A 2405 R	
									Aneth	2522 AR	
									Cambrian	2622 AR	
									Precambrian	2690 A 2677 R	

Drill Stem Tests

2434-2494: Rec 770' wtr, 20' mud, IFP (10 min) 168#, FFP (72 min) 392#, ISIP (30 min) 532#, FSIP (60 min) 532#.

2618-2701: Rec 300' WCM, IFP (5 min) 84#, FFP (33 min) 168#, ISIP (30 min) 588#, FSIP (45 min) 616#.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
386	<u>2508</u>	<u>437</u>	4- 7N- 8W NE SE 2050 FSL 600 FEL	Gulf #1 Nav Agua Sal	10/67 11/67	6562KB 6552GR	2656	Cambrian	Chinle Shinarump DeChelly Supai* evps Hermosa Redwall Ouray Elbert McCracken Aneth Cambrian	Spls Start 140 R 927 R 940 A 1419 A 1650 A 1728 R 2029 AR 2151 AR 2221 AR 2396 AR 2510 AR 2612 A**2605 R	D & A CORE: 2261-2317, rec 56' shale & dol PIPE: 9 5/8" @ 265' w/300 LOGS: IES, BHC/GR, FOR-DEN, MUD * Reported as Organ Rock. ** Interpreted as a soil zone.
387	<u>2511</u>	<u>439</u>	11- 7N- 8W NW SW 1920 FSL 700 FWL	Gulf #1-11 Navajo	10/67 11/67	6708KB 6698GR	2687	Pre- cambrian granitic	Chinle Shinarump DeChelly Supai* evps Hermosa Ismay Desert Cr Akah Barker Cr Redwall Ouray Elbert McCracken Aneth Cambrian Precambrian	Spls Start 5 A 945 AR 1401 A 1680 A 1692 R 1730 R 1834 R 1900 R 1975 R 2080 A 2050 R 2180 R 2187?A 2235 R 2230?A 2394 A 2408 R 2515 AR 2610?A 2600 R 2648 A 2650 R	D & A PIPE: 9 5/8" @ 270' w/150 LOGS: IES, BHC/GR, FOR-DEN, MUD * Reported as Organ Rock.
Drill Stem Tests											
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1190-1322: Op 60 min, rec 200' mud, SIP (60 min) 2-8#, FP 2-2#, HP 566#.											
2520-2687: Op 90 min, rec 288' mud, 420' WCM, SIP (60 min) 350#, FP 40-377#, HP 1236-1223#.											
388	<u>2512</u>	<u>440</u>	22- 7N- 8W SE NE 1980 FNL 660 FEL	Gulf #1-22 Navajo	11/67 11/67	6874KB 6864GR	2836	Pre- cambrian granitic	DeChelly Supai* evps Hermosa Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Ouray Elbert McCracken Aneth Cambrian Precambrian	Spls Start 1054 AR 1450 A 1852 A 1773 R 2160 R 2171 A 2207 A 2240?A 2250 A 2320 A 2355 AR 2553 AR 2651 AR 2770?A 2785 AR	D & A PIPE: 9 5/8" @ 257' w/150 LOGS: IES, BHC/GR, FOR-DEN, MUD * Reported as Organ Rock.
Drill Stem Tests											
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1741-1886: SI 1 hr, op 1 hr, SI 1 hr, rec 30' mud, FP 27-27#, SIP 127-107#, 915-915#.											
2560-2582: SI 30 min, op 30 min, SI 30 min, rec 5' mud, FP 0-0#, SIP 286-286#, HP 1284-1284#.											



389	<u>2092</u>	<u>432</u>	7 7N- 7W SW SE 850 FSL 2140 FEL	Depco #1 Navajo	9/67 9/67	6783KB 6771GR	2800	Pre- Cambrian meta	DeChelly Supai* Hermosa Molas Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Ouray Elbert McCracken Aneth Cambrian Precambrian	Surf 913 AR 1732 AR 2148 AR 2172 R 2178 A 2201 A 2267 A 2287 A 2335 AR 2372 A 2343 R 2533 AR 2630 A 2648 R 2727 A 2768 A 2752 R	D & A PIPE: 13 3/8" @ 400' w/500 LOGS: IES, DIL, SNP * Reported as Organ Rock.
390	<u>2566</u>	<u>480</u>	15- 7N- 7W SE SE 330 FSL 330 FEL	E.F. Doherty #1-15 Navajo	12/68 1/69	7085KB 7073GR	3001	Pre- Cambrian igneous?	Chinle basal sand DeChelly Supai Hermosa Molas Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Ouray Elbert McCracken Aneth Precambrian	200 A 415 A 230 R 1105 A* 1112 R 2013 A 1693 R 2410?A 2444 R 2444 A 2470 A 2535?A 2548 A 2590 A 2607 AR 2792 AR 2900 AR 2983 AR	D & A PIPE: 9 5/8" @ 197' w/100 LOGS: IES, BHC/GR * Organ Rock used
391	<u>2090</u>	<u>430</u>	26- 7N- 7W NW NE 660 FNL 1980 FEL	Texaco #1 Nav-BC	9/67 9/67	7139DF	2937	Pre- Cambrian meta	Alluvium Chinle basal sand DeChelly Supai** Hermosa Molas Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Ouray Elbert McCracken Aneth Precambrian	Spis Start 110 A 300 A 468 A* 467 R 1170 AR 1970 A 1684 R 2370 A 2374 R 2380 A 2407 A 2470 A 2496 A 2541 A 2580 A 2550 R 2722 A 2697 R 2860 AR 2925 A	D & A PIPE: 8 5/8" @ 316' w/225 LOGS: IES, BHC/GR, FOR-DEN * Reports as Coconino. ** Reported as Organ Rock.
Drill Stem Tests											
2340-2438: Op 1 hr, rec 5' mud in drill pipe, NS.											
2688-2760: Rec 500' GCM, no press reported.											

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
392	2505	428	32- 7N- 7W NW SE 1800 FSL 1900 FEL	Pan American #1 Nav AB	8/67 9/67	7312KB 7299GR	3020	Devonian basal	Chinle Shinarump DeChelly Supai Hermosa Miss Ouray Elbert McCracken Aneth	212 R 400 R 1180 R 2030 R 2360 R 2515 R 2552 R 2782?R 2855 R	D & A PIPE: 12½" @ 508' w/235; 7 5/8" @ 2300' w/100 LOGS: IES, BHC/GR, SNP
Drill Stem Test											
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2380-2570: SI 1 hr, op 2 hr, rec 290' wtr, flowed non-flam gas 164 MCFPD 5/8" ck, SIP 170-172#.											
393	3033	534	14- 6N-10W SW NW 1980 FNL 660 FWL	Union Texas #1-14 Nav	5/70 5/70	5774KB 5760GR	3101	Pre- cambrian granitic	DeChelly Hermosa Molas Miss Elbert McCracken Aneth Cambrian Precambrian	216 R 2250 R 2410 R 2550 R 2643 R 2815 R 2950 R 3035 R 3090 R	D & A PIPE: 8 5/8" @ 238' w/180 LOGS: IES, BHC/GR, SNP
Drill Stem Test											
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2813-2959: SI 64 min, op 65 min, SI 80 min, rec 840' salt wtr(33,000 ppm), non-flammable gas at 615 MCFPD w/pitot tube, SIP 943-950#, FP 140-450#, HP 1353-1254#.											
394	2096	453	26- 6N- 8W SE SE 990 FSL 990 FEL	Curtis Little #1 Nav	2/68 2/68	7414KB 7402GR	2322	Pre- cambrian	Chinle Shinarump Moenkopi* basal Tri sd DeChelly Supai Hermosa Molas Miss Mooney Falls Fault (A) Elbert Fault (A) Ouray Fault (A) Elbert McCracken Cambrian Fault (A) Precambrian	Spls Start 148 A 204 A 280?AR 1135 AR 1750?A 1958 A 1977 R 1977 A 2035 A 2071 R 2053 A 2090 A 2222 A 2224 R 2286?A 2290? 2272 R	D & A PIPE: 10" @ 155' w/160 LOGS: IES, BHC/GR, SNP * Probably not present
Drill Stem Test (Chart on file)											
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2021-2065: Op 5 min, SI 30 min, op 30 min, SI 30 min, rec 30' mud, FP 13- 20#, SIP 174-80#, HP 1004-1004#.											

395	<u>2509</u>	<u>429</u>	12- 6N- 7W	Gulf #1 Nav-Defiance	9/67 9/67	7309KB 7295GR	2594	Pre- cambrian X'tline	DeChelly Supai evps Hermosa Molas Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Ouray Elbert McCracken Aneth Precambrian	Spls Start 976 AR 1333?A 1705?A 2019 A 2040 R 2041 A 2053 A 2074 A 2102 A 2145 A 2160 A 2332 A 2468 A 2552 AR	1704 R 2040 R 2150 R 2342 R 2450 R	D & A PIPE: 9 5/8" @ 231' w/140 LOGS: IES, BHC/GR, FOR-DEN
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396	<u>2537</u>	<u>448</u>	26- 6N- 7W NE NE 660 FNL 660 FEL	Texaco #1 Navajo-BF	1/68 2/68	7699KB 7689GR	2825	Pre- cambrian meta	Alluvium Chinle basal sand Coconino DeChelly Supai* Hermosa? Hermosa Molas Miss Mooney Falls Fault (A) Ouray Fault (A) Miss Whitmore Wash Martin Ouray Elbert McCracken Aneth Precambrian	Spls Start 30 A 369 A 495?A 573?A 1313 A 1943?A 1768 R 2284 A 2290 A 2310 A 2326 A 2380 R 2363 A 2409 A 2556 A 2660 A 2736 A	492 R 1310 R 1768 R 2380 R	D & A PIPE: 8 5/8" @ 300' LOGS: IES, BHC/GR, FOR-DEN * Reported as Organ Rock.
Drill Stem Tests												
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2299-2385: Packer failed.												
2370-2441: Rec 5' drlg mud, NS.												
2553-2640: Rec 1567' muddy salt wtr, NS.												
2660-2740: Rec 20' drlg mud, NS.												
2036-2066: (Straddle packer) Rec 12' muddy wtr.												

397	<u>2593</u>	<u>496</u>	32- 6N- 7W NE NE 660 FNL 660 FEL	Gulf #1 Nav-Anardarko	5/69 5/69	7421KB 7411GR	2778	Pre- cambrian x'tline	Chinle Shinarump Fault (A) Chinle Shinarump basal sand Coconino DeChelly Supai Hermosa? Hermosa Molas Miss Mooney Falls Thunder Sprgs Whitmore Wash	Spls Start 180 A 432 A 510 A 582 A 758 A 1385 A 2052?A 2025 R 2256 A 2283 R 2291 A 2352 A 2363 A	477 R 1383 R 2025 R 2283 R 582 P	D & A PIPE: 8 5/8" @ 366' w/175 LOGS: IES, BHC/GR, FOR-DEN
Drill Stem Tests												
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1200-1269: Op 45 min, rec 390' drlg mud, NS, FP 26-198#, SIP 316-303#, HP 566-566#, BET 90°F.												
2441-2516: Op 2 hr, rec 124' drlg mud, 718' muddy brackish wtr, FP 79-409#, SIP 444-435#, HP 1265#.												

Cont'd next page

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IDENTIFICATION SEQ ABM OGC	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
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Well No. 397 Cont'd

Ouray?	2400?A	
Elbert	2434 A	2430 R
McCracken	2572 A	2615 R
Aneth	2654 A	2680 R
Cambrian	2722 A	
Precambrian	2740 A	2740 R

398	<u>2576</u>	<u>477</u>	20- 6N- 6W NW NW 600 FNL 984 FWL	Union #1 Nav-166	11/68 12/68	7571KB 7561CR	2800	Pre- cambrian x'tline	Chinle Shinarump? Moenkopi?* basal Tri sd Coconino** DeChelly Supai Organ Rock evps Hermosa Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash	Spis Start 50 A 125 A 420?A 567?A 775 A 1320 R 1317?A 1640 A 2067 A 2325 R 2310 A 2327 A 2340 A 2360 A	420 R 420 P 543 R 543 P	D & A PIPE: 8 5/8" @ 327' LOGS: DIL, FOR-DEN, SNP * Probably Chinle. ** In DeChelly.
Drill Stem Tests												
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2640-2675: Packer failed.												
2644-2675: Op 10 min, SI 30 min, op 30 min, SI 1 hr, rec 120' muddy salt wtr, 1100' salt wtr, FP 26-290#, SIP 743-743#, HP 1232-1225#.												
447-510: Op 10 min, SI 20 min, op 10 min, SI 20 min, no rec, HP 178-178#.												
-----												
Ouray 2394 A 2418 R												
Elbert 2428 AR												
McCracken 2534 A 2636 R												
Aneth 2680 AR												
Precambrian 2753 AR												

399	<u>2597</u>	<u>499</u>	11- 4N- 7W SW SW 660 FSL 660 FWL	Gulf #1 Nav- Texaco 1481	6/69 6/69	7444KB 7434GR	2375	Pre- cambrian granitic	Triassic Coconino DeChelly Organ Rock Supai Hermosa Molas Miss Devonian Elbert McCracken Aneth Cambrian Precambrian	Spis Start 380?A* 170 R 890 R 877 A 1346 A 1628 R 1717?A 1803 A 1865 R 1895 A 1902 R 2052 R 2196 R 2176 A 2280 A 2294 R	345 P 1210 P	D & A PIPE: 8 5/8" @ 275' w/225 LOGS: IES, BHC/GR, FOR-DEN * In DeChelly. ** The drilled section matches outcrop section in Canyon DeChelly as recorded by Peirce. Drilled Section
Drill Stem Tests												
-----												
1862-1996: Op 70 min, no gas to surf, rec 10' drlg fluid, FP (60 min) 13-13#, SIP (60 min) 448-540#.												
2031-2095: Op 75 min, no gas to surf, rec 2' drlg fluid, FP (60 min) 6-6#, SIP (60 min) 13-13#.												
2079-2166: Op 130 min, no gas to surf, rec 180' drlg fluid & 1428' non-flammable gas cut muddy salt wtr, FP (60 min) 66-652#, SIP (60 min) 652-652#.												
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DeChelly Sandstone												
White House Mb 345-900												
Oak Springs Mb 900-950												
Hunters Pt. Mb 950-1210												

400 2594 500 36- 4N- 7W Gulf #1 6/69 7568KB 2032  
 SW SW Navajo-BW 1797 6/69 7558GR  
 860 FSL  
 860 FWL

Pre-  
 cambrian  
 meta  
 Chinle  
 Shinarump  
 DeChelly  
 Organ Rock  
 Hermosa  
 Fault (A)  
 Redwall  
 Elbert  
 McCracken  
 Aneth  
 Precambrian

Spls Start  
 27 AR  
 839 AR  
 1568 A 1535 R  
 1670 A \*  
 1733 A 1720 R  
 1851 A 1835 R  
 1960 AR  
 1999 AR

D & A  
 PIPE: 8 5/8" @ 308' w/250  
 LOGS: IES, BHC/GR, FOR-DEN  
 \* Miss not reported  
 by operator.

Drill Stem Tests

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 1806-1930: Op 140 min, non-flam GTS, TSTM, rec 297' drlg fluid, FP (60  
 min) 13-145#, SIP (60 min) 527-474#.

1930-2032: Op 135 min, non-flam GTS, TSTM, rec 120' drlg fluid, FP (60  
 min) 79-92#, SIP (60 min) 579-500#.

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401	-	-	11- 2N- 9W	Wilson- Cranmer #2	-	-	826	Pre- cambrian	Supai Precambrian	Surf 795?	D & A
<hr/>											
402	-	-	21- 2N- 6W	Wilson- Cranmer #2	-	-	249	Pre- cambrian	Supai Precambrian	Surf 139?	D & A

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IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OCC									
<u>Navajo County</u>			<u>Tws. North</u> <u>Ranges East</u>								
403	<u>280</u>	<u>13</u>	34-42N-18E SW SE	Texas et al #1 Nav-A	12/52 6/53	6662KB	4523	Cambrian carbonates	Chinle Shinarump Moenkopi DeChelly Organ Rock Cedar Mesa Halgaito Rico Hermosa Molas Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Devonian Ouray Elbert Aneth? Cambrian	Spls Start 90 A 356 A 695 AR 1315 A 1325 R 1835 R 2207 R 2785 R 3488 R 3585 R 3601 A 3755 A 3920 A 4020 A 4077 R 4050 A 4192 R 4367 A 4423?A	D & A PIPE: 20" @ 43'; 13 3/8" @ 423' w/350; 9 5/8" @ 3426' w/350 LOGS: ES, ML, GRN, MUD, Spl Des
Drill Stem Tests											
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3426-3856: Op 1 hr, rec 415' drlg mud, BHP/30 min 345#, FP 110-230#.											
4152-4190: Op 55 min, rec 60' mud, BHP/30 min 485#, FP 0#.											
404	<u>2010</u>	<u>270</u>	36-39N-21E NE NW 660 FNL 1980 FWL	Texaco #1 Nav-AM	3/64 4/64	5516KB 5504GR	7190	Pre- cambrian igneous, altered	Wingate Lukachukai Rock Point Chinle Owl Rock? Petrified For? Shinarump Moenkopi basal Tri sd DeChelly Organ Rock Cutler evps Honaker Trail Penn undivided? Molas Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Ouray Elbert McCracken Aneth Precambrian	Spl Start 1505 A 1770 A 1988 A 2563 A 2623 A 2756?A 2837 A 3493 AR 4114 A 4810 R 5080 A 5978 AR 6043 R* 6046 A 6170?A 6300?A 6390 A 6424 AR 6516 AR 6774 A 6863 AR 7012 AR	D & A CORE: 6852-6912 PIPE: 10 3/4" @ 118' w/100; 7 5/8" @ 1115' w/363 LOGS: SON-CR, IES, AMP-SON * Reported as Leadville.
Drill Stem Tests											
-----											
6945-7081: Op 45 min, rec 60' mud.											
5313-5340: Op 2 hr, rec 3860' mud.											
6130-6146: Test failed.											

405 2050 281 29-38N-21E Superior #21-29 5/64 5561KB 7207  
 NE NW Navajo-W 7/64 5550GR  
 660 FNL  
 1980 FWL

Drill Stem Tests

5915-6202: Op 10 min, SI 30 min, op 90 min, SI 90 min, rec 1030' wtr, 200' MCSW & 920' sli MCSW, SIP 1777-1777#, FP 425-989#, HP 3098-3098#, BHT 120°F.

6601-6670: Op 10 min, SI 30 min, op 60 min, SI 60 min, rec 20' drlg mud, SIP 1233-1205#, FP 28-28#, HP 3546-3546#, BHT 118°F.

6625-6779: Op 10 min, SI 30 min, op 1 hr, SI 1 hr, rec 70' drlg mud, SIP 2190-2176#, FP 28-28#, HP 3518-3518#, BHT 118°F.

6860-7207: Op 10 min, SI 30 min, op 25 min, SI 7, rec 1220' SWC drlg mud, & 3160' SW, SIP 2286-2286#, FP 1343-2016#, HP 3695-3668#, BHT 120°F.

5551-5609: Op 2 hr, SI 2 hr, rec 250' SWC drlg mud, & 800' sli MCSW, FSIP 1908#, FP 243-540#, HP 2963-2963#.

Pre-cambrian quartzite? DeChelly 2630 R  
 Organ Rock 3335 R  
 Cutler 3770 R  
 Hermosa 4570 R  
 Ismay 5058 R  
 Desert Cr 5154 R  
 Chimney Rock 5233 R  
 Molas 5699 R  
 Miss 5802 R  
 Ouray 6191 R  
 Elbert 6256 R  
 McCracken 6556 R  
 Aneth 6632 R  
 Bright Angel 6783 R  
 Tapeats 6854 R  
 Precambrian 7142 R

D & A

CORE: 5022-5077; 5551-5582;  
 5610-5670; 6542-6550;  
 6555-6670; 6865-6900

PIPE: 16" @ 74' cmt to surf;  
 10 3/4" @ 1823' cmt to surf

LOGS: DIL, SON-CR, GRN

406 2013 283 24-38N-19E Tenneco #1 6/64 5865KB 7400  
 SE SW Navajo 7/64 5857GR  
 1196 FSL  
 1434 FWL

Drill Stem Test

6960-7054: Op 15 min, SI 1 hr, op 30 min, SI 1 hr, rec 94' mud w/trace live oil & asphaltic residue, FP 132-142#, SIP 253-152#, HP 3397-3377#.

Summerville Surf R  
 Entrada Spl's Start 30 R  
 Carmel 260 A 270 R  
 Navajo 390 AR  
 Kayenta 1070 A 1090 R  
 Wingate 1270 R  
 Lukachukai 1257 A  
 Rock Point 1440 A  
 Chinle 1390 R  
 Owl Rock 1640 A  
 Petrified For 1821 A  
 Shinarump 2306 AR  
 Moenkopi 2435 AR  
 basal sd 2682 A  
 DeChelly 2805 A 2682 R 2805 P  
 Organ Rock 3556 A 3574 R  
 Cedar Mesa 4060 A  
 Honaker Trail 4437 R  
 Penn undivided 5044?A  
 Ismay 5110 R  
 Desert Cr 5234 R  
 Akah 5302 R  
 Barker Cr 5534 R  
 L. Barker Cr 5706 R  
 Molas 5924 AR  
 Miss 6001 R\*  
 Horseshoe M. 6000 A  
 & Mooney Falls  
 Thunder Sprgs 6250 A

D & A

PIPE: 20" @ 60';  
 13 3/8" @ 1450'

LOGS: DIL, SON-CR, GRN

\* Reported as Redwall

IDENTIFICATION		LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS		
SEQ	ARM	OGC					BOTTOM	TOPS			
Well No. 406 Cont'd											
								Whitmore Wash 6396 A			
								Ouray 6450 A 6403 R			
								Eibert 6533 A 6503 R			
								McCracken 6792 A 6710 R			
								Aneth? 6870 A			
								Aneth 6871 R			
								Bright Angel 7033 AR			
								Tapeats 7134 AR			
								Precambrian 7382 R			
407	-	-	14-36N-18E SW NW	Peabody Coal #3 Waterwell	?	6458KB	3600	Wingate?	See Seq 409	Water Well compl in Navajo- Wingate interval	
408	-	-	16-35N-18E NE NW	Peabody Coal #4 Waterwell	?	6241KB	3547	Wingate?	See Seq 409	Water well compl in Navajo- Wingate interval	
409	-	-	20-36N-18E C	Peabody Coal #1 Waterwell	11/65	6403KB 6393GR	5745	Organ Rock Supai	Mesaverde Mancos Dakota* Morrison Entrada Carmel Navajo Kayenta Wingate Chinle Moenkopi Coconino Supai	Surf 560 R 1200 R 1360 R 2050 R 2250 R 2400 R 3150 R 3297 R 3600 R 4740 R 4950 R 5560 R	Water well compl in Navajo- Wingate interval  * Show gas reported
410	-	-	20-36N-18E SE SE	Peabody Coal #2 Waterwell	?	6552KB	3650	Wingate?	See Seq 409	Water well	
411	-	-	26-36N-18E C N/2 N/2	Peabody Coal #6 Waterwell	?	6686KB	3573	Wingate?	See Seq 409	Water well compl in Navajo- Wingate interval	
412	-	-	34-36N-18E NE SW	Peabody Coal #5 Waterwell	?	6606KB	3749	Wingate?	See Seq 409	Water well compl in Navajo- Wingate interval	
413	2039	309	35-30N-17E SW NE 1980 FNL 1980 FEL	Skelly #1 Hopi-(A)	4/65 5/65	6119KB 6106GR	7780	Pre- cambrian granitic	Mesaverde Mancos Dakota Cow Springs Entrada? Entrada	Surf 400 AR 918 AR 997 AR 1283 A 1332 R	D & A  PIPE: 16" @ 74' w/150; 11 3/4" @ 1933' w/1050  LOGS: IES, GRN, SON-CAL



Well No. 413 Cont'd

Drill Stem Tests

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 4490-4619: SI 30 min, op 1 hr, SI 30 min, rec 180' mud, 270' sli MCW, 2629' wtr, FP 936-1167#, SIP 1312-1312#, FHP 2181#.  
 7580-7635: SI ?, op 1 hr, SI 30 min, rec 250' muddy wtr, 4440' salty wtr, FP 575-2095#, SIP 2545-2487#, FHP 3753#.

Carmel 1538 A  
 Navajo 1618 AR  
 Kayenta 1958 A  
 Moenave 2193 A 2010 R  
 Wingate 2370 R  
 Lukachukai 2480 A  
 Rock Point 2668 A  
 Chinle 2860 R  
 Owl Rock 2894 A  
 Petrified For 3515 A  
 Shinarump 3746 A 4110 R  
 Moenkopi 3860 A 4230 R  
 DeChelly 4230 A\* 4512 R 4230 P  
 Supai 4930 A 5355 R 4930 P  
 Naco 6635 A 6601 R\*\*  
 Molas 6914 AR  
 Miss 6984 R  
 Horseshoe M. 6986 A  
 Mooney Falls 7020 A  
 Thunder Sprgs 7113 A  
 Whitmore Wash 7150 A  
 Ouray 7160 A  
 Elbert 7180?A 7180 R  
 McCracken 7455 AR  
 Aneth 7546?A 7545 R  
 Bright Angel 7622 AR  
 Tapeats 7700 A 7650 R  
 Precambrian 7760 A

\* Reported as Coconino-DeChelly. The upper 400' is Coconino-like while the lower 300' is DeChelly-like.  
 \*\* Reported as Hermosa.

133

414 2051 310 8-29N-19E Amerada #1 4/65 6183KB 7750 Pre-cambrian  
 SE NE Hopi 5/65 6171GR granitic  
 1980 FNL  
 660 FEL

Drill Stem Tests

-----  
 3697-3762: Op 1 hr 48 min, SI 1½ hr, rec 210' mud, FP 56-113#, FSIP 310#, HP 1852-1852#.  
 7095-7191: Op 1 hr 15 min, SI 1½ hr, rec 146' mud, FP 29-117#, FSIP 2251#, HP 3580-3536#.  
 7548-7660: Op 4 hr, SI 1½ hr, rec 2325' MC sli salty wtr, 2648' sli salty wtr, FP 163-2261#, FSIP 2449#, HP 3855-3734#.

Mesaverde Surf  
 Mancos 302 AR  
 Dakota 821 AR  
 Morrison 910 A  
 Cow Springs 951 A  
 Entrada 1220 A  
 Carmel 1520 A  
 Navajo 1615 AR  
 Kayenta 1933 A  
 Moenave 2103 A  
 Wingate 2129 R  
 Lukachukai 2420 A  
 Rock Point 2551 A 2420 R  
 Chinle 2760 R  
 Owl Rock 2760 A  
 Petrified For 3300 A  
 Moenkopi 3860 A  
 DeChelly 4044 A\* 4060 R  
 Supai 4850 A 5540 R 4850 P  
 Naco 6579 AR  
 Miss 6842 R  
 Horseshoe M. 6841 A  
 Mooney Falls 6870 A  
 Thunder Sprgs 6974 A  
 Whitmore Wash 7021 A

D & A  
 PIPE: 9 5/8" @ 1223' w/640  
 LOGS: IES, GRN, SON-CAL  
 \* Reported as Coconino-DeChelly. The upper 400' is Coconino-like while the lower 400' is more DeChelly-like.

Cont'd next page

IDENTIFICATION SEQ ABM OCC	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
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Well No. 414 Cont'd

Ouray	7038	AR
Elbert	7095	AR
McCracken	7330	AR
Aneth	7350	A 7437 R
Bright Angel	7540	A 7528 R
Tapeats	7570	A 7560 R
Precambrian	7694	AR

415	<u>2041</u>	<u>312</u>	9-28N-15E SW SE 660 FSL 1980 FEL	Atlantic Refining #9-1 Hopi	6/65 7/65	5820KB 5808GR	6640	Pre- cambrian granitic	Entrada Carmel Navajo Kayenta Moenave Wingate Lukachukai Rock Point Chinle Owl Rock Petrified For Shinarump Moenkopi Kaibab Toroweap Coconino DeChelly Supai* Naco Molas Miss Horseshoe M. Mooney Falls Thunder Sprgs Whitmore Wash Elbert McCracken Aneth Bright Angel Tapeats Precambrian	50 R 252 R 295 R 758 R 830 A 1090 AR 1394 A 1544 A 1812 R 1860 A 2240 A 2855 AR 2923 AR 3054 AR 3088 R 3195 AR 4712 AR 5543 AR 5805 R 5862 R 5862 A 5890?A 5940?A 6000?A 6033 AR 6240 AR 6273 AR 6459 A 6480 AR 6607 AR	D & A  PIPE: 13 3/8" @ 1034' w/600  LOGS: IES, GRN, ML, FOR-DEN, BHC/CAL  * The upper Supai is very sandy therefore difficult to separate from overlying sandstone.
Drill Stem Tests											
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			4303-4360:	Op 2 hr, SI 1 hr, op 40 min, SI 1 hr, rec 1700' wtr, 20' mud, FP 251-749#, SIP 1240-1095#.							
			6050-6105:	SI 1 hr, op 1 hr, SI 1 hr, rec 100' mud, FP 8-10#, SIP 1172-1012#.							
			6250-6338:	SI 1 hr, op 1 hr, SI 1 hr, rec 125' mud, FP 100-120#, SIP 2256-1749#.							
			6418-6461:	SI 1 hr, op 2 hr, SI 1 hr, rec 90' MCW, FP 108-268#, SIP 2002-1949#.					3920?P 4090?P		
			6473-6560:	SI 1 hr, op 2 hr, SI 1 hr, rec 30' mud, FP 8-509#, SIP 2029-1922#.							

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416	<u>2047</u>	<u>307</u>	15-26N-16E NW NW 660 FNL 660 FWL	Texaco #1 Hopi-A	4/65 5/65	5547KB 5535GR	5915	Pre- cambrian granitic	Kayenta Moenave Wingate Lukachukai Rock Point Chinle	131 R 370 A 750 A 950 A 1225 R	D & A  CORE: 5830-5908  PIPE: 16" @ 124' w/115; 10 3/4" @ 1002' w/390
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Well No. 416 Cont'd

Drill Stem Test

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 5792-5876: Op 1 hr, rec 20' mud, 190' MC salt wtr, 910' salt wtr, FP 15-546#, SIP 2036-1978#, HP 2836-2778#.

Owl Rock	1200 A	
Petrified For	1700 A	
Shinarump	2232 A	
Moenkopi	2296 A	
Coconino*	2638 A	2638 R
Supai	3561 A	
Naco	5149 A	5148 R
Miss		5412 R
Redwall	5413 A	
Devonian		5470 R
Elbert	5448 A	
Aneth	5640 A	
Tapeats	5730 A	5782 R
Precambrian		5855 R
meta sed	5856 A	
granitic	5888 A	

LOGS: SON-GR, IES

\* Except for color in the lower 400 feet the interval does not contain DeChelly-like sands. Apparently the Coconino-like sands wedge towards the northeast.

417	<u>2021</u>	<u>231</u>	35-21N-18E	Peak Pet New Mex & Ariz Ld Co #1	5/62 7/63	5674KB 5669GR	1350	Coconino	Chinle Shinarump Moenkopi Kaibab? Coconino	Surf 600?A* 410 R 450 R 827 R 830 AR	D & A
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PIPE: 7" @ 60'

\* Interpret Shinarump filling channel cut into Coconino sandstone.--Moenkopi likely not present.

418	<u>1649</u>	<u>211</u>	4-20N-21E	Linehan & Stoltenberg #1 Matthews-State	9/62 9/62	5463KB 5460GR	965	Coconino	Shinarump Coconino	530 PI 960 PI	D & A
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PIPE: 5½" @ 98' w/19

LOGS: Smp1 des

419	-	158	11-20N-21E	Linehan & Stoltenberg #1 Jeffers	10/61 11/61	5344DF	1714	Coconino?	Shinarump Coconino	445 R 890 R	D & A
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CORE: 908-914; 1240-1246

PIPE: 5½" @ 123' w/14

LOGS: IES

Drill Stem Test

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 890-930: Op 30 min, rec 210' WCM, FP 140-140#, SIP (30 min) 140#.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
420	2024	233	27-20N-17E SE NW 1980 FNL 1980 FWL	Peak Pet #2 NMA (Strat)	5/63 5/63	5294KB 5290GR	910	Basal Moenkopi	Chinle Petrified For Sonsela Mesa Redondo Shinarump Moenkopi basal sand	85 A 200 A 520 A 630 A 700 A 875 A	D & A  PIPE: 7" @ 60'
Drill Stem Test											
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848-881: Op 30 min, no rec, FP 0-0#, HP 485-460#.											
421	8	-	6-19N-23E SW NW 2310 FNL 330 FWL	General Pet #14-6 Creager-State	12/48 2/49	5720DF	3432	Pre- cambrian granitic	Chinle Shinarump Moenkopi Kaibab Coconino Supai evps Ft. Apache Naco Precambrian	10 R  593 AR 667 AR  1124 R 1127 AR 1590 R 1667 P 1800 P 2160?P	D & A  CORE: 815-835, 865-885, 1127-1162, 1300-1320, 1350-1370, 1420-1440, 1530-1570, 1625-1633, 1660-1680, 1863-1883, 2050-2070, 2530-2550, 2700-2717, 2898-2918, 3045-3049, 3190-3194, 3292-3294, 3375-3378, 3431-3432  PIPE: 20" @ 12'; 13 3/8" @ 775'  LOGS: RES, SMPL DES
422	-	160	9-19N-23E SW NW 1980 FNL 660 FWL	F.J. Fohs #1-9 Santa Fe	11/61 11/61	5691DF 5689GR	1073	Coconino	Chinle congl Coconino	580 R 1059 R	D & A  CORE: 1050-1062  PIPE: 5 1/2" @ 100' w/10  LOGS: IES
Drill Stem Test											
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1041-1065: Op 33 min, SI 15 min, rec 45' mud, 65' sli salty watery mud, FP 22-55#, IHP 475#, SI 15 min 102#.											
423	-	173	16-19N-23E NE SW 2420 FSL 2452 FWL	F.J. Fohs #2-16 State	11/61 12/61	5629	997	Coconino	Chinle congl Coconino	510 R 958 R	D & A  CORE: 954-956, 988-997  PIPE: 5 1/2" @ 100' w/25  LOGS: IES

424	-	164	16-19N-23E NW SW 2374 FSL 919 FWL	F.J. Fohs #1-16 State	11/61 11/61	5816GR	845	Moenkopi	Chinle congl Moenkopi	532 R ?		D & A
												LOGS: IES
425	-	161	21-19N-23E SE NE 2515 FNL 277 FEL	F.J. Fohs #1-21 Santa Fe	12/61 12/61	5361DF 5359GR	710	Coconino	Chinle congl Coconino	300 R 687 R		D & A
												CORE: 670-677, 687-700 PIPE: 5½" @ 100' w/25 LOGS: IES
426	-	174	26-19N-23E NW SW 2310 FSL 330 FWL	F.J. Fohs #1-26 Finley-Ariz Land	12/61 12/61	5362DF 5360GR	727	Coconino	Coconino	690 R		D & A
												CORE: 710-725 PIPE: 5½" @ 98' w/30 LOGS: IES
427	-	162	34-19N-23E NW NW 1270 FNL 836 FWL	F.J. Fohs #1-34 Santa Fe	11/62 12/62	5292DF 5290GR	678	Coconino	Chinle congl Coconino	260 R 622 R		D & A
												CORE: 653-668 PIPE: 5½" @ 100' w/10 LOGS: IES
428	-	*	36-19N-23E SW SW 330 FSL 330 FWL	Duval #29 State (Strat)	4/64 4/64	5410GR	1454	Supai	Chinle Shinarump Moenkopi Coconino Supai anhydrite no salt	Surf 376 R 400 R 711 R 1165 R 1245 R R		D & A
												Potash expl LOGS: GRN * Have samples
429	<u>371</u>	<u>26</u>	1-19N-22E 330 FSL 330 FWL	Hager-Mills Landrum #1 Santa Fe	12/54 1/55	5670GR approx	1182	Coconino	Alluvium Chinle Shinarump Moenkopi Coconino	Spls Start 65?A 560?A 670?A 1045?A		D & A
												LOGS: Smpl Des
430	-	181	13-19N-22E C S/2 SE 660 FSL 1320 FEL	F.J. Fohs #1-13 Santa Fe	4/62 5/62	5606DF 5604GR	1838	Supai	Chinle congl Moenkopi Coconino Supai? Supai evps	455 R 935 R* 965 R 1560 R 1300 P 1540 P		D & A
												CORE: 1813-1823 PIPE: 5½" @ 102' w/25 LOGS: IES * Probably picked too low

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS		REMARKS
SEQ	ABM	OGC										
431	-	301	10-19N-17E NE SW 1880 FSL 1980 FWL	Ferrin #1 State	2/65 6/67	5103KB 5100GR	1417	Supai	Moenkopi Coconino Supai evps*	585 R 985?P	250?P	D & A  PIPE: 4½" @ 1368' w/100; 10" @ 20' w/20  LOGS: SON-GR, IES  * Top evaporites displaced by Supai sands.
432	-	344	22-19N-17E NW NW 660 FNL 700 FWL	Ferrin #1 NMA	3/66	5500 approx	1250	Supai	Coconino Supai	403 R 810?P		D & A  PIPE: 10 3/4" @ 22' w/8  LOGS: IES
Drill Stem Tests												
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407-411: Op 23 min, no rec.												
1130-1155: Op 30 min, rec 825' wtr.												
1243-1246: Good blow, died after few hours.												
433	<u>2599</u>	<u>340</u>	18-18N-23E NE SW 1739 FSL 1801 FWL	Arkla #24 NMA (Strat)	1/66 1/66	5251KB 5244GR	1560	Supai	Chinle Moenkopi Coconino Supai* salt	Surf 206 PI 551 PI 1152 PI 1170 PI		D & A  potash expl  PIPE: 9 5/8" @ 42' w/35 7" @ 1070' w/300  LOGS: GRN  * Probably picked too low. Samples and logs of Supai not released by Company.
434	<u>3008</u>	<u>360</u>	21-18N-23E NE NE 660 FNL 660 FEL	Arkla #23 NMA (Strat)	9/66 9/66	5311KB 5304GR	1919	Supai	Chinle Shinarump Moenkopi Coconino Supai salt	Surf 190 R 200 R 343 R 850 R 922 R	P*	D & A  PIPE: 9 5/8" @ 42' w/35 7" @ 861' w/280  LOGS: GRN  * Sample top between 600-680

435	-	235	27-18N-23E SW NE 1980 FNL 1650 FEL	Franklin, Aston, Fair #C-1 NMA	5/63 12/64	5295KB	310 PB to 242	Coconino	Chinie Shinarump? Moenkopi Coconino	80 R 90 R 300 R		D & A PIPE: 5½" @ 93' circ 2½" @ 242' circ PERF: 204-216 LOGS: GRN Reported helium-bearing gas from lower Moenkopi.
436	<u>2026</u>	<u>254</u>	27-18N-23E SW NE 1680 FNL 1980 FEL	Franklin, Aston, Fair #C-2 NMA	10/63 10/63	5283KB	380	Coconino	Moenkopi Coconino	100 R 350 P*		D & A PIPE: 4½" @ 30' (approx) * Sample top
437	<u>2025</u>	<u>221</u>	35-18N-23E SW NE 1650 FNL 1980 FEL	Franklin, Aston, Fair #A-2 NMA	12/62 12/62	5290GR	390	Coconino	Coconino	370 R		D & A PIPE: 5½" @ 99' w/6 LOGS: SL
438	-	253	36-18N-23E NW SE 1650 FSL 1650 FEL	Franklin, Aston, Fair #1 Bernstein State	9/63 9/63	5334DF 5330GR	215	Moenkopi?	Shinarump	165 PI		D & A PIPE: 4½" @ 30'
439	<u>1362</u>	<u>83</u>	28-18N-20E SW NE 1596 FNL 1940 FEL	Arrowhead Besoyan Bros #1 State	6/59 7/59	5351DF	1988	Supai	Moenkopi Coconino Supai evps Ft. Apache	100?P* 340 PI 383 P 785 P 1120 P 1927 PI 1920 P		D & A CORE: 1927-1987 PIPE: 12" @ 90' 9 5/8" @ 400' w/250 8" @ 1200' LOGS: GRN * Apparent sample top
Drill Stem Test												
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1965-1980: Op 1 hr, rec 10' mud, FP 0#, SIP (30 min) 80#.												
440	-	67	30-18N-20E SW SE 660 FSL 1980 FEL	Tucson O & G #1 Woodman Fed	3/59 4/59	5103KB	310	Coconino?	?			D & A PIPE: 12 3/4" @ 100' w/50

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC					BOTTOM			
441	-	89	30-18N-20E SW SE 672 FSL 1980 FEL	Tucson O & G #1-x Woodman Fed	4/59 10/60	5103DF	1785	Supai Moenkopi Coconino Supai evps Ft. Apache	? 575?P 885 P 1675 P	D & A PIPE: 8 5/8" @ 303' w/150 4 1/2" @ 1740' w/250 LOGS: GRN
442	<u>1303</u>	<u>54</u>	31-18N-20E SE SE 990 FSL 660 FEL	Besoil #1 Hunt	2/58 4/58	5092KB 5089GR	1685	Supai Moenkopi Coconino Supai evps Ft. Apache	Surf 93 PI 90 P 470 PI 550?P 858 P 1570 PI 1565 P	D & A Perforations: variously from 826-1662. Reported oil show in Ft. Apache PIPE: 10 3/4" @ 304' 7" @ 1202' 5 1/2" @ 1663' LOGS: GRN
443	<u>2541</u>	<u>470</u>	31-18N-20E SE SE 1058 FSL 407 FEL	Cree #1 Hunt	8/68 8/68	5083KB 5078GR	1615	Ft. Apache Moenkopi Coconino Supai evps salt Ft. Apache? Ft. Apache	Surf 88 A 781 A* 540 P** 854 P 1020 A 1561?A 1561 P	D & A CORE: 1545-1605 PIPE: 7 5/8" @ 844' - no cement LOGS: GRN * Picked at change from dark sandstones to dark siltstones. ** Picked at change from red, clean, silicified sandstones to red-brown, more poorly sorted, sand- stones with rounded grains.
444	-	356	32-18N-20E SW SE 330 FSL 2330 FEL	Kalil & Asso #1 State Zelia		5100GR	1400 PB to 800	Supai Coconino Supai evps	42 S 733 S* 888	D & A Perforations: 749-753, 756-758, 760-763 - Rec wtr. 1245-1255, acidized and squeezed. PIPE: 8 5/8" @ 100' w/50 4 1/2" @ 1400' w/200 LOGS: GRN * Probably picked low



445	-	-	32-18N-20E S/2 S/2 330 FSL 2640 FEL	Oil Holding's #1 State	12/50 3/51	5095DF	180							D & A No information
446	2099	460	33-18N-20E SW SW 660 FSL 660 FWL	Cree #1 Scorse Fee	4/68 5/68	5070GR	3585	Pre- cambrian granitic	Cenozoic Coconino Supai evps salt Ft. Apache Naco Devonian Precambrian	Surf 40 A 722 A 870 A 1553?A 2423 A 3333 A 3534 AR	50 R 460 P* 770 P 1553 P		CORE: (Analysis on file) 1559-1649 PIPE: 13" @ 239' w/275 7 5/8" @ 1642' w/65 LOGS: GRN	
														* Picked at strong break in sandstone types.
447	1652	55	33-18N-20E SE SE SW	Bescoil #1 Perkins	12/57 12/58	5070GR	485		Moenkopi Coconino Supai	70 P* 440 P*			D & A * Approx sample tops	
448	-	217	1-17N-23E SW NE 2310 FNL 2310 FEL	Franklin, Aston, Fair #A-1 NMA	10/62 11/62	5692KB 5690GR	1285	Supai	Moenkopi Coconino Supai	535?P 785 S 1175 S			D & A PIPE: 5 1/2" @ 95' w/15 LOGS: ES Lost circ at 780'. Report a show of helium in Shinarump conglomerate.	
Drill Stem Tests														
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(Swab type-no regular tools used)														
755-770: (Failed)														
755-770: Rec 315' sli WCM.														
750-769: Rec 30' mud.														
449	3002	337	5-17N-23E SE SW 1008 FSL 1604 FWL	Arkla #6 NMA (Strat)	12/65 1/66	5611KB 5604GR	1635	Supai	Chinle Moenkopi Coconino Supai evps salt	Surf 490 R 700 R 1210 R 1271 R	1020?P* 1210?P		D & A Potash explor PIPE: 9 5/8" @ 104' w/125 7" @ 212' w/135 LOGS: GRN * Approx sample top	

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
450	-	-	8-17N-23E SW SW 666 FSL 718 FWL	Arkla #38 NMA (Strat)	1965	5552GR	1600	Supai	Coconino Supai	648 P 990?P	D & A  Potash expl  LOGS: GRN
451	2590	361	8-17N-23E SW SE 666 FSL 3358 FWL	Arkla #44 NMA (Strat)	9/66 9/66	5551KB 5544GR	1331	Supai	Chinle Petrified For Shinarump Moenkopi Coconino Supai salt	Sp1s Start  387 A 313 R 400 AR 674 AR 1167 A 1208 R 1035 P* 1220 A 1230 R	D & A  Potash expl  PIPE: 9 5/8" @ 42' w/35 7" @ 1217' w/250  LOGS: GRN  * Approx sample top.
452	2069	335	19-17N-23E 660 FNL 660 FEL	Arkla #36 NMA (Strat)	11/65 12/65	5458KB 5451GR	1473	Supai	Chinle Coconino Supai salt	Surf 551 R 1090 R 910?P* 1131 R	D & A  Potash expl  PIPE: 9 5/8" @ 42' w/35 7" @ 1091' w/250  LOGS: GRN  * Approx sample top
453	-	-	23-17N-23E SE SE 666 FSL 717 FEL	Arkla #22 NMA (Strat)	1965	5590GR	1718	Supai	Coconino Supai evps	830 P 1135?P 1330 P	D & A  Potash expl  LOGS: GRN GR kick @ 185'
454	2035	333	29-17N-23E SE NE 1415 FNL 715 FEL	Arkla #39 NMA (Strat)	11/65 11/65	5373KB 5365GR	1340	Supai	Chinle Shinarump Moenkopi Coconino Supai salt	Surf  256 R 352?P* 466 R 981 R 820?P** 1024 R	D & A  Potash expl  PIPE: 9 5/8" @ 42' w/35 7" @ 985' w/125  LOGS: GRN  * Moenkopi thinned beneath Chinle.  ** Approx sample top.

455 2588 364 31-17N-23E Arkla #20 10/66 5368GR 1029 Supai Chinle Surf D & A  
 SW SW NMA (Strat) 10/66 Moenkopi 140 R  
 680 FSL 213 R Potash expl  
 1056 FWL Coconino 382 R  
 Supai 907 R 720?P\* PIPE: 9 5/8" @ 42' w/35  
 salt 976 R 7" @ 900' w/300  
 LOGS: GRN  
 \* Approx sample top.

456 3003 331 21-17N-22E Arkla #33 1/66 5359GR 1142 Supai Chinle D & A  
 NW SW NMA (Strat) 2/66 basal sand Surf R  
 2158 FSL Moenkopi 72 R 60?P Potash expl  
 4250 FEL Coconino 230 R  
 Supai 810 R 550 P\* PIPE: 9 5/8" @ 42' w/35  
 salt 856 R 7" @ 813' w/425  
 LOGS: GRN  
 \* Approx sample top.

457 - 220 22-17N-22E Franklin, Aston, 12/62 5460GR 375? Coconino Coconino 350 S D & A  
 SW NE Fair #B1 NMA 12/62 5463DF 400?  
 1650 FNL  
 1650 FEL  
 PIPE: 5 1/2" @ 97'  
 LOGS: SL

458 3005 334 24-17N-22E Arkla #7 11/65 5391GR 1275 Supai Chinle D & A  
 NW SW NMA (Strat) 11/65 basal sand 212?P  
 2158 FSL Moenkopi 160 R\* 226?P Potash expl  
 868 FWL Coconino 377 R  
 Supai 946 R 740 P\*\* PIPE: 9 5/8" @ 42' w/35  
 salt 972 R 7" @ 902' w/250  
 LOGS: GRN  
 \* Reported pick might be in Mesa Redondo Member of Chinle.  
 \*\* Approx sample top.

459 - 244 28-17N-22E New Mex & Ariz 6/63 5375GR 1418 Supai? No info D & A  
 1320 FSL Land #3 Fee 7/63  
 1320 FEL  
 PIPE: 4 1/2" @ 1080' w/5  
 Reported small blow non-flammable gas from Supai 1040-1048.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY		REMARKS
SEQ	ABM	OGC								TOPS	
460	-	326	36-17N-22E NW SW 1794 FSL 675 FWL	Arkla #3 State (Strat)	9/65 10/65	5316GR 5324KB	1170	Supai	Chinle basal sand Moenkopi Coconino Supai salt	158?P 170?P 78 R 283 R 818 R 870 R	D & A  Potash expl  PIPE: 9 5/8" @ 44'-circ 7" @ 817'-circ  LOGS: GRN
461	<u>2570</u>	<u>532</u>	6-17N-21E SE NE 2542 FNL 4339 FWL	Aritex #2 Fee (Strat)	3/70 3/70	5077GR	1140	Supai	Coconino Supai evps salt	130 R 773 R 515 P* 920 P 1052 R	Drilled in connection with making solution cavity in salt for storage purposes.  CORE: 1005-1110  PIPE: 9 5/8" @ 185' w/125 7" @ 1139' w/200  * Appearance of red shale & red more poorly sorted sandstones.
462	<u>2569</u>	<u>530</u>	6-17N-21E NE SE 2943 FNL 4340 FWL	Aritex #1 Fee (Strat)	2/70 3/70	5078GR	1100	Supai	Coconino Supai evps salt	138 R 725 R 520 P 920 P 1025 R	Solution cavity storage project.  PIPE: 9 5/8" @ 140' w/90 7" @ 1026' w/150
463	622	-	21-17N-20E NW NW NW	Great Basin #1 Taylor-Fuller	1927	5270	4675	Pre- cambrian granitic	Coconino Supai salt Ft. Apache Naco L. Pal undiff Precambrian granite	Surf 460 P* 785 P* 1620 P* 2805 P* 3645?P* 3685 PI 4670 PI	D & A  PIPE: 12 1/2" @ 630' 10 3/4" @ 978' 8 1/4" @ 1858'  LOGS: Sp1 log  * Interpreted from uncredited sample log that terminates at 3630'.
464	-	350	4-17N-16E SW NW 1865 FNL 663 FWL	Ferrin #1 AJA Cattle-Babbitt	7/66 8/66	5200GR est	30	Coconino	Kaibab Coconino	Surf 26 R	D & A

465	<u>2587</u> <u>357</u>	5-16N-23E SW NW 3371 FSL 640 FWL	Arkla #15 NMA (Strat)	8/66 8/66	5418KB 5411GR	1157	Supai	Coconino Supai salt	435 R 975 R 1019 R	780 P*	D & A  Potash expl  PIPE: 9 5/8" @ 43' w/35 7" @ 973' w/125  LOGS: GRN * Sample top
466	- -	6-16N-23E SW NE 3371 FSL 3960 FWL	Arkla # 83 State (Strat)	1965	5400GR	1320	Supai	Supai evps potash	914 P 1034 P		D & A  Potash expl  LOGS: GRN
467	- -	7-16N-23E SW NE 1636 FNL 4123 FWL	Arkla #88 NMA (Strat)	1965	5426GR	1325	Supai	Coconino Supai evps	439 P 790?P 970 P		D & A  Potash expl  LOGS: GRN
468	- -	9-16N-23E SW NE 1980 FNL 1980 FEL	Arkla #17 NMA (Strat)	1965	5444GR	1420	Supai	Coconino Supai evps dolomite	530 P 836 P 1046 P	960 R 1372 R	D & A  Potash expl  LOGS: GRN
469	<u>3004</u> <u>342</u>	13-16N-23E NW NW 202 FNL 176 FWL	Arkla #16 NMA (Strat)	2/66 2/66	5421KB 5414GR	1430	Supai	Chinle Moenkopi Coconino Supai salt	Surf 364 R 517 R 1021 R 1051 R	880 P*	D & A  Potash expl  PIPE: 9 5/8" @ 42' w/35 7" @ 1010' w/250  LOGS: GRN * Sample top
470	- -	18-16N-23E SW NE 1980 FNL 4010 FWL	Arkla #32 State (Strat)	1965	5394GR	1255	Supai	Coconino Supai evps potash	363 P 676 P 860 P 972 P		D & A  Potash expl  LOGS: GRN

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OCG									
471	<u>3001</u>	<u>358</u>	18-16N-23E SW NW 1980 FNL 1370 FWL	Arkla #25 State (Strat)	8/66 8/66	5444KB 5437GR	1100	Supai	Chinle Shinarump Moenkopi Coconino Supai evps salt	Surf 46 R 217?P 83 R 240?P 390 R 891 R 770 P* 944 P 974 R	Converted to water well.  Potash expl  PIPE: 9 5/8" @ 42' w/35 7" @ 897' w/125  LOGS: GRN * Approx sample top
472	-	-	19-16N-23E SW NE 1709 FNL 3171 FWL	Arkla #68 NMA (Strat)	1965	5354GR	985				D & A  Potash expl  No information.
473	-	-	21-16N-23E SW NE 1995 FNL 1995 FEL	Arkla #12 NMA (Strat)	1965	5372GR	1295		See Appendix Well No. 473		D & A  Potash expl  LOGS: GRN
474	-	-	26-16N-23E	Arkla #14 State (Strat)	1965	5336GR	1300				D & A  Potash expl  No information.
475	<u>2586</u>	<u>359</u>	27-16N-23E SW SE 426 FSL 3149 FWL	Arkla #10 NMA (Strat)	8/66 10/66	5310KB 5303GR	1009	Supai	Chinle Shinarump Moenkopi Coconino Supai salt	Surf 90 R 159 R 328 R 848 R 700 P* 911 R	D & A  Potash expl  Blow gas from 1059' in Supai- 1 to 2.4% helium.  PIPE: 9 5/8" @ 72' w/50 7" @ 873' w/350  * Sample top

476	<u>2044</u>	<u>336</u>	28-16N-23E SW SE 1210 FSL 1600 FEL	Occidental #1 State (Strat)	12/65 12/65	5327KB 5319GR	1035	Supai	Chinle Shinarump Moenkopi Coconino Supai evps salt	Surf* 140 AR 326 AR 760 A 809 R 720 P 860 P 916 AR	D & A Potash expl 819-839, 909-965 whipstocked 838-963*** PIPE: 9 5/8" @ 42' w/35 7" @ 818' w/125 LOGS: GRN * Might not be Shinarump ** Sample top *** Trace potassium @ 934.6'
477	-	-	29-16N-23E SW SW 859 FSL 773 FWL	Arkla #51 NMA (Strat)	1965	5377GR	1260	Supai	See Appendix Well No. 477		D & A Potash expl LOGS: GRN
478	-	<u>338</u>	30-16N-23E SE NW 2359 FNL 1832 FWL	Occidental #2 State (Strat)	12/65 12/65	5315KB 5308GR	960	Supai	Chinle Shinarump Moenkopi Coconino Supai evps salt	Surf * 75 AR 259 AR 703 A 730 R 630 P 777 P 833 AR	D & A Potash expl CORE: 832-884 whipstocked 759-864, 868-918 Kcl 852-855 PIPE: 9 5/8" @ 42' w/35 7" @ 740' w/125 LOGS: GRN * Might not be Shinarump
479	-	<u>555</u>	34-16N-23E NW NE 660 FNL 1420 FEL	RW Little #1 State	6/71 11/71	5315GR	1006	Supai	Coconino Supai	313 R 715 P	Converted to water well PIPE: 9" @ 65' w/5 4 1/2" @ 775' w/400 LOGS: DL
480	-	-	34-16N-23E SW NE 3066 FSL 3149 FWL	Arkla # 99 NMA (Strat)	1965	5295GR	942	Supai	Supai evps potash	840 P 927 P	D & A Potash expl LOGS: GRN

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS		REMARKS
SEQ	ABM	OGC										
481	-	363	34-16N-23E SW SW 660 FSL 660 FWL	Arkla #31 State (Strat)	9/66 10/66	5275GR	926	Supai	Chinle Shinarump Moenkopi Coconino Supai evps salt	Surf 34 R 288 R 780 R 780 P 863 R	116?P 134?P 612 P 780 P	D & A  Potash expl  PIPE: 9 5/8" @ 72' w/75 7" @ 826' w/225  LOGS: GRN
482	-	-	36-16N-23E SW NE 3325 FSL 1751 FEL	Arkla #59 State (Strat)	1965	5329GR	1315	Supai	Coconino Supai evps potash	445 P 750 P 906 P 1028 P		D & A  Potash expl  LOGS: GRN
483	-	-	12-16N-22E SW NE 1841 FNL 1884 FEL	Arkla #46 NMA (Strat)	1965	5425GR	1247	Supai	Coconino Supai evps	360 P 740?P 912 P		D & A  Potash expl  LOGS: GRN
484	-	-	14-16N-22E SW NE 2273 FNL 1341 FEL	Arkla #26 NMA (Strat)	1965	5395GR	1176	Supai	Coconino Supai evps potash	280 P 570 P 786 P 895 P		D & A  Potash expl  LOGS: GRN
485	<u>2070</u>	<u>329</u>	16-16N-22E SE NE 1767 FNL 722 FEL	Arkla #64 State (Strat)	10/65 11/65	5217KB 5210GR	3380	No info	Moenkopi Coconino Supai salt  No information released for remainder of hole.	Surf 67 R 606 R 667 R	440 P*	D & A  Potash expl  PIPE: 9 5/8" @ 72' w/60 7" @ 580' w/175  LOGS: GRN  * Approx sample top
486	<u>3000</u>	<u>362</u>	23-16N-22E NE SE 1980 FSL 50 FEL	Arkla #19 NMA (Strat)	9/66 9/66	5436KB 5429GR	945	Supai	Chinle Shinarump Moenkopi Coconino Supai salt	Surf 30 R* 88 R 300 R 796 R 892 R	130?P 640 P**	D & A  Potash expl  PIPE: 9 5/8" @ 42' w/35 7" @ 796' w/225  LOGS: GRN  * Might not be Shinarump  ** Approx sample top



487	-	-	25-16N-22E 2010 FNL 866 FEL	Arkla #37 NMA (Strat)	1965	5279	1075	Supai	See Appendix Well No. 487				D & A	Potash expl	LOGS: GRN
488	-	<u>328</u>	27-16N-22E NE SE 3463 FNL 521 FEL	Arkla #77 NMA (Strat)	10/65 10/65	5260KB 5253GR	1000	Supai	Moenkopi Coconino Supai salt	Surf 100 R 630 R 685 R	484?P		D & A	Potash expl	PIPE: 9 5/8" @ 42'-circ 7" @ 615'-circ LOGS: GRN
489	<u>1006</u>	<u>85</u>	5-16N-20E SE NE 2239 FNL 661 FEL	Pan Amer #1 Aztec-A	6/59 7/59	5439DF 5429GR	4003	Pre- cambrian granitic	Coconino Supai evps salt Ft. Apache Big "A"* Amos Wash* Penn Naco Redwall Martin "Granite Wash" Precambrian	Surf 676 AR 1110 A 1703 R 1746 R 2116 R 2623 A 2933 R 3589 AR 3660 A**3662 R 3910 AR 3924 A	395 P 712 P 2000 P 2405?P		D & A	CORE: 1529-1579, 1721-1771, 3686-3722 PIPE: 8 5/8" @ 726' w/470 LOGS: GRN, SON-SP, LL, MLL	* Winters' surface termin- ology-Ft. Apache Res. ** Report Devonian as Elbert.
Drill Stem Tests															
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602-686: Op 1 hr, rec 185' WCM, FP 115-140#, SIP (30 min) 140#, HP 370#.															
1698-1771: Op 2 hr, rec 15' mud, FP 70#, SIP (30 min) 70#, HP 1005#.															
3627-3722: Op 2 1/2 hr, rec 200' SWCM, 1300' SW, FP 70-860#, SIP (30 min) 1645#, HP 1910#.															
490	<u>1017</u>	<u>86</u>	9-16N-18E SW NE	Pan Amer #1 Aztec-B	7/59 8/59	5691KB 5678GR	3936	Pre- cambrian granitic	Coconino Supai evps salt Ft. Apache Big "A" Amos Wash Penn Naco Redwall Martin Precambrian	Surf 765 A 1205 A 1800 AR 1845 A 2090 P 2470?P 2700 A 2827 R 3577 AR 3626 AR 3835 AR	779 R 520?P 790 P		D & A	CORE: 1812-1862, 3650-3687 PIPE: 8 5/8" @ 761' w/555 LOGS: GRN, LL	
Drill Stem Tests															
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1805-1883: Op 1 hr, rec 10' M, FP 30#, SIP (30 min) 30#, BHT 100°F.															
3625-3687: Op 3 hr, rec 200' MCSW, 800' SW, FP 115-550#, SIP 1315#, BHT 105°F.															
491	620	-	20-16N-17E NE NE	Black Canyon Oil #1	Prior to 11/27	5400 est	476*	Coconino	Kaibab Coconino	Surf (map) 48?P			D & A	LOGS: SL, Smp1 Des	* Lowest sample description.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
492	<u>443</u>	<u>20</u>	1-16N-16E SW SW 660 FSL 330 FWL	Eisele #1 McCauley	4/54 6/55	5558DF	4231	Pre-cambrian granitic	Kaibab Coconino Supai evps salt Ft. Apache Amos Wash Penn Naco Redwall Martin Precambrian Granite	Surf   90 P ? 650?P 1550 R 1720 R 1565?P 1880?P 2200?P 3280 R 2570?P 3400?P 3500?P  3700 R	D & A  CORE: 1592-1604, 3437-3452 PERFS: 3705-3735; 3820-3870 LOGS: ES
----- Drill Stem Tests -----											
1587-1592: Rec 850' fluid.											
1587-1603: Rec 570' SW & mud, FP 270#, SIP 480#.											
2815-2832: Rec 2' mud.											
3472-3486: Rec 100' SWCM.											
3407-3435: Rec 60' SW & mud, FP 125-125#, SIP 765#/15 min.											
3685-4209: Rec 240' mud.											
3690-4204: Rec 180' mud, FP 125#, SIP 190#/30 min.											
493	<u>2034</u>	<u>323</u>	10-15N-23E SW NE 1455 FNL 3683 FWL	Arkla #7 State (Strat)	9/65 9/65	5290KB 5282GR	1060	Supai	Moenkopi Coconino Supai salt	125 R 326 R 821 R 690 P* 885 R	160?P     D & A Potash expl PIPE: 9 5/8" @ 106'-circ 7" @ 827'-circ LOGS: GRN * Sample top
494	<u>3006</u>	<u>343</u>	3-15N-22E NE NE 200 FNL 200 FEL	Arkla #55 NMA (Strat)	2/66 2/66	5223KB 5215GR	975	Supai	Coconino Supai salt	58 R 605 R 420 P* 659 R	D & A Potash expl PIPE: 9 5/8" @ 42' w/35 7" @ 610' w/125 LOGS: GRN * Approx sample top
495	-	243	24-15N-22E C E/2	New Mex & Ariz Ld Co #2 Fee (Strat)	4/63 6/63	5445?	1844				D & A No information.

496	618	-	21-15N-19E NW NE	Hopi Oil #1	1927	5900 est	2420	Supai	Coconino Supai evps Ft. Apache	Surf 465?P* 710?P* 1725?P*		D & A	LOGS: SL	* Picked off SL.
497	961	*	34-15N-19E SW NE 2160 FNL 2115 FEL	Union-Continental #1 NMA	1/44 3/44	6047DF 6034GR	3609	Pre- cambrian granitic	Moenkopi Coconino Supai evps salt Ft. Apache Penn Naco Redwall Martin Precambrian	Surf 50?A 630 A 1118?A 2545 A Absent 3544 A 3593 A	3096 R 3577 R 3603 R	D & A	520 P**CORE: (Description on file) 700 P** 1692-3607 1730 P**PIPE: 10 3/4" @ 336' 2545 P**	LOGS: Smp1 Des * Have samples & State: ** Picked from Smp1 Des
Drill Stem Tests														
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1709-1793: Rec 35' mud.														
3252-3290: Rec 18' mud.														
498	-	-	14-15N-18E SE SW?	Winslow Oil #1			3000						Well Reported by PI.	
499	40	*	19-15N-18E NE NE 330 FNL 330 FEL	Union-Continental #1 Aztec	9/43 12/43	6127KB 6112GR	3850	Devonian	Kaibab Coconino Supai evps Ft. Apache Penn Naco Molas Redwall Devonian	Surf 25?R 750 R in @ in @ in @ in @ 3739 R 3772 R 3812 R	150 P** 610?P** 860 P** 1878?P** 2709 P** 3213 P**	D & A	PIPE: Set csg @ 745' LOGS: Smp1 Des * Have samples ** Picked from Smp1 Des	
500	-	-	23-15N-18E NE	Holbrook Oil #1	1924	6020	3023?	Supai*	Sample log covers interval 2380-3023 Penn			D & A	PIPE: 8" @ 2380' 6 5/8" @ 2674'	LOGS: *SL
501	-	-	12-14N-23E SE NE 2277 FNL 529 FEL	Arkla #5 NMA (Strat)	1965	5521GR	1350	Supai	See Appendix Well No. 501				LOGS: GRN	
502	-	242	5-14N-22E C NE 1320 FNL 1320 FEL	New Mex & Ariz Ld Co #1 Fee (Strat)	3/63 5/63	5457GR	1500	Supai				D & A	PIPE: 5 1/2" @ 740' w/18 sx	

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
503	1011	61	33-14N-20E C NE 1320 FNL 1320 FEL	Lydia Johnson #1 Aztec	9/58 8/59	5981DF 5980GR	3746	Pre-cambrian quartzite?	Coconino Supai evps salt Ft. Apache Penn Naco Martin Precambrian	Spls Start 505 A 430 P 600 P 694 A 1506 A 1650 P 2680?P* 2680?P	D & A PIPE: 10 3/4" @ 1177' 7" @ 2670' w/50 LOGS: GRN * See remarks for Well Seq. No. 506
504	-	97	33-14N-20E SW NE 2450 FNL 1650 FEL	Lydia Johnson #2 Aztec	9/59 2/61	6012KB	1540	Ft. Apache	Ft. Apache	1510 R	D & A Cable tools. Perfs: 1517-1523, acidized- rec small amt gas & distillate. PIPE: 10" @ 10' 7" @ 200' 4 1/2" @ 1532'
505	-	126	33-14N-20E NE SW 2500 FSL 2100 FWL	Lydia Johnson #3 Aztec	12/59 9/60	6102KB	610				D & A No information
506	39	*	33-14N-20E NE SE 2460 FSL 1305 FEL	Lockhart #1 Aztec	3/49 6/49	6020KB 6012GR	3734	Pre-cambrian granitic	Coconino Supai evps salt Ft. Apache Big "A" Butte Amos Wash Penn Naco Redwall Martin Tapeats? Precambrian	Surf 578 A 450 R 450 P 610 P 1150 A 1680 P 1740 P 2150 P 2620?P** 2900 P 3024 R	D & A CORE: 1678-1880, 2070-2181, 2492-2502, 2651-2665, 2830-3187, 3201-3229, 3273-3296, 3351-3388, 3422-3734 * Have samples ** Not typical Supai-consider raising Naco or developing a new unit. A Virgilian fusulinid reported from 3220-3230.
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Comment											
D.L. Baars (1962) AAPG V. 46, No. 2, p. 149, used this hole as a key point in making regional Permian correlations (personal communication). It is the turning point in S. Navajo County shown in his fence diagram, p. 184. Some of his tops are shown below:											
				Glorieta	10						
				Yeso	560						
				Ft. Apache equiv.	610-620						
				DeChelly	700						
				Supai-abo	980						
				Penn?	2520						
				Naco	2900						

## Well No. 506 Cont'd

As suggested elsewhere (Arizona Bureau of Mines bulletin 182, p. 61), the Ft. Apache horizon is approximately 1,000 feet too high and the "DeChelly" Sandstone is placed within the Supai evaporites. These correlations are incorrect and lead to considerable confusion if followed. For clarification, the interested worker is referred to the continuous core from Well Seq. No. 509.

507	617	-	4-14N-20E SW SE?	Adamana Oil	1924	6000 approx	3387	Penn?	Moenkopi Coconino Supai evps Ft. Apache Penn Redwall	Surf 60 R 549 R 481?P* 680?P* 1750?P* 2848?P* 2848 R		D & A PIPE: 8 1/2" @ 810' 6 5/8" @ 2158' 4" @ 2380' LOGS: SL, Smp1 Des * From sample description.
508	<u>2016</u>	<u>291</u>	35-14N-19E NE NE 660 FNL 660 FEL	Taubert & Steed #1 Babbitt	11/65 11/65	6012KB 6002GR	3822	Pre- cambrian granitic	Moenkopi Kaibab Coconino Supai evps salt Ft. Apache Big "A" Butte Amos Wash Penn Naco? Miss? Martin? Precambrian	Surf 130?P 140?A 730?A 830 P 1000 A 1635 P 1690 P 2120 P 2555?P 2877 A 3688 A 3694 A 3800 A		D & A CORE: 3718-3744 PIPE: 10 3/4" @ 171' w/220 8 5/8" @ 756' LOGS: GRN, LL
509	1354	<u>175</u>	12-14N-18E NW 1370 FNL 1370 FWL	Calif Oil #1A State	12/61 2/62	5841KB 5830GR	2947	Naco	Alluvium Moenkopi Coconino Supai evps salt Ft. Apache L. Supai Penn Naco	Surf ? 65 R 730 A 968 A 1463 R 1537 R 2216?P 2335 A		D & A CORE: 1947-2947 PIPE: 8" @ 66' 5 9/16" @ 710' w/60 4" @ 1936' w/10 LOGS: GRN 2483 R 2618 P
510	-	<u>154</u>	12-14N-18E NW 1320 FNL 1320 FWL	Calif Oil #1 State	9/61 12/61	5841KB 5830GR	1947	Supai	See Seq. No. 509			Abandoned-fish in hole CORE: 141-1947 PIPE: 5 9/16" @ 122' w/23 LOGS: GRN

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
511	131	-	3-13N-20E SE SE 990 FSL 330 FEL	Phil Lynch #1 Aztec	1951	5960GR	3140	Penn Naco?	Coconino Supai evps in @ salt in @ Ft. Apache Penn	Surf? 450 P 705 P 710 P 1644 P 2540?P	D & A  LOGS: Smpl Des
512	1009	76	25-12N-23E SW NE 1983 FNL 1969 FEL	Pan Am #1-B NMA	4/59 6/59	6250KB 6244GR	4497	Pre- Cambrian meta	Moenkopi Kaibab Coconino Supai evps salt Ft. Apache Big "A" Butte Amos Wash Penn Naco chert breccia Miss Devonian Precambrian	Surf?  145 R 164 R 630 A 623 R 600 P 790 P 1200?P 1540?A 1847 R 1847 P 1946 R* 1946 P 2425 P 3158?A 2813 R 2854?P 3467 A 2813 R 3158 P 4090 A 4101 R 4148 R 4404 R	D & A  CORE: 1473-1508, 1874-1925, 4079-4102  PIPE: 8 5/8" @ 785' w/500  LOGS: SON, GRN, LL, MLL  * Reported as lower Supai.  Virgilian fusulinids reported in interval 3450-3460.
Drill Stem Tests											
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1220-1236: Op 1½ hr, rec 15' mud, FP 90#, SIP (30 min) 90#.											
1925-2048: Op 1½ hr, rec 30' mud, FP 85#, SIP (30 min) 100#.											
4065-4140: Op 2½ hr, rec 1350' SW, FP 175-865#, SIP (30 min) 1204#.											
4148-4250: Op 2½ hr, rec 3645' MCW, FP 195-1350#, SIP (30 min) 1375#.											
513	2063	374	18-12N-17E SE SE 660 FSL 660 FEL	Tenneco #1 Fed-A	1/67 1/67	6696KB 6686GR	1700	Supai	Alluvium Kaibab Coconino Supai evps Ft. Apache Big "A" Butte	Surf 90 A 258 A 855 A 830 P 970 P 1337?A 1390 P 1490 P	D & A  PIPE: 13 3/8" @ 41' w/150  LOGS: DIL, FOR-DEN, SNP
514	2076	368	31-10N-21E NE SE 2090 FSL 515 FEL	Tenneco 1X Ft. Apache	10/66 11/66	6639KB 6626GR	4059	Pre- Cambrian granitic	Cretaceous? Kaibab Coconino Supai Corduroy evps Ft. Apache Big "A" Butte Amos Wash Penn Naco Molas Miss Martin Cambrian Tapeats Precambrian in @	Surf  222 R 344 R 660 A 664 R 820 P 1445 A 1364 R 1445 P 1540 P 1900 P 2282?P 2517 A 2842 R 2517 P 3410 R 3517 AR 3625 A 3675 R 3830 A 3850 R 4003 R 4040 A	D & A  PIPE: 16" @ 46' w/120 10 3/4" @ 960' w/200  LOGS: DIL, GR-I, SNP, FOR- DEN, GRN
Drill Stem Test											
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3619-3699: SI 30 min, op 30 min, SI 1 hr, rec 1500' SW, FP 566-664#, SIP 659-666#, HP 1729-1720#.											

515 2060 369 15-10N-19E  
NW NW  
500 FNL  
500 FWL

Tenneco  
#1 Fed

1/67  
1/67

6991KB  
6980GR

1840

Supai

Tertiary  
Cretaceous  
Kaibab  
Coconino  
Supai  
Corduroy  
evps  
Ft. Apache  
Big "A" Butte

Surf  
122 R  
542 A  
650 A  
933 A  
932 R  
1088 R  
1604 R  
1790 R  
650 P  
542 R  
1088 P  
1661 P  
1775 P

D & A

PIPE: 13 3/8" @ 69' w/150

LOGS: FOR-DEN, DIL, SNP, GRN

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
Coconino County			Tws. North Ranges East								
516	2002	275	32-39N- 2E NE NE 330 FNL 330 FEL	Underwood #1-32 Jacob Lake	4/64 5/64	7680KB 7668GR		Cambrian Bright Angel Shale	Kaibab Toroweap Hermit Supai Hermosa Molas Miss D Zone C Zone B Zone A Zone Devonian Temple Butte Cambrian Muav Bright Angel	Surf 2142A 310 R 663 AR 1405 AR 1930 AR* 2108 A 2230 R 2230 A 2460 A 2730 A 2835 A 2914 AR** 3060 AR 3729 AR	D & A PIPE: 16" @ 16' w/50 10 3/4" @ 439' w/200 LOGS: IES, GRN * Reported as Callville. ** Reported as Martin.
517	287	*	28-37N-14E C N/2 NE 660 FNL 1320 FEL	Sinclair #1 Navajo	5/52 10/52	6620DF 6609GR	7210	Cambrian Tapeats	Spls Start Navajo Kayenta Wingate Chinle Owl Rock Petrified For Shinarump Moenkopi Coconino DeChelly Organ Rock Cedar Mesa Halgalto? Penn Miss D & C Zone B Zone A Zone Ouray Elbert McCracken Cambrian Bright Angel Muav Tongue Tapeats	68 A 80 R 1165 A 1090 R 1244 A 1660 R 1820 R 1630 A 1950 A 2630 A 2814 A 2820 R 2950 P 3290 P 3730 A 4110 P 4430 P 5345?A 5570 R 5643 A 5923 A 6140 A 6182 A 6220 A 6480 A 6503 A 6537 A 6735 A 7050?A	D & A CORE: 6700-6754 PIPE: 13 3/8" @ 285' w/220 7" @ 6224' w/250 LOGS: ML, Smpl des * Have samples.



518	<u>11</u>	-	22-34N- 8E	Collins-Cobb #1-x	12/46	5783KB	3440?	Cambrian	Kaibab	Surf		D & A
			SW SE*	Natonie-Nav	5/48	5781GR		Tapeats	Coconino	335 U**		PIPE: 6 5/8" @ 3184' w/100
								or	Hermit-			LOGS: Smpl des
								Pre-	Organ Rock?	1230 P		* Some question of exact
								cambrian	Cedar Mesa			location. Apparently
								quartzite	equiv?	1370 P		another hole was started
									Supai undiff	1620 P		and abandoned prior
									Redwall	1940?		to this hole.
									Devonian	2460 D***		** U.S.G.S.
									Cambrian			*** Denver Sample Log
									Muav	2500?		
									Bright Angel	2650?		
									Tapeats	2960?		
									Precambrian	3427 U		

519	<u>3037</u>	321	6-29N-15E	Moore-Moore &	9/65	5648KB	7000	Pre-	Navajo	Spls Start		D & A
			NW NW	Miller #1 Hopi	10/65	5634GR		cambrian	Kayenta			PIPE: 9 5/8" @ 993' w/800
			660 FNL					granitic	silty facies	1100 A		LOGS: IES, SON-GR, FT
			660 FWL						Moenave	1350 A		* Reported as Hermosa.
									Wingate			
									Rock Pt	1633 A		
									Chinle	1775 A		
									Owl Rock	2075 A		
									Petrified For	2406 A		
									Shinarump	3012 AR		
									Moenkopi	3123 AR		
									Kaibab	3232?AR		
									Coconino	3395?AR		
									DeChelly?		4010 P	
									Supai	4817 AR	4200?P	
									Naco	5712 AR*		
									Miss		6085 R	
									Horseshoe M.	6085 A		
									Mooney Falls	6120?A		
									Thunder Sprgs	6170?A		
									Whitmore Wash	6260?A		
									Elbert	6282 AR		
									McCracken	6500 AR		
									Aneth	6529 AR		
									Bright Angel	6723 AR		
									Tapeats	6750 AR		
									Precambrian	6972 AR		

Wireline Tests

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3408-3410: ISIP 820#, FSIP 800#. Tool op 14 min, rec 20,350 cc filtrate wtr with resistivity of 4.17 ohms at 70°. No formation water, no free gas, no fluor.

6680-6682: ISIP 2320#, FSIP 2270#. Tool op 25 min, rec 19,000 cc salty sulfur wtr with resistivity of .32 ohms at 120°. No free gas, no fluor. Fluid 7% formation wtr.

520	<u>2542</u>	<u>474</u>	11-29N-14E	Pennzoil #1-11	10/68	5650KB	6940	Pre-	Kayenta	920 A		D & A
			NW NW	Hopi	12/68	5638GR		cambrian	Moenave			PIPE: 11 3/4" @ 902' w/710
			660 FNL					granitic	Dinosaur Can	1187?A		LOGS: IES, GRN, BHC/GR
			660 FWL						Wingate			* Reported as Redwall.
									Lukachukai	1465 A		** Reported as Temple
									Rock Point	1622 A		Butte @ 6313'.
									Chinle		1622 R	
									Owl Rock	1834 A		
									Petrified For	2240 A		
									Shinarump	2860 A		

Cont'd next page

IDENTIFICATION SEQ ABM OGC	LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS	
Well No. 520 Cont'd										
Drill Stem Tests (Chart on File)							Moenkopi	2969 AR	*** Suggest may be as	
-----							Coconino	3249 AR	high as 6800'.	
6410-6443:	Op 15 min, SI 1 hr, op 10 min, SI 2 hr, rec 45' mud, FP 21-43#, SIP 1963-2006#, HP 3080-3080#.						DeChelly	3820?P		
							Supai	4710 AR	4000?P	
							Naco	5590 A	5570 R	
							Miss	5940 A	5984 R*	
6768-6944:	Op 20 min, SI 1 hr, op 1 hr, SI 1 hr, rec 700 WCM, 1190' salt wtr, FP 43-757#, SIP 2158-2093#, HP 3174-3174#.						Whitmore Wash	6140 A		
							Elbert**	6157 A		
							McCracken	6345 A		
							Aneth	6405 A		
							Tapeats	6590 A	6615 R	
							Precambrian***	6927 A	6868 R	
521	<u>10</u> *	15-27N- 9E SW SW 660 FSL 660 FWL	Barron-Steele #1 Babbitt-Bar	7/47 4/48	5200?	2/65	Supai	Kaibab Coconino Supai	Surf 320?P 960?P	D & A LOGS: Smpl des * Have samples.
522	<u>38</u> *	21-27N- 9E NE NE 660 FNL 660 FEL	Lockhart Bros #1 Babbitt-Bar	9/48 6/49	5106KB 5096GR	3625	Tapeats	Kaibab- Toroweap undiff Coconino Supai Miss C Zone B Zone A Zone Martin* Bright Angel in @ Tapeats in @	Spls Start 290 A 1010?P 2715 A 2770 A 2870 A 2930 A 3378 A 3402 A	D & A CORE: 2042-2946, 3254-3268, 3325-3332, 3373-3541, 3573-3575, 3592-3598, 3621-3623½ LOGS: Smpl Des * Have samples.
523	- -	27-25N 2E NE NW NE	Black Mesa Pipeline Co #1 station #3	69 70	6165GR	3670	Tapeats	Basalt Moenkopi Kaibab Toroweap Coconino Supai Penn Redwall Devonian & Muav Bright Angel sh & dol sandstone Tapeats	Surf 90 R 150 R 590 R 800 R 1360 R 2570 R 2730 R 2980 R 3310 R 3430 R 3660 R	Water well, perf 2880-3050- open hole below 3324'. Most of water coming from Bright Angel-"Gas noted in water".

524	<u>63</u>	*	3-22N-10E NW	Flagstaff Asso #1 Kellum	1933	5550	2420?	Supai?	Volcanics Kaibab Coconino Supai	Surf ? Spls Start 1030 R		D & A  LOGS: Smpl des  * Have samples.
525	<u>285</u>	*	26-22N- 5E SE NE	El Paso #6 Williams	1953	7300?	2350	Supai	Cenozoic Coconino Supai	Surf 905 A 1900 A	** P	Water Well  * Have samples.  ** Thickness Cenozoic uncer- tain. Supai appears at 2000' in samples. Samples above not typical of Coconino Sandstone.
526	<u>57</u>	*	11-21N- 6E NW SW SW	US Navy #1 Navajo Ordnance	1950	7050GR	1654	Supai	Alluvium Volcanics Kaibab Toroweap Coconino Supai	Surf 65 R 125 R 635 R 780 R 1130 R	655 P	Water Well  LOGS: Smpl des  * Have samples
527	-	-	3-20N-12½E SW?	Arizona Sunshine #1		5292GR	1470	Coconino	Coconino	1440 R		Water Well
528	<u>1359</u>	<u>186</u>	12-20N-11E NE NW 330 FNL 2310 FWL	Roy Owens #1 Diablo-Amarillo	5/62 6/62	5735KB 5724GR	3630	Pre- cambrian x'tlines- Pyritic	Kaibab Coconino DeChelly-like Supai Ft. Apache base Naco Molas Miss C Zone B Zone A Zone Martin Precambrian	Surf 283 A  1173 A 1742 A 1748 A 2543 A 3058 A  3070 A 3130 A 3150 A 3180 A 3560 A	930 P 930 P*	D & A  CORE: 3352-3412 PIPE: 9 5/8" @ 128'  LOGS: IES, ML, SON, FOR- DEN, Smpl Des  * The DeChelly-like sand- stones give way to finer grained clastics below 1100'. The unit here called Ft. Apache prob- ably correlates with the thin carbonate near the top of the Supai in Oak Creek Canyon below which Baars finds "DeChelly".
Drill Stem Test												
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3225-3284: Op 1 hr, rec 360' MCW, 2080' wtr, FP 563-1053#, SIP (45 min) 1053#.												

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS	
SEQ	ABM	OGC										
529	<u>1677</u>	<u>240</u>	26-20N-10E NW SE 1980 FSL 1980 FEL	Pickett #1 Padre Canyon-State	8/63 2/64	6261KB 6250GR	3596	Pre-cambrian x'tlines Pyritic	Kaibab Coconino Supai Ft. Apache Naco Molas Redwall Martin Precambrian	Surf 324 A 1074 A 1795 A 2686 A 3106 A 3135 A 3200 A 3591 A	D & A PIPE: 8 5/8" @ 120' w/25 5 1/2" @ 2747' w/100 LOGS: IES, SON-CR	
Drill Stem Test												
-----												
3399-3446: SI 30 min, op 25 min, SI 30 min, rec 60' mud, FP 26-27#, SIP 26-39#.												
530	<u>2066</u>	<u>351</u>	24-20N- 5E SW NW 1537 FNL 1230 FWL	Willet (Potter) #1 State	6/65 ?	7199GR	3781?	Pre-cambrian quartzite	Kaibab Coconino DeChelly Supai Molas Redwall Martin Precambrian	Spis Start 483 A 1346 A 2119 A 2731 A 2754 A 2784 A 2855 A	D & A PIPE: 14" @ 240' w/200 10 3/4" @ 1912' w/100 8 5/8" @ 2275' w/300 7" @ 2675' w/74 LOGS: SL * Sample base of typical Coconino. Clastics below are finer-grained and darker.	
531	-	239	5-19N-10E NW SE 2039 FSL 1787 FEL	Shoshone #1 Hildyard	7/63 8/63	6508DF	1125	?	Coconino	285 R	D & A PIPE: 8 5/8" @ 180' w/75	
532	<u>1191</u>	<u>72</u>	24-19N-10E SE NW 1960 FNL 1960 FWL	Western Oil & Minerals #1 Fed	4/59 9/60	6394?DF	3020	?	Kaibab Coconino Supai Ft. Apache Naco	Surf 350 A 1073 A 1810 AR 2710 R	280 R 350 P 820 R 903?P 1810 P	D & A PIPE: 13 3/8" @ 100' w/52 8 5/8" @ 1831' w/41 Cable tool samples.
533	<u>2062</u>	<u>376</u>	24-19N-10E SE SW 833 FSL 1828 FWL	Steinberg #1A Flowalt-Babbitt	12/66 2/67	6271KB 6260GR	6500	Pre-cambrian granitic	Supai Naco Redwall Martin in @ Precambrian	Spis Start 2568?A 3135 A 3370 A 3613 A	D & A LOGS: DIL, BHC/CAL	
Drill Stem Tests												
-----												
4851-5050: Op 2 hr, rec 3000' wtr, IH 1570#, IFP 1534#, FFP 1535#, SIP (30 min) 1543#, FH 1570#.												

Well No. 533 Cont'd

4875-4906: Op 2 hr, rec 3500' wtr, IH 1562#, IFP 1508#, FFP 1560#, FSIP  
1561#, FH 1563#.

534	-	436	17-19N- 6E NE SE 1617 FSL 642 FEL	Oil Discovery #1 Federal	10/67 12/67	7012KB 7000GR	3253	Pre- Cambrian ?	Volcanics Kaibab Coconino Supai Naco Redwall Martin Precambrian	Surf 110 R 425 R 1200 R 2400 R 2900 R 3045 R 3110 R	D & A
535		486	8-17N- 6E 1878 FNL 1460 FWL	Hopkins #1 Stevenson	2/69 2/69	4260GR	215	Supai	Supai	Surf	D & A PIPE: 8 5/8" @ 61' w/11 7" @ 92'
536	-	498	6-17N- 6E SE SE 700 FSL 330 FEL	Hopkins #1 Jordan (Strat)	5/69 5/69	4400	1254	Pre- Cambrian granitic	Supai Martin Precambrian	Surf 854 R 1220 R	D & A PIPE: 10 3/4" @ 40' w/60 7" @ 1060' LOGS: IES, GRN
537	-	202	29-16N-14E NE SW 1980 FSL 1980 FWL	Allen #1 O'Haco	8/62 11/62	6128DF	510	?	?		D & A Cable tools
538	-	475	21-15N-10E SW NW 3063 FSL 530 FWL	Pease #1 Federal	12/68 1/69	7375KB 7368GR	3610	Pre- Cambrian ?	Kaibab Coconino Supai Ft. Apache Naco Molas Redwall Martin Cambrian Precambrian	Surf 220 R 1060 R 1670 R 2595 R 2860 R 2890 R 3000 R 3550 R 3595 R	D & A PIPE: 10 3/4" @ 160' w/100 LOGS: GRN Drilled w/air.
539	<u>1013</u>	<u>71</u>	30-14N-14E SW NE 2047 FNL 1906 FEL	Monsanto #1 Cabin Wash-Fed	4/59 9/59	6859KB 6854GR	3811	Pre- Cambrian granitic	Kaibab Coconino Supai Ft. Apache Big "A" Naco	Surf 294 AR 1008 A 1053 R 1610 A 1575 R 1675 A 2750 AR	D & A LOGS: GRN Drilled with cable tools.

Cont'd next page

IDENTIFICATION			LOCATON	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
Well No. 539 Cont'd											
									Molas	3272 A* 3231 R	* Used "chert breccia zone".
									Martin	3310 AR	
									Cambrian	3660 R	
									Precambrian	3650 A	
540	2559	464	10-14N-11E NW SW 1980 FSL 660 FWL	Eastern Pet # Fed- Moqui Bardo	8/68 2/69	6906DF 6904GR	3691	Devonian	Kaibab Toroweap Coconino Supai Ft. Apache "A" "B" Big A Amos Wash Naco? Naco Molas Redwall Martin	Surf 275 A 395 AR 1367?A 1092 R 1130 P 1488 P 1488 A 1637 A 1723 A 1505 P 2283 A 2822 A 2822 P 2289 R 3248 AR 3260 AR 3361 A 3371 R	D & A PIPE: 10 3/4" @ 18' w/20 7 5/8" @ 1489' w/70 6 3/4" @ 3397' LOGS: GR-I, GRN, RES
Tws. North Ranges West											
541	197	6	35-28N-1W SW NE 1980 FNL 1980 FEL	Sinclair #1 Santa Fe	4/52 5/52	6005GR	3544	Tapeats	Kaibab Coconino Supai sandstone shale sandstone Naco? Redwall Martin Muav-bright Angel undiff Tapeats	Surf 600 D 1140 D 910 P 1140 P 1500 P 2030 D 2346 D 2806 D 2912 D 3481 D	D & A PIPE: 13 3/8" @ 316' 9 5/8" @ 2205' LOGS: ES, SL, Smp1 Des
Drill Stem Test											
-----											
2878-2932: Op 1 hr, rec 155' drlg mud.											
542	841	47	34-25N-8W NE NE 660 FNL 660 FEL	Ray Terry #1 State	10/57 7/58	5410GR	1948	Tapeats	Alluvium Miss D Zone C Zone B Zone A Zone Martin Cambrian undiff Muav Bright Angel Tapeats	Surf 425 A 570 A 660 A 710 A 780 A 1020 A 1060 A 1560 A 1755 A	D & A LOGS: Smp1 Des

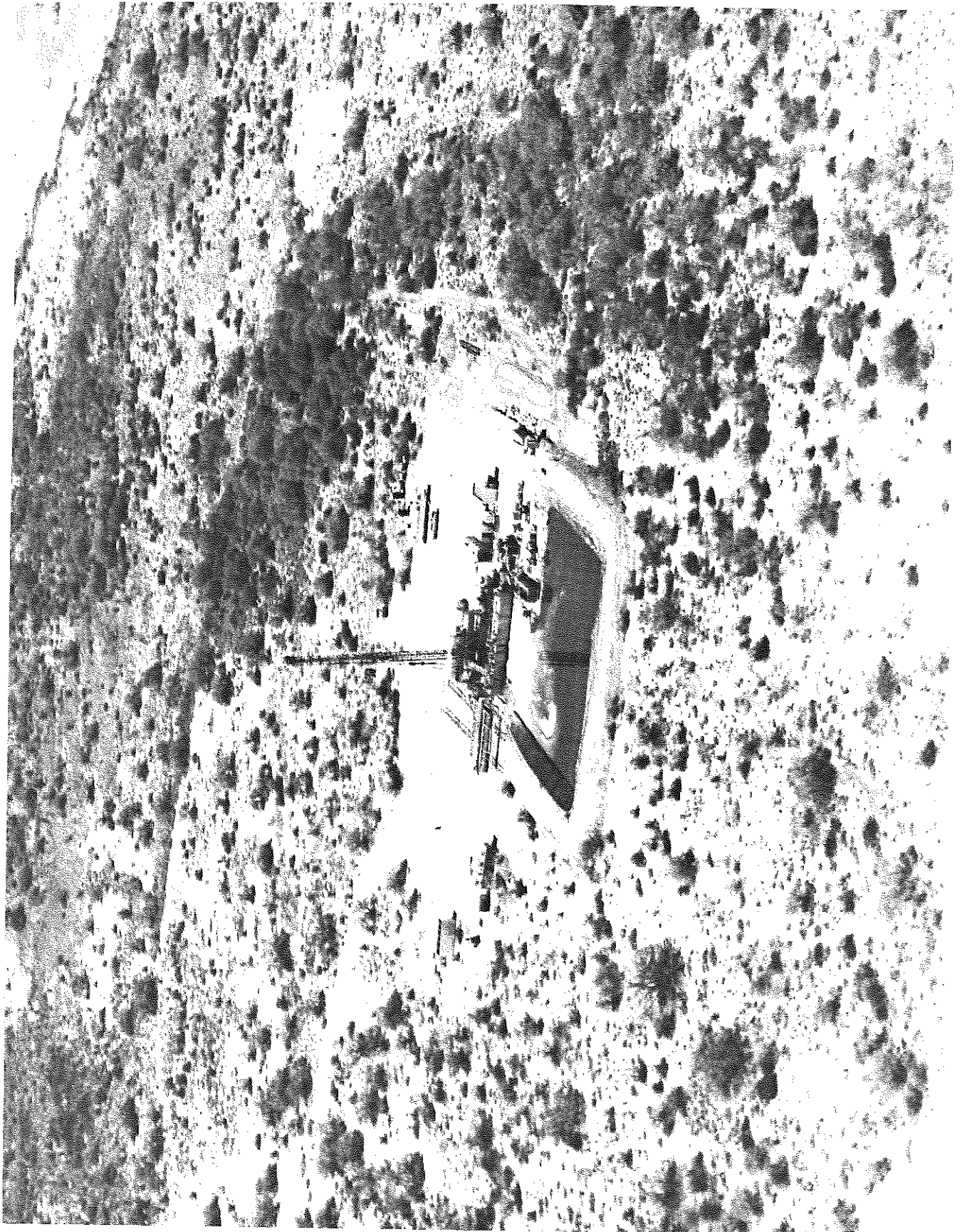


Figure 2. The Humble No. 1 State, Pinal County, Arizona, July, 1972.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS	
<u>Mohave County</u>			<u>Tws. North</u> <u>Ranges West</u>							
543	-	-	32-42N-15W	Virgin Oil Co #6? State	1931	?	545			D & A LOGS: Smp1 Des
544	-	-	32-42N-15W	Virgin Oil Co #1 State	1931	?	1405			D & A
545	-	-	31-42N- 8W SW SW	Ariz-Utah Consol Oil #1 State	1909	?	936			D & A
546	-	-	29-41N-15W	Virgin Oil & Mines #4 State	1918	?	2600? 553?			D & A LOGS: Smp1 Des to 553
547	-	-	18-41N- 8W NE NW	Antelope Pet Co #1 Morris	1932	?	1522			D & A
548	-	-	16-41N- 6W SE	Cane Bed Well	1931	?	542			Water Well LOGS: Smp1 Des
549	<u>441</u>	*	28-40N- 8W SE SW? NW NE? 660 FSL? 1983 FWL?	Falcon-Seaboard- Valen #1 Antelope-Fed	6/56 8/56	4800	3753	Miss Moenkopi Timpoweap Kaibab Toroweap upper middle lower Coconino Hermit Queantoweap Pakoon Callville Miss D Zone C Zone	Spls Start 183 A 210 A 620 A 883 A 1092 A 1184 A 1206 A 1985 A 2565 A 3074 A 3313 A 3542?A	D & A CORE: 3733-3739 PIPE: 13 3/8" @ 183' w/175 10 3/4" @ 192' LOGS: IES, GRN Numerous oil stains reported below 1100'. * Have samples
550	-	-	28-40N- 8W	Valen Oil & Minerals #1 Antelope-Fed	12/54 6/56	4800	120			D & A



551	<u>664</u>	<u>40</u>	12-40N- 6W NW SW? NW NW? 1980 FSL? 660 FWL?	TW George #1 Fed	4/57 6/57	5280 Est	2202	Kaibab	Navajo Chinle Shinarump Moenkopi Timpoweap Kaibab	Spls Start 100 A 675 A 730 A 1890 A 2040 A	D & A  LOGS: Smpl Des
552	<u>1184</u>	<u>114</u>	35-39N-13W SE SW 580 FSL 1900 FWL	Tenn Gas Trans #1 USA-Schreiber	4/60 5/60	5416KB 5404GR	4015	Miss	Moenkopi Kaibab Toroweap Coconino Hermit Queantoweap Pakoon Callville Miss chester? D Zone	Spls Start 327 A 755 A 1290 A 1396 A 2095 A 2755 A 3130 A  3877 A 3945 A	D & A  PIPE: 13 3/8" @ 138' w/160  LOGS: IES, GR, Smpl Des  Drld w/air 0-3085'. Drld w/air, wtr, & detergent 3085'-4015'.
553	<u>2061</u>	<u>347</u>	2-39N- 7W NE SE 1980 FSL 660 FEL	Skelly #1 Fed-A	4/66 5/66	5120 Est	4031	Miss	Gravels Moenkopi Timpoweap? Kaibab Toroweap upper middle lower Coconino Hermit Queantoweap Pakoon Callville Miss Horseshoe M. Mooney Falls	Surf 30?A 795 A 855 A  1310 A 1565 A 1625 A 1787 A 1807 A 2617 A 3134 A 3555 A  3850 A 3980 A	D & A  PIPE: 10 3/4" @ 221'  LOGS: IES, SON-CAL, MUD  Numerous oil stains reported to 1800'.
Drill Stem Tests											
-----											
857-887:	Op 2 hr 5 min, SI 30 min, rec 1 qt mud, IFP O#, FSIP 0 #, HP 326-326#.										
3145-3436:	SI 30 min, op 1 hr, SI 1 hr, rec 945' WCM, FP 53-186#, SIP 495-507#, HP 1479-1466#.										
3830-4030:	SI 30 min, op 1 hr, SI 30 min, rec 2446' WCM, FP 351-1247#, SIP 1387-1267#.										
554	<u>699</u>	<u>42</u>	14-39N- 6W SW NW 1980 FNL 660 FWL	Poteet & Lyons #1 Fed	6/57 8/57	5200?	2303	Coconino	Alluvium Chinle Shinarump Moenkopi Timpoweap Kaibab Toroweap Coconino	  30 A 110 A 1210 A 1350 A 1810 A 2280 A	D & A  PIPE: 10 3/4" @ 30'  LOGS: SL  Drld w/cable tools.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
555	<u>1016</u>	<u>56</u>	35-39N- 6W 1980 FSL 1980 FWL	Tony Lyons #1 Fed	8/58 9/58	5210GR	1820	Toroweap	Moenkopi Shnabkaib middle Virgin Timpoweap Kaibab Toroweap	Surf 135 A 635 A 740 A 872 A 1380 A	D & A  PIPE: 10 5/8" @ 253'  Drld w/cable tools.  Oil stains reported in Kaibab-Toroweap interval.
556	-	117	17-38N- 7W NW SW 2310 FSL 660 FWL	Roger Fields #2 Fed	6/60 10/60	4960GR	32	Triassic			D & A  Drld w/cable tools.
557	-	41	17-38N- 7W SW SW 330 FSL 330 FWL	Roger Fields #1 Fed	6/57 6/57	4980GR	460	Toroweap?			Lost Hole  CORE: 178'-181.6'  Reported show oil 150-190.
558	<u>991</u>	<u>53</u>	17-38N- 7W SW SW 330 FSL 320 FWL	Roger Fields #1-x Fed	1/58 4/58	4980GR	1780?	?	Triassic Timpoweap Kaibab Coconino Hermit	Surf 160 R 460?R 1111 R 1137 R	D & A  PIPE: 8 5/8" @ 100' w/20 7" @ 1089' w/120  LOGS: Smp1 des, IES, GRN  Swbd sli show oil-acidized- shot w/110 qts.
					Reported show oil in limestone 1136-1339(?). Tested at rate of 1 Bbl oil/day after being shut in 1958. Drld deeper with cable tools in 1960(?).						
559	-	502	29-38N- 7W	Harris #1 Fed	7/69 7/70	5200?	1115	Hermit	Moenkopi Timpoweap Kaibab Toroweap Coconino Hermit	312 R 448 R 585 R 1080 R 1110 R	D & A  PIPE: 14" @ 65' w/50
560	<u>1190</u>	<u>43</u>	31-38N- 5W 1980 FSL 1980 FEL	Western Dr1g Co #1 Valen-Fed	7/57 3/62	5050GR	4666	Bright Angel	Alluvium Moenkopi Timpoweap Kaibab Toroweap Coconino Hermit Supai Esplanade middle	Surf 50 A 185 A 516 A 940 A 1009 A 1820 A 2290 A	D & A  PIPE: 13 3/8" @ 60' 8 5/8" @ 2912' 7" @ 3730'  LOGS: SL  Numerous oil stains reported.

Callville	2500 A	
Miss		2815 R
D Zone	2930 A	
C Zone	3100 A	
B Zone	3380 A	
A Zone	3545 A	
Temple Butte	3635 A	
Cambrian undiff	4100 A	
Muav	4180 A	
Bright Angel	4615 A	

561	<u>3044</u> <u>542</u>	22-26N-16W 330 FSL 660 FWL	El Paso #1 Red Lake-Ped (Strat)	7/70 7/70	2804GR	5994	Halite	Alluvium Halite in @ TD	Surf 1796 R	CORE: 1957-2057, 3013-3113, 4009-4109, 4994-5094, 5900-5994  LOGS: IES, BHC/GR, FOR-DEN, SNP, DM, CAL (BW), DEN (BW), TS (BW), TD-VEL (BW)
<p>Age of halite not known with certainty. Hypotheses range from Permian to Pliocene. Regional geologic setting suggests positioning (deposition or intrusion) in late Tertiary.</p>										
562	-	28-26N-16W 100 FNL 600 FEL	Kerr-McGee #2 Red Lake (Strat)	3/58 5/58	2810GR Est	2135	Halite	Alluvium clay anhydrite halite	Surf 10 R 1457 R 1500 R	CORE: (Description available) 1290-2135  PIPE: 4½" @ 1290' (no cement)  LOGS: GRN, Smp1 Des
563	<u>1695*</u>	30-26N-16W 100 FSL 100 FEL	Kerr-McGee #1 Red Lake (Strat)	2/58 3/58	2800GR Est	2608	Halite	Alluvium clay gypsum halite	Surf 10 R 1310 R 1418 R	CORE: (Description available) 1400-2608  PIPE: 4½" @ 1310' (no cement)  LOGS: GRN  * Miscellaneous core on hand.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
<u>Yavapai County</u>			<u>Tws. North Ranges East</u>								
564	<u>3062</u>	550	34-18N- 4E 660 FNL 2310 FEL	CE Cope #1 Bradshaw	4/71 4/72	4480GR	3206	Pre-cambrian meta	Miss Devonian Cambrian Precambrian	486 R 525 R 1040?R 1110 R	D & A  PIPE: 9" @ 90'
565	<u>3007</u>	<u>458</u>	28-18N- 5E SE NE 1653 FNL 340 FEL	AA Hopkins #28-1 Fed	5/68 6/68	4600GR	1308	Pre-cambrian granitic	Supai Miss Devonian Cambrian Granite	Surf 648 R 798 R 1292 R 1306 R	D & A  PIPE: 7" @ 1131' w/35 6" @ 1308' w/50  LOGS: DEN, GRN  Rotary to 855'-cable tools to TD.
					Perf 12 shts 1271-1277 Perf 6 shts 1299-1302 Set BP 1239 Perf 10 shts 1233-1238 Set BP 1225 No fluid rec.						
566	<u>2545</u>	<u>487</u>	31-18N- 5E 650 FSL 850 FEL	AA Hopkins #1 Hallermund (Strat)	2/69 4/69	4575KB	1215	Pre-cambrian granitic	Supai Miss Devonian Cambrian Granite	Surf 530 R 669 R 1165 R 1212 R	D & A  PIPE: 8 5/8" @ 50' 6 5/8" @ 872' w/50 5 1/2" @ 1071' w/75  Rotary to 872'-cable tools to TD.
567	<u>2530</u>	<u>469</u>	34-18N- 5E SW NW 1868 FNL 819 FWL	AA Hopkins #34-1 Fed	10/68 11/68	4375GR	500	Miss	Supai Miss	Surf 479 R	D & A  PIPE: 6 5/8" @ 50'
568		495	34-18N- 5E 493 FNL 1685 FWL	AA Hopkins 34-2 Fed	5/69 5/69	4400GR	1217	Pre-cambrian granitic	Alluvium Supai Miss Devonian Cambrian Granite	Surf 25 R 504 R 662 R 1167 R 1215 R	D & A  PIPE: 10 3/4" @ 51' w/60  LOGS: IES, DEN

569	<u>2534</u>	<u>479</u>	34-18N- 5E 1880 FNL 819 FWL	AA Hopkins #34-1x Fed	11/68 12/68	4375GR	1138	Pre- cambrian granitic	Supai Miss Devonian Cambrian Granite	Surf 479 R 630 R 1128 R 1137 R	D & A  PIPE: 10" @ 10' 8" @ 50' 7" @ 500' 4 3/4" @ 1135'  LOGS: IES, DEN, ACS-VEL, FRF-MS
						Perf 136 shts 1098-1132 350 gal acid BP @ 1095 Perf 36 shts 1070-1088 950 gal acid BP @ 950 Perf 26 shts 905- 918 850 gal acid No fluid.					
570	<u>2552</u>	<u>482</u>	34-18N- 5E 1940 FNL 819 FWL	AA Hopkins #34-1Y Fed	12/68 12/68	4375GR	1238	Pre- cambrian granitic	Miss Devonian Cambrian Granite	504 R 662 R 1167 R 1215 R	D & A  PIPE: 10 3/4" @ 50' 7" @ 1032' 4 1/2" @ 1150'  Rotary to 1032'-cable tools to TD.
571	<u>2546</u>	<u>493</u>	8-17N- 5E W/2 NW 1320 FNL 330 FWL	Hopkins #1 Coconino Cattle Co (Strat)	4/69 5/69	4412KB 4400GR	1195	Pre- cambrian granitic	Supai Miss Devonian Cambrian Granite	Surf 512 R 696 R 1120 R 1193 R	D & A  PIPE: 10 3/4" @ 60' w/60 7" @ 1060' w/200
572	<u>3041</u>	<u>551</u>	16-17N- 5E 1190 FSL 1980 FWL	Cathedral #1 Fed	4/71 5/71	4430GR	1015	Pre- cambrian granitic	L. Supai Miss Devonian Cambrian Granite	Surf 306 R 473 R 953 R 1014 R	D & A  PIPE: 8 5/8" @ 20' w/3 6 5/8" @ 858' w/88  Fresh water 924-953'.
573	<u>2547</u>	<u>492</u>	34-17N- 5E SW NW 2283 FNL 403 FWL	Hopkins #1 Frye (Strat)	4/69 10/69	4000GR	1405	Pre- cambrian granitic	Supai Miss Devonian Cambrian Granite	Surf 582 R ? ? 1370 R	D & A  PIPE: 10 3/4" @ 50' w/60 7" @ 1051' w/200  Fresh water reported-100 bbls/hr @ 940'.
574	-	485	3-17N- 4E NE NE 641 FNL 662 FEL	HK Riddle #3A Fed	1/69 5/70	4510	1242	Cambrian?	Miss Devonian	560 R 740 R	D & A  PIPE: 9 5/8" @ 321' 7" @ 827'  Lost circ 740-1242-unable to cement 7" casing.  Oil show reported in Devonian.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OCC						BOTTOM	TOPS		
575	-	285	3-17N- 4E NE NE 660 FNL 660 FEL	Harless 36-C Fed	10/64 10/68	4443GR	340?	Supai?		D & A Drld w/cable tools.	
576	<u>2003</u>	<u>169</u>	4-17N- 4E SW NW 1988 FNL 990 FWL	Harless #1 Fed S/a #9	12/61 10/68	4415GR	1762?	Pre- cambrian granitic	Miss Martin Granite	503 A 655 A 1203 A	D & A
577	<u>2544</u>	<u>278</u>	4-17N- 4E NW NW 580 FNL 900 FWL	Harless #27B-Fed	4/64 10/68	4412GR	1958?	Pre- cambrian	Miss Devonian Cambrian? Precambrian in @	520 S 660?S' 1164 S 1435*P	D & A Oil show (?) reported. LOGS: SON, IES * Samples start
578	-	267	4-17N- 4E NW NW 660 FNL 900 FWL	Harless #27 Fed	2/64 10/68	4415GR	1294	?			D & A
579	<u>2008</u>	<u>293</u>	5-17N- 4E NE SW 1980 FSL 1980 FWL	Yucca Pet #1 Crary	10/64 10/64	4386KB 4376GR	1663	Pre- cambrian granitic	Miss Devonian base Precambrian in @	644?R 752?S 1303?S 1656 R	D & A CORE: 1656-1660 (granitic) PIPE: 10 3/4" @ 110' w/100 LOGS: IES, FOR-DEN
580	<u>1190</u>	<u>96</u>	20-16N- 4E NW NW 560 FNL 560 FWL	Cottonwood Oil #1 State	9/59 10/59	3412GR	1485	Tertiary			D & A PIPE: 16" @ 212' w/50 12 3/4" @ 925' w/300
581	615	-	9-13N- 5E NW NW	Ariz Verde Oil #2	1913		1225	Tertiary? Volcanics?	Igneous	1225 R	D & A Brief Smpl Des
582	616	-	14-13N- 5E NW NW	Ariz Verde Oil #1	1913		1625	Tertiary? Volcanics?	Igneous	1625?R	D & A Brief Smpl Des
583	-	-	<u>Ews. North Ranges West</u> 17-24N- 8W	Santa Fe RR			1785	Granite			Water Well

170

584	<u>376</u>	-	15-22N- 8W SW SW SW	El Paso Nat #1 Seligman	3/55 4/55	5505	1104	Cambrian	Alluvium Miss-Dev Cambrian Muav? Bright Angel Tapeats	Surf 30?S 490?S 665 A 743?A 970 A	Water Well  PIPE: 13 3/8" @ 42' 8 5/8" @ 1104'  Perfs: 756-806, 856-1104  LOGS: Smp1 Des
585	<u>1309</u>	<u>141</u>	23-20N- 3W NW	Sierra Drlg #2 Campbell	3/61 4/61	5580DF	1155	Tapeats	Miss Devonian Tapeats	340 PI 640 PI 1085 PI	D & A  Oil show reported in Miss.
586	<u>1308</u>	<u>133</u>	23-20N- 3W SW SW 350 FSL 250 FWL	Sierra Drlg #1 Campbell	11/60 2/61	5558GR	1182	Tapeats	Supai Redwall Martin Tapeats	Surf 270 R ? 1179 R	D & A  Oil show (?) reported in Devonian.  LOGS: IES
587	-	*	20-18N- 2W S/2	Chino Val Devel #1 Walton-State	8/38 1940	4480	2060	Pre- cambrian granitic	Miss Devonian Tapeats Precambrian	550?R 1070? ? 2060 R	D & A  Drld w/cable tools.  LOGS: Smp1 Des  * Have samples
588	<u>2040</u>	<u>332</u>	26-18N- 2W NW NW 660 FNL 660 FWL	O'Donnel-Ewing #1 Fed	11/65 12/65	4550	1205	Tapeats or Pre- cambrian granitic	Devonian Granite?	295?R 845 S	D & A  PIPE: 10 3/4" @ 140' w/200 7 5/8" @ 633'  LOGS: GRN
589	-	-	27-18N- 2W E/2 SW SW	Aricopa #1 Puntenny	1938		460				D & A
590	635	-	27-18N- 2W SE SE SE	Anthony Oil #1 Discoverer (#1 Heslet)	1903	4487	2003	?	Alluvium?	Surf	D & A  Smp1 Des
591	14	*	27-18N- 2W SE SE SE	Chino Valley #1	1913		1800	Pre- cambrian granitic?			D & A  LOGS: Smp1 Des  * Have samples?
592	-	-	32-18N- 2W NE SE	England #3 #1 Sullivan		4385	1000				D & A  PIPE: 11 3/4" @ 100' w/75

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS	
593	-	-	34-18N- 2W NE NE	Aricopa Drlg & Min #1 Lyons	1940	4500	3010			D & A  Smpl Des
594	-	-	16-11N-10W	Klaner & Doolin	1958		1140			LOGS: RES
595	<u>3032</u>	<u>533</u>	3-10N-10W 1400 FNL 1247 FEL	El Paso Nat #1 Bullard Wash-Fed (Strat)	4/70 6/70	2266KB 2216GR	3831	Tertiary Alluvium Tertiary	Surf 1550 R	D & A  PIPE: 12 3/4" @ 37' 7" @ 2005' w/600  LOGS: SL, DIL, FOR-DEN, BHC/GR, SNP
596		330	5- 9N- 6W SE NE 3300 FSL 330 FEL	G&J Drlg #1 State	10/65 1/66	3025GR	2370	Cenozoic		D & A  Fish in hole  PIPE: 12 3/4" @ 39'
<u>Gila County</u>										
Tws. North Ranges East										
597	-	516	5- 4N-13E 1980 FNL 1980 FWL	EA Kerber #1 Fed	10/69 3/70	2668GR	480	Pre- cambrian Dripping Spring Quartzite	Alluvium Drip Sprg Qtz	Surf 360 R  D & A  PIPE: 12 1/2" @ 360'
<u>Graham County</u>										
Tws. South Ranges East										
598	-	-	17- 5S-24E NE SE	Alexander #1 Graham	1906	2730	1400	Cenozoic		D & A
599	643	-	30- 5S-24E NE NE?	Ashurst Oil #1	1928	2731	1247	Cenozoic		Artesian water  LOGS: Smpl Des



600	644	-	30- 5S-24E SW NE	Gila Oil Synd #1	1931	2730	2645	Cenozoic		Salt water @ 620-700' & 1515-1995'
										LOGS: Smpl Des
601	-	-	13- 6S-24E NE	Underwriters Synd #1 Mack	10/27 4/28		3767	Cenozoic?		PIPE: 24" @ 30' 20" @ 80' 12½" @ 680' 10" @ 1950'
										LOGS: SL
602	-	-	17- 7S-26E NW NW NW?	S. Pacific Water Well	1/06 3/07	2023?	1820	Cenozoic		Salt Water Smpl Des
603	-	-	6- 8S-26E SE NW	Idle #1 Healy	1913	2920 Est	1800	?		Hot artesian wtr reported at 1800'.
604	-	539	36- 9S-27E 650 FSL 1990 FEL	Tenny #1 State	7/69 6/70		630	Cenozoic		D & A Drid w/cable tools. PIPE: 18" @ 554' w/10
605	<u>3047</u>	<u>541</u>	36- 9S-27E 890 FSL 1960 FWL	Tenny etal #3 State	4/70 1/71	3230 Est	3500	Tertiary	gypsum in @ 2900 P	D & A PIPE: 18" @ 623' 13 3/8" @ 1195' 10" @ 1400' 8 5/8" @ 1825' 7" @ 2090' Left 600' 13 3/8" & 60' of 10' csg in hole.
606	-	540	36- 9S-27E SW SE 640 FSL 1990 FEL	Tenny #2 State	9/69 6/70	?	1090	Cenozoic		D & A Drid w/cable tools. PIPE: 18" @ 773' w/no cmt 16" @ 1085' w/no cmt
607	-	-	14- 9S-21E	Waggoner #3 Eureka	7/69 6/70	?	630	Cenozoic		D & A Drid w/cable tools. PIPE: 18" @ 554' w/10
608	-	-	20-10S-30E C	US Oil #1	1920		700			

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS
609	655	-	21-10S-29E SW NE	Whitlock #1 Penrod Fed	1930	3475?	521	Cenozoic	D & A PIPE: 8 3/4" @ 385' LOGS: Smpl Des
610	653	-	25-10S-28E SE SE	Bear Springs Oil #1 Allen	1929	3350	1555	Cenozoic	D & A PIPE: 12 1/2" @ 442' 10 3/4" @ 1008' 8 1/2" @ 1517' LOGS: Smpl Des
611	-	-	35-10S-28E NW SE	US Oil	1917		900		
612	654	-	36-10S-28E NE NE	Whitlock Oil #1 State	1927	3550 Est	1925	Cenozoic	Fresh Artesian water- 1363-1369 PIPE: 8 1/2" @ 1405' 6 1/2" @ 1837' LOGS: Smpl Des
613	658	-	28-11S-28E SW NE	Bear Springs Oil #1 Reed	1928		670	Cenozoic	D & A LOGS: Smpl Des
614	-	-	28-11S-28E	Perry Howle #1	1912		1100		
615	656	-	6-11S-23E NE NW	Hooker etal #1	1930	4400	1985	Cenozoic	D & A LOGS: Smpl Des
616	<u>2029</u>	<u>249</u>	2-11S-22E SE SE 660 FSL 660 FEL	Ram Oil #1 Sierra Bonita	11/63 8/65	4425GR	1823	Cenozoic	D & A Lost Hole PIPE: 12 3/4" @ 750' w/50 10 3/4" @ 1410' 8 5/8" @ 1732'

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS	
<u>Yuma County</u>			<u>Tws. North Ranges West</u>							
617	-	-	6-10N-14W SE ?	Sutton #1 Johnson	1946		400	Cenozoic		D & A PIPE: 6" @ 100' 5" @ 360'
618	<u>2521</u>	<u>457</u>	20- 8N-13W 660 FSL 660 FWL	El Paso Nat #1 Fed-Butler (Strat)	4/68 4/68	1743KB 1727GR	1358	Pre-cambrian meta	Alluvium Precambrian gneiss & schist	Surf 1347 A CORE: 1262-1266, 1347-1358 LOGS: IES, GRN, AC
619	<u>2538</u>	<u>462</u>	10- 7N-19W 643 FSL 710 FEL	El Paso Nat #1 Fed-La Posa-B (Strat)	6/68 6/68	838KB 833GR	1401	Tertiary?		D & A CORE: 880-896, 1058-1069, 1225-1238 LOGS: IES, GRN, BHC/GR, DM, MUD
620	<u>2522</u>	<u>459</u>	24- 7N-19W NE NW 660 FNL 1980 FWL	El Paso Nat #1 Fed La Posa-A (Strat)	4/68 6/68	885KB 880GR	2815	Pre-cambrian?	Bouse Basement	850 R 2328 R 2355 K D & A CORE: 2030-2034, 2403-2410, 2747-2755 Perf: 1211-1221' Ran swab 3 times-rec sand & some water PIPE: 4½" @ 1460' w/184 LOGS: IES, GRN, BHC/GR, DM, MUD
621	-	-	18- 4N-15W	Perry, Sutton Granville	1948		1242			
			<u>Tws South Ranges West</u>							
622	-	-	18- 7S-12W SW NW SW	Mitchell #1 Dunford	1943		2000	?	'Red Lava'	726 R D & A Described as "hot" below 1250'

623 1676 156 16- 7S-13W Desert Drig #1 9/61 418KB 6770 Cenozoic?  
 NE NE State 3/63  
 660 FNL (Orig Keoughan  
 660 FEL Drig Co)

D & A

PIPE: 10" @ 233'

LOGS: ACS-GR, IES

Gas show reported at 6550'.

Drill Stem Tests

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 3499-3540: Op 2 hr, rec 375' MGSW, FP 10-20#, HP 1700-1700#.  
 3685-3721: Op 35 min, rec 30' drlg mud, ISIP 925#/10 min, FP 50-55, HP 1830-1830#.  
 3865-3920: Op 1 hr 15 min, rec 150' sli GCM?, ISIP 1475#/10 min, FP 100-110#, HP 2000-2000#, ISIP 700-715#.  
 5590-5670: Op 90 min, rec 1512' OCSW, FP 100-700#, ISIP 400#/15 min, FSIP 2275#/15 min, HP 3000-3000#.  
 5700-5793: Op 90 min, rec 3000' SW, FSIP 2470#/30 min, FP 300-125#.  
 6175-6212: Op 1 hr 30 min, rec 1500' OCW, FP 100-950#, SIP 1460#/60 min, HP 3320#.

624 - - 4- 8S 13W Loftus-Baird 1928 2630 ?  
 NE NW #1 Stoval

D & A

PIPE: 18" @ 176'  
 12½" @ 1000'  
 10 3/4" @ 2600'

LOGS: Smp1 Des, SL

625 1181 45 15- 8S-22W Gila Valley Oil 8/57 179KB 2140 Cenozoic  
 NE SE #1 Kamrath 11/59 173GR  
 2247 FSL  
 840 FEL

D & A

PIPE: 8 5/8" @ 434'  
 5½" @ 1260' w/75

LOGS: ES

626 - 62 15- 8S-22W Gila Valley Oil 380  
 SE SE #2 Kamrath

627 - - 32- 8S-23W Yuma Basin 1926 1815  
 SE #1 Sinclair

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
628	<u>358</u>	24	19- 9S-23W SW NW 2310 FNL 990 FWL	Colo Basin Asso #1 Elliott (S/a Newcomber & Pasquineilli)	10/54 11/54	110	3255	Pre- Cambrian?	Granite	3153 R	D & A  PIPE: 11 3/4" @ 401' w/250
629	<u>301</u>	-	31-10S-23W 660 FNL 660 FEL	Stewart #1 Fed	7/53 6/54	194	3660	Cenozoic			D & A  PIPE: 22" @ 30' 10 3/4" @ 426'
630	<u>385</u>	27	24-10S-24W NW SW 2970 FNL 330 FWL	Colo Basin #1 Fed	11/54 1/55	177	6015	Tertiary	"Marine or brackish water"	3010-4010 R	D & A  PIPE: 11 3/4" @ 400'  LOGS: ES
631	<u>202</u>	9	35-10S-24W NW NW	Hickey & Son #1 Fed	1952	160 Est	940	Cenozoic			D & A
632	-	-	35-10S-25W NW NW	USGS #17 LCR* Project	1/64 2/64	90 Est	2946	Tertiary?			Water Well  PIPE: 24" @ 24' 8" @ 1948'  LOGS: ES  Perf: 520-1398', 1438-1998'  * Lower Colorado River
633	<u>37</u>	-	11-11S-25W NW NE	Yuma Valley Gas & Oil #1 Musgrove	7/39 6/40	100 Est	4868	Tertiary	Bouse	3395 R	D & A  CORE: 1098-1122, 1254-1270?, 1984-2025, 2283-2293, 3318-3330  PIPE: 12 1/2" @ 174' 10 3/4" @ 1650' 8 1/2" @ 4868'  LOGS: ES, Smpl Des
Drill Stem Test											
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3250-3330: Op 30 min, rec 800' mud.											

Maricopa County		Tws. North Ranges East									
634	<u>261</u> <u>16</u>	7- 5N- 4E SE NW	Landrum Gabrielson #1 Salyer	1953	1825 Est	1040	Cenozoic?	"All Alluvium to Precambrian"	(PI)	D & A PIPE: 10 3/4" @ 187'	
635	<u>262</u> <u>14</u>	14- 5N- 3E NE NW	Landrum Gabrielson #1-14 State	1/53 2/53	1630 Est	1146	Cenozoic	"Conglomerate	218-1136" (PI)	PIPE: 16" @ 73' 12 3/4" @ 204'	
636	<u>52</u> -	8- 4N- 4E SW SW	Glenn Oil #2 State	2/49 4/50	1750	4520	Cenozoic	"All Alluvium"	(PI)	Lost hole PIPE: 12 1/2" @ 1645' 8 5/8" @ 3068'	
637	<u>130</u> -	8- 4N- 4E SE SW 549 FSL 1658 FWL	Biery #1 State	3/51 4/51	1720	5396	Cenozoic?			D & A Lost hole CORE: 5394-5396 PIPE: 13 5/8" @ 513'	
638	<u>4</u> -	13- 4N- 4E NW SW 3000 FNL 840 FWL	Campbell #1 Pierce	5/50 8/50	2095	1585	Cenozoic	"All in arkose"	(PI)	D & A PIPE: 17 1/2" @ 175' 13 3/4" @ 844' 11 1/8" @ 999' 9 5/8" @ 1500'	
639	<u>36</u> -	2- 3N- 4E NE NW	Glenn Oil #1 State	1948		4159	?			D & A PIPE: 12" @ 218' LOGS: E, Smp1 Des	
640	- -	32- 3N- 1E NW SE NE	US Bur Rec CAP	4/65 5/65	1096GR	2000	Cenozoic	Recent Alluvium Surf Younger Alluvium 80 B Quat Alluvium 260 B Quat-Tertiary 502 B Tertiary 1054 B*		Test hole LOGS: EL, SL * Siltstone & sandstone	
641	- -	30- 2N- 4E NE NW	Totweiler #1 Camelback	1906 6/07		2818	Cenozoic			D & A PIPE: 12 1/2" @ 148' 10" @ 556' 5 5/8" @ 1548' LOGS: Smp1 Des	

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS	
SEQ	ABM	OGC						BOTTOM	TOPS		
642	<u>3</u>	-	30- 2N- 4E SE SW	Newcom #1 Langley	1949	1190	1050?	Cenozoic		D & A  LOGS: Smpl Des	
643	-	-	5- 1N- 4E NW SW	American Union Pet	1931	1210	600	Cenozoic	"All alluvium" (PI)	D & A	
644	498	-	2- 1N- 3E SE SE	Peoples Oil #1 Gardiner	7/39 7/45	1200	3550	Cenozoic		D & A  LOGS: Smpl Des	
645	-	-	13- 1N- 3E NW NW SE	US Bur Rec CAP	10/64 10/64	1115 Est	757	Cenozoic?	Alluvium Surf Cret*-Tert 158 B Sandstone & siltstone with dips up to 50 degrees.	Test hole  CORE: Approx 10' each 50'  LOGS: SL  * Probably Tertiary	
646	-	-	<u>Tws. North Ranges West</u> 19- 5N- 2W NW SW	Wucherer et al			500				
647	-	-	33- 5N- 3W NE NE	Robertson #1 Wittman	1946	1625	4365	Tertiary? Volcanics		D & A  Lost hole	
648	-	-	33- 5N- 3W 245 FNL 2095 FWL	Robertson #2 Wittman	5/46 1948	1620 Est	5000	Tertiary? Volcanics	Valley Fill Conglomerate Volcanics	Surf 3100 PI 3800 PI	D & A  PIPE: 10" @ 1000'  LOGS: Smpl Des  "Water temp: 127°"
649	-	-	25- 4N- 1W SW SW SW	US Bur Rec CAP	3/65 4/65	1208	1990	Cenozoic	Sand & gravel @ TD granitic clasts above 1040' & volcanic clasts below 1040' (B)	Test hole  CORE: approx 10' every 50'  LOGS: SL	

650	632	-	25- 4N- 2W SE NE	Tannehill #1 Beardsley	1923		3350	Cenozoic?				D & A
												Water Temp: 114°
												LOGS: Smpl Des, SL
651	-	-	32- 3N- 1W	US Bur Rec CAP	2/66 3/66	1115 Est	2003	Cenozoic	Alluvium andesitic or basaltic gravel Clay, silty & sandy, red brown, apparent dips to 45 degrees.	Surf 650-750 (B) 1965 TD		Test hole
												CORE: Approx 10' every 50' from 450'
												LOGS: EL, SL
												Plant stems reported 1390-1998'.
652	-	-	1- 2N- 1W	United Metro #2 Water Well	11/69	1066KB 1060GR	1318	Tertiary? salt	Alluvium salt	Surf 1200 K		Water Well
												LOGS: IES, FOR-DEN, ML-CAL
653	<u>2897</u>	548	2- 2N- 1W NW SW 1735 FSL 556 FWL	SW Salt Co #2 Roach-Baker (Strat)	10/70 11/70	1085GR	3425	Tertiary? salt	Alluvium basalt? anhydrite salt	Surf 850 P* 950 P* 1000 P*		Brine Well
												CORE: 3412-3425
												PIPE: 20" @ 17' w/5 10 3/4" @ 1300' w/350
												* Smpl tops
654	<u>2531</u>	527	2- 2N- 1W 554 FSL 707 FWL	SW Salt Co #1 Roach-Baker (Strat)	10/68 11/68	1085GR	4503	Tertiary? salt	Alluvium basalt? anhydrite salt	Surf 672 P 800 P 880 P		Brine Well
												CORE: Two feet in salt
												PIPE: 6" @ 880' w/120
												LOGS: IES, SNP, DEN
655	<u>207*</u>	-	19- 2N- 1W NE NE NW	Goodyear Farms #19E	4/53 12/53	1195 Est	2784	Tertiary? salt	Alluvium salt	2318 K		PIPE: 20" @ 1282' 11 3/4" @ 2784'
												LOGS: Smpl Des
												* Samples to 2240- Hole apparently deepened
656	-	-	33- 1N- 4W SE SW	Reaves #1 King	1940	905GR	1780	Cenozoic?	"All alluvium"	(PI)		



IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS
657	<u>12</u>	-	34- 1N- 4W NW NW	Reaves #1 Fuqua	2/39 8/39	940	4117	Cenozoic?	LOGS: Smp1 Des
658	-	-	34- 1N- 5W C W/2	Dixie Oil #1 State	1947		3505	?	
659	-	-	34- 1N- 6W	Wilson	1948		1413	Cenozoic "All alluvium"	(PI) Water well
			<u>Tws. South Ranges East</u>						
660	-	-	27- 1S- 6E NE SE SE	US Bur Rec CAP	7/64 9/64	1297 Est	1940	Cenozoic Silty clay 1590-1940 (B) interbedded gypsum, salty taste. Apparent dips to 15 degrees.	Test hole CORE: 300-800-otherwise approx 10' every 50' LOGS: SL, EL Bottom hole. T 117°F.
			<u>Tws. South Ranges West</u>						
661	-	171	30- 2S- 9W NW SW 3116 FNL 573 FWL	Montezuma #1 Fed-A	3/62 7/62	1227	248?	Cenozoic Valley Fill to TD	(PI) D & A Cable tools junk in hole PIPE: 12" @ 110' w/75
662	-	208	30- 2S- 9W NW SW 3116 FNL 585 FWL	Montezuma #1A Fed-A	7/62 4/64	1225GR	441	Cenozoic?	D & A Cable tools PIPE: 12½" @ 15'
663	-	-	33- 5S- 4W SW SE SE	US Bur Rec CAP	5/65 5/65	818 Est	1782	Cenozoic Conglomerate 1719-1782 (B) clasts largely non-volcanic crystallines.	Test hole CORE: Approx 50' each 50' LOGS: SL, EL

<u>Pinal County</u>		<u>Tws. South</u>	<u>Ranges East</u>							
664	<u>198</u>	5	17- 1S- 8E SE SE 660 FSL 660 FEL	Robison-Mason #1 Nichols	9/51 5/56	1535	2836	Pre- cambrian? granitic	Precamb granite 1060?K	D & A PIPE: 8 5/8" @ 35' LOGS: ES
665	-	-	30- 1S- 8E NE NE SE	US Bur Rec CAP	8/64 9/65	1490GR	1929	Cenozoic	Sand & gravel 1580-1929 (B) majority of clasts are volcanic	Test hole CORE: Approx 10' each 50' LOGS: EL, SL
666	<u>19</u>	*	32- 2S- 10E SW	E Lantron Oil #1 State	1949		1020	Cenozoic		D & A LOGS: Smp1 Des * Have samples
667	-	-	9- 4S- 3E SE SE SW	US Bur Rec CAP	4/64 6/64	1148 Est	1777	Cenozoic	Gypsiferous 660-1490 conglomerate 1690-1777 Largely unconsolidated with granitic clasts.	Test hole CORE: Approx 10' every 50' LOGS: SL
668	<u>67</u>		36- 4S- 3E NE NW 660 FNL 1980 FWL	Robison-Mason #1 Harbor	12/49 1/51	1195	3642	Cenozoic?		D & A Lost hole PIPE: 12 1/2" @ 25' LOGS: Smp1 Des
669	-	-	25- 4S- 9E SE SW 820 FSL 2505 FWL	Schoenheit #1 Moorhouse	4/45 1945	1462DF	415	Cenozoic		D & A PIPE: 10" @ 175' 8" @ 315'
670	-	-	8- 5S-14E S/2	Hackberry	1905		700?			D & A

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
671	260	15	31- 5S-10E SW SW	Western Oil Fields #1 Fed	3/53 5/53	1625?	5142	Cenozoic? Pre- Cambrian?	Conglomerate or basement?		D & A  PIPE: 10 3/4" @ 795'  LOGS: SL
672	-	-	18- 6S- 8E SE SE SW	Crouch Drillers #1 Holland	6/64	1438KB 1430GR	3243				D & A  LOGS: IES
673	645	-	25- 6S- 7E SE SE	Casa Grande Dev #1 Laveen	9/44 9/45	1474	4742	Tertiary? Pre- Cambrian?			D & A  PIPE: 13 3/8" @ 62' 7" @ 3033' 4 3/4" @ 3700'  LOGS: Smp1 Des
674	-	-	19- 6S- 5E NE SE SE	US Bur Rec CAP	6/65 6/65	1338	1780	Cenozoic	Conglomerate loose to well cemented granitic clasts	1070-1780 (B)	Test hole  CORE: Sporadic  LOGS: SL, EL
675	-	-	21- 6S- 3E NE NW NW	US Bur Rec CAP	12/63 1/64	1335 Est	1803	Pre- Cambrian? granitic	Gravelly Granodiorite (partially cored)	1780-1803	Test hole  CORE: Approx 10' every 50'  LOGS: SL, EL
676			22- 7S- 8E NW NE NW	Hatchett #1 McFarland	1945	1500	1260	Cenozoic			D & A  LOGS: Smp1 Des
677	-	-	25- 7S- 8E	US Bur Rec CAP	7/63 9/63	1570 Est	1944	Cenozoic	gypsum* dirty halite dirty	1934-1936 (B) 1936-1944 (B)	Test hole  CORE: Most of section  * Contains a spore-pollen assemblage. Jim King of Univ of Arizona says " Plio-pleistocene"
678	-	-	31- 7S- 8E NE NW NW	US Bur Rec CAP	2/65 2/65	1535	828	Cenozoic	Silt & clay	778-828 (B)	Test hole  CORE: Most of section  LOGS: SL, EL

679	650	-	32- 8S-17E NE NE SE	San Pedro Oil #1 Smith	2/30 12/30	2835 Est	1485	Cenozoic		D & A LOGS: Smpl Des
680	<u>22</u>	*	25- 8S-16E SE SW SE	Santa Maria Expl #1	6/48 7/48	2910	2144	Cenozoic?	Conglomeratic at TD	D & A LOGS: Smpl Des * Have samples
681	-	317	8- 8S-10E SE NW 1980 FNL 1980 FWL	Ari-Mass #1 State	6/65 6/67	1880GR	832	Cenozoic		D & A PIPE: 8 5/8" @ 380' w/85 6" @ 700' w/200
682	-	-	12- 8S- 7E	Creed #1 Cherry	1946 1948	1685GR	2700	Cenozoic		Water Well LOGS: ES
683	-	-	34- 9S- 7E	US Bur Rec CAP	10/63 11/63	1637 Est	2007	Cenozoic	Conglomerate 1200-2007 (B) reddish brown-clasts largely volcanic.	Test hole CORE: Approx 10' every 50' LOGS: SL, EL
684	<u>256</u> *	-	15-10S-10E SW NW NE	Ariz Pub Service #2	11/52		1950	Cenozoic		Water Well LOGS: Smpl Des * Samples to 710'
685	<u>206</u>	-	15-10S-10E SE SE NE	Ariz Pub Service	1953		2500	Cenozoic		Water Well LOGS: Smpl Des

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS	
<u>Pima County</u>			<u>Tws. South Ranges East</u>							
686	<u>209</u>	11	27-11S-10E NE SE 2340 FSL 300 FEL	Berry Min Dev #1 Fed	8/52 11/53	1920DF	3312	Tertiary? Cretaceous?	Samples suggest rhyolitic volcanics at TD. Smpl Des suggests "hard red beds".	D & A PIPE: 12 3/4" @ 400' LOGS: Smpl Des
687	<u>23</u>	-	6-12S-11E SW SW NE	Eloy Dev #1 State	2/46 10/49	1975	4950	Tertiary?		D & A LOGS: Smpl Des
688	<u>180</u>	<u>3</u>	33-18S-18E N/2 S/2 1850 FSL 2640 FWL	Cienega Basin #1 State	5/51 11/52	4800	2760	Cretaceous		D & A Cable tools Water Well LOGS: Smpl Des Smpls to 475'.
689	<u>336</u>	19	34-18S-18E 1200 FNL 500 FWL	Ted Jones #1 Juanita-State	1954	4860	2656	Cretaceous	Section cut by aplite dikes. This apparently called "anhydrite" in smpl des.	D & A PIPE: 12 3/4" @ 160' LOGS: ES, ML, Smpl Des
690	-	192	29-19S-18E NE NE 330 FNL 330 FEL	Mountain States Expl #1 State	7/62 1/64	4861DF	1050	Cretaceous		Lost hole
691	<u>2006</u>	<u>219</u>	29-19S-18E NE NE 300 FNL 610 FEL	Mountain States Expl #1A State	11/62 1/64	4862KB	4410	Cretaceous	Bisbee Group to TD (A)	D & A PIPE: 7" @ 940'
692	133	-	22-19S-17E SW SE 400 FSL 1600 FEL	Anderson #2 Empire	5/51 7/51	4500	1350			D & A PIPE: 7" @ 1120'

693 - - 22-19S-17E Arizona Oil 1942 4450 2991 Cenozoic D & A  
 SE SE #1 Boyce  
 LOGS: Smp1 Des

Santa Cruz Tws. South  
County Ranges East  
 694 686 - 9-20S-16E Jones et al 9/42 5175 3394 Cretaceous? Sand & gravel Surf D & A  
 NW SE #1 Larimore 9/43 Est Cretaceous? 700?P  
 1980 FSL PIPE: 12 3/4" @ 53'  
 1980 FEL LOGS: Smp1 Des, RES

695 - - 6-21S-18E Nogales Oil 1921 4925 1115 Tertiary D & A  
 SW & Gas  
 LOGS: Smp1 Des

187

Cochise County Tws. South  
Ranges East  
 696 27 \* 31-13S-31E Fitzwater 1947 3600 4440 Tertiary? Volcanics 2800?R D & A  
 SW SE #1 Thayer 5/51? Est volcanics  
 CORE: 23 cores, 1750'-4107', details unknown

Drill Stem Tests

3583-3700: Op 2 hr 35 min, rec 2520' fresh water & mud, FP 325-1082#, No SIP.

4030-4137: Op 2 hr 15 min, rec 1350' mud & 1350' fresh water, FP 350-1600#, SIP 1885#/15 min.

697 26 - 27-13S-30E Funk 1929 3600 6668 Cretaceous? Valley fill Surf D & A  
 SE SE NE Benevolent 1939 clastics Cretaceous? 2000?R  
 #1 Fee  
 CORE: Some taken  
 PIPE: 15" @ 60'  
 12" @ 650'  
 10" @ 2026'  
 8" @ 2772'  
 6" @ 4170'  
 4 3/4" @ 5000'

Cont'd next page

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	REMARKS								
SEQ	ABM	OGC					BOTTOM	TOPS									
Well No. 697 Cont'd																	
Comment																	
<p>-----</p> <p>In 1940 E. D. Wilson of the Arizona Bureau of Mines visited this site. He was shown some core that he declared as being of "Cretaceous aspect." He was told that water temps up to "274" degrees were encountered.</p>									LOGS: SL								
698	25	*	16-13S-28E SE SE NW	Bowie Oil #1	1924 2/25	3700	4100	Tertiary? Cretaceous?	Samples suggest clastics @ 3800'.  D & A								
Lost hole																	
PIPE: 16" @ 620' 12" @ 1450' 10" @ 2520' 8 1/4" @ 3273' 6 1/4" @ 3856'																	
LOGS: SL																	
* Have samples																	
699	-	-	31-13S-25E NW NE SW	Hill Drlg #10 Wilcox	1965	4185KB 4180GR	1936	Cenozoic	Water well  PIPE: 12 1/2" @ 1146'  LOGS: IES								
700	24	*	23-13S-24E SW SW SE	Waddell-Duncan #1 McComb	5/47 5/51	4238KB	6865	Cretaceous?	Samples contain an impure, indurated limestone at TD. Higher in hole difficult to separate conglomeratic materials from lithologies in place.  D & A								
Comments																	
<p>-----</p> <p>A sample log by G. A. Hemenway reports:</p> <table style="margin-left: 100px;"> <tr> <td>Alluvium</td> <td>Surf</td> </tr> <tr> <td>Fill</td> <td>550</td> </tr> <tr> <td>Tertiary</td> <td>4950</td> </tr> <tr> <td>Cretaceous</td> <td>5800</td> </tr> </table>										Alluvium	Surf	Fill	550	Tertiary	4950	Cretaceous	5800
Alluvium	Surf																
Fill	550																
Tertiary	4950																
Cretaceous	5800																
LOGS: GRN, CAL, TL, Smp1 Des																	
* Have samples																	
701	-	-	33-13S-22E NE SE 1810 FSL 664 FEL	Lloyd Duncan #3 State	2/59 12/59	4953	2185	Cenozoic	Water well  PIPE: 13 3/8" @ 54'w/20 8 5/8" @ 244' 5 1/2" @ 302'								

702	<u>357</u>	<u>23</u>	33-13S-22E NE SE 1980 FSL 330 FEL	Lloyd Duncan #1 State 1-x State (Deepening)	1955	4953	1435 5310*	Cenozoic Cenozoic?	Lost hole PIPE: 10" @ 353' 5 1/2" @ 5307' LOGS: GRN, IES, ML * Deepened - samples not available
703	660	-	29-13S-22E NW NW	Lloyd Duncan #2 Clayton	6/45 7/45	4852	1180	Granite? Granite 1175? PI	LOGS: Smp1 Des
----- Comment -----									
L. A. Heindl says that Lloyd Duncan claims that "granite" is "granite wash."									
704	-	-	29-13S-22E NE SE 1400 FSL 90 FEL	Lloyd Duncan #1 Clayton	6/45 7/45	4953	1000	Cenozoic	
705	671	-	16-14S-31E SW SE	San Simon #1 State	12/22 1923	3675	2000	Cenozoic	D & A PIPE: 16" @ 175' 10" @ 1189' 8" @ 1592' LOGS: Smp1 Des
706	669	-	34-14S-30E SE SE NW	Ryan et al #1 Ryan	9/30 2/31	4100	990	Cenozoic	D & A PIPE: 8 1/4" @ 404' LOGS: Smp1 Des
707	<u>337</u>	<u>21</u>	36-14S-30E NE NE 990 FNL 660 FEL	Ariz. Oil & Gas #1 State	5/54 8/54	3876KB 3866GR	7580	Cenozoic Samples at TD consist of rhyolitic fragments.	D & A LOGS: ML
708	<u>32</u>	*	4-14S-25E SW NE	Waddell & Duncan #1 Lawson	5/50	4225	2702	Cenozoic volcanics Samples at TD consist of dark, olivine-bearing volcanic fragments.	Flowing water well LOGS: Smp1 Des * Have samples
709	667	-	6-14S-25E NE NE	Geronimo Oil #1 Holliday	-	4100	428	Cenozoic	D & A PIPE: 10 3/4" @ 43' 8 1/4" @ 425' LOGS: Smp1 Des



IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY		REMARKS
SEQ	ABM	OGC						BOTTOM	TOPS	
710	666	-	6-14S-25E SE NE NE	Geronimo Oil #1 Brunning	10/30 1/31	4100?	770	Cenozoic		D & A  PIPE: 8 1/4" @ 127' 6 5/8" @ 769'  LOGS: Smp1 Des  Water @ 767-770 100 gal/min - Temp 98°F
711	668	-	9-14S-25E C SE SE	Wilcox Oil #1 Ariz. Sulphur Springs	1925	4175	2360	Cenozoic		D & A  LOGS: Smp1 Des
712	<u>31</u>	*	30-14S-24E NE SE SW	Francis Bros. #1 Proctor	1948 9/50	4185	4605	Tertiary? volcanics		D & A  PIPE: 7" @ 2652'  cable tools 2652-4605'  LOGS: Smp1 Des * Have samples
713	-	82	22-14S-21E SE NW 1865 FNL 2262 FWL	Bomak Oil #1 State	5/60 10/60	4765	440	Miss	Escabrosa 440 K	D & A
714	673	-	19-15S-26E NW SE	Benedum-Trees #1 Arzberger	4/31 10/31	4250	3298	Cenozoic?		D & A  PIPE: 20" @ 129' 15 1/2" @ 638' 12 1/2" @ 1468' 10" @ 2348' 8 1/4" @ 3285'  LOGS: Smp1 Des
715	-	103	1-15S-23E NW NW 239 FNL 615 FWL	Hatchett #1 State	12/59 10/61	-	670	Cenozoic		D & A  PIPE: 8 1/4" @ 320' 6" @ 620'  LOGS: Smp1 Des
716	255	-	9-16S-31E SW NE 1650 FNL 1650 FEL	Portal Drlg #C-9 State	5/50 10/53	4310	5353	Tertiary?	Quaternary Surf Tertiary 2000 R	PIPE: 16" @ 880' 12 3/4" @ 1600' 8 5/8" @ 3104'  LOGS: Smp1 Des

717	<u>814</u> <u>48</u>	10-16S-31E NE NE 660 FNL 440 FEL	L. A. Thomson #1 State	1/58 4/60	4256	5434	Tertiary rhyolite?	Gravels Rhyolite? 3060 P	PIPE: 12 3/4" @ 340' LOGS: ES
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Comments

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 TD samples are rhyolite fragments. Reported "quartzites" are believed to be finely crystalline, slightly porphyritic (biotite & feldspar) rhyolite.

718	- -	36-16S-24E NW NW	McCall #1 State	1928	4250	1510	Tertiary? Cretaceous?	"Fill" "Hard red rock" 1350 PI "Limestone & shale" 1470 PI	D & A PIPE: 14" @ 200' 10" @ 1350'
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719	<u>74</u> -	34-16S-20E NW SE	Pomerene #1	6/51 7/51	-	1000	Cenozoic	Water well PIPE: 12 1/2" @ 122' 8 1/4 " @ 610' LOGS: Smp1 Des
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720	678 -	17-17S-19E	Century Pet #1 Colglazier	1930 1931	4250	1560	Cretaceous? Fill Cretaceous? 120?	D & A LOGS: Smp1 Des
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721	<u>2023</u> 111	24-18S-24E SE SE 1665 FSL 700 FEL	Donnelly #1-A State	3/60	4680GR	1193	Cretaceous? Cretaceous? 110 R	D & A PIPE: 5 1/2" @ 30' LOGS: Smp1 Des
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722	- 104	24-18S-24E SE SE 660 FSL 660 FEL	Donnelly #1 State	3/60	4680	523	Cretaceous?	Lost hole
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723	<u>321</u> <u>12</u> <u>1659</u> <u>224</u>	25-21S-25E C SE NE	Allen #1 Davis	12/52 5/53	4261KB	5450	Tertiary igneous	Quaternary Quat-Tert. 215 A Plio saline beds 625 A conglomerate* 2260 A Plio fine- grained 2710 A Plio-Mio volcanics 3625 A Andesite porphyry 5400 A	Spls Start PIPE: 13" @ 50' 9 5/8" @ 385' w/375. LOGS: ES, MUD * Designated as "Gila."
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Comments

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 Work over deviated from old hole between 385-810'. New hole drilled to 4024'.

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	BOTTOM	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC									
724	<u>1148</u>	<u>34</u> 456	5-21S-24E NE NE 884 FNL 660 FEL	Southwest Oil #1 Davis-Clark	7/56 10/67	4595GR	3570	Martin	Alluvium Surf Cretaceous Bisbee Group Mural Morita Earp Horquilla Escabrosa Martin	200 R 600 R 1150 R 1575 R 2400 R 3335 R	D & A  Cable tools to 2455'  PIPE: 13 3/4" @ 515' w/25 10" @ 976' w/25 7" @ 1633' w/175 4 1/2" @ 3017'  LOGS: IES, CAL, ACS, GRN ACS-GR, ES Smpl Des, SL
Drill Stem Tests											
-----											
2570-2590: Rec 450' OCM - no pressures.											
2634-2660: Op 120 min, SI 60 min, FP 83-557#, FSIP 933#, HP 1168-1042#, rec 1100' drlg fluid - misrun.											
Work over: Gross perms 2229-2794, fraced w/4400 bbls fresh wtr. Swabbed load out. Could not lower fluid below 400' down while swabbing 50-70 BWP. Ran tubing to isolate best porous zone @ 2615-2548'. Swabbed 10 bbls WPH & sli show oil. Pumped 7-3-68 to 8-15-68 @ 300 bbls/day w/oil decreasing to zero-Abd.											
725	<u>1655</u>	<u>212</u>	5-21S-24E NW SE 2710 FNL 2310 FEL	Moncrief #1 Davis-Clark	10/62 2/63	4742DF	3525	Cambrian?	Cretaceous Morita Penn-Perm Miss Escabrosa Devonian Martin Cambrian?	Spis Start 1135 A  2520 A 3026 A 3510 A	D & A  PIPE: 10 3/4" @ 150' w/150  LOGS: IES, SL
726	<u>1654</u>	<u>222</u>	17-21S-23E SE SE 770 FSL 550 FEL	Moncrief #1 State	12/62 2/63	4755	2446	Paleozoic			Lost hole  PIPE: 10 3/4" @ 220' w/180  LOGS: RT, MUD, SL
727	<u>1311</u>	<u>93</u>	19-21S-23E NE SE 2050 FSL 1120 FEL	Fraser Oil #1 State	10/59 2/60	4479KB 4474GR	1899	Paleozoic	Probably start and finish in Penn-Perm Paleozoic carbonates & shales		D & A  PIPE: 12" @ 40' w/50  LOGS: GRN  Work over 1968.
Drill Stem Test											
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1285-1477: Op 1 hr, rec 960' muddy fresh wtr, FP 30-420#, SIP 420-420#, HP 660-660#.											

728	<u>132</u> *	5-22S-27E 1980 FNL 1980 FWL	Waddeil-Duncan #1 Murray	7/50 5/52	4238KB 4225GR	4400	Precambrian granitic	Alluvium Cret? Naco Miss Devonian? Cambrian Granite	Surf 540?P 1608 R 2305?R 3380 R 3520?R 4000 R	D & A  PIPE: 13 3/8" @ 237' w/125 8 5/8" @ 1970' 5 1/2" @ 3098' w/375  LOGS: ES, TS, SL * Have samples  Gross Perfs 2625-3000' - filled up 900' wtr & 900' mud.
729	- -	24-22S-27E NW NW 1025 FNL 630 FWL	Douglas Pet #1 Evans	9/48 11/48	4278	702	Cenozoic		D & A	
730	- -	27-23S-27E SW SE 660 FSL 2310 FEL	Owens & Goldman #1 Bruno	12/47 12/47	3950	680	Cenozoic		D & A  PIPE: 8" @ 130'  LOGS: Smp1 Des	
731	- -	34-23S-27E NW NW 660 FNL 860 FWL	Owens #1 Fourr	5/48	3960	475	Cenozoic		D & A	
732	<u>390</u> -	34-23S-27E NW NW 671 FNL 207 FWL	Cochise Oil #1 Goldman	12/55 1/56	3960	1000	Cenozoic		D & A  PIPE: 10" @ 250'  Used as water well.	
733	- 52	2-24S-31E NE NE 660 FNL 530 FEL	L. A. Thomson #2 State	4/58 11/58	4280GR	802	Permian	Permian at Surf	D & A  PIPE: 12 3/4" @ 410' w/400	
734	<u>3048</u> <u>564</u>	2-24S-31E NE SW 2200 FSL 2500 FWL	Guadalupe Expl #1 State	10/71 11/71	4355	5679	Cambrian	Colina Earp Horquilla Miss Paradise? Escabrosa Devonian Ord Montoya? Cambrian El Paso Bolsa	Surf 100 R 1296 R  2760 R 2840 R 4260 R  4555 R  4712 R 5545 R	D & A  PIPE: 18" @ 90' w/20 12 1/4" @ 1780' w/400  LOGS: DEN, GRN

IDENTIFICATION			LOCATION	NAME	DATES	ELEV	TD	STRATIGRAPHY	TOPS	REMARKS
SEQ	ABM	OGC						BOTTOM		
735	-	-	4-24S-23E NW NW	Ari-Tex Oil #1 Goins	5/45	4525	1005	Permian		

APPENDIX

<u>Apache County</u>			<u>Tws. North Ranges East</u>								
350	-	-	19-16N-24E NW NE 200 FNL 1750 FFL	ArkLa #1 NMA (Strat)	1965?	5502GR	2800	Supai	Moenkopi Coconino Supai evps potash* Ft. Apache Big "A" Amos Wash	360 R 645 R 1065 R 1146 R 1264 R 2180 P 2227 P 2640 P	D & A  Potash expl LOGS: GRN  * Potash zone 1264-1276.5  High GR kicks @ 102' & 172'.
360	-	-	23-15N-24E NW SW 2548 FSL 428 FWL	ArkLa #2 NMA (Strat)	? 1965	5575GR	2570	Supai	Coconino Supai evps Ft. Apache Big "A" Amos Wash	522 P 830 P 995 P 2050 P 2092 P 2540?P	D & A  Potash expl LOGS: GRN
363	-	-	18-14N-25E 642 FNL 2971 FFL	ArkLa #3 NMA (Strat)	? 1965	5472GR	2610	Supai	Coconino Supai evps Ft. Apache Big "A" Amos Wash	420 P 736 P 929 P 2031 P 2091 P 2560?P	D & A  Potash expl LOGS: IES, GRN, SON-GR
364	-	-	28-14N-25E SW SW 660 FSL 660 FWL	ArkLa #4-C NMA (Strat)	? 1965	5498GR	2488	Supai	Coconino Supai evps salt dolomite Ft. Apache Big "A" Amos Wash	322 P 642 P 794 P 910 R 1261 R 1947 P 2004 P 2457?P	D & A  Potash expl LOGS: GRN

<u>Navajo County</u>		<u>Tws. North Ranges East</u>										
473	-	-	21-16N-23E SW NE 1995 FNL 1995 FEL	ArkLa #12 NMA (Strat)	1965	5372GR	1295	Supai	Coconino Supai evps salt potash dolomite	400 P 700 P 914 P  956 R 987 R 1257 R	834 R	D & A  Potash expl LOGS: GRN
477	-	-	29-16N-23E SW SW 859 FSL 773 FWL	ArkLa #51 NMA (Strat)	1965	5377GR	1260	Supai	Coconino Supai evps potash dolomite	380 P 700 P 894 P 970 P 1239 R		D & A  Potash expl LOGS: GRN
487	-	-	25-16N-22E 2010 FNL 866 FEL	ArkLa #37 NMA (Strat)	1965	5279	1075	Supai	Coconino Supai evps salt potash dolomite	186 P 500 P 672 P 761 R 788 R 1048 R		D & A  Potash expl LOGS: GRN
501	-	-	12-14N-23E SE NE 2277 FNL 529 FEL	ArkLa #5 NMA (Strat)	1965	5521GR	1350	Supai	Coconino Supai evps salt dolomite	400 P 716 P 892 P  1019 R 1312 R	842 R	LOGS: GRN

Yuma County  
(Omission)

736	-	-	32-9S-23W SE SE	Yuma #1 Sinclair	1926		1815					
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## ARIZONA BUREAU OF MINES

W. H. DRESHER, Director

J. D. FORRESTER, Director Emeritus	H. W. PEIRCE, Geologist
S. B. KEITH, Geologist	D. D. RABB, Mining Engineer
R. T. MOORE, Principal Geologist	G. H. ROSEVEARE, Metallurgist
R. T. O'HAIRE, Associate Mineralogist	J. S. VUICH, Assistant Geologist

### SERVICES AVAILABLE FROM ARIZONA BUREAU OF MINES THE UNIVERSITY OF ARIZONA, TUCSON, ARIZONA

The ARIZONA BUREAU OF MINES was created and placed under the authority of the Arizona Board of Regents in 1915 by an act of the State legislature. The Bureau is directly charged with developing, maintaining, and disseminating to the people of Arizona information relating to geology, mining, metallurgy, and earth sciences generally. The Bureau's primary functions, therefore, are scientific investigation and public service activities comparable to those conducted by geological survey agencies and mineral experiment stations in other states. These primary functions are achieved through the following continuing programs:

1. Prepare and publish bulletins and circulars containing authoritative information on a wide range of topics of interest to prospectors, miners, and others concerned with the development of Arizona's mineral resources and industries. The bulletins are distributed free of charge to residents and at cost to nonresidents of Arizona upon request.

2. Classify mineral and rock specimens. Besides identifying rocks and giving the composition of minerals, the Bureau makes qualitative tests for important elements and answers inquiries concerning the probable market for and the economic value of material similar to samples submitted. This service is furnished free of charge providing the specimens originate within the State of Arizona; a charge of \$2 per specimen is made for samples submitted from outside the State. Spectrographic analyses and detailed microscopic determinations are furnished at established rates, a schedule of which will be submitted on request.

3. Conduct laboratory and pilot-plant metallurgical testing of mineral substances in cooperation with industries and individual mine operators in the State. Such tests are conducted on the basis of nominal charges to compensate for wear and depreciation of equipment needed in the experimentation.

4. Make geologic investigations and compile geologic maps and reports. Geologic maps of each county, on a scale of 1:375,000, have been issued and geologic reports on numerous mining districts have been made available as bulletins. In addition to maps and reports on counties and mining districts, comprehensive studies of basic problems in the geology of Arizona are being carried out in order that the maximum benefits may be derived by the people of the State by having a more complete knowledge of its geologic setting.

5. Maintain a working file of statistical records of mineral production in Arizona.

6. Develop well-log storage facilities and a library of data pertaining to oil and water wells drilled in Arizona.

7. Conduct state-wide commodity studies as to modes of occurrence and potential industrial value of various mineral materials.

8. Collect and file items relating to Arizona mines and minerals that appear in Arizona newspapers and in many technical periodicals.

The basic philosophy which obtains in the operation of the Arizona Bureau of Mines is that of providing for the people of Arizona educational services in the earth sciences which cannot be readily secured elsewhere, and furnishing advice and service about mineral occurrences which cannot be obtained conveniently from commercial sources.

An inquiry addressed to: Director, Arizona Bureau of Mines, University of Arizona, Tucson, AZ 85721, will bring a prompt response if further information is desired about the services which are available.