

REPORT OF INVESTIGATION NO. 88
UTAH GEOLOGICAL AND MINERAL SURVEY

INFORMATIONAL CORE DRILLING IN UTAH'S OIL-IMPREGNATED
SANDSTONE DEPOSITS, SOUTHEAST UINTA BASIN
UINTAH COUNTY, UTAH

In cooperation with U. S. Bureau of Mines

By

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February, 1974

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(1) Numbered at bottom right-hand corner

(2) Numbered from 1 to 50 in upper left

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INTRODUCTION

This program was undertaken under Grant No. GO122094 from the U.S. Department of the Interior, Bureau of Mines to the Utah Geological and Mineral Survey, dated June 15, 1972. Amount of the grant was \$77,200. Principal investigator was Howard R. Ritzma, Petroleum Geologist, Utah Geological and Mineral Survey.

Originally, the grant was to have been completed June 14, 1973, but various circumstances made necessary extensions to December 14, 1973. Work on several aspects of the project are still underway at this time.

PLAN OF OPERATION AND ACTUAL PERFORMANCE

The program as first outlined was divided into two parts:

PART I - Delineate extent of oil-impregnated sandstone deposits beneath cover by drilling coreholes as follows:

<u>Deposit</u>	<u>Planned</u>	<u>Drilled</u>
P.R. Spring deposit	7	13
Hill Creek deposit	3	3
Raven Ridge deposit	5	0
Rim Rock deposit	2	1
Northwest Asphalt Ridge deposit	2	0

PART II - Determination of differences in composition of oils between outcrop and cores from depth with increasing distance from outcrop within two deposits, one with steep dip and one with low dip:

P.R. Spring deposit (low dip)	4 coreholes
Rim Rock deposit (steep dip)	2 coreholes

As the program proceeded, the Raven Ridge deposit was not drilled because surface mapping of the deposit indicated that it was less favorable for delineation than originally considered. Beds were found to be thin and discontinuous and generally with lean oil impregnation.

Drilling in the Northwest Asphalt Ridge deposit also was not undertaken because of the lack of suitable locations on Federal or State lands and because it was found the area had been extensively core-drilled and most of the information was already available to the U.S. Bureau of Mines. It was decided not to waste funds duplicating this information.

One corehole was drilled in the Rim Rock deposit but indicated complex structural conditions and had little oil impregnation compared to nearby outcrops. It was decided not to proceed with the program here; this was the steep dip portion of Part II of the original plan of operation.

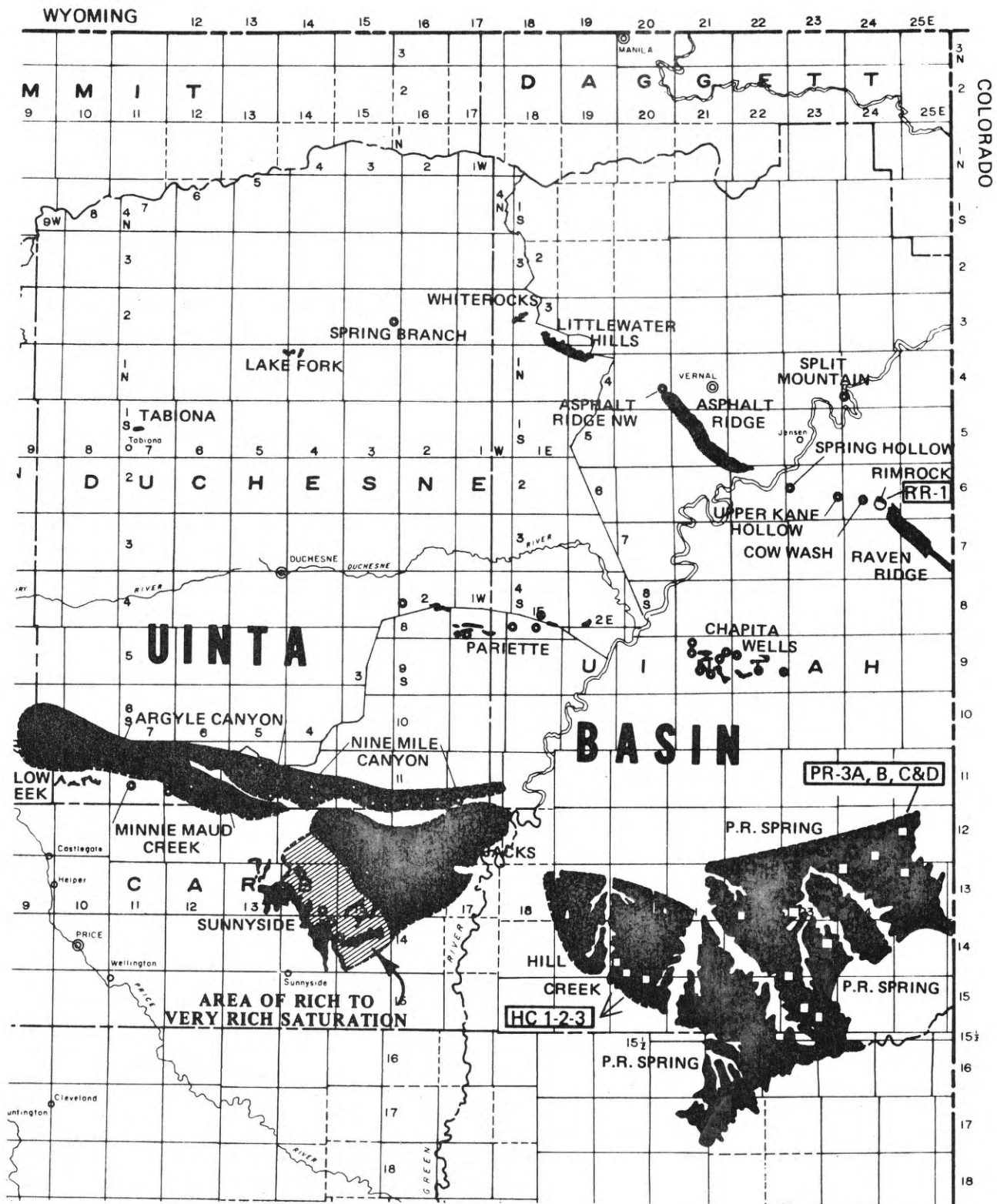
Alternate locations were investigated in the Littlewater Hills, Asphalt Ridge and Chapita Wells deposits but plans could not be consummated because of difficulty in obtaining permits, lack of suitable drill sites, excessive costs of long distance moves by the contractor, and the hazards of drilling and coring conglomerate zones at the Littlewater Hills and Asphalt Ridge deposits.

It was decided to concentrate as many locations as possible in the P.R. Spring deposit, and the low dip portion of Part II of the original plan of operation was successfully carried out with coreholes PR-3A, PR-3B, PR-3C (originally PR-3) and PR-3D. Considerable difficulty and delay was encountered in obtaining permits to drill on lands controlled by the U.S. Bureau of Land Management, and three holes were finally drilled on State of Utah lands as a substitute.

TIMING OF PROGRAM

It was originally planned to conduct most of the program through the summer and autumn of 1972. However, it was not possible to obtain a drilling contractor because of lengthy bidding procedures, and there were long delays in obtaining a Special Land Use Permit from the U.S. Bureau of Land Management. Special Land Use Permit No. U-20385 was applied for on September 5, 1972 and approved November 9, 1972. A drilling contractor was obtained on a tentative basis, but the whole program was shelved because of the approaching winter and postponed until the advent of Spring weather in 1973. In early Spring the first contractor asked to be relieved of his obligation to drill because of other long-term commitments, and the next lowest bidder was contacted and accepted the contract and began drilling and coring operations in early June 1973. Drilling ended on September 2, 1973.

Application for extension of the Special Land Use Permit was submitted on June 25, 1973 but no reply was received until September 12, 1973, at which time the Bureau of Land Management said the matter would be considered. By this time drilling had been completed--in some cases on locations with no valid permit; and it was decided that it was futile to try to obtain an extension for one or two more coreholes.



FROM U.G. & M.S. MAP 33

FIGURE 1

INDEX MAP, OIL- IMPREGNATED SANDSTONE DEPOSITS, UINTA BASIN, SHOWING LOCATIONS OF RR-1 AND HC 1,2,3 CORE HOLES IN RIM ROCK AND HILL CREEK DEPOSITS AND GENERAL LOCATIONS OF 13 CORE HOLES IN P. R. SPRING DEPOSIT.

Sorting of samples and distribution to the U.S. Bureau of Mines was completed by early October 1973, and all arrangements were made for analytical work by commercial laboratories by mid-October 1973. All analytical work by Core Laboratories, Casper, Wyoming was completed in early November 1973 and by Geochron Laboratories Division, Krueger Enterprises, Inc., Cambridge, Massachusetts, in early January 1974.

Assembly of field data, comparison of laboratory results, and compilation of field and laboratory data continues in early February 1974.

FIELD OPERATION AND SUPERVISION

CONTRACTOR

Himes Drilling Company, Inc.
2390 Highway 6 and 50
Grand Junction, Colorado 81501
Manager and Tool Pusher - Bud Himes
Driller - Roger Thompson
Helpers - Steve Wellman, Jim Wellman, Tim Himes

EQUIPMENT

Drill - Longyear 44 w/G.M. power mounted on Mack truck
Compressor - Joy w/G.M. power

OPERATION

Commenced: 6-11-73 Completed: 9-2-73

HOLE SIZE

6-1/4" surface w/4-1/2", 4-1/8" and 3-7/8" drill and coring bits.
2-1/8" and 2-3/8" cores cut at intervals chosen by geologist. All coring by Christensen diamond bits.

SAMPLES

10' and 5' intervals above core point and 5' from bottom of last core to total depth in some holes. Samples examined and described by P.R. Peterson, geologist in charge, under 10x or 30x binocular microscope.

DRILLING MEDIA

Water (natural mud) or air as dictated by conditions.

CORING

Prior to and into tops of all oil sands and thence to total depth except in some holes.

LOGGING

Lithology only. No mechanical logs run.

TESTING

None

CASING

Short surface conductor pipe only.

STATUS

All holes filled with mud, surface cemented and all locations cleaned up. All locations on Federal lands inspected and approved by Bureau of Land Management.

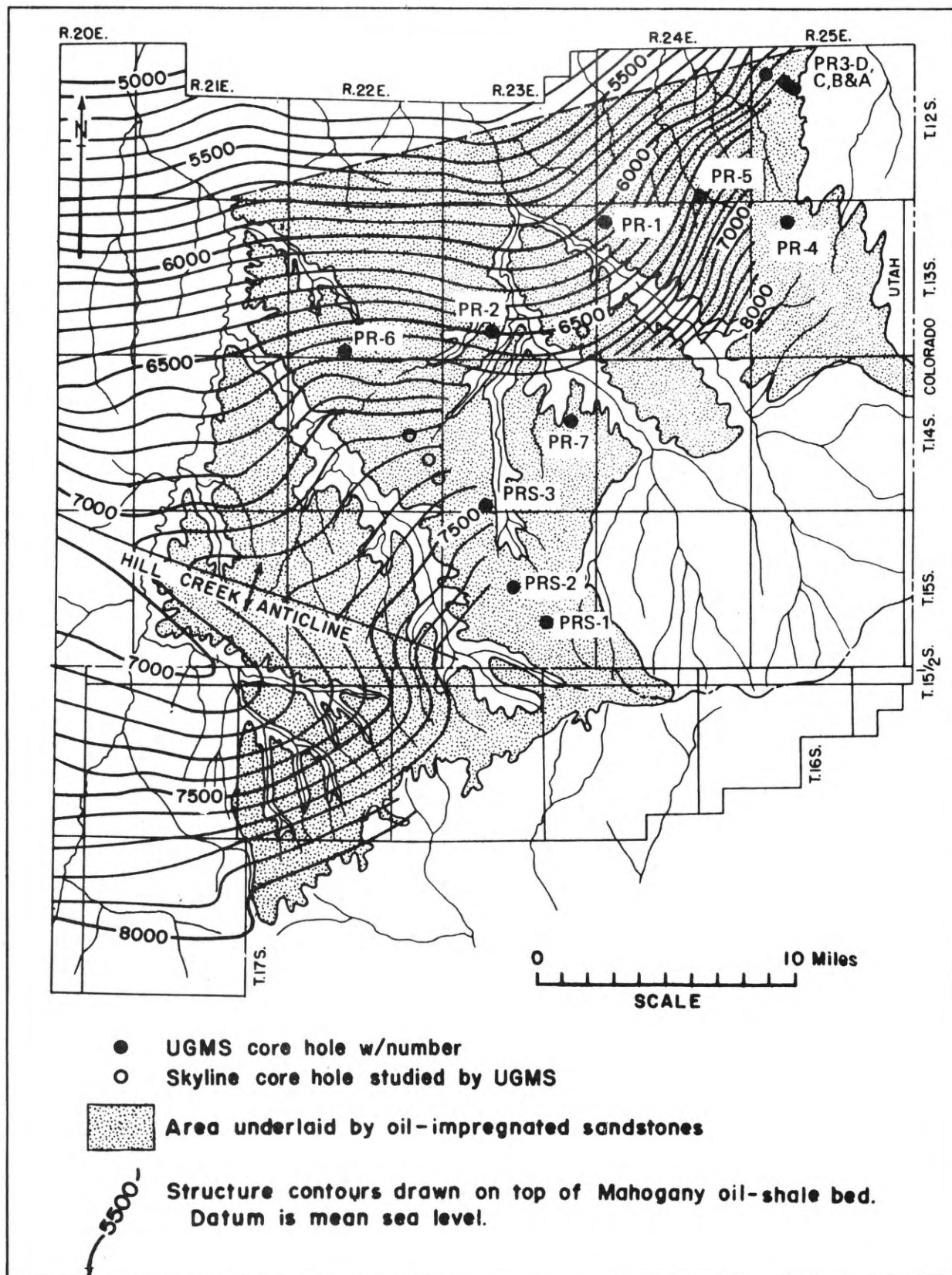


FIGURE 2

FROM GWYNN (1971)

INDEX MAP, P.R. SPRING OIL - IMPREGNATED SANDSTONE DEPOSIT,
SHOWING LOCATION OF UGMS CORE HOLES AND PREVIOUSLY DRILLED SKYLINE OIL COMPANY
CORE HOLES STUDIED BY UGMS.

GEOLOGICAL SUPERVISION

Geologist in Charge

Parley R. Peterson, Consulting Geologist

1940 Laird Drive, Salt Lake City, Utah 84108

Assistants

D. Craig Mann and Kelly Calder

SUMMARY OF OPERATIONS

OPERATOR: Utah Geological and Mineral Survey
103 Utah Geological Survey Building
University of Utah
Salt Lake City, Utah 84112

Operating under Grant No. GO122094 from U. S. Department of Interior, Bureau of Mines and with Special Land Use Permit U-20385, U. S. Department of Interior, Bureau of Land Management, Utah State Office.

See Figures 1 and 2 for maps of locations.

CORE HOLES: Rim Rock Deposit, Uintah County, Utah

RR-1 - Lot 2 (SE NW NE), Section 26, T6S, R24E, SLM
562' fNL, 1770' fEL (U. S. surface and minerals)
Elev.: 5451' gr.; Total depth: 246'
Spud: 6-12-73 Complete: 6-14-73

CORE HOLES: P. R. Spring Deposit, Uintah County, Utah

✓PR-1 - SW NE SW, Section 6, T13S, R24E, SLM
1719' fSL, 1687' fWL (U. S. surface and minerals)
Elev.: 6210' gr.; Total depth: 326'
Spud: 6-27-73 Complete: 7-7-73

✓PR-2 - SE SE SE, Section 29, T13S, R23E, SLM
578' fSL, 579' fEL (U. S. surface and minerals)
Elev.: 6346' gr.; Total depth: 202'
Spud: 7-8-73 Complete: 7-10-73

✓PR-3A- NW NE SW, Section 8, T12S, R25E, SLM
3138' fNL, 1582' fWL (U. S. surface and minerals)
Elev.: 6302' gr.; Total depth: 95'
Spud: 8-7-73 Complete: 8-8-73

PR-3B- NE NW SW, Section 8, T12S, R25E, SLM
3021' fNL, 1044' fWL (U. S. surface and minerals)
Elev.: 6361' gr.; total depth: 157-1/2'
Spud: 8-8-73 Complete: 8-10-73

PR-3 - SW SW NW, Section 8, T12S, R25E, SLM
(or PR-3C) 2600' fNL, 467' fWL (U. S. surface and minerals)
Elev.: 6430' gr.; Total depth: 317'
Spud: 6-18-73 Complete: 6-20-73

CORE HOLES: P.R. Spring Deposit, Uintah County, Utah (Cont.)

- PR-3D - SE SW NE, Section 7, T12S, R25E, SLM
2108' fNL, 1518' fEL (U.S. surface and minerals)
Elev.: 6512' gr.; Total depth: 416-1/2'
Spud: 8-11-73 Complete: 8-14-73
- PR-4 - NE SE SW, Section 5, T13S, R25E, SLM
992' fSL, 2055' fWL (U.S. surface and minerals)
Elev. 7187' gr.; Total depth: 195'
Spud: 6-21-73 Complete: 6-22-73
- PR-5 - NE SW NE, Section 34, T12S, R24E, SLM
1937' fNL, 1468' fEL (U.S. surface and minerals)
6437 Elev. 6420' gr.; Total depth: 274'
(Loc. plot) Spud: 7-24-73 Complete: 7-25-73
- PR-6 - SE SW SW, Section 33, T13S, R22E, SLM
6707 588' fSL, 1092' fWL (U.S. surface and minerals)
(Loc. plot) Elev.: 6710' gr.; Total depth: 423'
Spud: 7-11-73 Complete: 7-20-73
- PR-7 - SW NW NE, Section 14, T14S, R23E, SLM
965' fNL, 2324' fEL (U.S. surface and minerals)
Elev.: 6798' gr.; Total depth: 212'
Spud: 7-21-73 Complete: 7-23-73
- PRS-1 - SE NE NE, Section 27, T15S, R23E, SLM
1040' fNL, 137' fEL (State surface and minerals)
Elev.: 8010' gr.; Total depth: 247'
Spud: 7-24-73 Complete: 7-26-73
- PRS-2 - NE SE NW, Section 16, T15S, R23E, SLM
1767' fNL, 2558' fWL (State surface and minerals)
Elev.: 7702' gr.; Total depth: 282'
Spud: 7-27-73 Complete: 7-29-73
- PRS-3 - C SW SE, Section 32, T14S, R23E, SLM
683' fSL, 1963' fEL (State surface and minerals)
Elev.: 7387' gr.; Total depth: 242'
Spud: 7-30-73 Complete: 7-31-73

CORE HOLES: Hill Creek Deposit, Uintah County, Utah

- HC-1 - SE NW NE, Section 31, T14S, R20E, SLM
1271' fNL, 1819' fEL (Indian surface, U.S. minerals)
Elev.: 7260' gr.; Total depth: 268'
Spud: 8-20-73 Complete: 8-22-73
- HC-2 - SE NW SW, Section 33, T14S, R20E, SLM
1395' fSL, 821' fWL (Indian surface, U.S. minerals)
Elev.: 7485' gr.; Total depth: 488'
Spud: 8-23-73 Complete: 8-28-73
- HC-3 - NE NE NE, Section 3, T15S, R20E, SLM
156' fNL, 443' fEL (Indian surface, U.S. minerals)
Elev.: 7410' gr.; Total depth: 500'
Spud: 8-28-73 Complete: 8-31-73

SUMMARY OF DRILLING AND CORING

<u>CORE HOLE</u>	<u>TOTAL DEPTH</u>	<u>FOOTAGE DRILLED</u>	<u>FOOTAGE CORED</u>
RR-1	246	90	156
PR-1	326	163	163
PR-2	202	187	15
PR-3A	95	22	73
PR-3B	157.5	88.5	69
PR-3C	317	200	117
PR-3D	416	338	78
PR-4	195	126	69
PR-5	274	116	158
PR-6	423	129	294
PR-7	212	9	203
PRS-1	247	22	225
PRS-2	282	50	232
PRS-3	242	22	220
HC-1	268	34	234
HC-2	488	262	226
HC-3	500	278	222
TOTAL	4890.5	2136.5	2754

Core recovery - 99.1%

LOCATION OF CORE HOLES ON TOPOGRAPHIC MAPS

<u>QUADRANGLE</u>	<u>CORE HOLE</u>
CLIFF RIDGE	RR-1
BATES KNOLLS	PR-6
BURNT TIMBER CANYON	PR-4, PR-5
COOPER CANYON	PR-1, PR-2
P. R. SPRING	PRS-1
RAINBOW	PR-3A, B, C, D
SEEP CANYON	PR-7, PRS-2, PRS-3
FLAT ROCK MESA	HC-1, HC-2, HC-3

RESULTS OF CORING

RIM ROCK - AREAL EXTENT

The Rim Rock deposit was found to be of very limited extent and the degree of impregnation erratic, only a short distance south of the outcrop. Core Hole RR-1 was only 150' from an exposed section of oil-impregnated sandstone which suggested that well-saturated sandstone should be found in the corehole. The results were disappointing. The corehole was only 0.3 miles southeast, on strike, from the thickest and most heavily saturated outcrop section in the deposit.

Careful study of the geology of the outcrop area suggests that faulting may complicate the structure of the area and control the pattern of heavy oil impregnation of sandstones.

Also suggesting possible structural complexity were the slight shows of gas encountered in the corehole, the only such shows in any corehole of the program.

P. R. SPRING - AREAL EXTENT

The P. R. Spring deposit was definitely proved to extend over wide areas beneath cover. Core Hole PR-3D appears to have found the northern down-dip limit of the deposit almost where predicted from outcrop mapping.

Core Hole PR-6 encountered typical oil-impregnated sandstone (heavy oil) down to a depth of 280 feet. From 299-1/2 feet to 414 feet (109-1/2 feet gross) about 30-1/2 feet of sandstone stained with light oil, more typical of normal oil reservoirs, was encountered. The discovery raises the interesting possibility that a transition area from source to shallow reservoir exists in this portion of the deposit.

Oil-impregnated beds here appear to be lenticular and to have erratic degrees of impregnation when considered over wide areas. Gross oil-impregnated zones appear to be recognizable for distances of 6 to 10 miles and the zonation established by Gwynn (1971) appears to be valid and workable.

If coring were conducted in more closely spaced patterns, correlation of individual zones would probably be easily established and continuity of groups of zones easily recognized throughout the deposit.

The thickest and richest impregnated sandstones were found in the southern part of the deposit in Core Hole PRS-1, located on State of Utah lands in Section 27, T15S, R23E and north and west into Core Holes PRS-2 and PRS-3, also on State lands.

HILL CREEK - AREAL EXTENT

The Hill Creek deposit appears to be concentrated mainly in the vicinity of Core Hole HC-1 and along the outcrop to the west and north-west where thick outcrop sections similar to those encountered in HC-1 are exposed for many miles along the canyons of Hill Creek and its eastern tributaries. Core Holes HC-2 and HC-3 indicate that this area of optimum saturation does not extend east beneath Flat Rock Mesa and that the thickness and richness of the oil-impregnated sandstones decreases rapidly. The deposit appears to be concentrated on the west plunging end of Hill Creek (Flat Rock) anticline and not to be well developed on the structural culmination of the anticline beneath the mesa.

The Hill Creek deposit is still in the "giant" class as far as gross oil in place is concerned, but the lean and widely dispersed nature of the oil impregnation decreases the possible commercial value of the deposit under present economic constraints.

LOW DIP AREA EXPERIMENT

A series of coreholes was drilled in the West Fork of Three Mile Creek area (Black Virgin Mine Road Fork) where a single rich bed first intersected in Core Hole PR-3C could be traced without doubt to a nearby easily measured outcrop (Cashion, 1967, pls. 2 & 3, Sec. 5). The series of coreholes was spaced from the outcrop through PR-3D for 0.72 miles distance. Another nearby oil shale corehole which penetrated part of the oil-impregnated sandstone bed was projected into the line of section (Figure 3). The line of coreholes indicated that the bed maintains even thickness and impregnation until the vicinity of PR-3D which apparently is located on the down dip north edge of the deposit.

Figure 4 indicates the average gravity of oils extracted from the outcrop section and from the series of coreholes. The chart indicates that increasing distance from the outcrop and increasing cover and depth exert little influence on the gravity and sulfur content and the consequent quality of the oil. This tends to support observations made in many deposits in Utah where it has been considered that deterioration of the oil takes place only in the outer few inches of the outcrop and that oil quality remains relatively uniform for long distances back of the immediate outer weathered "skin."

HIGH DIP AREA EXPERIMENT

This experiment, planned with two holes in the Rim Rock Deposit, was not completed because of unfavorable results obtained in Core Hole RR-1 (see preceding sections).

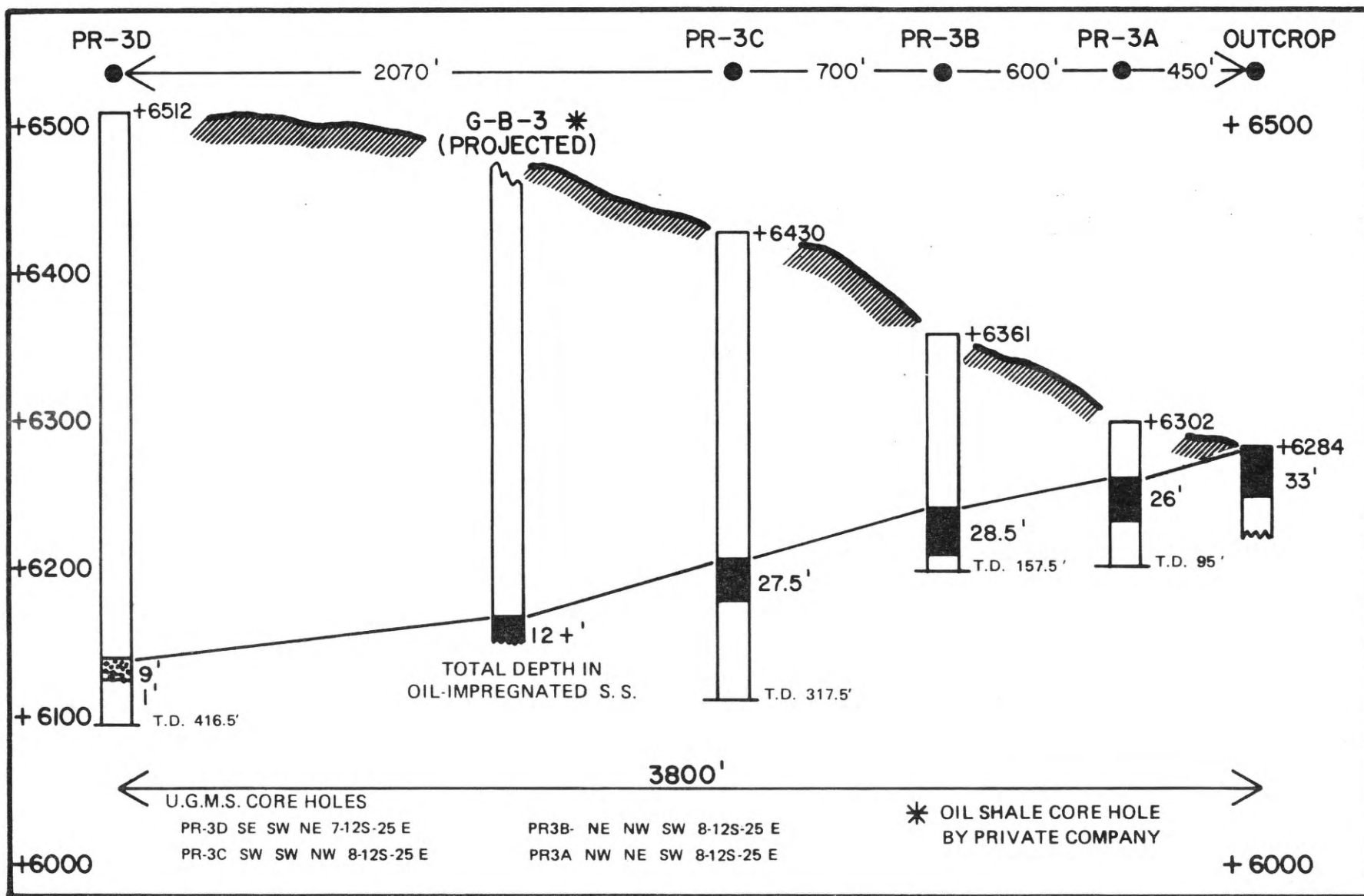


FIGURE 3

Thickness of oil-impregnated sandstone in core holes spaced from outcrop to 0.72 miles from outcrop (PR3A thru D). Nearby shale core hole by private operator projected into line of section.
West Fork of Three Mile Creek (Black Virgin Mine Road Fork) , secs. 7 & 8, T.12S R.25 E, Uintah Co. , Utah

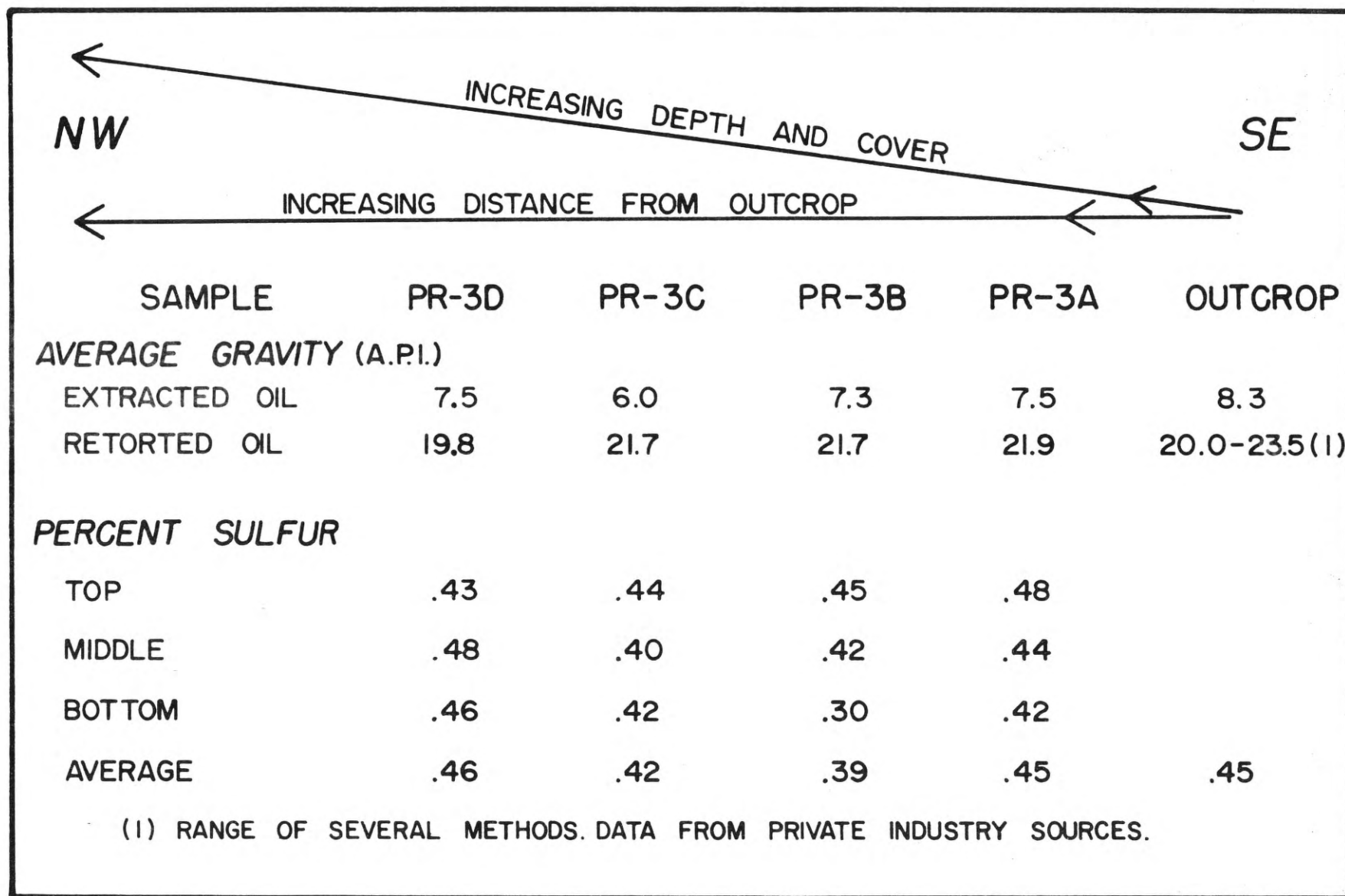


FIGURE 4

Average gravity and percent sulfur in oils extracted from outcrop and core samples in core holes PR3-A thru D, West Fork of Three Mile Creek (Black Virgin Mine Road Fork), Secs. 7 & 8 , T.12S , R.25 E, Uintah Co. , Utah

RESULTS OF ANALYSES

CORE ANALYSES (See Appendix)

Results of 587 standard core analyses of all principal oil-impregnated zones in all coreholes are tabulated as follows:

Sample Number, Corehole Number, Depth
Permeability (before and after extraction of oil)
Porosity percent
Pore saturation (oil and water)
Oil (gallons per ton, % volume, % weight)

All work was performed by Core Laboratories, Inc., Casper, Wyoming.

The analyses cover a wide range of conditions and have not been studied in detail. However, spot examination of selected intervals in specific coreholes indicate areas of the P.R. Spring deposit that are probably suitable for in situ experiments and for open cut mining on a commercial basis.

GRAVITY (See Appendix)

The gravity of extracted and retorted oils from all coreholes in all three deposits show a remarkable uniformity.

<u>GRAVITY (API°)</u>		<u>EXTRACTED OIL</u>			<u>RETORTED OIL</u>		
<u>DEPOSIT</u>	<u>SAMPLES</u>	<u>HIGH</u>	<u>LOW</u>	<u>AVERAGE</u>	<u>HIGH</u>	<u>LOW</u>	<u>AVERAGE</u>
RR	1	-	-	6.5	-	-	20.6
PR	37	15.3	5.8	9.5	24.2	19.0	21.5
HC	5	10.5	5.5	7.9	22.1	20.0	21.1

Mean and average values for extracted and retorted oils compare as follows:

	<u>EXTRACTED OIL</u>		<u>RETORTED OIL</u>	
	<u>MEAN</u>	<u>AVERAGE</u>	<u>MEAN</u>	<u>AVERAGE</u>
RR			-	
PR	10.6	9.6	21.6	21.5
HC	8.0	7.9	21.0	21.1

Gravity of retorted and extracted oil seems to increase with depth in several coreholes; in others, variation is random. The results do not appear to be conclusive within the narrow range of results.

PERCENT SULFUR (See Appendix)

Percent sulfur in extracted oil was determined for the same 43 samples that were tested for API° gravity. A remarkable uniformity in sulfur content was obtained. The average percent for 37 samples in P.R. Spring is .46.

<u>DEPOSIT</u>	<u>SAMPLES</u>	<u>% SULFUR</u>		<u>NO. OF SAMPLES IN RANGE</u>
		<u>HIGH</u>	<u>LOW</u>	
RR	1	0.37	0.37	-
PR	37	0.76	0.30	0.30 to 0.39 - 4 0.40 to 0.49 - 24 0.50 to 0.59 - 4 0.59 to 0.76 - 2
HC	5	0.46	0.34	-

SULFUR ISOTOPE RATIO (S^{34}/S^{32}) (See Appendix)

Nine samples from selected wells were analyzed for the sulfur isotope ratio (S^{34}/S^{32}) of extracted oils.

With the exception of the single value obtained from the 88-foot sample in PRS-1, all oils in the south part of the deposit appear to fall into the range of normal crude oils. The high ratios in PR-6 and PR-3 suggest oils with an origin similar to that of gilsonite. The oil in the PR-3 cores has a strong gilsonitic odor and is located close to two major gilsonite vein systems. The results for the PR-6 sample and the PRS-1 (88') sample are anomalous in the light of present data available.

Overall, the sulfur isotope data obtained appears to correlate with that obtained by Gwynn (1971).

REFERENCES CITED

1. Cashion, W. B., 1967, Geology and Fuel Resources of the Green River Formation Southeastern Uinta Basin Utah and Colorado, U.S. Geological Survey Prof. Paper 548, 48 p., 5 pls.
2. Gwynn, J. W., 1971, Instrumental Analyses of Tars and Their Correlations in Oil-Impregnated Sandstone Beds, Uintah and Grant Counties, Utah, Utah Geological and Mineralogical Survey Special Studies 27, 64 p.

P. R. PETERSON-1973

(1)

CORE HOLE	ESTIM. CORE	OIL-IMPREG.-SANDSTONE INTERVALS	INTERVAL THICKNESS	NET O/S THICKNESS	BED THICKNESS RANGE	NO. OF BEDS	VISUAL CLASSIFICATION - IMPREGNATION					ZONE(S)	NAME OF ZONE
							I	II	III	IV	V		
5451 ⁽²⁾ GL		+5386 ⁽³⁾											
RR-1	60	66½-122½	56	20	3½-5	5		5	7½	7½			
1 ⁽¹⁾		246 T.D.											
6302 GL		+6263											
PR-3A		39-65	26	26	-	1						26	
12		95 T.D.											
6361 GL		+6242											
PR-3B		119-148½	29½	29½	-	1		1				28½	
13		157½ T.D.											
6430 GL		+6209											
PR-3C	325	221-248½	27½	27½	-	1						27½	
2		317 T.D.											
6512 GL		+6143											
PR-3D		369-383½	14½	10	1-8	2			1	9			
14		416½ T.D.											
7187 GL		+7129											
PR-4	60	58-78	20	19½	-	1	½	2½	4½	4½	7½		
3		195 T.D.											
6420 GL		+6269											
PR-5	140	151-242	91	18½	1½-4	6			12½	3	3		
4		274 T.D.											
6210 GL		+5940											
PR-1	270	175½-263½	88	32½	1-10	5		2½	20	4½	5½		
5		326 T.D.											
6346 GL		+6326											
PR-2	30	20½-95	74½	18	½-5	6	6½	6½	5				
6		202 T.D.											
6707 GL		+6545											
PR-6	150	162-280	118	46	½-18½	8	3½	15½	7½	19½			
7		423 T.D.											
6798 GL		+6789											
PR-7	20	9-185½	176½	29	1-9½	8	4½	9½	5½		9½		
8		212 T.D.											
8010 GL		+7983											
PRS-1		27-222	195	102	2-24½	8	4	17½	4½	63½			
9		247 T.D.											
7702 GL		+7645											
PRS-2		57-254½	197½	52	½-16½	13	5½	15½	12½	18½			
10		282 T.D.		50									
7387 GL		+7364											
PRS-3		23-235	212	49½	½-7½	13	5	5	16½	17	6		
11		242 T.D.											

⁽¹⁾ Order in which drilled

⁽²⁾ Elevation (mean sea level)

⁽³⁾ Sea level datum at top first oil sand

OIL-IMPREGNATED SANDSTONE STATISTICS

SUMMARY TABLE

(2)

CORE HOLE	ESTIMATED CORE POINT	OIL-IMPREG. SANDSTONE INTERVALS	INTERVAL THICKNESS	NET OISS THICKNESS	BED THICKNESS RANGE	NO. OF BEDS	VISUAL CLASSIFICATION - IMPREGNATION					ZONE	NAME OF ZONE
							I	II	III	IV	V		
HC-1	7261 G.L. (2) 265 15 (1)	+7220 (3) 41½-230½ 268 T.D.	189½	65	1-10½	13	0	19	43	3	0		
HC-2	7483 G.L. 470 16	+7159 324½-477 488 T.D.	142½	53½	1-16	6	7½	30	16	0	0		
HC-3	7409 G.L. 425 17	+6974 306½-463 500 T.D.	156½	64	1-24	6	26½	30	7½	0	0		

(1) Order in which drilled (2) Elevation (mean sea level) (3) Sea level datum at top first oil sand

DETAIL TABLE

1

CORE HOLE	ESTIMATED CORE POINT	OIL-IMPREG. SANDSTONE INTERVALS	INTERVAL THICKNESS	NET OILS THICKNESS	BED THICKNESS RANGE	NO. OF BEDS	VISUAL CLASSIFICATION - IMPREGNATION					ZONE
							I	II	III	IV	V	
5456 GL. RR-1 1*	60	66½-70	3½	3					3			
		80½-84½	4	4					4			
		97½-103½	6	5				1		4		
		110-113½	3½	3½						3½		
		118½-122½	4	4				4				
		66½-122½ 246 T.O.	56	19½	3½-5	5		5	7	7½		
6302 GL. PR-3A 12*		39-65 45 T.O.	26	26	-	1					26	
6361 GL. PR-3B 13*		119-148½ 157½ T.O.	29½	29½	-	1		1			28½	
6430 GL. PR-3C 2*	325	221-248½ 317 T.O.	27½	27½	-	1					27½	
6512 GL. PR-3D 14*		369-383½ 416½ T.O.	14½	10	1-8	2			1	9		
7187 GL. PR-4 3*	60	58-78 145 T.O.	20	19½		1	½	2½	4½	4½	7½	
6437 GL. PR-5 4*	140	151-155½	4½	4					4			
		159-162	3	3							3	
		168-171½	3½	3½					3½			
		218-221½	3½	3½					3½			
		225-228	3	3						3		
		240½-242	1½	1½					1½			
		151-242 274 T.O.	91	18½	1½-4	6		2½	12½	3	3	
6210 GL. PR-1 5*	270	(On page 2)										

*Order in which drilled

cont. p. 2

DETAIL TABLE

2

CORE HOLE	ESTIMATED CORE POINT	OIL-IMPREG. SANDSTONE INTERVALS	INTERVAL THICKNESS	NET OILS THICKNESS	BED THICKNESS RANGE	NO. OF BEDS	VISUAL CLASSIFICATION-IMPREGNATION					ZONE
							I	II	III	IV	V	
PR-1 3*	270	175½-185½	10	9½				2½	1½		5½	
		192-194½	2½	2½					2½			
		197½-198½	1	1						1		
		240½-246½	6	6					6			
		250-263½	13½	13½					10	3½		
		175½-263½ 326 T.D.	88	32½	1-10	5		2½	20	4½	5½	
6346GL PR-2 6*	30	20½-21½	1	1					1			
		44-47	3	2½			½		2			
		51-56	5	5				3	2			
		62½-64½	2	2				2				
		66½-67½	1	1			1					
		88½-95	6½	6½			5	1½				
		20½-95 202 T.D.	74½	18	½-5	6	6½	6½	5			
6707GL PR-6 7*	150	162-164½	2½	2½				2½				D C B
		169-173	4	4					3	1		
		176-186½	10½	10½				8	2½			
		191½-196½	5	5			2	3				
		229½-253½	24	20½					2	18½		
		262-262½	½	½			½					
		266½-267½	1	1			1					
		277½-280	2½	2				2				
		162-280	118	46	½-18½	8	3½	15½	7½	19½		
		294½-295½	1	1			1					
		298½-302	3½	3½			3½					
		323-324	1	1			1					

*Order in which drilled

cont. p. 3

DETAIL TABLE

3

CORE HOLE	ESTIMATED CORE POINT	OIL-IMPREG. SANDSTONE INTERVAL	INTERVAL THICKNESS	NET OISS THICKNESS	BED THICKNESS RANGE	NO. OF BEDS	VISUAL CLASSIFICATION - IMPREGNATION					ZONE	ZONE (JD)
							I	II	III	IV	V		
PR-6 (cont.) 7*	LIGHT OIL STAIN INTERVAL	326-326½	½	½						½			
		329½-332	2½	2½					2½				
		338-344½	6½	6½					6½				
		350-360	10	5				2	3				
		373-379½	6½	4				2	2				
		383-391	8	5	2				5				
		411-414	3	1½				1½					
		294½-414 423 TD.	119½	30½	½-6½	10	5½	5½	19	½			
6798 GL. PR-7 8*	20	9-11½	2½	2½			2½					D	
		15-17	2	2			2						
		21-22	1	1				1					
		24-42½	18½	16½				3	4		9½		
		82½-84	1½	1½				1½				C	
		99-101½	2½	2½				2½					
		118½-120	1½	1½					1½				
		184-185½	1½	1½				1½					
		9-185½ 212 T.D.	176½	29	1-9½	8	4½	9½	5½	0	9½		
8010 GL. PRS-1 9*	30	27-32½	5½	5½				5½				D	E
		35½-39½	4	4			4						
		41½-51½	10	7½ 17				3	2	1½	1		↓
		65½-70	4½	4½				4½				C	↓
		74-81½	7½	7½ 12				7½					↓
		89½-118	28½	27					2½	24½		B	C
		159-175 (159-175 sandstone)	16	16						16		A	cont. p. 4

* Order in which drilled

DETAIL TABLE

4

CORE HOLE	ESTIMATED CORE POINT	OIL-IMPREG-SANDSTONE INTERVAL	INTERVAL THICKNESS	NET OISS THICKNESS	BED THICKNESS RANGE	NO. OF BEDS	VISUAL CLASSIFICATION - IMPREGNATION					ZONE	
							I	II	III	IV	V		
PRS-1 (cont.) 9*		175-182	7	7			3	3		1		A	159-175 (sandstone) 175-182 (oolite)
		199-222	23	23					1	22			
		27-222 247 T.D.	195	102	2-24½	9	7	23½	5½	65	1		
7702 GL. PRS-2 10*	60	57-58	1	1			1					D	
		60½-65	4½	3½			1	1	1½				
		67½-70	2½	2½					1½	1			
		75½-82	6½	6					6				
		122½-124	1½	1½			½			1		B	
		126-128½	2½	2½				2½					
		132-133	1	1				1					
		135-138	3	3				3					
		172-180	8	5			3	2					
		192½-217	24½	23				5	1½	16½		A	
		233-233½	½	½				½					
		246-246½	½	½				½					
		252-254½	2½	2					2				
		57-254½ 282 T.D.	197½	50 52	½-16½	13	5½	15½	12½	18½	0		
7387 GL. PRS-3 11*	80	23-49	26	21			1½	1	6	6½	6	D	
		62-64½	2½	2½				2½					
		85-94	9	7½						7½		B	
		96-98	2	1½					1½				
		107-109½	2½	1				1					
		112½-113½	1	1						1			
		117½-119½	2	2						2			
		128-134	6	5					5				
		140-142	2	1			1						

* Order in which drilled

cont p. 5

DETAIL TABLE

5

CORE HOLE	ESTIMATED CORE POINT	OIL-IMPREG.- SANDSTONE INTERVAL	INTERVAL THICKNESS	NET OISS THICKNESS	BED THICKNESS RANGE	NO. OF BEDS	VISUAL CLASSIFICATION - IMPREGNATION					
							I	II	III	IV	V	ZONE
PRS-3 (cont.) 11*		152-156½	4½	4					4			
		215-215½	½	½				½				
		218-219½	1½	1			1					
		233½-235	1½	1½			1½					
		23-235 242 T.D.	212	49½	½-7½	13	5	5	16½	17	6	
7261 GL. HC-1 15*	265	41½-48½	7	7				2½	1½	3		
		67½-74	6½	5½					5½			
		85½-88	2½	2½					2½			
		90-100	10	9					9			
		108-109½	1½	1½					1½			
		112½-121	8½	8½					8½			
		123½-128	4½	4½					4½			
		130½-132	2	2				2				
		134½-139	4½	4½				4½				
		189½-190½	1	1					1			
		193½-206	12½	10½				6	4½			
		214-218	4	4				4				
		223-230½	7½	4½					4½			
		41½-230½ 268 T.D.	189½	65	1-10½	13	0	19	43	3	0	
7483 GL. HC-2 16*	470	324½-347½	23	17½			1½		16			
		359½-371	11½	9½			1	8½				
		374½-378	3½	2½				2½				
		424-436½	12½	8			1	7				
		445-467	22	15			3	12				
		471½-477	5½	1			1					
		324½-477 488 T.D.	142½	53½	1-16	6	7½	30	16	0	0	
cont. p. 6												
* Order in which drilled												

cont. p. 6

* Order in which drilled

7

DETAIL TABLE

6

CORE HOLE	ESTIMATED CORE POINT	OIL-IMPREG.- SANDSTONE INTERVAL	INTERVAL THICKNESS	NET OILSS THICKNESS	BED THICKNESS RANGE	NO. OF BEDS	VISUAL CLASSIFICATION - IMPREGNATION					
							I	II	III	IV	V	ZONE
HC-3 17*	7409 GL. 425	306½-328	21½	19			2	9½	7½			
		331-332½	1½	1				1				
		338-343½	5½	5½			5½					
		404-409	5	5			2	3				
		413-440	27	24			16	8				
		452½-463	10½	9½			1	8½				
		306½-463	156½	64	1-19	6	26½	30	7½			
		500 T.D.										

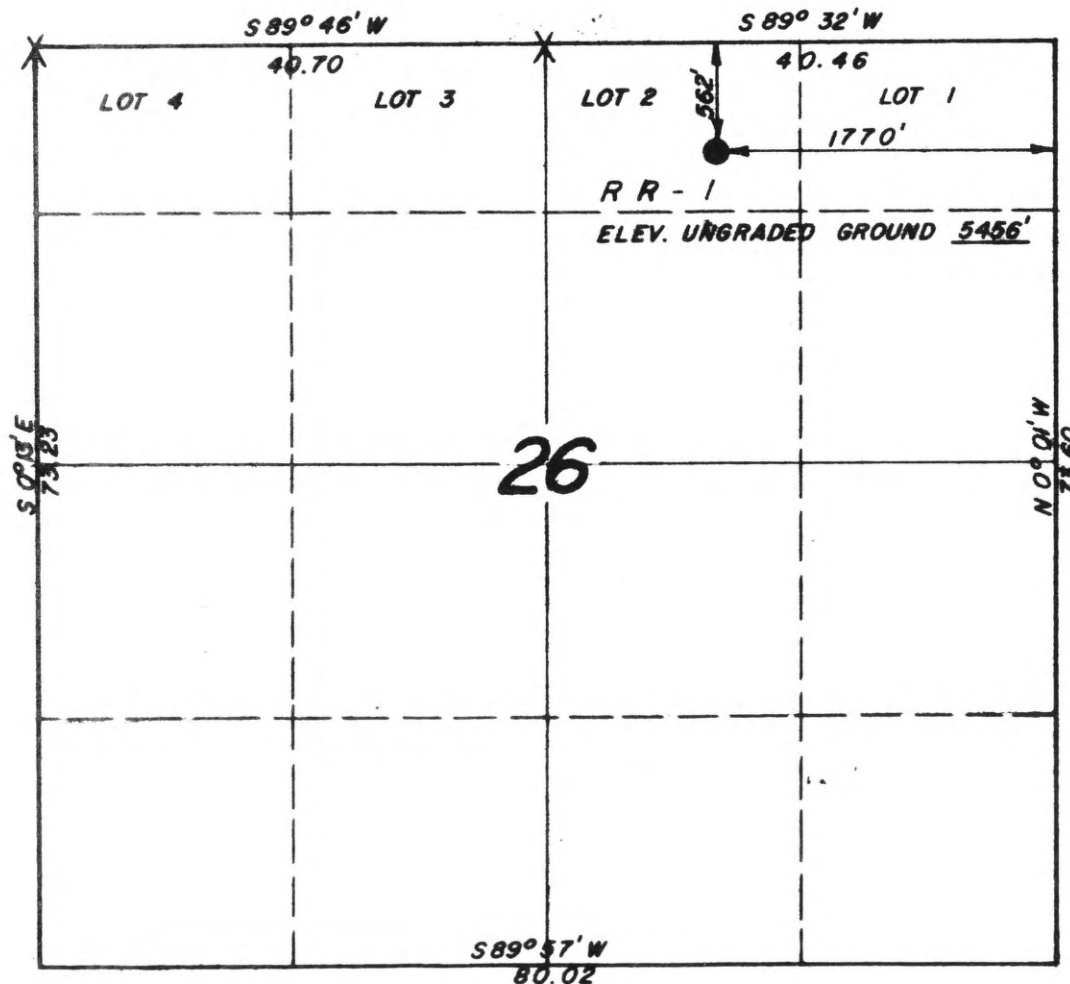
* Order in which drilled

T6S, R24E, S. L. M.

PROJECT

UTAH GEOLOGICAL SURVEY

WELL LOCATION, RR-1, LOCATED AS SHOWN
IN LOT 2, SECTION 26, T6S, R24E, S. L. M.,
UINTAH COUNTY, UTAH



X = CORNERS LOCATED & USED

CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF.

Lawrence C. K.
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

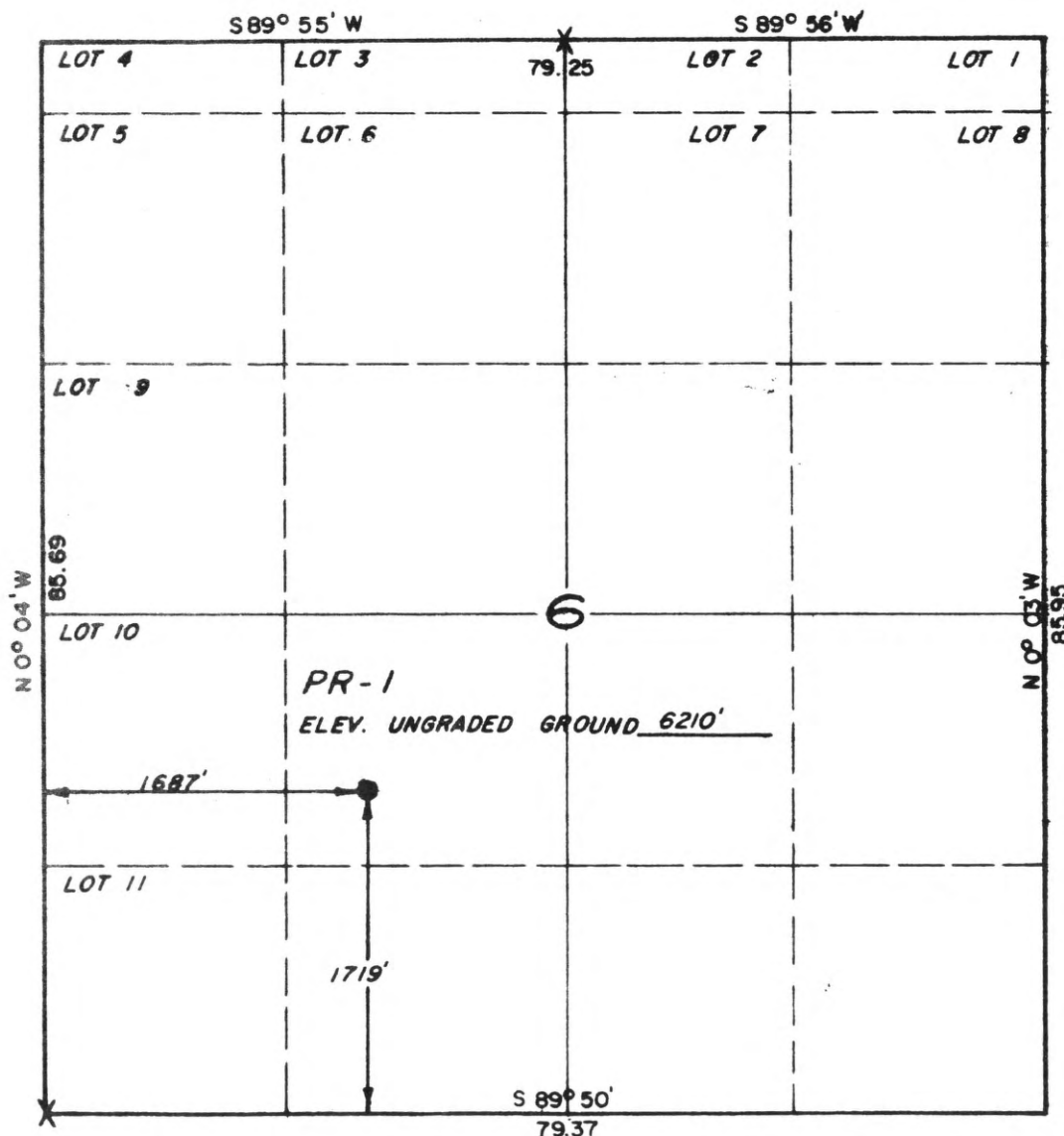
SCALE 1" = 1000'	DATE 29 SEPT. 1972
PARTY L. C. K. & R. K.	REFERENCES B. L. Q. PLAT.
WEATHER WARM	FILE UTAH GEO. SURVEY

T13S, R24E, S. L. M.

PROJECT

UTAH STATE GEOLOGICAL SURVEY

WELL LOCATION, PR-1, LOCATED AS SHOWN
IN THE NE 1/4 SW 1/4 SECTION 6, T13S, R24E,
S. L. M., UTAH COUNTY, UTAH



X = CORNERS LOCATED & USED



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF.

Lawrence C. Roy

REGISTERED LAND SURVEYOR
REGISTRATION NO
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

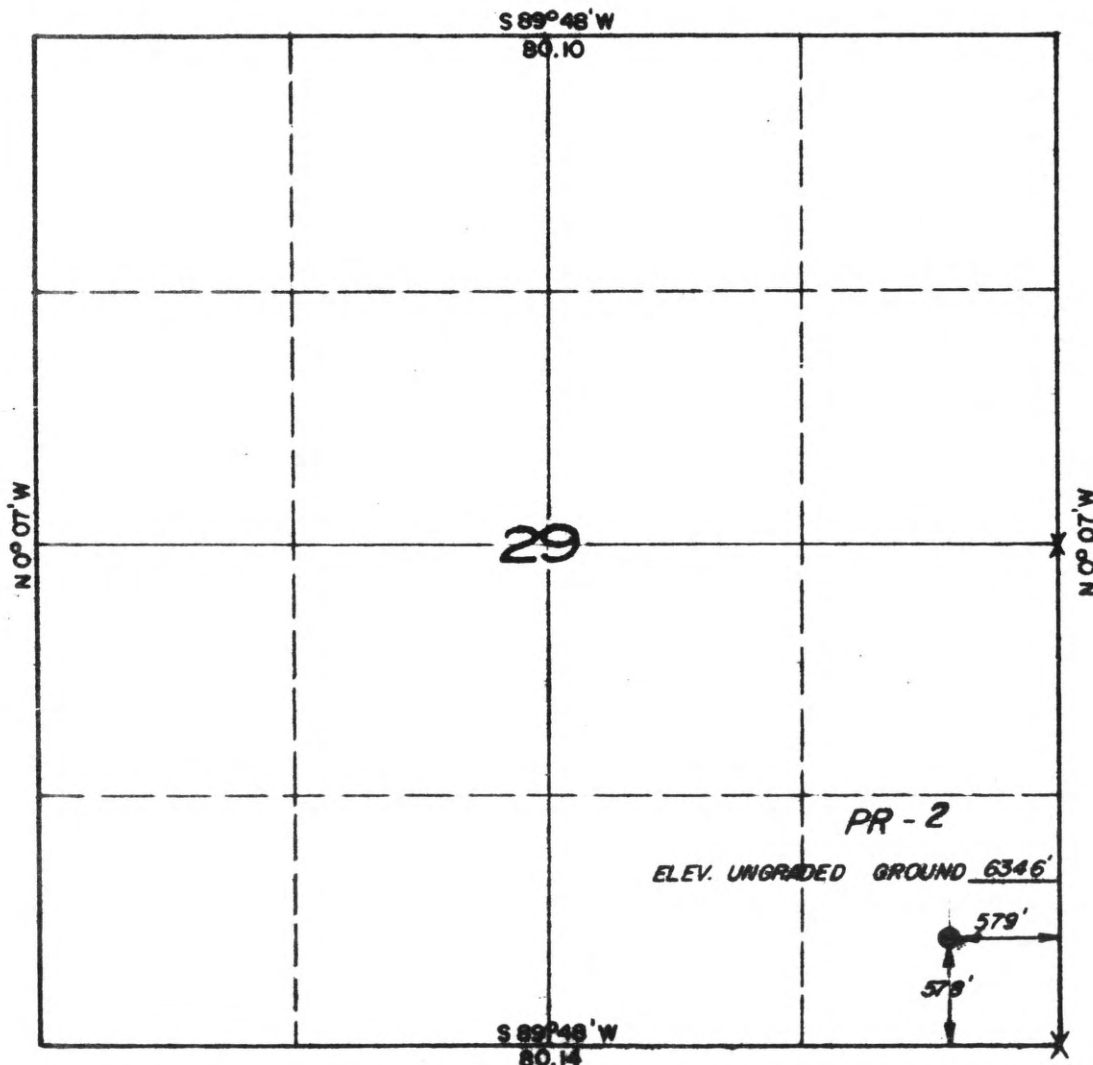
SCALE 1" = 1000'	DATE 21 SEPT. 1972
PARTY L. D. T. & R. R.	REFERENCES G L O PLAT
WEATHER WARM	FILE UTAH GEOLOGICAL SURVEY

PROJECT

T13S, R23E, S.L.M.

UTAH STATE GEOLOGICAL SURVEY

WELL LOCATION, PR-2, LOCATED AS SHOWN IN
THE SE 1/4 SE 1/4 SECTION 29, T13S, R23E,
S. L. M., UTAH COUNTY, UTAH



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF

Lawrence C. Ray
REGISTERED LAND SURVEYOR
REGISTRATION NO.
STATE OF UTAH

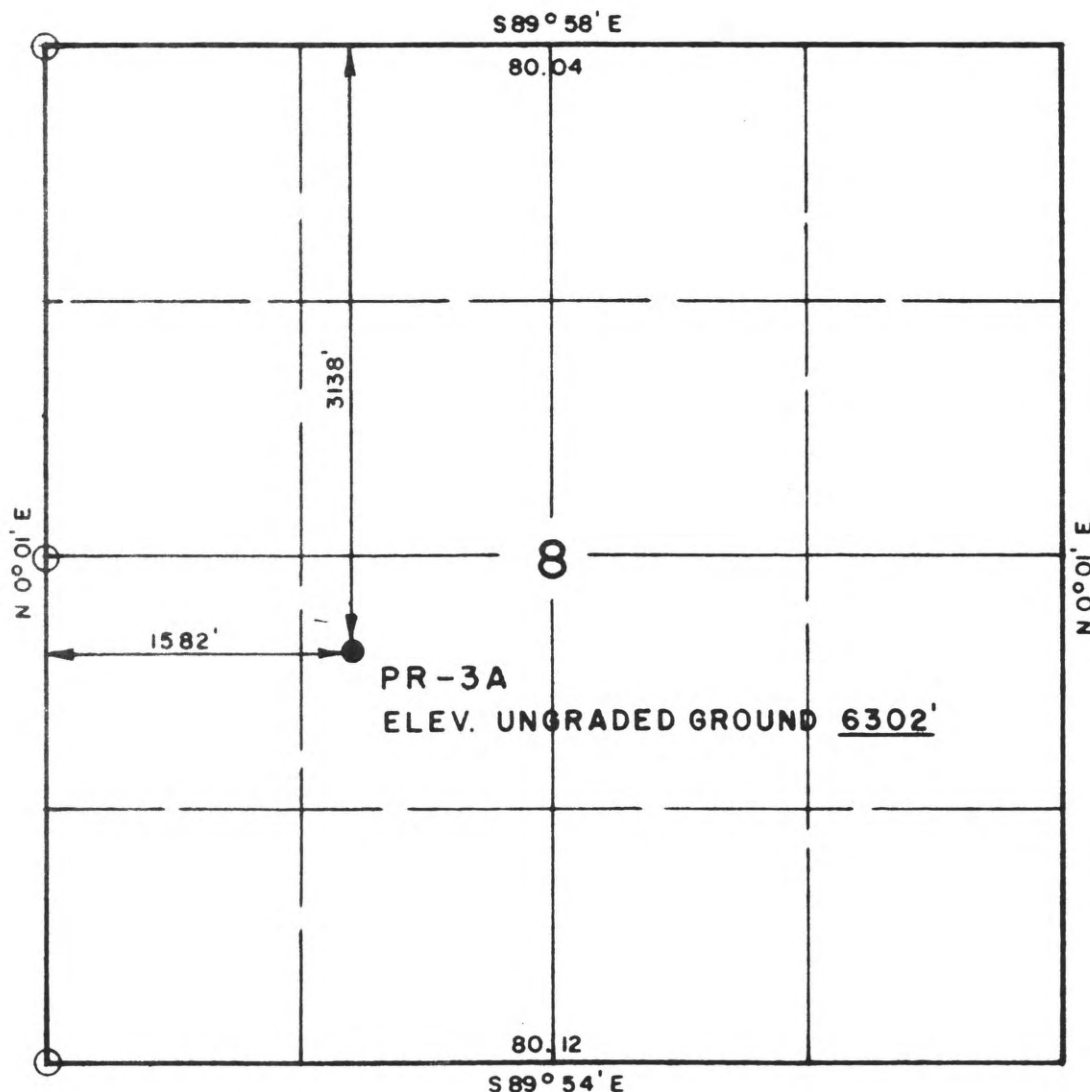
X = CORNERS LOCATED O = USED

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 21 SEPT. 1972
PARTY L. D. T. & R. R.	REFERENCES G. L. Q. PLAT.
WEATHER HAPPY	FILE UTAH GEOLOGICAL SURVEY

PROJECT

T12S, R25E, S.L.M.



UTAH GEOLOGICAL SURVEY

CORE HOLE LOCATION, PR-3A, LOCATED
AS SHOWN IN THE NE 1/4 SW 1/4
SEC. 8, T12S, R25E, S. L. M., UINTAH
COUNTY, UTAH



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF.

Lawrence C. Kain

REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 7 JULY 1973
PARTY LK KC	REFERENCES G. L. O. PLAT
WEATHER	FILE

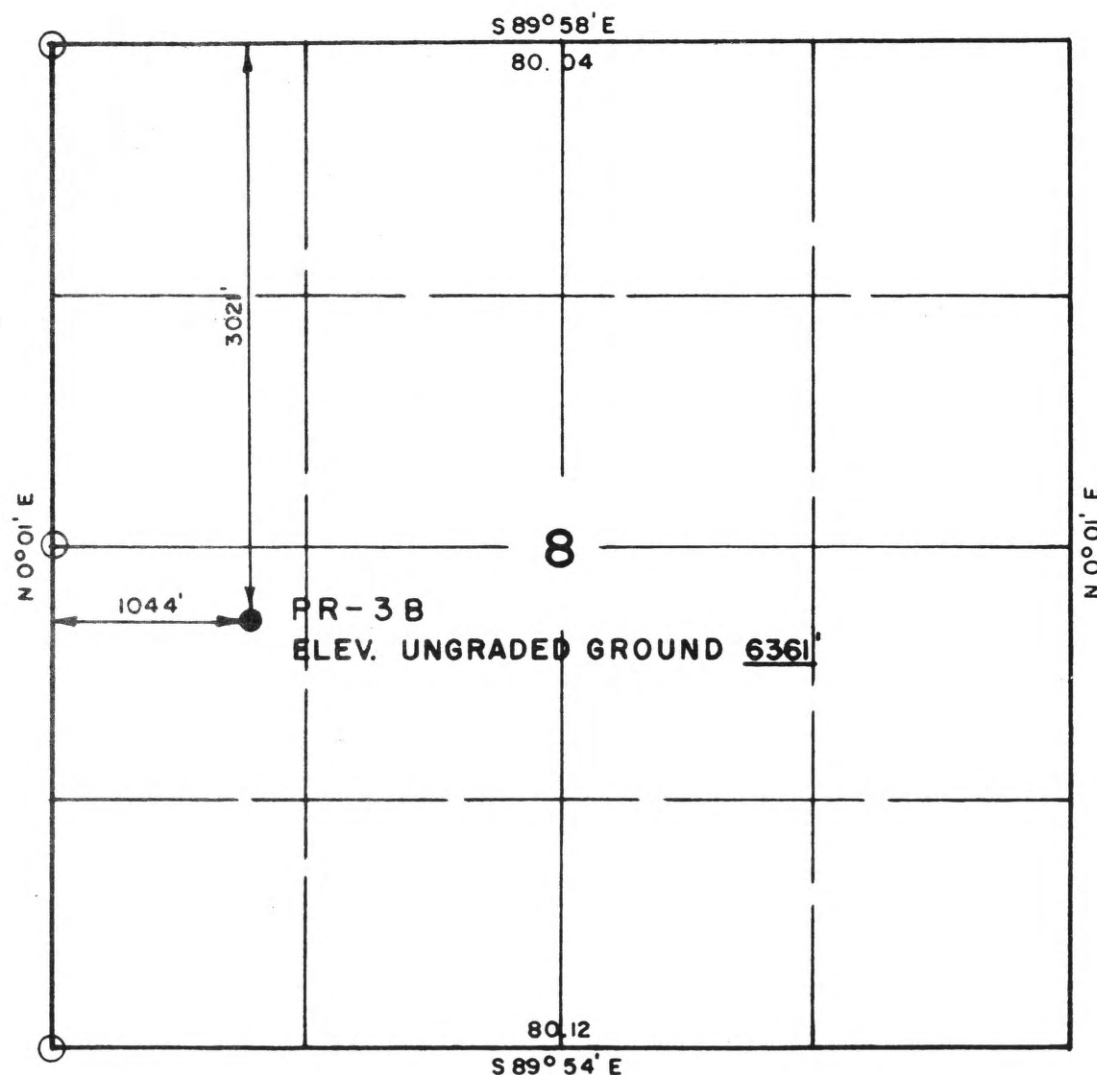
○ = CORNERS USED (STONE)

PROJECT

T12S, R25E, S.L.M.

UTAH GEOLOGICAL SURVEY

CORE HOLE LOCATION, PR-3B, LOCATED
AS SHOWN IN THE NW 1/4 SW 1/4
SEC. 8, T12S, R25E, S.L.M., UTAH
COUNTY, UTAH



○ = CORNERS USED (STONE)



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF

Frederick C. Smith
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P.O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 7 JULY 1973
PARTY LK KC	REFERENCES G.L.O. PLAT
WEATHER	FILE

PROJECT

UTAH GEOLOGICAL SURVEY

WELL LOCATION, PR-3, LOCATED AS SHOWN
IN THE SW 1/4 NW 1/4 SECTION 8, T12S,
R25E, S. L. M., UTAH COUNTY, UTAH



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF

Lawrence C. King
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE
1" = 1000'

DATE
29 SEPT. 1972

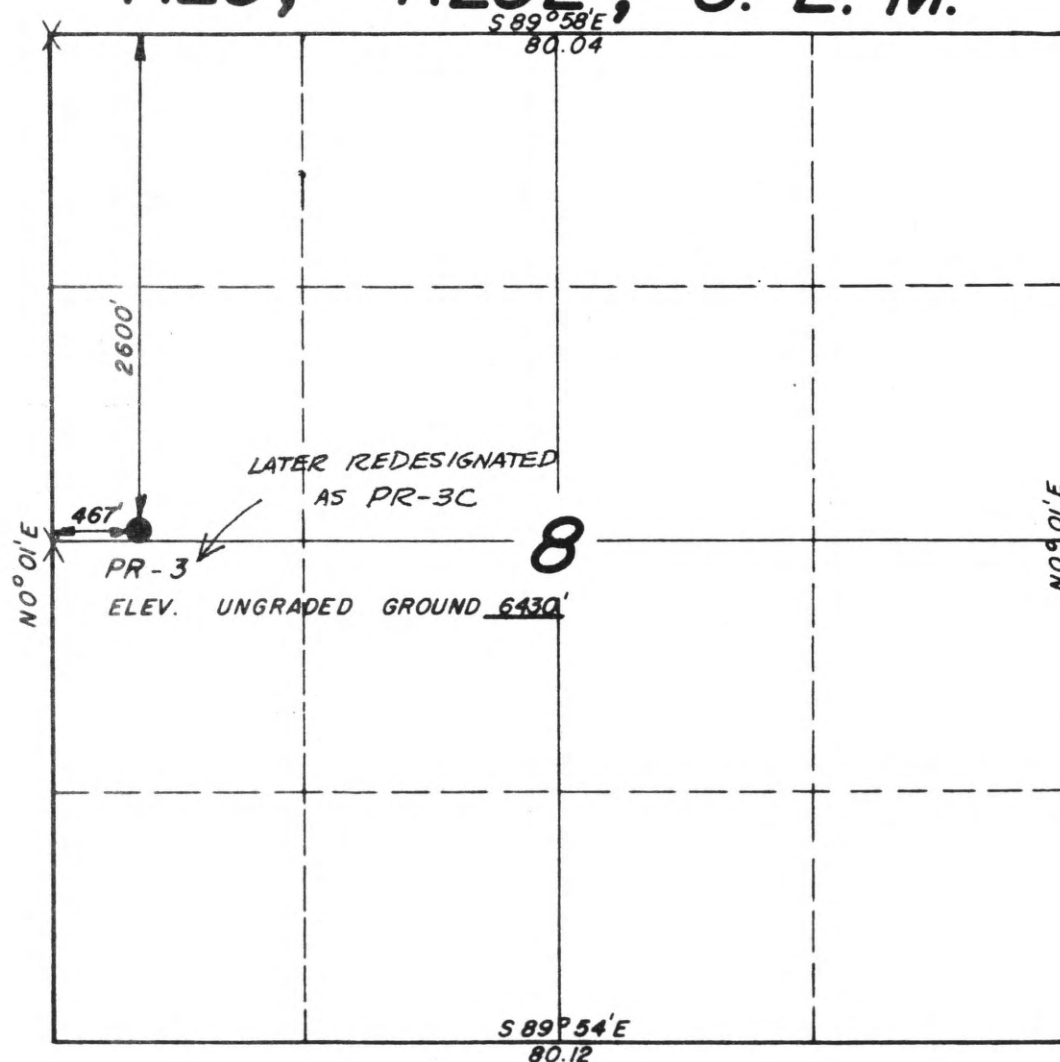
PARTY
L. C. K. & R. K.

REFERENCES
G. L. O. PLAT.

WEATHER
WARM

FILE
UTAH GEO. SURVEY

T12S, R25E, S. L. M.



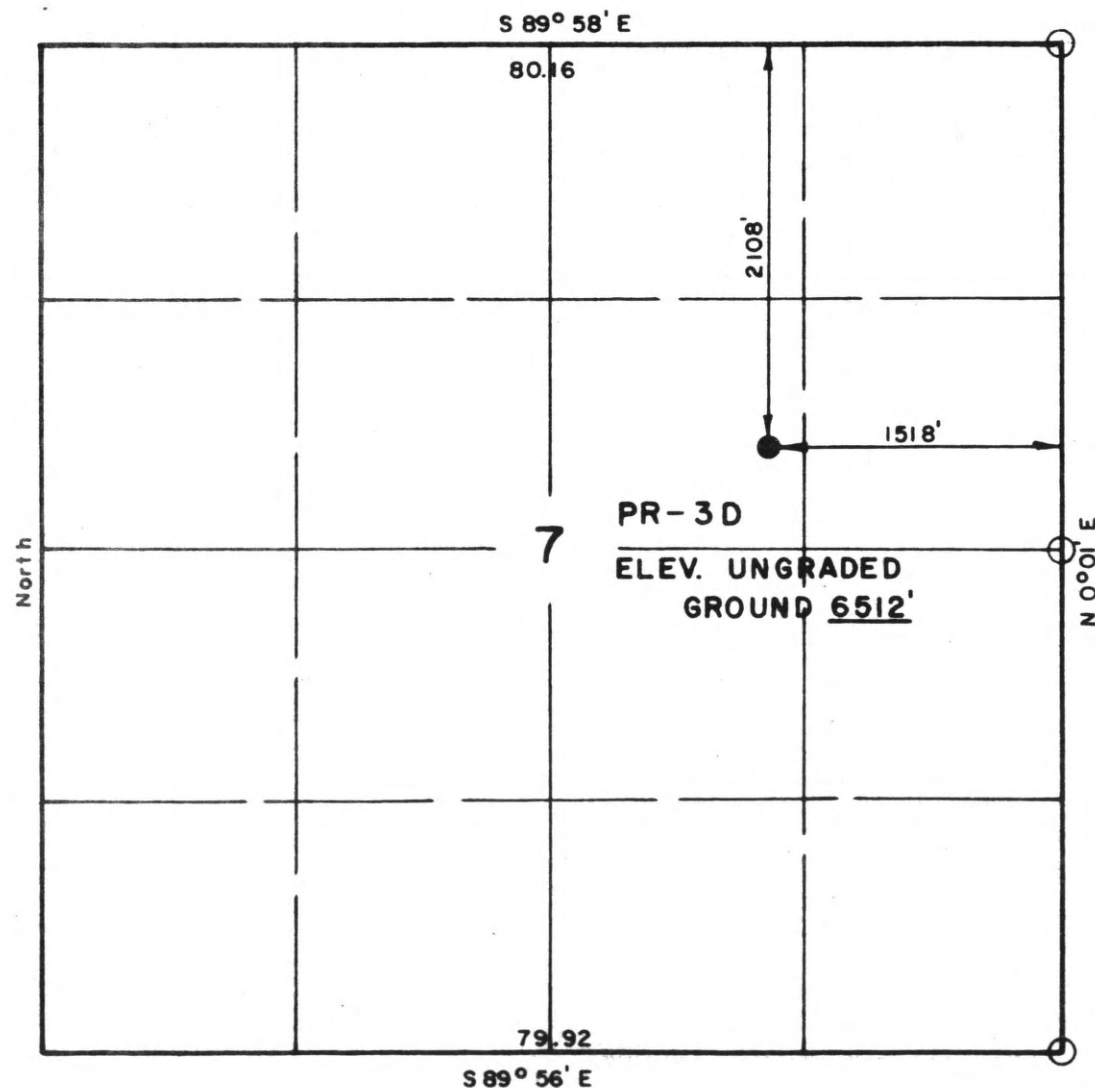
X = CORNERS LOCATED & USED (STONE)

PROJECT

T 12 S, R 25 E, S. L. M.

UTAH GEOLOGICAL SURVEY

CORE HOLE LOCATION, PR-3D, LOCATED
AS SHOWN IN THE SW 1/4 NE 1/4
SEC. 7, T12S, R25E, S.L.M., UTAH
COUNTY, UTAH



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF

Lawrence C. Davis

REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 7 JULY 1973
PARTY LK KC	REFERENCES G. L. O. PLAT
WEATHER	FILE

○ = CORNERS USED (STONE)

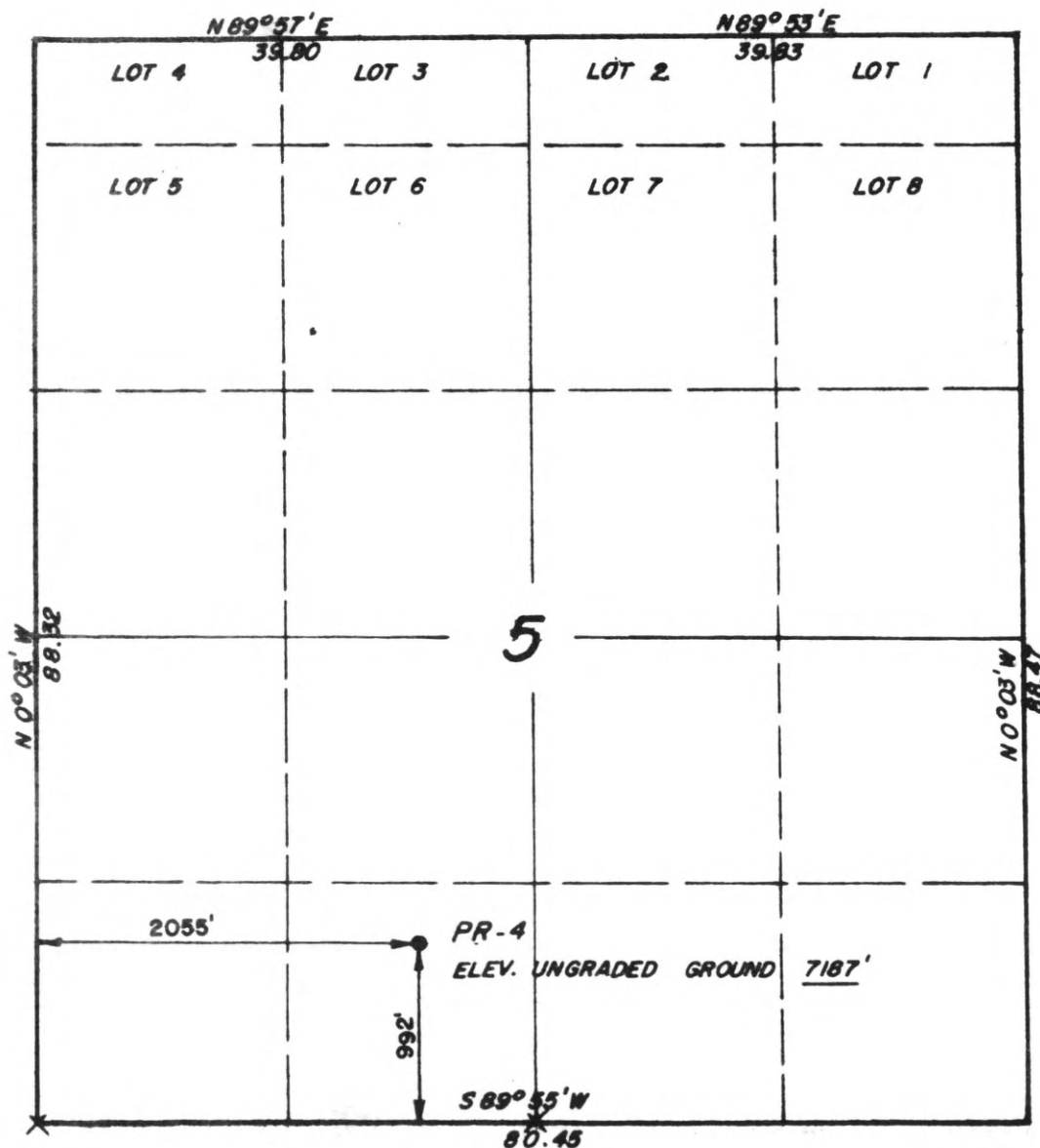
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T13S, R25E, S. L. M.

PROJECT

UTAH GEOLOGICAL SURVEY

WELL LOCATION, PR-4, LOCATED AS SHOWN IN
THE SE 1/4 SW 1/4 SECTION 5, T13S, R25E,
S. L. M., UTAH COUNTY, UTAH



X = CORNERS LOCATED & USED (BRASS CAPS)



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF

Lawrence C. Ray

REGISTERED LAND SURVEYOR
REGISTRATION NO. 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

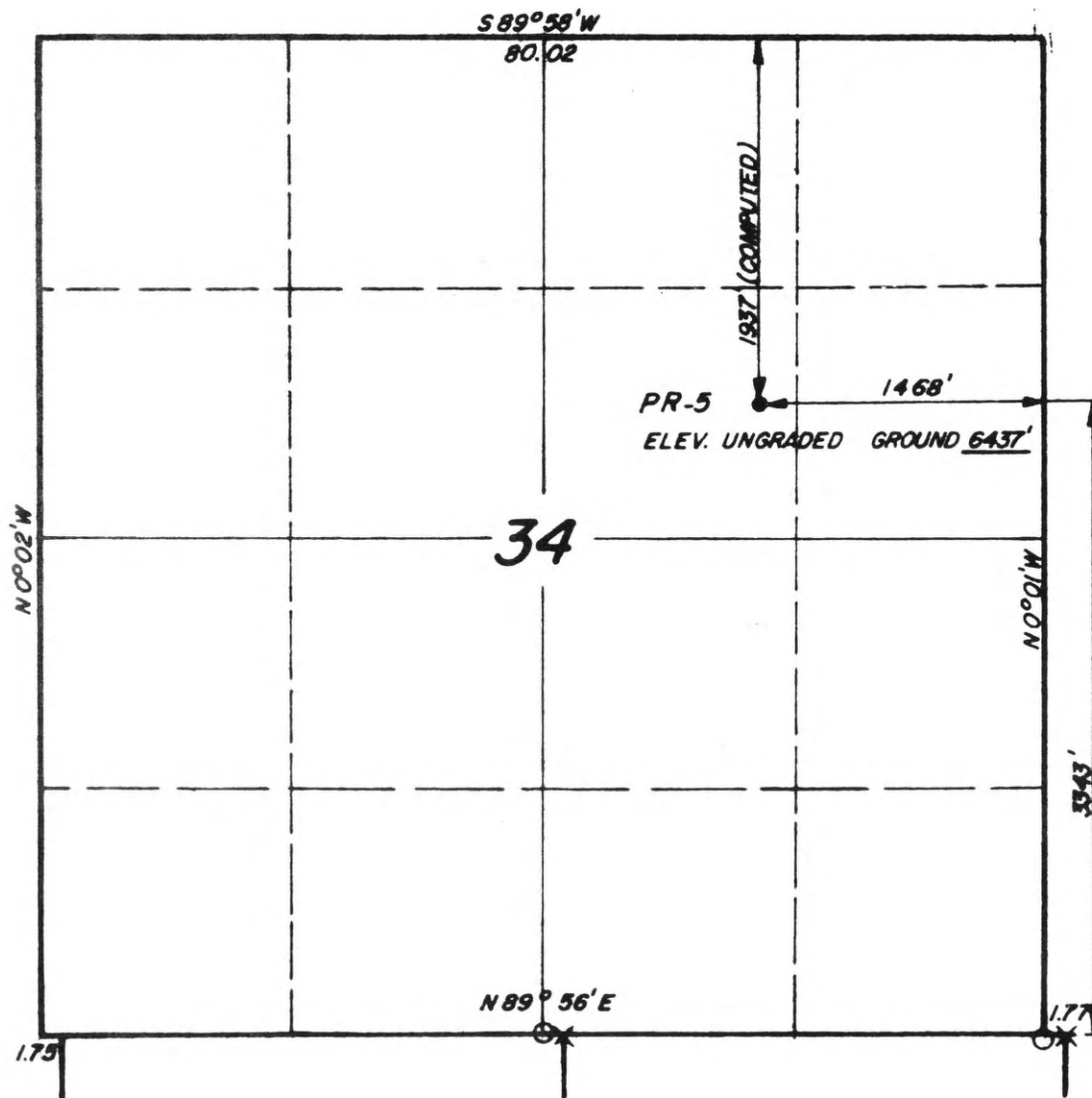
SCALE 1" = 1000'	DATE 5 OCT. 1972
PARTY L. C. K. & H. M.	REFERENCES G. L. O. PLAT
WEATHER COOL	FILE UT. GEO. SURVEY

T12S, R24E, S. L. M.

PROJECT

UTAH GEOLOGICAL SURVEY

WELL LOCATION, PR-5, LOCATED AS
SHOWN IN THE SW 1/4 NE 1/4 SECTION 34,
T12S, R24E, S. L. M., UTAH COUNTY,
UTAH



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF.

Lawrence C. Ray
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE
1" = 1000'

DATE
5 OCT. 1972

PARTY
L. C. K. & H. M.

REFERENCES
G. L. O. PLAT

WEATHER
COOL

FILE
U. G. S.

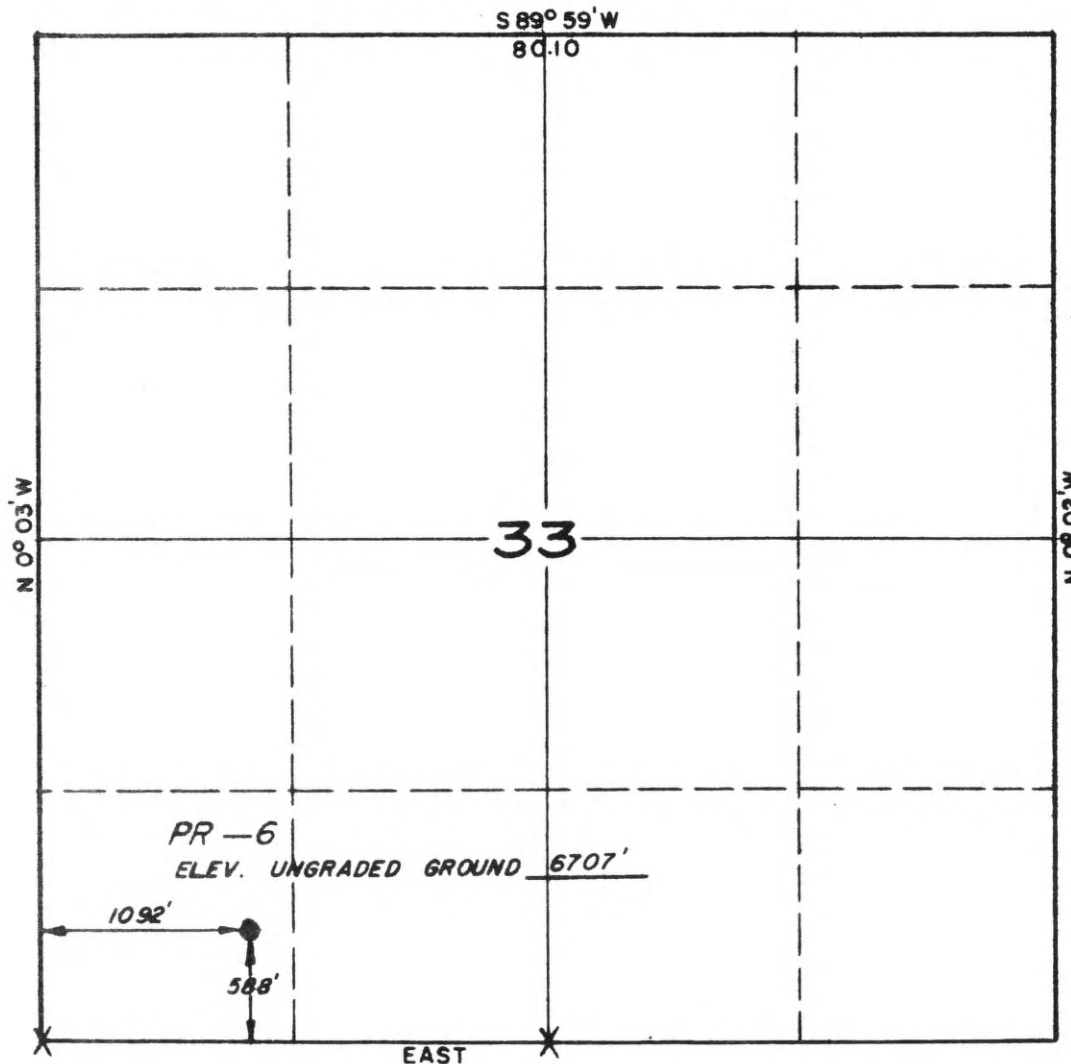
- = CORNERS LOCATED & USED (STONE)
X = CORNERS LOCATED & USED (BRASS)

PROJECT

T13S, R22E, S. L. M.

UTAH STATE GEOLOGICAL SURVEY

WELL LOCATION, PR - 6, LOCATED AS SHOWN
IN THE SW 1/4 SW 1/4 SECTION 33, T13S, R22E,
S. L. M., UTAH COUNTY, UTAH



X = CORNERS LOCATED & USED



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF

Lawrence P. Key
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

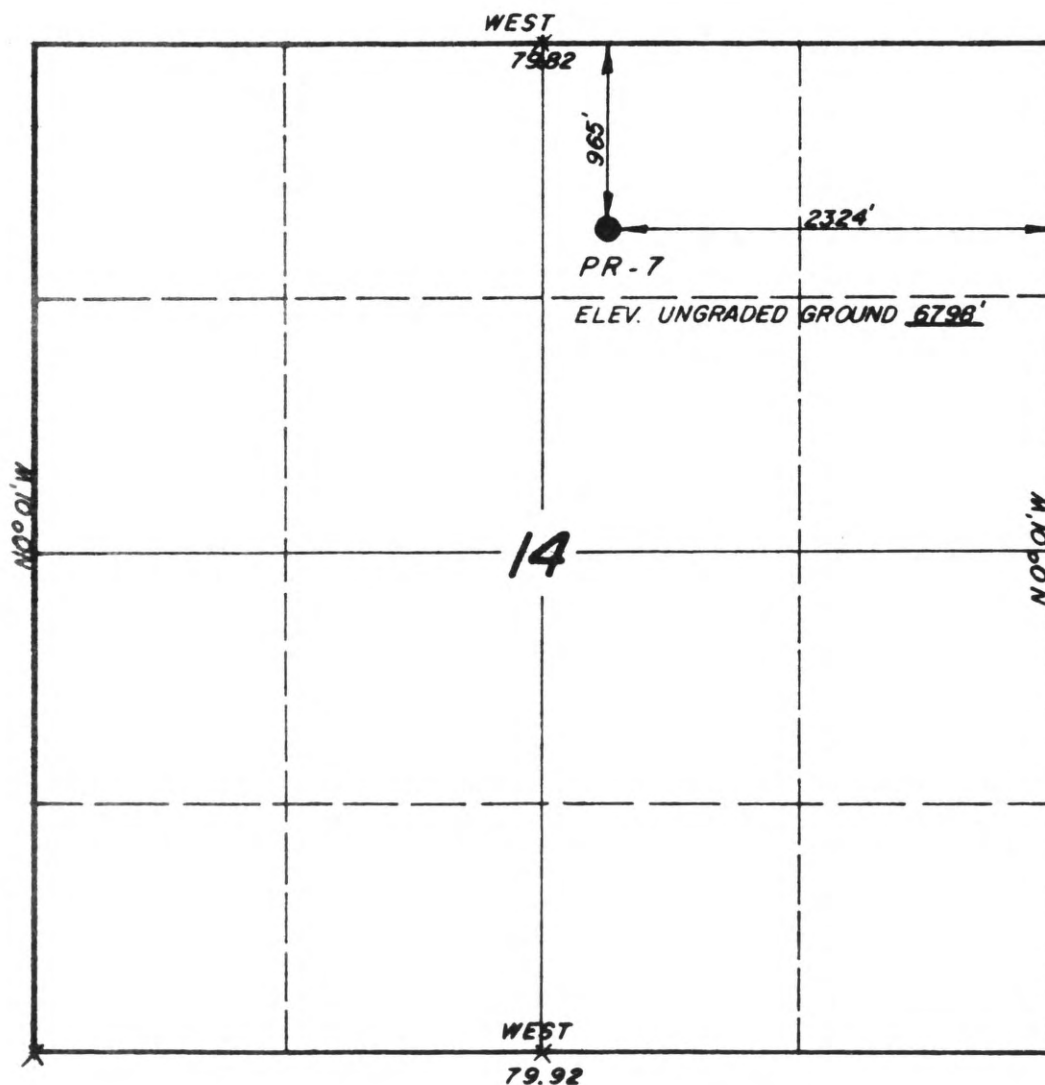
SCALE 1" = 1000'	DATE 21 SEPT. 1972
PARTY L. D. T. & R. R.	REFERENCES G. L. O. PLAT.
WEATHER WARM	FILE UTAH GEOL. SURVEY

T14S, R23E, S.L.M.

PROJECT

UTAH GEOLOGICAL SURVEY

WELL LOCATION, PR-7, LOCATED AS SHOWN
IN THE NW 1/4 NE 1/4 SECTION 14, T14S,
R23E, S.L.M., UTAH COUNTY, UTAH



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF.

Lawrence C. Kay
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 13 OCT. 1972
PARTY L.C.K., B.R.	REFERENCES G.L.O. PLAT
WEATHER COOL	FILE U. G. S.

X = CORNERS LOCATED & USED (BRASS CAPS)

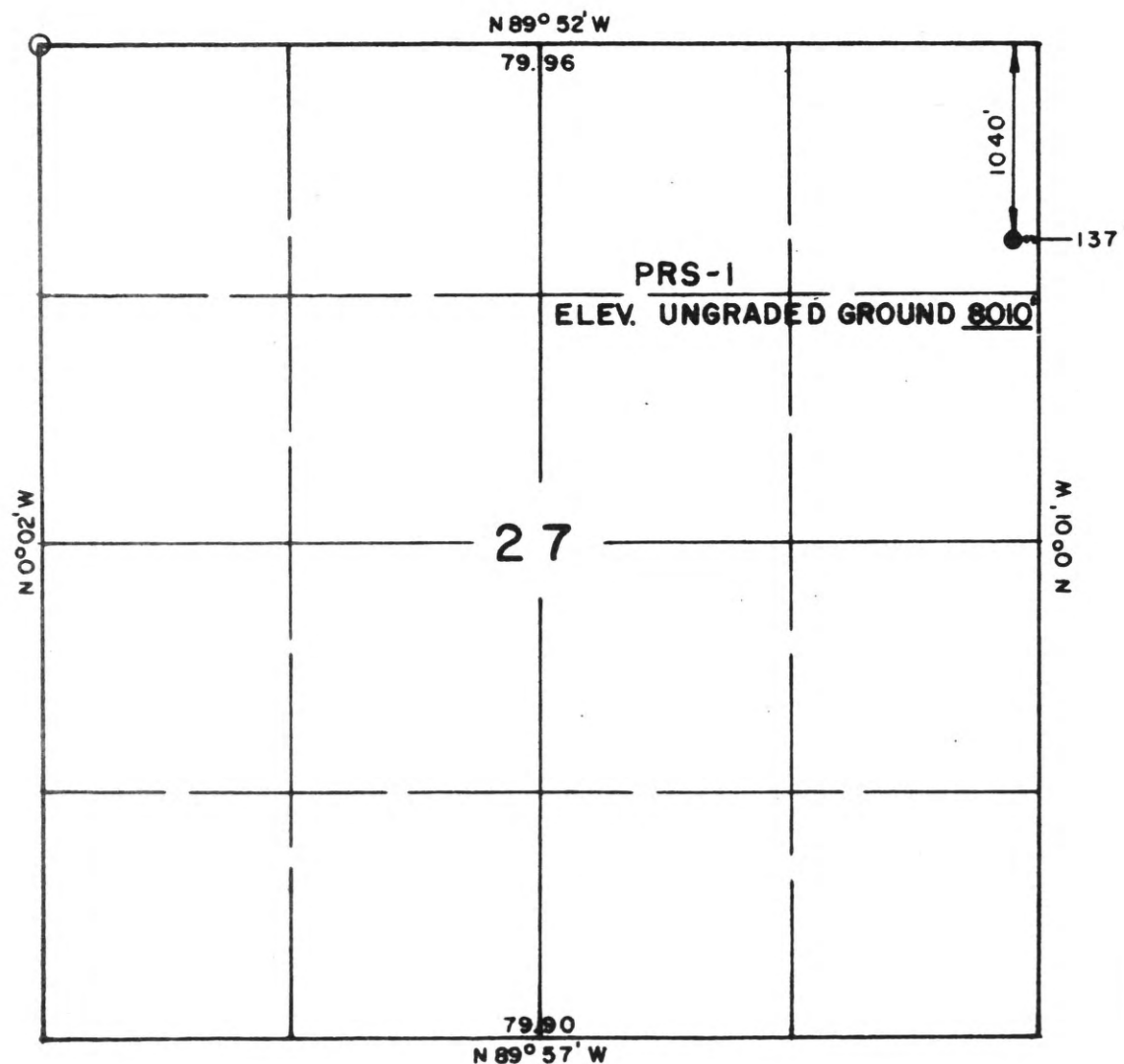
61

PROJECT

T 15 S, R 23 E, S. L. M.

UTAH GEOLOGICAL SURVEY

CORE HOLE LOCATION, PRS-1, LOCATED AS
SHOWN IN THE NE 1/4 NE 1/4 SEC. 27, T15S,
R 23 E, S. L. M., UTAH COUNTY, UTAH



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF

Lawrence E. Ray
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 3 JULY 1973
PARTY LK RK	REFERENCES G L O PLAT
WEATHER	FILE

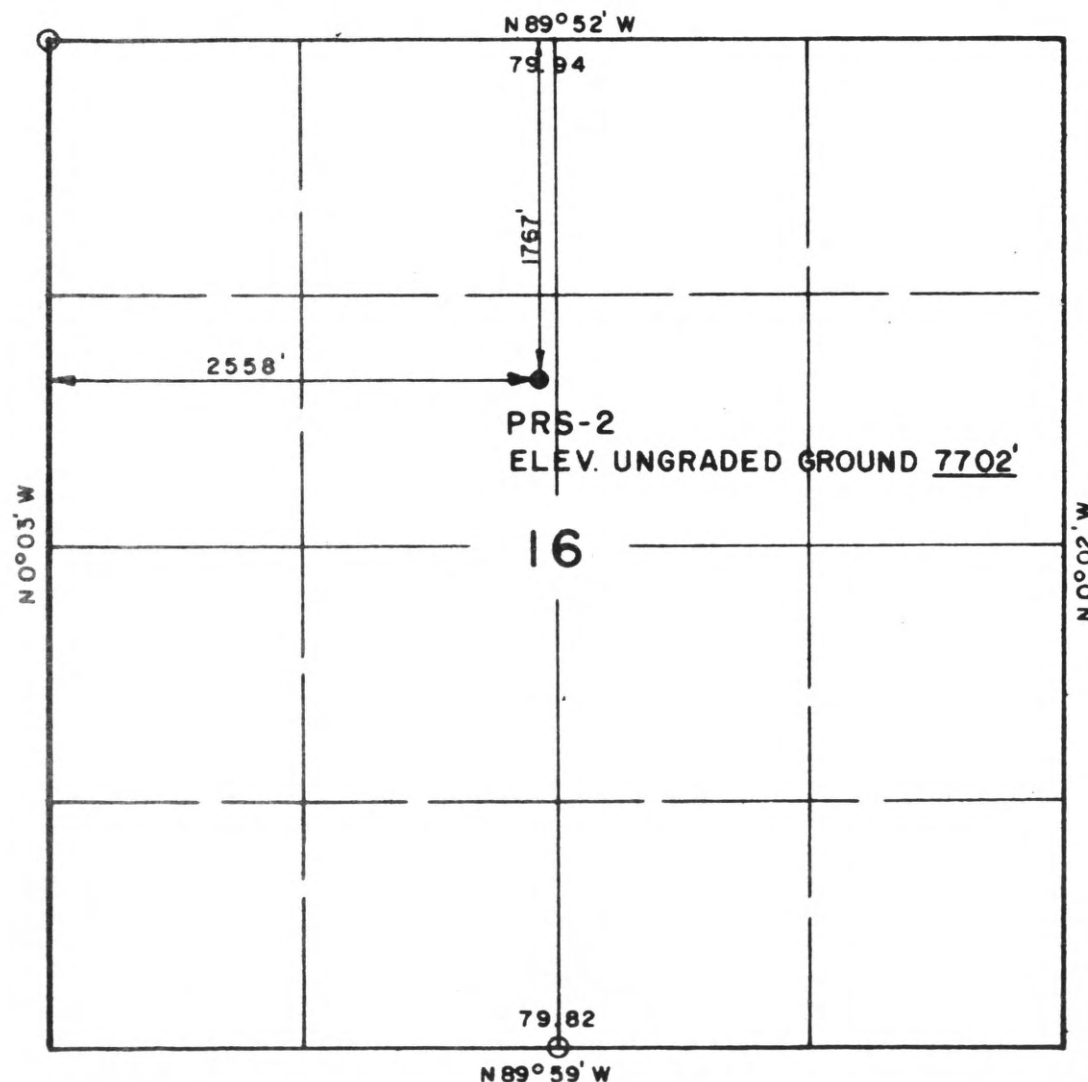
○ = CORNERS USED (BRASS CAPS)

PROJECT

T15 S, R23 E, S. L. M.

UTAH GEOLOGICAL SURVEY

CORE HOLE LOCATION, PRS-2, LOCATED AS
SHOWN IN THE SE 1/4 NW 1/4 SEC. 16, T15 S,
R23 E, S. L. M., UTAH COUNTY, UTAH



○ = CORNERS USED (BRASS CAPS)



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF

Lawrence C. Kay
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

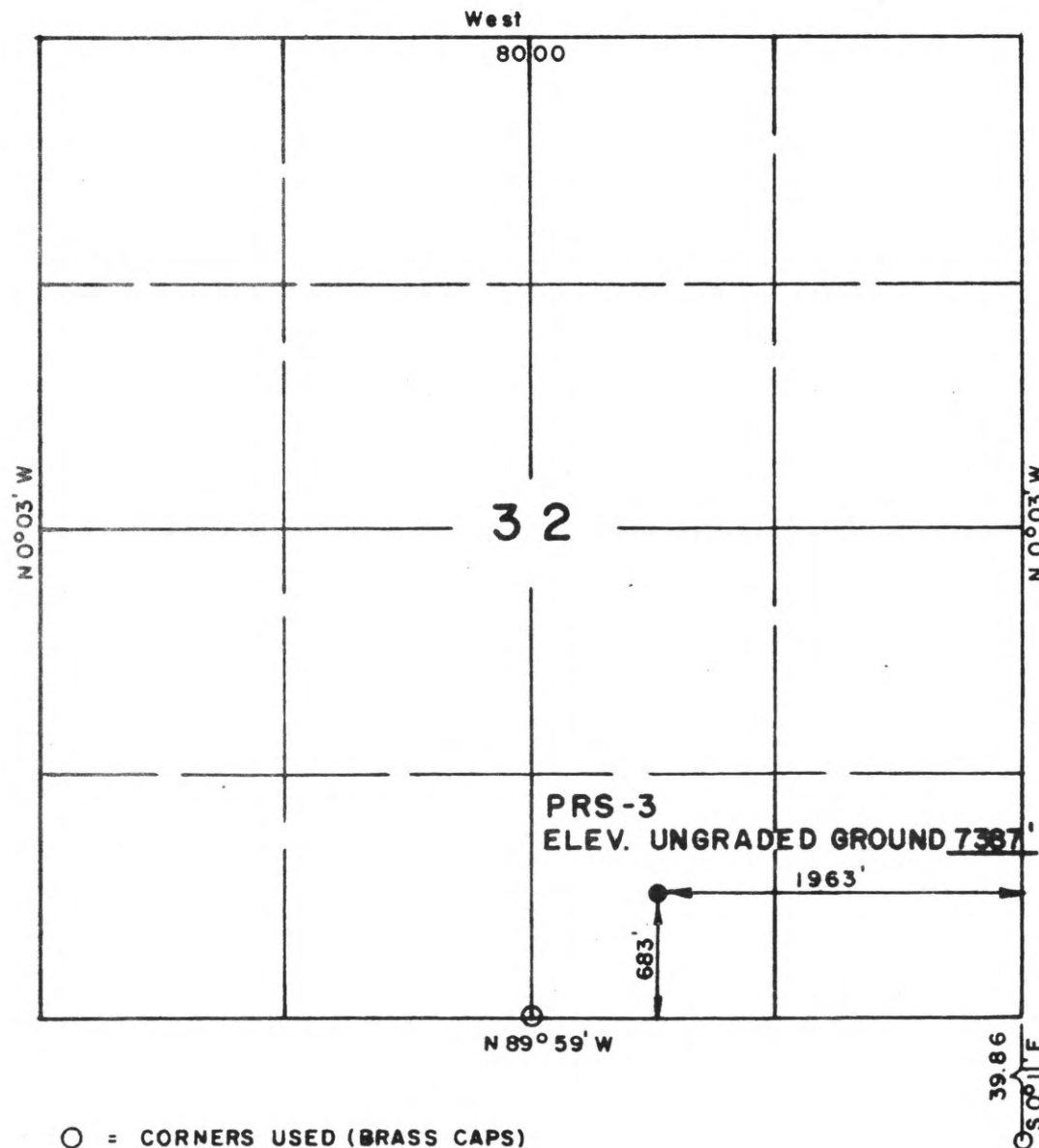
SCALE 1" = 1000'	DATE 3 JULY 1973
PARTY LK RK	REFERENCES G L O PLAT
WEATHER	FILE

PROJECT

T14S, R23E, S.L.M.

UTAH GEOLOGICAL SURVEY

CORE HOLE LOCATION, PRS-3, LOCATED AS
SHOWN IN THE SW 1/4 SE 1/4 SEC. 32, T14S,
R23E, S.L.M., UTAH COUNTY, UTAH



○ = CORNERS USED (BRASS CAPS)



CERTIFICATE

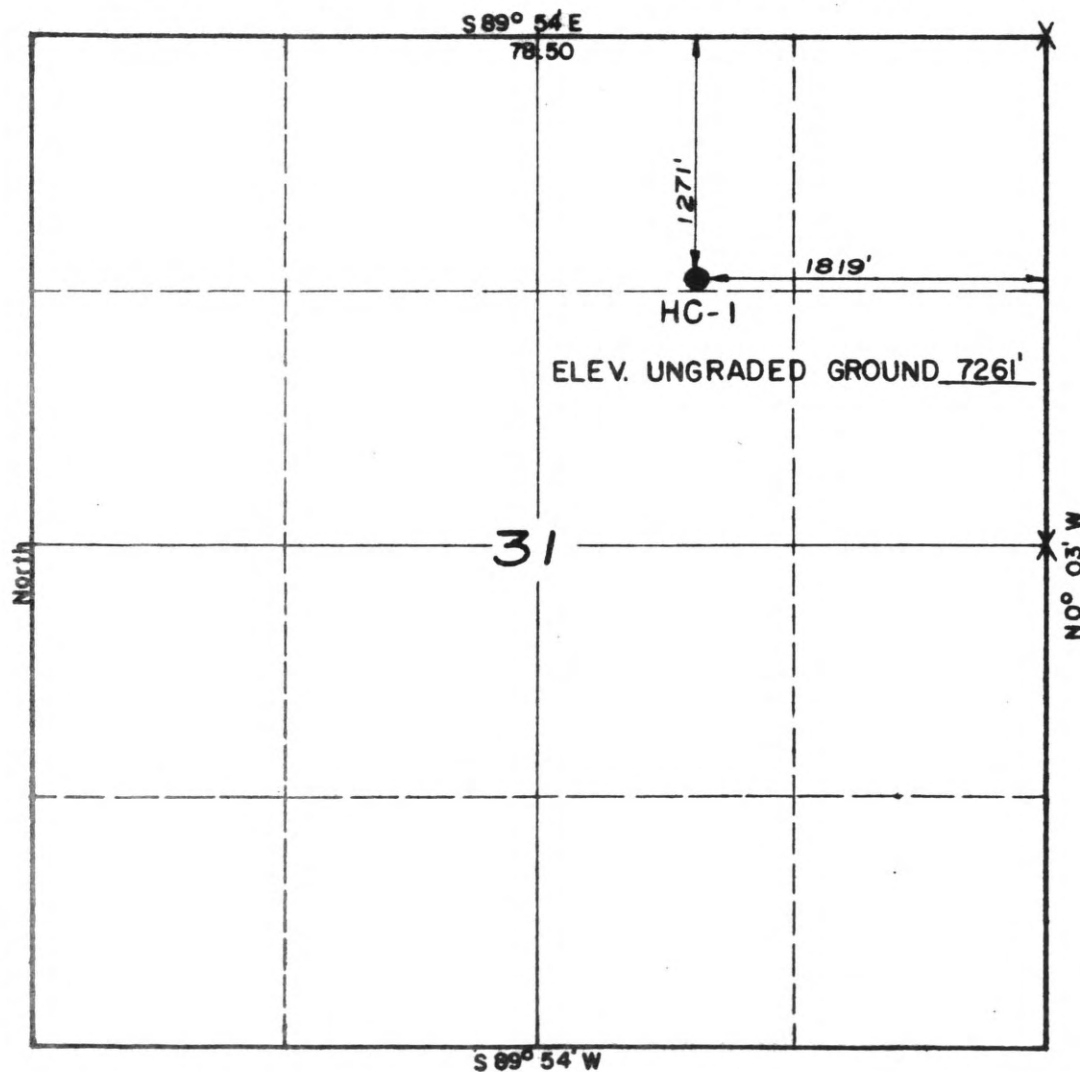
THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF

Lawrence C. Kay
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P.O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 3 JULY 1973
PARTY LK RK	REFERENCES G L O
WEATHER	FILE

T14S, R20E, S. L. M.



PROJECT

UTAH GEOLOGICAL SURVEY

Well location, HC - 1, located as shown in the NW 1/4 NE 1/4 Section 31, T14S, R20E, S. L. M., Uintah County, Utah.



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Lawrence C. Kay
REGISTERED LAND SURVEYOR
REGISTRATION NO 3157
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 21 Sept. 1972
PARTY L. C. K. & H. M.	REFERENCES G. L. O. Plat.
WEATHER Warm	FILE Utah Geo. Survey

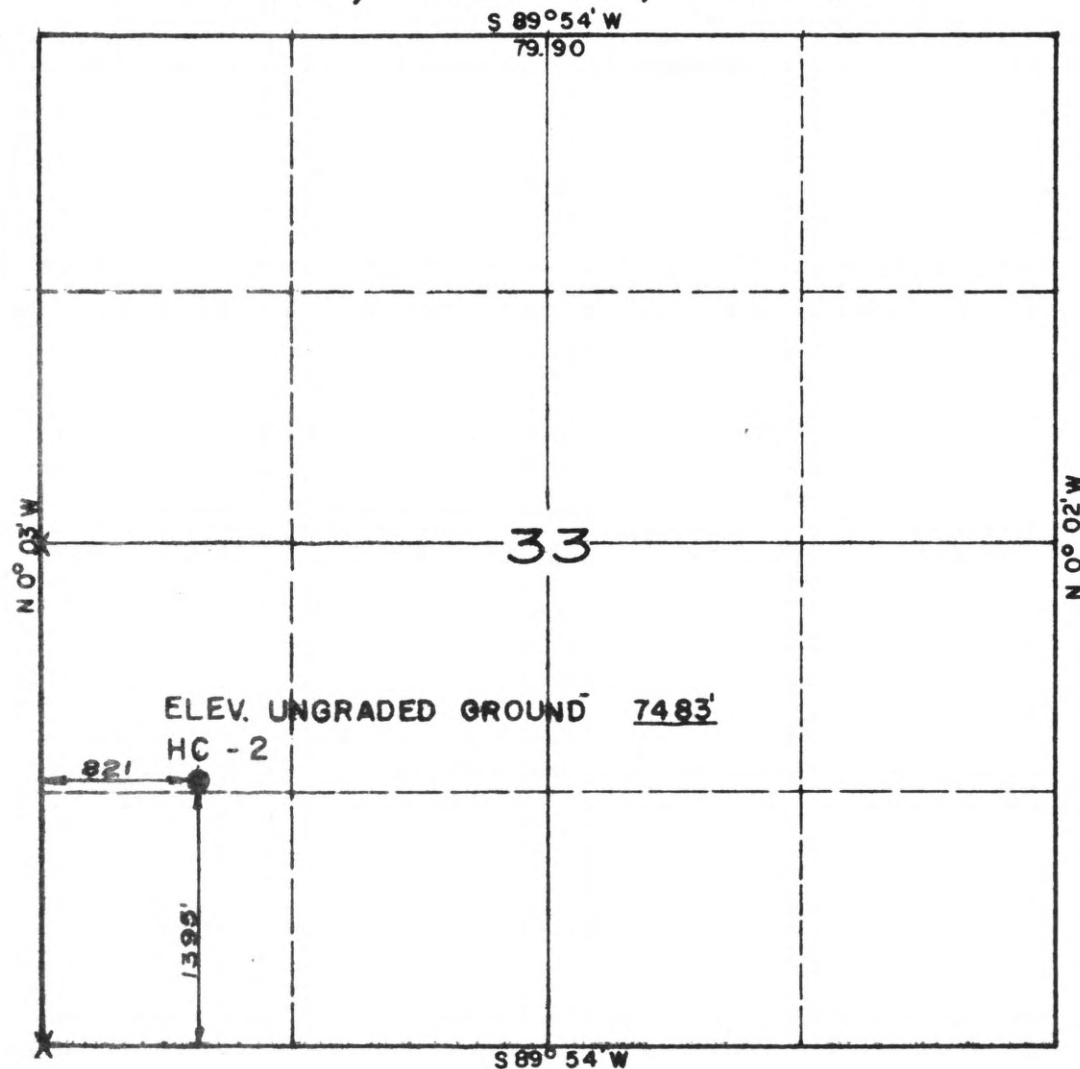
X = Corners Located & Used

T14S, R20E, S. L. M.

PROJECT

UTAH GEOLOGICAL SURVEY

Well location, HC-2, located as shown in the
NW 1/4 SW 1/4 Section 33, T14S, R20E,
S. L. M., Uintah County, Utah.



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE AND BELIEF.

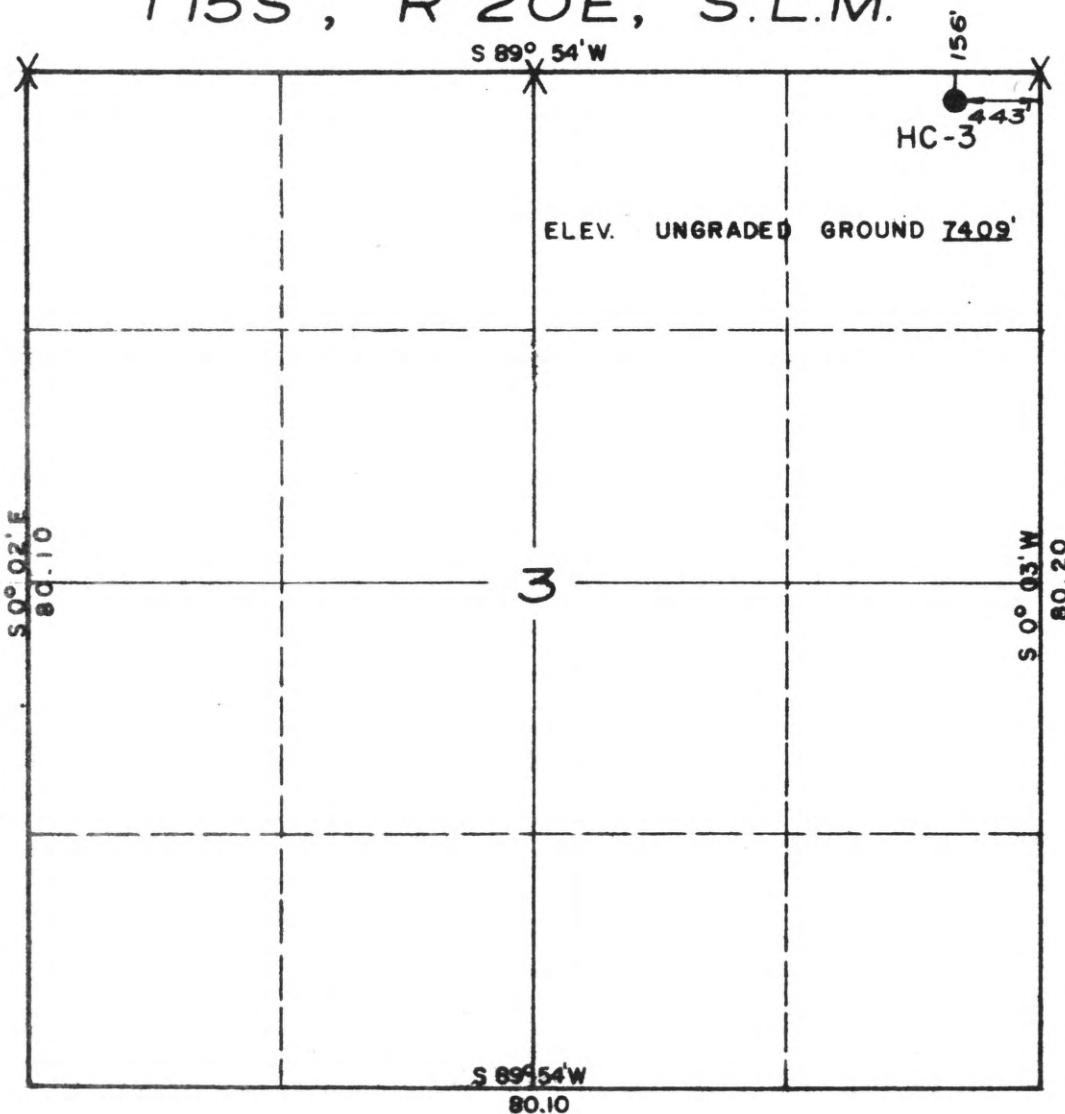
Lawrence C. Kay
REGISTERED LAND SURVEYOR
REGISTRATION NO 3131
STATE OF UTAH

X = Corners Located & Used

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 21 Sept. 1972
PARTY L. C. K. & H. M.	REFERENCES G. L. O. Plat.
WEATHER Wind	FILE Utah Geo. Survey

T15S, R 20E, S.L.M.



X = Corners Located & Used

PROJECT

UTAH GEOLOGICAL SURVEY

Well location, HC - 3, located as shown in the NE 1/4 NE 1/4 Section 3, T15S, R20E, S.L.M., Uintah County, Utah.



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Lawrence C. Key
REGISTERED LAND SURVEYOR
REGISTRATION NO 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q - 110 EAST - FIRST SOUTH
VERNAL, UTAH - 84078

SCALE 1" = 1000'	DATE 21 Sept. 1972
PARTY L. C. K. & H. M.	REFERENCES G. L. O. Plat.
WEATHER Warm	FILE Utah Geo. Survey



UTAH GEOLOGICAL SURVEY
COMPANY AS NOTED
WELL AS NOTED
FIELD
COUNTY STATE UTAH
LOCATION
FILE NO. RP-4-2820
DATE 10-25-73
ENGRS. KB:RH
FORMATION TAR SAND
ELEV.
DRLG. FLD.
CORES DIA CONV 2 1/2"
REMARKS

PAGE 1

SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
1	RR-1	83	431	527	7.9	52.0	22.8	5.0 5.1	4.1 4.2	2.0 2.2
2		101	327	1620	25.6	43.0	1.6	12.9 13.3	11.0 11.3	5.0 5.5
3		102	1110	1620	23.1	39.8	2.6	10.8 11.1	9.2 9.4	4.2 4.6
4	RR-1	103	496	744	26.4	41.7	1.5	12.0 12.3	10.0 10.3	4.7 5.1
5	PR-3A	39	64	769	24.5	48.9	23.3	14.1 14.4	12.0 12.2	5.5 6.0
6		40	70	377	28.9	55.4	12.5	19.1 19.5	16.0 16.2	7.4 8.1
7		41	82	782	30.9	45.0	12.0	16.3 16.5	13.9 14.1	6.3 6.9
8		42	15	475	27.5	53.5	9.1	17.2 17.5	14.7 14.9	6.7 7.3
9		43	10	67	35.2	26.1	21.0	10.3 10.5	9.2 9.3	4.0 4.4
10	PR-3A	44	136	1627	28.6	42.0	3.5	14.3 14.6	12.0 12.2	5.6 6.1

Top oil value in Gal/Ton, Percent Volume and Percent Weight columns was calculated from retoured oil. The lower value was calculated from extracted oil. (See attached letter for explanation of these values.)



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-25-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

PAGE 2

SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
11	PR-3A	45	145	1141	27.9	55.6	3.6	18.2 18.5	15.5 15.7	7.1 7.7
12		46	47	493	27.5	52.4	1.5	17.2 17.5	14.4 14.6	6.7 7.3
13		47	145	992	27.9	70.3	5.0	23.0 23.4	19.6 19.8	9.2 9.7
14		48	88	1142	19.7	52.8	10.2	12.2 12.4	10.4 10.6	4.7 5.2
15		49	31	1939	27.7	66.1	8.3	21.1 21.4	18.3 18.6	8.2 8.9
16		50	24	1548	30.6	60.8	18.0	21.8 22.1	18.6 18.8	8.4 9.2
17		51	8.8	744	26.8	57.8	24.6	17.5 17.7	15.5 15.8	6.8 7.4
18		52	33	1508	31.4	62.4	12.7	22.3 22.6	19.6 18.9	8.6 9.4
19		53	41	2133	31.7	60.0	19.6	21.5 22.1	19.2 19.6	8.3 9.2
20		54	9.7	1826	27.5	67.3	18.2	20.4 20.8	18.5 18.9	7.8 8.7
21		55	13	2773	30.3	64.0	16.5	22.2 22.8	19.4 19.8	8.5 9.5
22	PR-3A	56	20	1805	28.8	60.1	15.9	19.9 20.4	17.3 17.7	7.6 8.5



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-25-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

PAGE 3

SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
23	PR-3A	57	1.6	1989	31.1	58.5	21.5	20.4 21.3	18.2 18.5	8.0 8.9
24		58	25	3576	30.5	64.3	16.1	23.0 23.5	19.6 20.0	8.8 9.8
25		59	27	2733	30.9	66.0	12.3	23.4 24.0	20.4 20.9	9.0 10.0
26		60	55	1905	30.6	58.8	13.7	21.5 21.9	18.0 18.3	8.3 9.1
27		61	13	2282	28.7	64.2	19.8	21.5 21.9	18.4 18.7	8.3 9.1
28		62	17	2182	31.5	57.2	14.3	21.0 21.4	18.0 18.2	8.1 8.9
29		63	22	2529	32.6	63.1	4.3	23.6 24.1	20.2 20.5	9.1 10.0
30	PR-3A	64	51	2733	30.4	63.1	4.0	23.9 24.3	20.4 20.7	9.2 10.2
31	PR-3B	119	22	1964	27.7	69.3	5.1	22.5 23.0	19.2 19.5	8.6 9.6
32		120	6.4	2686	28.7	60.9	4.2	20.1 20.5	17.5 17.8	7.7 8.6
33		121	32	1686	28.4	67.6	7.4	22.0 22.5	19.2 19.5	8.4 9.4
34	PR-3B	122	20	1389	28.6	69.3	7.7	21.8 22.2	19.8 20.2	8.3 9.3



COMPANY UTAH GEOLOGICAL SURVEY
WELL AS NOTED
FIELD
COUNTY STATE UTAH
LOCATION
DATE 10-25-73
FORMATION TAR SAND
DRLG. FLD.
REMARKS
FILE NO. RP-4-2820
ENGRS. KB:RH
ELEV.
CORES DIA CONV 2 1/2"

PAGE 4

SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		OIL		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
35	PR-3B 123	27	1646	28.8	66.7	8.7	22.0 22.5	19.2 19.5	8.4 9.4
36	124	7.0	2232	27.9	74.7	2.1	23.9 24.4	20.8 21.2	9.2 10.2
37	125	6.1	1905	32.8	62.8	10.7	24.1 24.7	20.6 21.0	9.3 10.3
38	126	34	1369	28.6	55.9	8.4	19.2 19.5	16.0 16.3	7.3 8.1
39	127	19	2634	30.7	73.0	6.5	26.8 27.3	22.4 22.8	10.3 11.4
40	128	23	843	29.1	76.3	5.5	26.1 26.6	22.2 22.7	10.0 11.1
41	129	25	1778	25.8	61.3	5.4	18.9 19.3	15.8 16.1	7.2 8.0
42	130	2.7	2584	32.4	61.7	8.6	25.8 26.4	21.6 22.0	9.9 11.0
43	131	11	1706	29.7	70.7	11.1	24.2 24.6	21.0 21.4	9.3 10.3
44	132	6.1	1240	28.3	66.2	12.0	21.0 21.5	18.7 19.0	8.1 8.9
45	133	3.3	1944	27.9	71.7	11.8	23.4 24.0	20.0 20.4	9.1 10.0
46	PR-3B 134	1.3	1329	26.7	74.2	11.1	22.7 23.3	19.8 20.2	8.8 9.7



COMPANY UTAH GEOLOGICAL SURVEY
WELL AS NOTED
FIELD
COUNTY STATE UTAH
LOCATION
DATE 10-25-73
FORMATION TAR SAND
DRLG. FLD.
REMARKS
FILE NO. RP-4-2820
ENGRS. KB:RH
ELEV.
CORES DIA CONV 2 1/2"

PAGE 5

SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
47	PR-3B 135	7.0	664	27.7	67.6	13.3	21.5 22.0	18.7 19.2	8.3 9.2
48	136	9.4	1311	27.0	69.3	6.7	22.0 22.5	18.7 19.2	8.5 9.4
49	137	0.14	0.20	14.8	1.4	67.5	0.2 0.2	0.2 0.2	0.1 0.1
50	138	4.5	2182	29.8	71.1	4.6	25.4 25.9	21.2 21.7	9.8 10.8
51	139	4.2	1428	29.7	49.5	23.2	17.3 17.6	14.7 15.0	6.7 7.4
52	140	2.4	744	29.2	51.7	27.7	17.0 17.4	15.1 15.4	6.6 7.3
53	141	3.3	2033	31.4	67.4	12.7	25.4 26.0	21.2 21.7	10.0 10.8
54	142	3.6	1944	28.5	67.4	5.6	22.5 23.0	19.2 19.6	9.0 9.6
55	143	0.72	2778	28.6	67.0	8.8	22.1 22.5	19.2 19.6	8.6 9.4
56	144	2.7	3477	33.8	61.6	13.0	25.0 25.5	20.8 21.3	9.7 10.6
57	145	1.2	412	25.9	57.6	24.6	16.8 17.1	14.9 15.2	6.5 7.1
58	PR-3B 146	0.29	159	25.6	54.4	26.1	15.3 15.6	13.9 14.2	6.0 6.5



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-25-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
59	PR-3B 147	0.22	28	23.5	40.8	38.7	10.5 10.7	9.6 9.7	4.1 4.5
60	PR-3C 222	4.8	1230	22.2	86.5	0.9	21.8 22.5	19.3 19.9	8.4 9.4
61	223	0.63	1259	24.5	74.6	6.9	20.5 21.2	18.3 18.9	7.9 8.9
62	224	3.6	1349	22.5	79.5	0.9	20.1 20.7	17.9 18.4	7.7 8.7
63	225	2.8	1506	25.9	85.3	3.5	24.9 25.7	22.2 22.8	9.5 10.7
64	226	0.02	2003	25.2	87.7	3.6	24.9 25.7	22.2 22.8	9.5 10.7
65	227	0.01	2782	25.3	89.2	1.6	25.4 26.2	22.6 23.2	9.7 10.9
66	228	0.13	1746	26.3	87.5	1.5	25.9 26.7	23.0 23.7	9.9 11.1
67	229	0.01	1667	26.7	79.8	6.4	24.0 24.7	21.3 21.9	9.2 10.3
68	230	1.2	1210	25.3	82.2	3.6	23.5 24.2	20.8 21.5	9.0 10.1
69	231	0.60	1647	27.0	75.6	4.4	23.5 24.2	20.4 21.0	9.0 10.1
70	PR-3C 232	0.01	1845	22.8	70.2	8.8	17.5 18.0	17.0 17.5	6.7 7.5

1/3



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
WELL AS NOTED DATE 10-25-73 ENGRS. KB:RH
FIELD _____ FORMATION TAR SAND ELEV. _____
COUNTY _____ STATE UTAH DRG. FLD. _____ CORES DIA CONV 2 1/2"
LOCATION _____ REMARKS _____

PAGE 7

SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
71	PR-3C 233	8.9	1190	18.3	72.7	0.5	15.3 15.8	27.7 13.7	5.9 6.6
72	234	0.01	2480	26.6	83.1	6.4	24.9 25.7	22.1 22.8	9.6 10.7
73	235	0.01	3080	27.9	88.3	2.9	28.3 29.0	24.6 25.2	10.9 12.1
74	236	0.13	2529	28.9	89.3	0.7	29.7 30.5	25.8 26.5	11.5 12.7
75	237	0.60	1726	26.5	80.1	1.5	24.9 25.6	21.2 71.8	9.6 10.7
76	238	0.75	1409	27.2	83.9	4.4	26.8 27.6	22.8 23.5	10.3 11.5
77	239	0.90	487	23.3	80.3	5.2	21.6 22.2	18.7 19.3	8.3 9.2
78	240	0.27	3874	29.7	84.2	2.7	29.2 30.0	24.8 25.6	11.2 12.5
79	241	0.01	1875	26.7	84.3	4.5	25.9 26.6	22.5 23.1	9.9 11.1
80	242	0.15	1746	23.0	85.2	1.7	22.5 23.1	19.5 20.1	8.6 9.7
81	243	0.01	2430	26.8	87.4	3.0	26.8 27.6	23.3 24.0	10.3 11.5
82	PR-3C 244	0.01	1732	26.7	89.3	3.4	26.8 27.6	23.8 24.5	10.3 11.5



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-26-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

PAGE 8

SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
83	PR-3C 245	0.01	2579	28.5	87.1	0.7	28.5 29.3	24.7 25.5	10.9 12.2
84	246	0.01	2733	25.7	90.6	0.8	26.8 27.6	23.3 24.0	10.3 11.5
85	247	0.01	1309	25.2	87.8	1.6	24.9 25.7	22.1 22.8	9.6 10.7
86	PR-3C 248	0.11	0.46	19.9	50.2	1.0	11.0 11.4	10.0 10.3	4.3 4.7
87	PR-3D 376	38	1309	29.0	44.9	12.7	15.3 15.5	13.0 13.2	6.0 6.5
88	377	87	2831	31.5	20.3	39.3	7.7 7.7	6.4 6.5	3.0 3.2
89	378	275	2831	32.4	40.2	25.3	15.3 15.5	13.0 13.2	6.0 6.5
90	379	327	1686	30.5	36.1	40.0	12.9 13.2	11.0 11.3	5.1 5.5
91	380	521	1746	31.7	23.1	53.4	8.4 8.6	7.2 7.5	3.3 3.6
92	381	232	2034	31.8	27.1	43.3	10.1 10.3	8.5 8.8	3.9 4.3
93	382	203	1885	31.2	37.9	30.1	13.9 14.2	11.8 12.1	5.5 5.9
94	PR-3D 383	843	2865	28.4	35.3	42.6	11.5 11.7	10.0 10.2	4.5 5.0



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-26-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
95	PR-4	58	0.01	1031	22.3	83.8	4.0	20.6 20.4	18.6 18.5	7.9 8.5
96		59	5.8	559	23.4	73.9	3.8	18.7 18.5	17.3 17.2	7.2 7.7
97		60	9.4	0.55	30.3	37.6	6.3	13.2 13.1	11.4 11.4	5.1 5.5
98		61	7.3	14	23.0	18.7	17.8	4.8 4.8	4.3 4.3	1.8 2.0
99		62	26	449	26.7	43.4	7.9	13.4 13.3	11.6 11.6	5.2 5.6
100		63	81	487	27.2	69.5	7.0	21.3 21.2	18.9 18.8	8.2 8.8
101		64	2.8	6.0	20.6	34.4	32.4	7.7 7.6	7.1 7.1	2.9 3.2
102		65	16	257	24.7	48.1	12.1	13.2 13.1	11.9 11.9	5.1 5.5
103		66	65	863	31.0	59.4	3.9	21.6 21.4	18.3 18.2	8.3 8.9
104		67	37	1607	27.1	82.4	4.8	24.7 24.5	22.3 22.2	9.5 10.2
105		68	0.60	1220	27.2	82.1	3.7	25.6 25.4	22.2 22.1	9.8 10.6
106	PR-4	69	16	1426	28.0	68.8	2.1	22.3 22.1	19.3 19.2	8.6 9.2



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-26-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
107	PR-4	70	24	1170	28.4	70.4	7.4	23.0 22.8	20.0 19.8	8.8 9.5
108		71	11	1686	29.6	72.7	4.7	25.2 25.0	21.4 21.3	9.7 10.4
109		72	19	1369	28.5	76.1	3.2	24.4 24.3	21.7 21.5	9.4 10.1
110		73	5.2	11	25.1	34.6	5.2	9.8 9.7	8.7 8.7	3.8 4.1
111		74	1.3	18	28.0	61.8	3.6	19.9 19.7	17.2 17.2	7.6 8.2
112		75	1.1	5.2	25.6	52.0	6.6	15.3 15.2	13.3 13.2	5.9 6.3
113		76	0.10	1.8	27.5	62.2	7.6	19.7 19.5	17.0 16.9	7.5 8.1
114	PR-4	77	39	89	31.0	71.3	8.1	25.4 25.2	22.0 21.9	9.8 10.5
115	PR-5	153	8.5	142	24.2	58.3	5.8	14.9 14.6	14.0 13.8	5.7 6.1
116		159	19	232	24.2	53.7	7.0	14.4 14.1	13.0 12.8	5.6 6.0
117		160	3.6	232	27.7	62.1	4.7	19.4 19.1	17.2 16.9	7.5 8.0
118	PR-5	168	32	992	25.1	50.6	4.8	15.6 15.5	12.7 12.7	6.0 6.5



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-26-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
119	PR-5 169	6.0	281	29.2	58.3	5.8	19.2 19.1	17.0 17.0	7.4 8.0
120	170	4.9	75	25.9	52.2	8.5	14.9 14.8	13.4 13.4	5.7 6.2
121	218	18	330	28.8	54.2	16.6	17.3 17.5	15.6 15.8	6.7 7.3
122	219	4.9	515	27.1	68.9	6.3	20.6 20.9	18.6 18.9	8.0 8.7
123	220	11	353	24.3	57.3	3.7	15.3 15.5	13.9 14.1	6.0 6.5
124	225	15	625	30.2	73.6	1.3	23.9 24.4	22.2 22.6	9.3 10.2
125	226	9.9	783	27.1	69.0	4.8	20.6 21.0	18.6 19.0	8.0 8.8
126	227	1.2	284	24.6	62.6	7.3	16.3 16.6	15.4 15.7	6.3 6.9
127	PR-5 239	8.9	625	19.3	38.9	5.7	10.1 10.2	7.5 7.6	3.9 4.3
128	PR-1 175	1.2	203	17.9	50.8	2.8	9.6 9.4	9.1 8.9	3.8 3.9
129	176	18	64	20.8	34.6	6.3	8.2 8.0	7.2 7.1	3.2 3.3
130	PR-1 177	0.01	0.24	28.2	43.3	4.3	14.4 14.1	12.2 12.0	5.6 5.9



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-26-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
131	PR-1	178	527	1825	16.8	52.3	4.8	10.8 10.6	8.8 8.6	4.2 4.4
132		179	4.5	28	22.2	57.2	5.9	14.4 14.1	12.7 12.5	5.6 5.9
133		180	4.2	734	30.6	32.7	14.4	12.0 11.7	10.0 9.8	4.8 4.9
134		181	1.9	451	24.7	76.4	5.3	21.1 20.6	19.1 18.7	8.3 8.6
135		182	0.30	388	28.1	75.8	1.4	24.4 23.9	21.2 20.8	9.6 9.9
136		183	3.0	388	26.4	82.1	3.0	24.9 24.4	21.6 21.2	9.8 10.2
137		185	0.01	0.10	25.1	74.6	1.6	20.1 19.7	18.7 18.3	7.9 8.2
138		189	0.45	55	24.9	81.1	0.8	21.8 21.3	20.2 19.8	8.6 8.9
139		190	29	843	20.7	77.4	1.9	17.3 16.9	16.0 15.7	6.8 7.0
140		191	0.28	6.9	23.4	79.5	2.1	18.7 18.3	18.6 18.2	7.3 7.6
141		194	1.2	14	20.7	63.8	6.8	13.7 13.4	13.2 13.0	5.4 5.6
142		PR-1 197	31	152	20.3	73.8	6.9	15.8 15.5	15.0 14.7	6.2 6.5



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
WELL AS NOTED DATE 10-26-73 ENGRS. KB:RH
FIELD _____ FORMATION TAR SAND ELEV. _____
COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
143	PR-1	240	24	76	27.4	37.3	9.5	11.5 11.3	10.2 10.0	4.5 4.7
144		241	17	962	26.0	65.5	1.5	19.2 18.8	17.0 16.7	7.5 7.8
145		242	0.30	625	26.3	69.6	3.0	20.6 20.5	18.2 18.2	7.9 8.5
146		243	0.15	704	28.6	58.4	0.7	20.0 19.5	16.7 16.6	7.5 8.2
147		244	4.5	457	24.8	60.1	1.6	16.8 16.7	14.9 14.8	7.6 7.0
148		245	4.3	487	24.9	47.8	1.6	13.7 13.6	11.9 11.8	5.2 5.7
149		246	76	136	25.9	37.0	0.8	11.3 11.2	9.6 9.5	4.3 4.7
150		250	45	90	22.9	41.1	2.6	10.8 10.9	9.4 9.5	4.1 4.5
151		251	42	52	25.3	15.0	16.6	4.3 4.4	3.8 3.8	1.7 1.8
152		252	74	144	25.3	26.5	15.0	7.7 7.7	6.7 6.7	2.9 3.2
153		253	59	80	26.0	40.1	3.1	12.0 12.1	10.4 10.5	4.6 5.0
154	PR-1	254	77	290	28.2	43.3	1.4	14.4 14.5	12.2 12.4	5.5 6.1



COMPANY UTAH GEOLOGICAL SURVEY
 WELL AS NOTED
 FIELD
 COUNTY STATE UTAH
 LOCATION
 DATE 10-26-73
 FORMATION TAR SAND
 DRLG. FLD.
 REMARKS
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 ENGRS. KB:RH
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 CORES DIA CONV 2 1/2"

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
155	PR-1	255	129	284	26.7	40.4	3.0	12.5 12.6	10.8 10.9	4.4 5.2
156		256	200	734	28.2	54.7	1.4	17.7 17.9	15.4 15.6	6.8 7.5
157		257	15	813	26.9	61.6	0.7	18.7 18.9	16.6 16.7	7.2 7.9
158		258	69	774	26.5	47.2	1.5	14.4 14.5	12.5 12.6	5.5 6.1
159		259	0.01	0.09	25.5	30.5	0.8	9.1 9.2	7.8 7.8	3.5 3.8
160		260	61	1428	22.6	17.7	6.6	4.6 4.6	4.0 4.1	1.7 1.9
161		261	26	1508	27.2	54.0	2.2	16.5 16.7	14.7 14.8	6.3 7.0
162	PR-1	262	89	625	27.6	44.6	2.9	13.9 14.0	12.3 12.5	5.3 5.9
163	PR-2	21	4.5	113	23.8	71.5	3.8	18.0 17.5	17.0 16.6	7.0 7.3
164		45	7.2	25	19.6	56.7	1.0	11.7 11.4	11.1 10.8	4.6 4.8
165		46	8.1	336	16.3	81.7	2.4	14.6 14.2	13.2 12.9	5.7 5.9
166	PR-2	51	7.2	63	21.5	52.5	4.2	12.5 12.1	11.3 11.0	4.8 5.1



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-2820
 WELL AS NOTED DATE 10-26-73 ENGRS. RH:KB
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
167	PR-2	52	63	412	22.6	37.5	3.5	9.6 9.3	8.5 8.4	8.5 3.9
168		53	19	32	24.5	46.5	1.6	11.5 11.1	10.4 10.1	4.5 4.6
169		54	15	87	19.0	46.7	7.4	9.3 9.0	8.9 8.5	3.7 3.8
170		60	10	64	14.4	26.1	2.1	5.5 5.2	5.2 5.0	1.5 2.0
171		62	33	217	19.1	68.5	1.0	14.1 13.6	13.1 12.6	5.5 5.7
172		63	14	257	19.2	63.6	2.6	12.9 12.5	12.3 11.8	5.1 5.2
173		66	0.90	32	13.7	45.1	3.6	6.2 6.0	6.2 6.0	2.4 2.5
174		67	3.4	232	19.5	51.2	2.0	11.0 10.6	10.0 9.6	4.3 4.4
175		90	14	481	24.3	40.3	5.4	11.0 10.6	9.8 9.4	4.3 4.4
176	PR-2	91	0.60	14	27.2	68.3	11.4	20.1 19.4	18.7 18.0	7.6 8.1
177	PR-6	162	0.75	22	27.5	52.8	6.2	15.8 15.4	14.3 14.0	6.0 6.4
178	PR-6	163	0.03	23	28.2	78.7	3.2	23.9 23.3	22.2 21.6	9.1 9.7



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
WELL AS NOTED DATE 10-27-73 ENGRS. KB:RH
FIELD _____ FORMATION TAR SAND ELEV. _____
COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
179	PR-6	169	232	625	28.6	33.6	31.8	11.0	9.6	4.2
								10.7	9.3	4.5
180		170	1.5	382	18.3	77.6	7.1	15.3	14.2	5.8
								14.9	13.8	6.2
181		171	3.6	287	14.2	45.1	31.6	6.7	6.4	2.5
								6.5	6.2	2.7
182		172	0.30	493	24.9	81.8	5.2	22.5	20.4	8.6
								21.9	19.9	9.1
183		173	1.3	96	19.2	40.1	32.8	7.9	7.7	3.0
								7.7	7.5	3.2
184		176	12	130	20.6	67.1	5.8	17.3	13.8	6.6
								16.8	13.5	7.0
185		177	17	197	25.4	54.7	17.3	15.3	13.9	5.8
								14.9	13.5	6.2
186		178	0.01	194	25.2	73.1	2.8	20.4	18.5	7.7
								19.8	17.9	8.3
187		179	3.9	287	23.7	64.2	11.0	16.8	15.2	6.4
								16.3	17.8	6.8
188		180	27	302	22.8	41.6	28.0	10.1	9.5	3.8
								9.8	9.3	4.1
189		181	9.4	191	22.0	71.4	7.3	16.5	15.7	6.3
								16.1	15.3	6.7
190	PR-6	182	71	423	27.8	48.8	7.6	15.3	13.6	5.8
								14.9	13.2	6.2



COMPANY UTAH GEOLOGICAL SURVEY
WELL AS NOTED
FIELD
COUNTY STATE UTAH
LOCATION
DATE 10-27-73
FORMATION TAR SAND
DRLG. FLD.
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CORES DIA CONV 2 1/2"

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
191	PR-6	183	307	674	29.2	38.0	19.5	12.2 11.9	11.1 10.8	4.6 5.0
192		184	81	539	29.4	50.6	9.2	17.5 17.0	15.2 14.5	6.7 7.1
193		185	0.01	1071	29.1	79.6	1.4	25.6 24.9	23.3 22.6	9.8 10.4
194		192	12	188	31.1	55.1	11.2	19.7 19.4	17.1 16.9	7.5 8.1
195		193	0.17	64	27.9	55.3	2.9	17.7 17.5	15.4 15.2	6.8 7.3
196		229	0.01	11	18.9	59.9	5.8	12.0 12.3	11.4 11.7	4.6 5.1
197		230	4.6	635	20.6	48.5	1.9	10.8 11.1	10.0 10.3	4.1 4.6
198		235	57	165	25.5	30.9	6.7	9.1 9.4	7.9 8.1	3.5 3.9
199		236	1.2	18.5	22.1	44.3	12.2	10.5 10.9	9.8 10.0	4.0 4.5
200		237	2.4	43	23.8	49.2	11.7	13.2 13.6	11.7 12.0	5.1 5.7
201		238	156	319	26.7	23.5	3.7	7.7 7.9	6.2 6.5	2.9 3.3
202	PR-6	239	0.06	1.5	29.0	20.3	23.7	7.0 7.2	5.9 6.1	2.7 3.0



COMPANY UTAH GEOLOGICAL SURVEY
WELL AS NOTED
FIELD
COUNTY STATE UTAH
LOCATION
DATE 10-27-73
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CORES DIA CONV 2 1/2"

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
203	PR-6	240	0.01	5.8	31.9	23.8	17.5	9.1 9.4	7.6 7.8	3.5 3.9
204		241	23	6.7	28.9	40.5	19.7	12.9 13.3	11.7 12.1	5.0 5.6
205		242	22	68	24.2	37.6	34.7	9.8 10.1	9.1 9.4	3.8 4.2
206		243	35	113	29.1	29.9	27.1	10.1 10.4	8.8 9.0	3.9 4.3
207		244	53	110	25.6	31.9	22.5	9.6 10.0	8.5 8.8	3.8 4.1
208		245	0.30	13	24.5	55.0	25.3	14.9 15.3	13.8 14.2	5.7 6.4
209		246	107	240	24.1	42.3	40.6	11.0 11.3	10.2 10.5	4.2 4.7
210		247	53	133	29.7	26.9	14.5	9.3 9.6	8.0 8.2	3.6 4.0
211		248	121	330	27.7	38.3	19.5	11.7 12.1	10.7 11.0	4.5 5.0
212		249	330	714	26.9	23.4	23.4	7.2 7.4	6.3 6.4	2.8 3.1
213		250	21	226	27.4	35.3	15.3	10.8 11.1	9.4 9.6	4.1 4.6
214	PR-6	251	47	595	26.6	80.1	6.4	23.5 24.2	21.3 21.9	9.0 10.0



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
WELL AS NOTED DATE 10-27-73 ENGRS. KB:RH
FIELD _____ FORMATION TAR SAND ELEV. _____
COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
215	PR-6	252	0.01	551	28.0	78.9	8.2	22.8 23.4	22.1 22.7	8.7 9.8
216		253	0.60	3.7	19.8	82.3	9.6	16.8 17.3	16.3 16.7	6.4 7.2
217		277	49	182	24.8	42.7	6.9	12.0 12.3	10.6 10.9	4.6 5.1
218		278	2.7	16	25.3	22.9	13.0	6.7 6.9	5.6 6.0	2.6 2.9
219		329	8.5	29	28.3	14.8	50.8	4.6 4.7	4.2 4.3	1.7 2.0
220		330	25	84	25.6	15.6	59.7	4.3 4.4	4.0 4.1	1.7 1.9
221		331	22	127	26.8	20.9	49.6	6.0 6.2	5.6 5.7	2.3 2.6
222		338	3.7	13	18.9	15.3	70.4	2.9 3.0	2.9 2.9	1.1 1.2
223		339	3.0	4.8	25.6	17.2	45.7	4.8 4.9	4.3 4.5	1.8 2.0
224		341	48	72	25.5	13.7	40.7	3.8 3.9	3.5 3.6	1.5 1.6
225		342	243	694	23.9	27.2	5.0	7.4 7.6	6.5 6.6	2.9 3.2
226	PR-6	343	22	57	17.3	27.1	21.3	4.8 4.9	4.7 4.8	1.8 2.1



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-27-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
227	PR-6 350	2.8	4.2	26.0	9.2	4.6	2.9 3.0	2.4 2.5	1.1 1.2
228	351	1.5	1.9	28.7	4.5	68.1	1.4 1.5	1.3 1.3	0.6 0.6
229	356	0.90	3.7	14.6	68.4	10.9	9.1 9.4	10.0 10.3	3.5 3.9
230	357	4.5	9.7	26.2	45.5	5.7	13.2 13.6	12.0 12.3	5.1 5.7
231	358	76	136	21.7	47.8	20.2	10.8 11.1	10.5 10.8	4.1 4.6
232	374	440	574	25.8	17.4	4.7	5.3 5.4	4.5 4.6	2.0 2.3
233	376	344	434	27.1	16.9	20.6	5.3 5.4	4.6 4.7	2.0 2.3
234	377	70	96	21.0	19.0	19.0	4.3 4.4	4.0 4.1	1.7 1.9
235	378	77	101	24.6	13.4	8.6	3.8 3.9	3.3 3.4	1.5 1.6
236	384	61	116	27.4	12.4	38.7	3.8 3.9	3.4 3.5	1.5 1.6
237	385	99	197	24.5	17.5	8.2	5.0 5.2	4.3 4.4	1.9 2.1
238	PR-6 386	203	330	24.9	20.4	5.6	5.5 6.2	5.1 5.2	2.3 2.6



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-27-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
239	PR-6	387	110	188	24.3	14.4	6.2	4.1 4.1	3.5 3.6	1.6 1.7
240		388	93	214	24.7	18.6	4.9	5.3 5.3	4.6 4.6	2.0 2.2
241	PR-6	389	371	744	17.8	2.2	32.6	0.5 0.5	0.4 0.4	0.2 0.2
242	PR-7	21	3.0	20	23.3	42.9	7.3	11.0 11.0	10.0 10.0	4.2 4.6
243		27	7.9	595	25.6	3.5	50.4	1.0 1.0	0.9 0.9	0.4 0.4
244		28	1.5	1042	27.9	64.8	22.5	20.9 20.9	18.1 18.1	7.9 8.7
245		29	144	1369	27.9	32.2	32.2	10.3 10.3	9.0 9.0	3.9 4.3
246		30	13	1875	30.9	27.8	27.8	10.1 10.1	8.6 8.6	3.8 4.2
247		31	0.33	1706	30.5	35.4	17.7	12.9 13.0	10.8 10.8	4.9 5.4
248		32	1.9	1944	27.9	48.7	12.9	16.3 16.3	13.6 13.6	6.2 6.8
249		33	11	1805	28.4	77.5	7.1	25.9 25.9	22.0 22.0	9.8 10.8
250	PR-7	34	3.6	1220	28.9	79.3	4.5	26.4 26.4	22.9 22.9	10.0 11.0



COMPANY UTAH GEOLOGICAL SURVEY
WELL AS NOTED
FIELD
COUNTY STATE UTAH
LOCATION
DATE 10-27-73
FORMATION TAR SAND
DRLG. FLD.
REMARKS
FILE NO. RP-4-2820
ENGRS. RH:KB
ELEV.
CORES DIA CONV 2 1/2"

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
251	PR-7	35	0.01	2387	29.1	80.2	2.7	27.3 27.4	23.3 23.3	10.4 11.4
252		36	0.01	2634	28.0	67.2	2.9	23.0 23.0	18.8 18.8	8.7 9.6
253		37	8.1	1905	23.5	71.5	5.5	18.9 19.0	16.8 16.8	7.2 7.9
254		38	0.01	2833	29.8	78.2	2.7	27.3 27.4	23.3 23.3	10.4 11.4
255		39	0.01	2530	28.6	87.8	4.5	28.3 28.3	25.1 25.1	10.7 11.8
256		40	0.01	2182	29.7	87.3	3.0	29.2 29.3	26.0 26.0	11.1 12.2
257		41	0.01	2033	29.0	86.2	2.8	28.8 28.8	25.0 25.0	10.9 12.0
258		82	1.9	60	21.7	45.1	16.5	10.5 10.6	9.8 9.8	4.0 4.4
259		83	55	179	24.6	34.5	27.6	9.6 9.6	8.5 8.5	3.6 4.0
260		99	6.0	521	16.2	51.7	8.0	9.1 9.1	8.4 8.5	3.5 3.8
261		100	11	734	25.6	53.6	6.7	15.8 15.8	13.8 13.8	6.0 6.6
262	PR-7	118	12	545	22.4	50.4	9.8	12.5 12.5	11.3 11.3	4.7 5.2



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-27-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
263	PR-7 119	0.45	3.0	19.3	70.1	14.5	13.9 13.9	13.5 13.5	5.3 5.8
264	PR-7 184	22	1200	20.6	43.1	15.0	9.6 9.6	8.9 8.9	3.6 4.0
265	PRS-1 27	16	20	16.4	35.3	13.4	6.2 6.2	5.8 5.8	2.4 2.6
266	28	226	330	27.9	30.8	1.4	10.1 10.0	8.6 8.6	3.8 4.2
267	29	2.1	9.6	26.3	51.4	4.9	14.9 14.6	13.5 13.5	5.6 6.2
268	30	0.01	0.60	15.9	76.1	8.2	13.4 13.4	12.2 12.2	5.1 5.6
269	31	119	156	24.1	25.7	1.7	7.1 7.2	6.3 6.2	2.7 3.0
270	35	6.0	18	24.6	21.1	9.0	5.8 5.7	5.2 5.2	2.2 2.4
271	36	499	574	18.3	24.6	17.5	4.8 4.8	4.5 4.5	1.8 2.0
272	37	24	41	35.2	13.3	20.5	5.3 5.3	4.7 4.7	2.2 2.2
273	38	0.60	3.0	26.9	24.1	49.8	7.1 7.2	6.5 6.5	2.7 3.0
274	PRS-1 39	9.1	127	27.4	47.1	24.4	13.9 13.9	12.9 12.9	5.3 5.8

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COMPANY UTAH GEOLOGICAL SURVEY
 WELL AS NOTED DATE 10-27-73 FILE NO. RP-4-2820
 FIELD _____ ENGRS. KB:RH
 COUNTY _____ STATE UTAH FORMATION TAR SAND ELEV. _____
 LOCATION _____ DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		OIL		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
275	PRS-1 42	0.03	1.8	23.2	47.4	21.5	10.5 10.5	11.0 11.0	4.0 4.4
276	43	21	32	25.7	64.7	6.6	18.7 18.7	16.6 16.6	7.2 7.8
277	45	1.8	226	26.4	51.2	6.4	14.9 14.9	13.5 13.5	5.7 6.2
278	47	0.03	0.75	20.0	38.9	31.4	9.6 16.0	7.8 7.8	3.7 4.0
279	48	0.09	0.90	23.2	48.7	24.5	12.5 12.5	11.3 11.3	4.6 5.2
280	49	1.5	359	20.9	62.2	10.5	14.4 14.4	13.0 13.0	5.5 6.0
281	65	134	188	24.1	29.4	44.5	7.7 7.7	7.1 7.1	2.9 3.2
282	68	3.3	6.1	30.6	13.7	34.0	4.8 4.8	4.2 4.2	1.8 2.0
283	69	7.2	14	30.2	14.2	42.1	4.8 4.8	4.3 4.3	1.8 2.0
284	74	0.17	1.8	31.8	30.7	13.8	10.5 10.5	9.8 9.8	4.0 4.4
285	75	30	57	29.9	27.1	26.1	9.6 9.6	8.2 8.2	3.7 4.0
286	PRS-1 76	19	41	30.8	25.6	32.5	9.1 9.1	7.9 7.9	3.5 3.8



UTAH GEOLOGICAL SURVEY
 COMPANY AS NOTED
 WELL _____ DATE 10-27-73
 FIELD _____ FORMATION TAR SAND
 COUNTY _____ STATE UTAH
 LOCATION _____ DR LG. FLD. _____
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 CORES DIA CONV 2 1/2"

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		OIL		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
287	PRS-1 77	20	41	24.1	33.6	22.8	9.1 9.1	8.1 8.0	3.5 3.8
288	78	15	45	26.9	48.4	14.5	14.4 14.4	13.0 13.0	5.5 6.0
289	79	0.46	3.0	30.5	29.4	13.1	10.5 10.5	9.0 9.0	4.0 4.4
290	80	6.0	74	22.2	49.2	11.7	12.0 12.0	10.9 10.9	4.6 5.0
291	92	10	24	24.8	22.1	17.3	6.2 6.2	5.5 5.5	2.4 2.6
292	93	55	113	27.3	18.3	22.7	5.8 5.7	5.0 5.0	2.2 2.4
293	94	0.01	1.6	20.3	42.2	2.5	9.1 9.0	8.6 8.6	3.5 3.8
294	97	302	481	32.9	15.5	16.7	6.2 6.2	5.1 5.0	2.4 2.6
295	98	57	243	26.8	35.8	7.8	11.0 10.9	9.6 9.5	4.3 4.6
296	99	104	394	31.2	30.1	14.4	11.0 10.9	9.4 9.3	4.3 4.6
297	100	446	982	33.2	28.9	11.4	11.0 10.9	9.6 9.5	4.3 4.6
298	PRS-1 101	43	302	33.0	34.3	4.9	13.9 13.7	11.4 11.3	5.4 5.7



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-27-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
299	PRS-1 102	272	674	30.6	32.7	3.9	12.0 11.9	10.0 9.9	4.7 5.0
300	103	67	654	33.6	52.3	4.8	20.6 20.4	17.6 17.4	8.0 8.5
301	104	11	446	27.0	72.2	6.3	22.1 21.8	19.6 19.4	8.6 9.1
302	105	341	417	15.8	41.1	23.4	6.7 6.6	6.5 6.4	2.6 2.8
303	106	1924	2182	20.7	26.6	28.5	6.7 6.6	5.5 5.4	2.6 2.8
304	107	724	972	26.0	30.2	8.1	9.1 9.0	7.9 7.8	3.5 3.8
305	108	1200	1448	24.9	26.9	1.6	7.7 7.6	6.7 6.6	3.0 3.2
306	109	654	1190	29.0	37.3	7.2	12.5 12.3	10.8 10.7	4.8 5.2
307	110	96	645	29.7	34.4	1.3	12.0 11.9	10.2 10.1	4.7 5.0
308	111	154	783	28.9	33.2	2.8	11.5 11.4	9.6 9.5	4.5 4.8
309	112	101	615	25.1	45.5	4.0	13.2 13.1	11.5 11.3	5.1 5.4
310	PRS-1 113	57	664	28.4	43.0	2.8	14.4 14.2	12.2 12.1	5.6 5.9



UTAH GEOLOGICAL SURVEY
COMPANY AS NOTED
WELL
FIELD
COUNTY
LOCATION
DATE 10-27-73
FORMATION TAR SAND
STATE UTAH
DRLG. FLD.
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ENGRS. KB:RH
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CORES DIA CONV 2 1/2"

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
311	PRS-1 114	7.8	813	29.9	50.2	4.0	17.3 17.1	15.0 14.9	6.7 7.1
312	115	1.2	625	30.7	79.6	7.2	26.8 26.6	24.3 24.1	10.4 11.1
313	116	0.45	714	25.2	80.6	7.1	21.6 21.4	20.5 20.3	8.4 8.9
314	117	0.01	3.3	14.6	69.9	15.7	10.5 10.4	10.2 10.1	4.1 4.4
315	159	130	615	34.1	18.7	26.9	7.7 7.8	6.4 6.5	3.0 3.3
316	160	3.4	551	35.4	26.5	30.0	11.0 11.1	9.4 9.5	4.3 4.6
317	161	200	1686	27.5	42.6	3.6	13.4 13.6	11.7 11.8	5.3 5.7
318	162	1270	3080	34.0	35.3	11.8	14.4 14.5	12.0 12.1	5.6 6.1
319	163	744	2981	32.7	28.7	10.7	11.5 11.6	9.4 9.5	4.5 4.8
320	164	1309	3679	34.2	33.6	6.7	14.4 14.5	11.5 11.7	5.6 6.1
321	165	803	3080	36.1	30.7	19.1	13.9 14.0	11.2 11.3	5.5 5.9
322	PRS-1 166	893	1480	32.7	27.5	15.6	11.0 11.1	9.0 9.1	4.3 4.6



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-27-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
323	PRS-1 167	428	3179	27.9	59.5	15.4	18.7 18.9	16.6 16.8	7.3 7.9
324	168	90	1785	32.6	26.3	4.9	10.5 10.7	8.6 8.7	4.1 4.4
325	169	521	2782	31.9	26.6	9.7	10.5 10.7	8.5 8.5	4.1 4.4
326	170	0.04	30	29.8	79.9	5.7	27.3 27.2	23.8 23.6	10.7 11.3
327	171	5.5	1468	25.4	82.3	5.1	22.5 22.4	20.9 20.8	8.8 9.4
328	172	0.01	2728	34.3	82.8	2.3	32.6 32.4	28.3 28.2	12.8 13.5
329	173	0.15	1989	27.7	81.2	2.9	25.9 25.8	22.5 22.4	10.2 10.7
330	174	0.01	3.1	29.8	91.1	1.3	31.2 31.0	27.1 27.0	12.2 12.9
331	176	1.8	3973	12.1	47.1	35.5	6.2 6.2	5.7 5.6	2.4 2.6
332	177	4.5	6.0	32.9	16.1	42.0	5.8 5.7	5.3 5.3	2.3 2.4
333	178	6954	6954	28.4	24.9	18.6	7.7 7.6	7.1 7.1	3.0 3.2
334	PRS-1 179	9.8	35	27.7	32.1	16.2	9.6 9.5	8.9 8.8	3.8 4.0



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-27-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
335	PRS-1 180	9930	9930	27.5	27.6	30.1	9.6 9.5	7.5 7.5	3.8 4.0
336	181	803	8928	25.9	85.7	7.0	24.0 23.9	22.2 22.1	9.4 10.0
337	199	20	704	32.2	34.7	13.6	13.4 13.4	11.2 11.1	5.3 5.6
338	200	223	1944	36.5	29.1	17.0	13.2 13.3	10.6 10.7	5.1 5.6
339	201	6.0	1349	36.2	30.7	17.7	13.9 14.0	11.2 11.3	5.4 5.9
340	202	76	1746	29.8	48.3	20.1	16.3 16.5	14.5 14.6	6.3 6.9
341	203	605	2778	27.0	26.3	43.0	8.1 8.2	7.1 7.2	3.2 3.4
342	204	635	3769	35.0	25.1	23.8	10.5 10.7	8.8 8.9	4.1 4.4
343	205	1944	2166	31.4	28.6	12.4	11.0 11.1	9.0 9.1	4.3 4.6
344	206	1289	3874	34.7	21.9	24.2	9.1 9.2	7.6 7.7	3.5 3.8
345	207	417	3130	34.1	25.2	19.0	10.0 10.2	8.6 8.7	3.9 4.2
346	PRS-1 208	1408	4364	32.0	30.0	3.7	11.0 11.1	9.6 9.7	4.3 4.6



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
WELL AS NOTED DATE 10-27-73 ENGRS. KB:RH
FIELD _____ FORMATION TAR SAND ELEV. _____
COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
347	PRS-1 209	521	5450	27.1	36.1	11.0	12.5 12.6	9.8 9.9	4.8 5.3
348	210	1840	3130	35.6	30.6	22.4	13.1 13.0	11.2 11.3	5.0 5.4
349	211	1091	5957	32.8	28.0	18.3	11.0 11.1	9.2 9.3	4.3 4.6
350	212	330	5455	30.6	39.3	2.6	14.4 14.5	12.0 12.1	5.6 6.1
351	213	57	3130	32.2	41.0	3.7	15.8 16.0	13.2 13.3	6.1 6.7
352	214	110	2166	31.8	48.4	6.6	17.7 17.9	15.4 15.6	6.9 7.5
353	215	57	3769	28.3	54.8	5.7	18.2 18.4	15.5 15.7	7.1 7.7
354	216	664	3769	30.7	35.9	2.6	13.4 13.6	11.0 11.1	5.2 5.7
355	217	188	3130	30.3	38.4	4.0	13.9 14.0	11.6 11.7	5.4 5.9
356	218	130	3878	22.4	53.6	1.8	16.1 16.2	12.0 12.1	6.2 6.8
357	219	104	6453	22.1	63.8	6.8	16.3 16.5	14.2 14.3	6.3 6.9
358	PRS-1 220	0.01	1002	27.7	50.9	6.1	16.3 16.5	14.2 14.3	6.3 6.9



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-27-73 ENGRS. _____
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
359	PRS-1 221	2782	2529	32.0	7.8	16.5	3.1 3.1	2.5 2.6	1.2 1.3
360	PRS-1 222	3477	3566	32.0	8.8	33.8	3.8 3.9	2.8 2.8	1.5 1.6
361	PRS-2 62	87	142	28.6	30.7	7.0	10.3 10.4	8.8 8.8	4.0 4.3
362	63	533	853	35.5	25.0	10.7	11.0 11.1	8.8 8.9	4.3 4.6
363	64	1.5	21	26.2	47.7	5.0	14.1 14.2	12.6 12.6	5.5 5.9
364	66	11	156	33.6	30.3	24.3	12.0 12.1	10.2 10.3	4.7 5.0
365	67	1022	1448	39.3	23.4	33.7	11.0 11.1	9.2 9.3	4.3 4.6
366	68	434	1904	30.0	41.3	24.3	16.3 16.4	12.4 12.4	6.3 6.8
361	69	0.60	1885	29.2	69.2	4.1	27.6 27.8	20.2 20.3	10.7 11.6
368	75	1.3	16	22.7	54.2	8.4	15.3 15.4	12.3 12.4	6.0 6.4
369	76	1.5	29	24.3	51.5	23.4	15.3 15.3	12.5 12.5	5.9 6.4
370	PRS-2 77	75	463	28.9	29.7	21.1	5.4 10.1	8.6 8.6	3.9 4.2



COMPANY: UTAH GEOLOGICAL SURVEY
 WELL: AS NOTED
 FIELD: _____
 COUNTY: _____ STATE: UTAH
 LOCATION: _____
 FILE NO.: RP-4-2820
 DATE: 10-27-73
 FORMATION: TAR SAND
 ENGRS.: KB:RH
 ELEV.: _____
 CORES: DIA CONV 2 1/2"
 REMARKS: _____

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
371	PRS-2 78	3.1	90	31.0	53.9	14.8	19.2 19.2	16.7 16.7	7.4 8.0
372	79	0.90	2.7	31.0	32.3	9.0	12.0 12.0	10.0 10.0	4.6 5.0
373	80	0.45	11	23.6	74.2	3.4	20.1 20.1	17.5 17.5	7.7 8.4
374	81	341	1567	29.1	46.1	6.9	15.8 15.8	13.5 13.5	6.1 6.6
375	122	0.45	394	25.7	71.3	5.8	20.1 20.1	18.3 18.3	7.7 8.4
376	123	0.90	1220	27.4	76.7	4.8	23.7 23.7	21.1 21.0	9.1 9.9
377	126	699	704	25.6	13.1	34.9	3.8 3.8	3.5 3.5	1.5 1.6
378	127	81	96	20.4	18.6	10.3	4.3 4.3	3.8 3.8	1.7 1.8
379	131	2.8	23	16.3	36.7	5.5	6.2 6.2	6.0 6.0	2.4 2.6
380	132	113	330	16.3	42.8	16.5	7.2 7.2	7.0 7.0	2.8 3.0
381	136	1.8	275	28.3	71.4	4.2	23.3 23.2	20.2 20.2	8.9 9.7
382	PRS-2 137	26	40	34.4	14.8	56.4	6.0 6.0	5.1 6.1	2.3 2.5



COMPANY UTAH GEOLOGICAL SURVEY
WELL AS NOTED
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COUNTY STATE UTAH
LOCATION
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ELEV.
DRLG. FLD.
CORES DIA CONV 2 1/2"
REMARKS

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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		OIL		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
383	PRS-2 172	0.16	1.1	19.1	37.7	15.7	7.4 7.4	7.2 7.2	2.9 3.1
384	173	0.30	6.4	20.4	35.2	27.4	7.4 7.4	7.2 7.2	2.9 3.1
385	174	0.30	2.1	17.7	41.7	13.0	7.7 7.7	7.4 7.4	2.9 3.2
386	175	0.90	8.5	22.7	26.9	10.6	6.7 6.7	6.1 6.1	2.6 2.8
387	176	32	78	22.2	33.3	19.3	8.1 8.1	7.4 7.4	3.1 3.4
388	177	7.5	29	22.3	33.1	13.5	8.1 8.1	7.4 7.4	3.1 3.4
389	178	0.60	10	20.5	32.6	11.7	7.4 7.4	6.7 6.7	2.9 3.1
390	179	0.30	528	12.2	61.5	16.4	7.2 7.2	7.5 7.5	2.8 3.0
391	192	203	992	35.2	30.1	17.9	12.9 12.9	10.6 10.6	5.0 5.4
392	193	165	1706	36.5	36.1	27.4	15.8 15.4	13.2 12.9	6.2 6.4
393	194	185	853	34.4	36.1	23.2	14.9 14.5	12.4 12.1	5.8 6.0
394	PRS-2 195	487	3278	33.0	39.5	26.0	15.3 14.9	13.1 12.7	6.0 6.2



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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
395	PRS-2 196	127	2325	31.4	49.0	20.1	17.7 17.3	15.4 15.0	7.0 7.2
396	197	615	3675	34.6	38.8	19.1	16.1 15.6	13.4 13.1	6.3 6.5
397	198	0.60	2325	27.7	64.7	7.2	21.1 20.5	18.0 17.5	8.3 8.6
398	199	156	2781	30.7	41.4	8.8	15.6 15.2	12.7 12.4	6.1 6.3
399	200	417	952	27.4	26.2	35.7	8.1 7.9	7.2 7.0	3.2 3.3
400	201	364	1061	33.8	22.5	23.6	9.1 8.9	7.6 7.4	3.6 3.7
401	202	1726	4370	27.8	36.7	33.4	11.3 11.0	10.3 10.0	4.4 4.6
402	203	0.20	182	22.1	36.0	9.9	8.6 8.4	8.0 7.8	3.4 3.5
403	204	724	813	32.1	30.5	19.3	11.7 11.4	9.8 9.5	4.6 4.8
404	205	1885	2182	33.8	23.6	32.0	9.6 9.3	8.0 7.8	3.8 3.9
405	206	1147	2782	31.3	23.0	23.6	8.4 8.2	7.1 7.0	3.3 3.4
406	PRS-2 207	1885	1319	27.8	17.9	4.3	6.0 5.8	5.0 4.9	2.4 2.4



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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		OIL		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
407	PRS-2 208	1329	3179	30.9	16.8	54.1	5.8 5.6	5.2 5.1	2.3 2.3
408	209	1627	3378	35.2	19.0	31.9	7.7 7.5	6.7 6.5	3.0 3.1
409	210	1210	1408	26.2	14.5	19.4	4.1 4.0	3.8 3.7	1.6 1.7
410	211	1508	1508	32.8	16.4	24.0	6.2 6.1	5.4 5.3	2.4 2.5
411	213	330	344	32.3	9.0	29.0	3.4 3.3	2.9 2.8	1.3 1.4
412	214	5456	5456	36.1	31.3	36.0	12.5 12.2	11.3 11.0	4.9 5.1
413	215	2981	2981	33.7	11.6	55.2	4.3 4.2	3.9 3.8	1.7 1.7
414	216	1091	1091	22.9	27.4	40.1	7.2 7.0	6.3 6.1	2.8 2.9
415	252	674	1147	24.3	20.1	29.6	5.5 5.4	4.9 4.8	2.2 2.2
416	PRS-2 253	803	1041	25.2	12.7	23.4	3.4 3.3	3.2 3.1	1.3 1.4
417	PRS-3 22	664	952	31.7	10.1	46.4	3.6 3.6	3.2 3.2	1.4 1.5
418	PRS-3 23	714	1120	32.2	45.9	28.9	15.3 15.4	14.9 14.9	5.9 6.4



COMPANY UTAH GEOLOGICAL SURVEY
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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
419	PRS-3 24	14	87	31.9	21.3	41.4	7.7 7.7	6.8 6.8	2.9 3.2
420	25	229	509	31.9	22.3	28.8	8.1 8.2	7.1 7.1	3.1 3.4
421	26	1135	1750	26.4	13.6	43.9	4.1 4.1	3.6 3.6	1.6 1.7
422	27	40	850	29.7	32.3	38.1	10.5 10.6	9.6 9.6	4.0 4.4
423	28	307	1590	32.1	31.1	24.6	11.5 11.5	10.0 10.0	4.4 4.8
424	29	67	382	27.3	66.6	14.2	20.1 20.2	18.3 18.3	7.7 8.4
425	30	0.54	780	27.8	25.9	53.3	16.8 16.8	14.9 14.9	6.4 7.0
426	31	0.10	2485	24.0	59.6	17.9	15.8 15.9	14.3 14.4	6.1 6.6
427	32	0.01	3440	23.0	77.4	9.1	20.1 20.2	17.9 17.9	7.7 8.4
428	33	700	1520	29.4	30.2	27.5	11.0 11.1	8.8 8.9	4.2 4.6
429	34	880	2220	33.7	25.2	18.4	10.5 10.6	8.5 8.5	4.0 4.4
430	PRS-3 35	685	2020	29.7	34.4	4.0	12.5 12.5	10.0 10.2	4.8 5.2



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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		OIL		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
431	PRS-3	36	290	2120	30.2	48.0	7.6	17.7 17.8	14.5 14.5	6.8 7.4
432		37	72	1350	29.7	64.7	6.7	23.0 23.1	19.2 19.2	8.8 9.6
433		38	29	2225	30.8	75.9	9.4	26.8 26.9	23.3 23.4	10.3 11.2
434		39	0.70	715	29.7	67.4	11.4	22.5 22.6	20.0 20.0	8.6 9.4
435		40	12	515	26.9	69.5	15.9	20.6 20.7	18.7 18.7	7.9 8.6
436		41	0.30	194	26.8	74.8	7.8	22.5 22.6	20.0 20.0	8.6 9.4
437		43	0.12	5.5	19.4	76.3	19.0	15.3 15.4	14.9 14.9	5.9 6.4
438		46	0.46	4.9	20.2	39.0	11.4	8.1 8.2	7.9 7.9	3.1 3.4
439		47	1.9	90	18.7	57.3	25.1	11.0 11.1	10.7 10.7	4.2 4.6
440		63	1.6	5.2	26.5	35.4	20.7	10.5 10.6	9.4 9.4	4.0 4.4
441		85	1675	1440	32.2	17.7	52.6	6.2 6.2	5.7 5.7	2.4 2.6
442	PRS-3	86	18	1185	30.6	45.4	4.6	16.3 16.3	13.9 13.9	6.3 6.8



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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
443	PRS-3	87	8.7	371	33.4	39.6	16.7	15.8 15.9	13.2 13.2	6.1 6.6
444		88	3.4	104	29.0	51.3	14.8	16.8 16.8	14.9 14.9	6.5 7.0
445		89	95	2579	30.6	34.0	54.3	12.0 12.0	10.4 10.4	4.7 5.0
446		90	7.5	788	30.4	46.4	22.1	16.3 16.3	14.2 14.2	6.3 6.8
447		91	2.9	101	27.7	58.6	15.5	18.2 18.3	16.2 16.2	7.1 7.6
448		92	2.4	353	26.9	75.8	9.7	22.5 22.6	20.4 20.5	8.7 9.4
449		97	1.1	47	28.4	33.8	22.9	10.5 10.6	9.6 9.6	4.1 4.4
450		113	0.02	0.19	25.7	19.4	28.0	5.5 5.5	5.0 5.0	2.1 2.3
451		117	1.3	46	24.2	33.4	26.4	9.1 9.1	8.1 8.1	3.5 3.8
452		118	0.09	670	27.1	51.7	14.0	15.8 15.9	14.0 14.1	6.1 6.6
453		129	1.1	307	24.8	37.8	27.3	10.5 10.6	9.4 9.4	4.1 4.4
454		PRS-3 130	2.1	38	20.0	49.8	4.5	9.6 10.8	10.0 10.0	4.2 4.5



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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		OIL		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
455	PRS-3 131	0.09	266	21.6	54.1	7.0	12.9 13.0	11.7 11.8	5.0 5.4
456	153	206	428	33.4	29.3	28.7	11.7 11.8	9.8 9.8	4.6 4.9
457	154	159	1455	27.4	50.0	10.6	14.4 15.9	13.8 13.8	6.1 6.6
458	PRS-3 155	9.7	1115	24.0	32.1	2.5	8.6 8.6	7.7 7.7	3.3 3.6
459	HC-1 41	38	359	24.1	60.2	9.6	15.3 15.4	14.5 14.6	6.0 6.4
460	42	22	428	22.5	49.4	16.0	12.0 12.0	11.1 11.2	4.7 5.0
461	43	24	704	23.2	61.2	9.5	15.3 15.4	14.2 14.3	6.0 6.4
462	44	0.25	324	23.2	74.2	9.9	17.7 17.8	17.2 17.3	6.9 7.4
463	45	0.05	700	22.6	78.4	8.0	18.7 18.8	17.7 17.8	7.3 7.8
464	46	0.45	34	23.3	35.1	27.4	8.6 8.7	8.2 8.2	3.3 3.6
465	47	1.3	48	30.5	13.8	21.3	4.3 4.3	4.4 4.4	1.7 1.8
466	HC-1 68	0.50	20	28.2	66.0	7.8	20.1 20.2	18.7 18.7	7.8 8.4



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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
467	HC-1	69	2.2	39	25.7	51.7	10.5	14.4 14.4	13.3 13.4	5.6 6.0
468		70	0.03	2.4	29.1	68.8	6.5	20.6 20.7	20.0 20.1	8.0 8.6
469		71	3.0	545	25.0	46.1	21.1	12.5 12.5	11.6 11.6	4.8 5.2
470		72	24	98	23.3	66.6	7.7	16.8 16.8	15.6 15.6	6.5 7.0
471		73	6.2	726	24.0	72.1	9.2	18.7 18.8	17.3 17.4	7.3 7.8
472		86	0.90	12	25.4	22.4	17.3	6.2 6.3	5.7 5.7	2.4 2.6
473		87	3.0	12	24.5	29.0	18.3	7.7 7.7	7.1 7.1	3.0 3.2
474		92	28	102	22.3	31.3	11.6	7.7 7.9	7.0 7.2	3.0 3.3
475		93	57	430	22.1	35.3	7.7	8.6 8.9	7.8 8.1	3.3 3.7
476		94	24	54	21.8	36.6	8.3	8.6 8.9	8.0 8.3	3.3 3.7
477		96	3.7	15	18.8	43.5	9.6	8.6 8.9	8.2 8.5	3.3 3.7
478	HC-1	97	203	377	24.3	30.3	10.7	8.4 8.7	7.4 7.7	3.3 3.6



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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
479	HC-1	98	46	142	20.2	37.5	14.3	8.1 8.5	7.6 7.8	3.2 3.5
480		99	124	330	21.9	30.1	5.9	7.4 7.7	6.6 6.8	2.9 3.2
481		108	70	278	20.4	44.6	8.8	9.6 9.9	9.1 9.4	3.7 4.1
482		113	55	246	20.1	44.2	6.5	9.8 10.2	8.9 9.2	3.8 4.2
483		114	57	885	20.1	51.3	10.9	11.5 11.7	10.4 10.6	4.5 4.9
484		115	32	295	22.3	40.7	5.8	10.3 10.5	9.1 9.3	4.0 4.4
485		116	38	156	22.2	40.0	7.7	9.8 10.0	8.9 9.1	3.8 4.2
486		117	81	319	21.6	44.2	8.8	11.0 11.2	9.6 9.8	4.3 4.7
487		118	4.9	98	19.3	41.4	14.5	8.9 9.0	8.0 8.2	3.4 3.8
488		119	84	446	22.1	32.5	9.5	8.1 8.3	7.2 7.4	3.2 3.5
489		120	78	755	24.1	39.0	7.9	10.5 10.7	9.4 9.5	4.1 4.5
490	HC-1	123	72	1355	21.4	43.8	8.0	10.5 10.7	9.4 9.5	4.1 4.4



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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
491	HC-1	124	177	475	21.0	34.7	4.3	8.1 8.3	7.2 7.4	3.2 3.5
492		125	133	1015	22.3	42.2	5.8	10.5 10.7	9.4 9.5	4.1 4.5
493		126	81	1320	24.1	45.7	5.4	12.5 12.7	11.1 11.3	4.8 5.3
494		127	43	382	22.5	42.2	12.4	10.5 10.7	9.6 9.7	3.7 4.5
495		130	4.5	96	23.6	29.2	25.3	7.4 7.6	6.9 7.0	2.9 3.2
496		131	0.60	551	22.4	49.1	8.5	12.5 12.7	11.1 11.3	4.8 5.3
497		134	3.6	93	23.5	27.6	20.4	7.4 7.6	6.5 6.6	2.9 3.2
498		135	12	272	25.6	28.8	25.3	8.1 8.3	7.4 7.5	3.2 3.5
499		136	15	260	21.9	27.8	12.7	6.2 6.3	6.0 6.2	2.4 2.6
500		137	6.7	72	21.3	26.7	16.4	6.2 6.3	5.7 5.8	2.4 2.6
501		138	12	124	21.8	29.8	4.1	6.7 6.8	6.5 6.6	2.6 2.8
502	HC-1	189	1.2	21	11.6	65.5	10.3	7.7 7.8	7.6 7.8	3.0 3.3



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SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
503	HC-1 190	23	87	13.2	59.1	3.0	8.6 8.8	7.8 8.0	3.3 3.7
504	195	240	640	24.0	46.7	1.7	12.9 13.2	11.3 11.4	5.0 5.5
505	196	12	734	19.9	66.4	7.5	14.6 14.9	13.3 13.5	5.7 6.2
506	197	0.01	17	18.9	64.6	2.1	12.0 13.4	12.2 12.4	5.1 5.6
507	198	113	295	22.6	37.5	3.1	9.3 9.5	8.3 8.4	3.6 4.0
508	199	2.2	20	15.1	55.6	2.6	9.1 9.3	8.4 8.6	3.5 3.9
509	200	72	116	20.3	42.8	2.0	9.6 9.8	8.7 8.8	3.7 4.1
510	202	15	40	21.6	28.5	4.2	9.3 9.5	8.3 8.4	3.6 4.0
511	203	16	78	21.5	41.3	7.0	10.1 10.2	8.9 9.1	3.9 4.3
512	204	2.8	52	20.8	72.2	4.3	16.3 16.6	15.1 15.4	6.3 6.9
513	205	116	162	20.0	31.9	2.0	7.0 7.1	6.4 6.6	2.7 3.0
514	HC-1 214	0.13	52	23.4	82.1	3.0	20.9 21.2	19.3 19.7	8.1 8.9



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-29-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

PAGE 44

SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
515	HC-1 215	0.05	57	21.7	52.2	3.2	12.5 12.7	11.3 11.5	4.8 5.3
516	216	0.25	17	13.1	47.7	10.7	6.5 6.6	6.4 6.5	2.5 2.7
517	223	40	182	12.8	65.6	7.0	8.6 8.8	8.4 8.5	3.3 3.7
518	224	20	35	16.6	38.0	12.0	7.0 7.1	6.3 6.4	2.7 3.0
519	225	34	61	13.1	41.8	8.4	5.8 5.8	5.5 5.5	2.2 2.4
520	227	40	101	21.8	25.2	6.4	6.5 6.6	5.5 5.6	2.5 2.7
521	HC-1 228	165	406	19.4	31.0	5.7	6.7 6.8	6.0 6.1	2.6 2.8
522	HC-2 326	8.8	162	14.9	59.7	17.4	9.1 9.1	8.8 8.8	3.5 3.8
523	327	64	521	20.9	67.9	11.5	15.3 15.3	14.2 14.2	5.9 6.4
524	328	0.01	52	24.0	48.7	10.4	13.1 13.1	11.7 11.7	5.1 5.5
525	329	39	980	22.3	49.3	15.2	12.5 12.4	11.1 11.0	4.8 5.2
526	HC-2 329	40	446	22.5	44.4	27.1	11.0 11.0	10.0 10.0	4.2 4.6



COMPANY UTAH GEOLOGICAL SURVEY
WELL AS NOTED
FIELD
COUNTY STATE UTAH
LOCATION
DATE 10-29-73
FORMATION TAR SAND
DRLG. FLD.
REMARKS
FILE NO. RP-4-2820
ENGRS. KB:RH
ELEV.
CORES DIA CONV 2 1/2"

PAGE 45

SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
527	HC-2	330	96	760	19.3	64.3	15.5	13.7 13.6	12.4 12.3	5.2 5.7
528		331	130	697	24.3	48.1	13.2	13.2 12.0	11.7 10.0	5.1 5.0
529		333	29	78	18.4	48.3	19.0	9.8 9.8	8.9 8.9	3.8 4.1
530		334	38	255	23.4	41.8	20.9	9.6 11.0	9.8 9.7	4.2 4.6
531		335	20	76	27.6	42.0	1.8	12.2 12.1	11.6 11.6	4.7 5.1
532		336	24	203	24.6	45.2	10.1	11.7 11.7	11.1 11.1	4.5 4.9
533		337	98	717	27.5	37.0	13.1	11.0 11.0	10.2 10.2	4.2 4.6
534		340	145	673	23.6	44.1	3.8	11.5 11.5	10.4 10.4	4.4 4.8
535		343	116	533	23.5	39.1	3.8	10.3 10.3	9.1 9.1	3.7 4.3
536		364	281	451	26.4	20.4	32.1	6.0 6.0	5.4 5.4	2.3 2.5
537		365	295	451	30.1	19.9	23.9	6.7 6.7	6.0 5.9	2.6 2.8
538	HC-2	366	139	232	26.4	20.4	19.7	6.0 5.9	5.4 5.4	2.3 2.5



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-29-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

PAGE 46

SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
539	HC-2	369	412	656	24.4	23.7	28.6	6.5 6.4	5.7 5.7	2.5 2.7
540			2.1	2.4	24.4	22.9	10.2	6.5 6.4	5.6 5.6	2.5 2.6
541	375		38	65	21.7	23.5	11.0	2.6 2.6	2.4 2.4	1.0 1.1
542			78	223	17.4	6.9	89.8	1.2 1.2	1.2 1.2	0.5 0.5
543	428		84	168	23.8	23.5	2.5	6.5 6.4	5.6 5.6	2.5 2.7
544			226	284	23.9	21.7	2.5	6.0 6.0	5.2 5.2	2.3 2.5
545	433		46	67	18.7	19.2	18.2	3.8 3.8	3.6 3.6	1.5 1.6
546			130	133	15.3	19.6	15.0	3.1 3.1	3.0 3.0	1.2 1.3
547	449		87	142	21.9	22.4	5.0	5.5 5.5	4.9 4.9	2.1 2.3
548			272	336	21.2	23.6	1.9	5.8 5.7	5.0 5.0	2.2 2.4
549	457		98	119	19.5	17.4	1.0	3.8 3.8	3.4 3.4	1.5 1.6
550			1.1	35	23.1	73.1	13.0	17.5 17.9	17.0 17.4	6.8 7.5



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
WELL AS NOTED DATE 10-29-73 ENGRS. KB:RH
FIELD _____ FORMATION TAR SAND ELEV. _____
COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
LOCATION _____ REMARKS _____

PAGE 47

SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
551	HC-3	307	2.5	37	16.7	34.7	34.7	6.0 6.1	5.8 6.0	2.3 2.6
552		308	69	214	24.2	43.7	8.7	12.0 12.3	10.6 10.9	4.7 5.1
553		309	0.01	440	20.2	69.6	9.8	15.3 15.7	14.2 14.6	6.0 6.6
554		310	7.0	353	22.1	69.8	16.2	16.3 16.7	15.5 15.8	6.3 7.0
555		311	4.9	400	24.3	51.9	16.8	13.9 14.3	12.6 12.9	5.4 5.9
556		312	6.9	235	21.6	53.2	7.9	12.7 13.0	11.5 11.8	4.9 5.4
557		313	43	214	19.4	45.7	15.9	9.6 9.8	8.9 9.1	3.7 4.1
558		314	15	200	21.2	54.7	19.7	12.0 12.3	11.6 11.9	4.7 5.1
559		317	68	353	22.2	43.2	19.8	10.3 10.6	9.6 9.8	4.0 4.4
560		318	19	35	23.7	22.3	47.7	5.8 5.9	5.3 5.5	2.2 2.5
561		320	0.60	2.5	16.5	45.9	23.0	7.7 7.9	7.6 7.8	3.0 3.3
562	HC-3	321	113	412	26.5	28.7	27.9	8.4 8.6	7.6 7.8	3.3 3.6



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
 WELL AS NOTED DATE 10-29-73 ENGRS. KB:RH
 FIELD _____ FORMATION TAR SAND ELEV. _____
 COUNTY _____ STATE UTAH DRUG. FLD. _____ CORES DIA CONV 2 1/2"
 LOCATION _____ REMARKS _____

PAGE 48

SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		OIL		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
563	HC-3	322	275	174	25.5	18.8	42.8	5.3 5.4	4.8 4.9	2.0 2.3
564		323	200	290	24.0	22.1	62.1	5.8 5.9	5.3 5.5	2.2 2.5
565		324	71	116	20.8	16.3	64.5	3.6 3.7	3.4 3.5	1.4 1.5
566		325	99	182	22.0	15.9	41.2	3.8 3.9	3.5 3.6	1.5 1.6
567		326	68	107	24.1	20.3	34.8	5.3 5.4	4.9 5.0	2.0 2.3
568		404	111	119	25.5	16.8	16.8	4.8 4.9	4.3 4.4	1.9 2.1
569		406	110	139	26.7	10.8	13.8	3.4 3.4	2.9 3.0	1.3 1.4
570		414	240	252	24.6	7.3	16.7	2.2 2.2	1.8 1.9	0.8 0.9
571		415	67	64	26.5	8.3	24.5	2.4 2.5	2.2 2.6	0.9 1.0
572		417	568	620	25.8	8.1	42.7	2.4 2.5	2.1 2.2	0.9 1.0
573		418	782	782	24.4	3.7	49.6	1.0 1.0	0.9 0.9	0.4 0.4
574	HC-3	419	685	900	23.3	3.9	43.8	1.0 1.0	0.9 0.9	0.4 0.4



COMPANY UTAH GEOLOGICAL SURVEY FILE NO. RP-4-2820
WELL AS NOTED DATE 10-29-73 ENGRS. KB:RH
FIELD _____ FORMATION TAR SAND ELEV. _____
COUNTY _____ STATE UTAH DRLG. FLD. _____ CORES DIA CONV 2 1/2"
LOCATION _____ REMARKS _____

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SAMPLE NUMBER	DEPTH		PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
			BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
575	HC-3	420	574	614	24.3	6.2	38.6	1.7	1.5	0.7
								1.7	1.5	0.7
576		421	828	840	24.9	8.4	34.1	2.4	2.1	0.9
								2.5	2.2	1.0
577		422	995	1010	25.2	6.0	28.1	1.7	1.5	0.7
								1.7	1.5	0.7
578		423	1140	1150	26.5	7.9	28.3	2.4	2.1	0.9
								2.5	2.1	1.0
579		424	920	940	24.4	9.4	31.5	2.6	2.3	1.0
								2.7	2.4	1.1
580		425	955	1015	24.9	9.6	12.4	2.9	2.4	1.1
								2.9	2.5	1.2
581		426	1030	1145	28.3	8.8	22.9	2.9	2.5	1.1
								2.9	2.6	1.2
582		433	113	130	21.2	11.8	35.3	2.6	2.5	1.0
								2.7	2.6	1.1
583		455	89	113	24.1	12.8	49.8	3.3	3.1	1.3
								3.4	3.2	1.4
584		456	55	73	25.5	9.4	42.8	2.6	2.4	1.0
								2.7	2.5	1.1
585		457	53	68	22.5	9.8	22.2	2.4	2.2	0.9
								2.5	2.2	1.0
586	HC-3	458	77	99	24.7	10.5	27.1	2.9	2.6	1.1
								2.9	2.7	1.2



COMPANY UTAH GEOLOGICAL SURVEY
WELL AS NOTED
FIELD
COUNTY STATE UTAH
LOCATION
FILE NO. RP-4-2820
DATE 10-29-73
FORMATION TAR SAND
ENGRS. KB:RH
ELEV.
DRLG. FLD.
CORES DIA CONV2 1/2"
REMARKS

PAGE 50

SAMPLE NUMBER	DEPTH	PERMEABILITY		POROSITY PERCENT	PORE SATURATION		-----OIL-----		
		BEFORE	AFTER		OIL	WATER	GAL/TON	% VOLUME	% WEIGHT
587	HC-3 459	61	78	25.3	10.3	29.2	2.9	2.6	1.1
							2.9	2.7	1.2

CORE LABORATORIES, Inc.
Casper, Wyoming 82601
AC 307-265-2731

Page 1

Company UTAH GEOLOGICAL SURVEY
Sample Identification AS PROVIDED (SEE BELOW)
OIL-IMPREGNATED SANDSTONE FROM DEPOSITS
RIM ROCK = RR
P.R. SPRING = PR & PRS
HILL CREEK = HC

File RP-4-2820
Date _____
Chemist KB-RH

RETORTED OIL			EXTRACTED OIL	
	<u>SPECIFIC GRAVITY</u>	<u>API⁰</u>	<u>SPECIFIC GRAVITY</u>	<u>API⁰</u>
RR-1-101	0.930	20.6	1.026	6.5
PR-3A-40	0.928	21.0	1.015	7.9
-53	0.922	22.0	1.023	6.8
-64	0.918	22.6	1.016	7.8
PR-3B-120	0.917	22.8	1.019	7.4
-133	0.928	21.0	1.022	7.0
-146	0.926	21.3	1.018	7.5
PR-3C-222	0.920	22.3	1.030	5.9
-235	0.924	21.6	1.027	6.3
-247	0.927	21.1	1.031	5.8
PR-3D-376	0.932	20.3	1.010	8.6
-379	0.939	20.0	1.024	6.7
-383	0.940	19.0	1.020	7.2
PR-4-58	0.924	21.6	0.992	11.2
PR-5-159	0.927	21.1	0.982	12.6
-168	0.919	22.5	0.997	10.5
-218	0.927	21.1	1.012	8.4
-225	0.930	20.6	1.018	7.5
PR-1-176	0.935	19.8	0.978	13.1
-242	0.921	22.9	0.994	10.9
-250	0.923	21.8	1.009	8.8
PR-2-45	0.927	21.1	0.974	13.8
-52	0.935	19.8	0.964	15.3
PR-6-170	0.912	23.6	0.973	14.1
-176	0.909	24.2	0.973	14.1
-192	0.919	22.5	0.987	11.6
-229	0.920	22.3	1.029	6.0
-339	0.923	21.8	1.007	9.1
PR-7-30	0.910	24.0	1.001	9.9
PRS-1-42	0.916	23.0	0.999	10.1
-93	0.928	21.0	0.991	11.3
-159	0.937	19.5	0.995	10.6
-200	0.928	21.0	1.010	8.5
PRS-2-62	0.931	20.5	1.007	7.7
-76	0.918	22.6	0.999	10.1
-193	0.935	19.8	0.974	13.8
PRS-3-25	0.922	22.0	1.002	9.7
-86	0.925	21.5	1.002	9.7

CORE LABORATORIES, Inc.
Casper, Wyoming 82601
AC 307-265-2731

Page 2

Company UTAH GEOLOGICAL SURVEY
Sample Identification TAR SAND

File RP-4-2820
Date
Chemist KB-RH

	RETORTED OIL		EXTRACTED OIL	
	<u>SPECIFIC GRAVITY</u>	<u>API^o</u>	<u>SPECIFIC GRAVITY</u>	<u>API^o</u>
HC-1-43	0.925	21.5	1.004	9.4
-92	0.927	21.1	1.033	5.5
-114	0.934	20.0	1.017	7.6
HC-2-327	0.921	22.1	0.996	10.5
HC-3-309	0.928	21.0	1.026	6.5

CORE LABORATORIES, Inc.
Casper, Wyoming 82601
AC 307-265-2731

Page 1

OIL-IMPREGNATED SANDSTONE ANALYSIS RESULTS

Company Utah Geological Survey
Sample Identification AS PROVIDED (SEE BELOW)
OIL-IMPREGNATED SANDSTONE FROM DEPOSITS
RIM ROCK = RR
P. R. SPRING = PR & PRS
HILL CREEK = HC

File RP-4-COA-147
Date 11-7-73
Chemist Cross

SULFUR DETERMINATION

RR-1-101	0.37	HC-2-327	0.45
PR-3A-40	0.48	HC-3-309	0.41
-53	0.44		
-64	0.42		
PR-3B-120	0.45		
-133	0.42		
-146	0.30		
PR-3C-222	0.44		
-235	0.40		
-247	0.42		
PR-3D-376	0.43		
-379	0.48		
-383	0.46		
PR-4-58	0.43		
PR-5-159	0.55		
-168	0.58		
-218	0.48		
-225	0.57		
PR-1-176	0.42		
-242	0.42		
-250	0.46		
PR-2-45	0.46		
-52	0.41		
PR-6-170	0.50		
-176	0.43		
-192	0.48		
-229	0.45		
-339	0.41		
PR-7-30	0.48		
PRS-1-42	0.41		
-93	0.40		
-159	0.49		
-200	0.76		
PRS-2-62	0.73		
-76	0.39		
-193	0.43		
PRS-3-25	0.33		
-86	0.35		
HC-1-43	0.37		
-92	0.34		
-114	0.46		

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS 75207

P. O. Box 731
Casper, Wyoming 82601
October 29, 1973

Mr. Howard R. Ritzma
Utah Geological and
Mineralogical Survey
103 Utah Geological Survey Bldg.
Salt Lake City, Utah 84112

Dear Mr. Ritzma:

Two values for oil were calculated for the Gallons Per Ton, Percent Volume and Percent Weight columns. The top value in each column was calculated using the specific gravity of the retoured oil, which is the normal procedure for oil sand and oil shale analysis.

Due to the nature of your project we felt specific gravity of the oil in place would be of value to you, so at no additional cost to you we extracted oil from the core and used the inplace gravity to calculate the second value of the Gallons Per Ton, Percent Volume and Percent Weight columns.

The specific gravity of the retoured oil tends to be lower due to cracking that occurs during the retourting process. Methylene Chloride was used for extraction leaving the oil essentially unchanged.

We thank you for the opportunity to serve you on this important project. If we can be of further service to you, please do not hesitate to contact me.

Sincerely yours,



Kenneth R. Bowen
Lab Supervisor

KRB:ve

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75207

P. O. Box 731
Casper, Wyoming 82601
November 12, 1973

Mr. Howard R. Ritzma
Utah Geological and
Mineralogical Survey
103 Utah Geological Survey Bldg.
Salt Lake City, Utah 84112

Dear Mr. Ritzma:

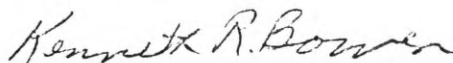
Two values for oil were calculated for the Gallons Per Ton, Percent Volume and Percent Weight columns. The top value in each column was calculated using the specific gravity of the retorted oil, which is the normal procedure for oil sand and oil shale analysis.

Due to the nature of your project we felt specific gravity of the oil in place would be of value to you, so at no additional cost to you, we extracted oil from the core and used the inplace gravity to calculate the second value of the Gallons Per Ton, Percent Volume and Percent Weight columns.

The specific gravity of the retorted oil tends to be lower due to cracking that occurs during the retorting process. Methylene Chloride was used for extraction leaving the oil essentially unchanged.

We thank you for the opportunity to serve you on this important project. If we can be of further service to you, please do not hesitate to contact me.

Sincerely yours,



Kenneth R. Bowen
Lab Supervisor

KRB:ve



24 Blackstone Street, Cambridge, Mass. 02139
Telephone TRowbridge 6-3691

REPORT OF ANALYTICAL WORK
STABLE ISOTOPE RATIO ANALYSES

Submitted by:

Howard R. Ritzma
Utah Geological & Mineral Survey
103 UGS Bldg., Univ. of Utah
Salt Lake City, Utah 84112

Date Received: 21 September 1973

Date Reported: 8 January 1974

Your Reference:

Our Lab. Number	Your Sample Number	Description	Analysis*
			S^{34}/S^{32}
SR-2783	UGS - PR - 3 233'	tar sand	22.1
SR-2784	UGS - PR - 6 246'	" "	20.7
SR-2785	UGS - PR - 7 35'	" "	12.5
SR-2786	UGS - PRS - 1 43'	" "	14.8
SR-2787	UGS - PRS - 1 101'	" "	15.8
SR-2788	UGS - PRS - 1 168'	" "	10.7
SR-2789	UGS - PRS - 1 210'	" "	11.6
SR-2790	UGS - PRS - 1 36'	" "	11.0
SR-2791	UGS - PRS - 1 88'	" "	22.9

* Unless otherwise noted, all analyses are reported in ‰ notation and are computed as follows:

$$\delta R_{\text{sample}} \text{‰} = \left[\frac{R_{\text{sample}}}{R_{\text{standard}}} - 1 \right] \times 1000$$

Where:

D/H standard is SMOW
C¹³/C¹² standard is PDB
O¹⁸/O¹⁶ standard is SMOW
S³⁴/S³² standard is Cañon Diablo troilite

And:

R_{standard} = 0.000316**
R_{standard} = 0.011237
R_{standard} = 0.0039948**
R_{standard} = 0.0450045

** Double atom ratio

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO HC-1, SE NW NE 31-14S-20E S.L.M. (1271 FNL, 1819 FEL)Uintah County, UtahLAND STATUS: SURFACE Indian MINERALS U.S.ELEVATION: 7261 GROUND TOTAL DEPTH 268SPUD: August 20, 1973 COMPLETE: August 22, 1973TOPS: SURFACE IN Parachute Creek TOP DATUM (msl)

PARACHUTE CREEK (Surface)

MAHOGANY OIL SHALE ZONE 7166 7095DOUGLAS CREEK 39 7222

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE

2 analyses
averagedSample
Number

DEPTH	VIS CLASS	PERMEABILITY BEFORE	PERMEABILITY AFTER	POROS. %	SATURATION OIL	SATURATION WATER	GALS / TON	% vol	% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
459	41	IV	38	359	24.1	60.2	9.6	15.4	14.6	6.2			
460	42	IV	22	428	22.5	49.4	16.0	12.0	11.2	4.9			
461	43	IV	24	704	23.2	61.2	9.5	15.4	14.3	6.2	0.37	9.4	21.5 APT
462	44	IV	0.25	324	23.2	74.2	9.9	17.8	17.3	7.2			
463	45	IV	0.05	700	22.6	78.4	8.0	18.8	17.8	7.6			
464	46	III	0.45	34	23.3	35.1	27.4	8.7	8.2	3.5			
465	47	II	1.3	48	30.5	13.8	21.3	4.3	4.4	1.8			
466	68	III	0.50	20	28.2	66.0	7.8	20.2	18.7	8.1			
467	69	III	2.2	39	25.7	51.7	10.5	14.4	13.4	5.8			
468	70	III	0.03	2.4	29.1	68.8	6.5	20.7	20.1	8.3			
469	71	III	3.0	545	25.0	46.1	21.1	12.5	11.6	5.0			
470	72	III	24	98	23.3	66.6	7.7	16.8	15.6	6.8			
471	73	III	6.2	726	24.0	72.1	9.2	18.8	17.4	7.6			
472	86	III	0.90	12	25.4	22.4	17.3	6.3	5.7	2.5			
473	87	III	3.0	12	24.5	29.0	18.3	7.7	7.1	3.1			
474	92	III	28	102	22.3	31.3	11.6	7.8	7.1	3.2	0.34	5.5	21.1
475	93	III	57	430	22.1	35.3	7.7	8.8	8.0	3.5			
476	94	III	24	54	21.8	36.6	8.3	8.8	8.2	3.5			
477	96	III	3.7	15	18.8	43.5	9.6	8.8	8.4	3.5			
478	97	III	203	377	24.3	30.3	10.7	8.6	7.6	3.5			
479	98	III	46	142	20.2	37.5	14.3	8.3	7.7	3.4			
480	99	III	124	330	21.9	30.1	5.9	7.6	6.7	3.1			
481	108	III	70	278	20.4	44.6	8.8	9.8	9.3	3.9			
482	113	III	55	246	20.1	44.2	6.5	10.0	9.1	4.0			
483	114	III	57	885	20.1	51.3	10.9	11.6	10.5	4.7	0.46	7.6	20.0
484	115	III	32	295	22.3	40.7	5.8	10.4	9.2	4.2			
485	116	III	38	156	22.2	40.0	7.7	9.9	9.0	4.0			
486	117	III	81	319	21.6	44.2	8.8	11.1	9.7	4.5			
487	118	III	4.9	98	19.3	41.4	14.5	9.0	8.1	3.6			
488	119	III	84	446	22.1	32.5	9.5	8.2	7.3	3.4			
489	120	III	78	755	24.1	39.0	7.9	10.6	9.5	4.3			
490	123	III	72	1355	21.4	43.8	8.0	10.6	9.5	4.3			
491	124	III	177	475	21.0	34.7	4.3	8.2	7.3	3.4			
492	125	III	133	1015	22.3	42.2	5.8	10.6	9.5	4.3			
493	126	III	81	1320	24.1	45.7	5.4	12.6	11.2	5.1			
494	127	III	43	382	22.5	42.2	12.4	10.6	9.7	4.1			
495	130	III	4.5	96	23.6	29.2	25.3	7.5	7.0	3.1			

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO. HC-1 , 31-14S-20E

Uintah County, Utah

LAND STATUS : SURFACE MINERALS

ELEVATION: 7261 GROUND TOTAL DEPTH 268

SPUD: _____ COMPLETE: _____

TOPS: SURFACE IN _____ TOP ' _____ DATUM (msl)

PARACHUTE CREEK

MAHOGANY OIL SHALE ZONE

DOUGLAS CREEK

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE

2 analyses
averaged

[illegible]

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO HC-2, SE NW SW 33-14S-20E S.L.M. (1395 FSL, 821 FWL)

Uintah County, Utah

LAND STATUS: SURFACE Indian MINERALS U.S.

ELEVATION: 7483 GROUND TOTAL DEPTH 488

SPUD: Aug. 23, 1973 COMPLETE: Aug. 28, 1973

TOPS: SURFACE IN Evacuation Creek TOP DATUM (msl)

PARACHUTE CREEK 80 7403

MAHOGANY OIL SHALE ZONE 240 7243

DOUGLAS CREEK 300 7183

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE SATURATION

2 analyses averaged

Sample Number

DEPTH	VIS CLASS	PERMEABILITY BEFORE	PERMEABILITY AFTER	POROS. %	OIL	WATER	GALS / TON	% vol	% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
522 326	III	8.8	162	14.9	59.7	17.4	9.1	8.8	3.7				
523 327	III	64	521	20.9	67.9	11.5	15.3	14.2	6.2	0.45	10.5	22.1	
524 328	III	0.01	52	24.0	48.7	10.4	13.1	11.7	5.3		0.996	0.921	
525 329	III	39	980	22.3	49.3	15.2	12.5	11.1	5.0				
526 329	III	40	446	22.5	44.4	27.1	11.0	10.0	4.4				
527 330	III	96	760	19.3	64.3	15.5	13.7	12.4	5.5				
528 331	III	130	697	24.3	48.1	13.2	13.2	11.7	5.1				
529 333	III	29	78	18.4	48.3	19.0	9.8	8.9	4.0				
530 334	III	38	255	23.4	41.8	20.9	9.6	9.8	4.2				
531 335	III	20	76	27.6	42.0	1.8	12.2	11.6	4.9				
532 336	III	24	203	24.6	45.2	10.1	11.7	11.1	4.7				
533 337	III	98	717	27.5	37.0	13.1	11.0	10.2	4.4				
534 340	III	145	673	23.6	44.1	3.8	11.5	10.4	4.6				
535 343	III	116	533	23.5	39.1	3.8	10.3	9.1	4.0				
536 364	II	281	451	26.4	20.4	32.1	6.0	5.4	2.4				
537 365	II	295	451	30.1	19.9	23.9	6.7	6.0	2.7				
538 366	II	139	232	26.4	20.4	19.7	6.0	5.4	2.4				
539 369	II	412	656	24.4	23.7	28.6	6.5	5.7	2.6				
540 370	II	2.1	2.4	24.4	22.9	10.2	6.5	5.6	2.6				
541 375	II	38	65	21.7	23.5	11.0	2.6	2.4	1.1				
542 376	II	78	223	17.4	6.9	89.8	1.2	1.2	0.5				
543 428	II	84	168	23.8	23.5	2.5	6.5	5.6	2.6				
544 432	II	226	284	23.9	21.7	2.5	6.0	5.2	2.4				
545 433	II	46	67	18.7	19.2	18.2	3.8	3.6	1.6				
546 448	II	130	133	15.3	19.6	15.0	3.1	3.0	1.3				
547 449	II	87	142	21.9	22.4	5.0	5.5	4.9	2.2				
548 456	II	272	336	21.2	23.6	1.9	5.8	5.0	2.3				
549 457	II	98	119	19.5	17.4	1.0	3.8	3.4	1.6				

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO HC-3, NE NE NE 3-15S-20E S.L.M. (156 FNL, 443 FEL),
Uintah County, Utah

LAND STATUS: SURFACE Indian MINERALS U.S.

ELEVATION: 7409 GROUND TOTAL DEPTH 500

SPUD: Aug. 28, 1973 COMPLETE: Sept. 2, 1973

TOPS: SURFACE IN Evacuation Creek TOP 76 DATUM (msl) 7333

PARACHUTE CREEK 112 7297

MAHOGANY OIL SHALE ZONE 389 7020

DOUGLAS CREEK 296 7113

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE

2 analyses
averaged

Sample
Number

DEPTH	VIS CLASS	PERMEABILITY BEFORE	PERMEABILITY AFTER	POROS. %	SATURATION OIL	SATURATION WATER	GALS / TON	% vol	% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
550	306	II	1.1	35	23.1	73.1	13.0	17.7	17.2	7.2			
551	307	II	2.5	37	16.7	34.7	34.7	6.1	5.9	2.5			
552	308	III	69	214	24.2	43.7	8.7	12.2	10.8	4.9			
553	309	III	0.01	440	20.2	69.6	9.8	15.5	14.4	6.3	0.41	6.5	21.0
554	310	III	7.0	353	22.1	69.8	16.2	16.5	15.7	6.7	1.026	0.928	
555	311	III	4.9	400	24.3	51.9	16.8	14.1	12.7	5.7			
556	312	III	6.9	235	21.6	53.2	7.9	12.9	11.7	5.2			
557	313	III	43	214	19.4	45.7	15.9	9.7	9.0	3.9			
558	314	III	15	200	21.2	54.7	19.7	12.2	11.8	4.9			
559	317	II	68	353	22.2	43.2	19.8	10.5	9.7	4.2			
560	318	II	19	35	23.7	22.3	47.7	5.9	5.4	2.4			
561	320	II	0.60	2.5	16.5	45.9	23.0	7.8	7.7	3.2			
562	321	II	113	412	26.5	28.7	27.9	8.6	7.7	3.5			
563	322	II	275	174	25.5	18.8	42.8	5.4	4.9	2.2			
564	323	II	200	290	24.0	22.1	62.1	5.9	5.4	2.4			
565	324	II	71	116	20.8	16.3	64.5	3.7	3.5	1.5			
566	325	II	99	182	22.0	15.9	41.2	3.9	3.6	1.6			
567	326	II	68	107	24.1	20.3	34.8	5.4	5.0	2.2			
568	404	II	111	119	25.5	16.8	16.8	4.9	4.4	2.0			
569	406	II	110	139	26.7	10.8	13.8	3.4	3.0	1.4			
570	414	I	240	252	24.6	7.3	16.7	2.2	1.9	0.9			
571	415	I	67	64	26.5	8.3	24.5	2.5	2.4	1.0			
572	417	I	568	620	25.8	8.1	42.7	2.5	2.2	1.0			
573	418	I	782	782	24.4	3.7	49.6	1.0	0.9	0.4			
574	419	I	685	900	23.3	3.9	43.8	1.0	0.9	0.4			
575	420	I	574	614	24.3	6.2	38.6	1.7	1.5	0.7			
576	421	I	828	840	24.9	8.4	34.1	2.5	2.2	1.0			
577	422	I	995	1010	25.2	6.0	28.1	1.7	1.5	0.7			
578	423	I	1140	1150	26.5	7.9	28.3	2.5	2.1	1.0			
579	424	I	920	940	24.4	9.4	31.5	2.7	2.4	1.1			
580	425	I	955	1015	24.9	9.6	12.4	2.9	2.5	1.2			
581	426	I	1030	1145	28.3	8.8	22.9	2.9	2.6	1.1			
582	433	II	113	130	21.2	11.8	35.3	2.7	2.6	1.1			
583	455	II	89	113	24.1	12.8	49.8	3.4	3.2	1.4			
584	456	II	55	73	25.5	9.4	42.8	2.7	2.5	1.1			
585	457	II	53	68	22.5	9.8	22.2	2.5	2.2	1.0			
586	458	II	77	99	24.7	10.5	27.1	2.9	2.7	1.2			
587	459	II	61	78	25.3	10.3	29.2	2.9	2.7	1.2			

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PR-1, SW NE SW 6-13S-24E S.L.M. (1719 FSL, 1687 FWL)

LAND STATUS: SURFACE U.S. MINERALS U.S.

ELEVATION: 6210 GROUND TOTAL DEPTH: 326

SPUD: June 27, 1973 COMPLETE: July 7, 1973

TOPS: SURFACE IN Parachute Creek TOP DATUM (msl)

PARACHUTE CREEK (Surface)

MAHOGANY OIL SHALE ZONE 4565 6165 6145

DOUGLAS CREEK 175 6035

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

DEPTH	VIS CLASS	PERMEABILITY		POROS. %	PORE SATURATION		2 analyses averaged			% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
		BEFORE	AFTER		OIL	WATER	GALS / TON	% vol	% wt				
128	E 175	II	1.2	203	17.9	50.8	2.8	9.5	9.0	3.8			
129	176	II	18	64	20.8	34.6	6.3	8.1	7.2	3.2	0.42	13.1	19.8
130	177	II	0.01	0.24	28.2	43.3	4.3	14.3	12.1	5.7			
131	178	III	527	1825	16.8	52.3	4.8	10.7	8.7	4.3			
132	179	III	4.5	28	22.2	57.2	5.9	14.3	12.6	5.7			
133	180	III	4.2	734	30.6	32.7	14.4	11.9	9.9	4.8			
134	181	IV	1.9	451	24.7	76.4	5.3	20.9	18.9	8.4			
135	182	IV	0.30	388	28.1	75.8	1.4	24.1	21.0	9.7			
136	183	IV	3.0	388	26.4	82.1	3.0	24.6	21.4	10.0			
137	185	IV	0.01	0.10	25.1	74.6	1.6	19.9	18.5	8.0			
138	189(?)		0.45	55	24.9	81.1	0.8	21.5	20.0	8.7			
139	190(?)		29	843	20.7	77.4	1.9	17.1	15.8	6.9			
140	191(?)		0.28	6.9	23.4	79.5	2.1	18.5	18.4	7.4			
141	E 194	IV	1.2	14	20.7	63.8	6.8	13.5	13.1	5.5			
142	D 197	IV	31	152	20.3	73.8	6.9	15.6	14.8	6.3			
143	B 240	III	24	76	27.4	37.3	9.5	11.4	10.1	4.6			23.38%
144	241	III	17	962	26.0	65.5	1.5	19.0	16.8	7.6			
145	242	III	0.30	625	26.3	69.6	3.0	20.6	18.2	7.2	0.42	10.9	22.9
146	243	III	0.15	704	28.6	58.4	0.7	19.7	16.7	7.8			
147	244	III	4.5	457	24.8	60.1	1.6	16.8	14.9	7.3			
148	245	III	4.3	137	24.9	47.8	1.6	13.7	11.9	5.4			
149	246	III	16	136	25.9	37.0	0.8	11.3	9.6	4.5			
150	250	III	45	90	22.9	41.1	2.6	10.8	9.4	4.3	0.46	8.8	21.8
151	251	III	42	52	25.3	15.0	16.6	4.3	3.8	1.7			
152	252	III	74	144	25.3	26.5	15.0	7.7	6.7	3.0			
153	253	III	59	80	26.0	40.1	3.1	12.0	10.4	4.8			
154	254	III	77	290	28.2	43.3	1.4	14.4	12.3	5.8			
155	255	III	129	284	26.7	40.4	3.0	12.5	10.8	4.8			
156	256	III	200	734	28.2	54.7	1.4	17.8	15.5	7.1			
157	257	III	15	813	26.9	61.6	0.7	18.8	16.6	7.5			
158	258	III	69	774	26.5	47.2	1.5	14.4	12.5	5.8			
159	259	III	0.01	0.09	25.5	30.5	0.8	9.1	7.8	3.6			
160	260	III	61	1428	22.6	17.7	6.6	4.6	4.0	1.8			
161	261	III	26	1508	27.2	54.0	2.2	16.6	14.7	6.6			
162	B 262	III	89	625	27.6	44.6	2.9	13.9	12.4	5.6			
					26.14			13.47					13.47
Zone I		7758	X 15	X .2338	X .95	=	25983	80/deg					
Zone II		7758	X 20	X .2414	X .962	=	39017	"					

Zone I 7758 X 15 X .2338 X .95 = 25983 80/deg

Zone II 7758 X 20 X .2414 X .962 = 39017 "

Zone I

Zone II

20

14

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PR-2, SE SE 29-13S-23E S.L.M. (578 FSL, 579 FEL),

Uintah County, Utah

LAND STATUS: SURFACE U.S. MINERALS U.S.

ELEVATION: 6346 GROUND TOTAL DEPTH 202

SPUD: July 8, 1973 COMPLETE: July 10, 1973

TOPS: SURFACE IN Parachute Creek TOP DATUM (msl)

PARACHUTE CREEK (Surface)

MAHOGANY OIL SHALE ZONE ?

DOUGLAS CREEK 45 6341

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE SATURATION

2 analyses averaged

Sample Number

DEPTH	VIS CLASS	PERMEABILITY BEFORE	PERMEABILITY AFTER	POROS. %	OIL	WATER	GALS / TON	% vol	% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
163	21	III	4.5	113	23.8	71.5	3.8	17.7	16.8	7.1			
164	45	III	7.2	25	19.6	56.7	1.0	11.6	11.0	4.7	0.46	13.8	21.1
165	46	III	8.1	336	16.3	81.7	2.4	14.4	13.1	5.8			
166	51	II	7.2	63	21.5	52.5	4.2	12.3	11.2	5.0			
167	52	II	63	412	22.6	37.5	3.5	9.5	8.5	3.9	0.41	15.3	19.8
168	53	II	19	32	24.5	46.5	1.6	11.3	10.3	4.6			
169	54	II	15	87	19.0	46.7	7.4	9.2	8.7	3.8			
170	60	-	10	64	14.4	26.1	2.1	5.4	5.1	1.8			
171	62	II	33	217	19.1	68.5	1.0	13.9	12.9	5.6			
172	63	II	14	257	19.2	63.6	2.6	12.7	12.1	5.2			
173	66	I	0.90	32	13.7	45.1	3.6	6.1	6.1	2.5			
174	67	I	3.4	232	19.5	51.2	2.0	10.8	9.8	4.4			
175	90	I	14	481	24.3	40.3	5.4	10.8	9.6	4.4		19.43	11.25
176	91	I	0.60	14	27.2	68.3	11.4	19.8	18.4	7.9		25.75	15.30

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PR-3A, NW NE SW 8-12S-25E S.L.M. (3138 FNL, 1582 FWL)

Uintah County, Utah

LAND STATUS: SURFACE U.S. MINERALS U.S.

ELEVATION: 6302 GROUND TOTAL DEPTH: 95

SPUD: Aug. 7, 1973 COMPLETE: Aug. 8, 1973

TOPS: SURFACE IN Parachute Creek TOP DATUM (msl)

PARACHUTE CREEK (Surface)

MAHOGANY OIL SHALE ZONE (6340 est.)

DOUGLAS CREEK 39 6265 6243

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

2 analyses averaged

Sample Number

DEPTH	VIS CLASS	PERMEABILITY		POROS. %	PORE SATURATION		GALS / TON	OIL		% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
		BEFORE	AFTER		OIL	WATER		% vol	% wt					
4 5	39	V	64	769	24.5	48.9	23.3	14.3	12.1	5.8				
6	40	V	70	377	28.9	55.4	12.5	19.3	16.1	7.8	0.48	7.9	21.0	API
4 7	41	V	82	782	30.9	45.0	12.0	16.4	14.0	6.6		1.015	0.928	
4 8	42	V	15	475	27.5	53.5	9.1	17.4	14.8	7.0				
2 9	43	V	10	67	35.2	26.1	21.0	10.4	9.3	4.2				
4 10	44	V	136	1627	28.6	42.0	3.5	14.5	12.1	5.9				
11	45	V	145	1141	27.9	55.6	3.6	18.4	15.6	7.4				
4 12	46	V	47	493	27.5	52.4	1.5	17.4	14.5	7.0				
13	47	V	145	992	27.9	70.3	5.0	23.2	19.7	9.5				
3 14	48	V	88	1142	19.7	52.8	10.2	12.3	10.5	5.0				
15	49	V	31	1939	27.7	66.1	8.3	21.3	18.5	8.6				
16	50	V	24	1548	30.6	60.8	18.0	22.0	18.7	8.8				
4 17	51	V	8.8	744	26.8	57.8	24.6	17.6	15.7	7.1				
18	52	V	33	1508	31.4	62.4	12.7	22.5	19.3	9.0				
19	53	V	41	2133	31.7	60.6	19.6	21.8	19.4	8.8		7.9	220	API
20	54	V	9.7	1826	27.5	67.3	18.2	20.6	18.7	8.3		1.023	0.928	
21	55	V	13	2773	30.3	64.0	16.5	22.5	19.6	9.0				
22	56	V	20	1805	28.8	60.1	15.9	20.2	17.5	8.1				
23	57	V	1.6	1989	31.1	58.5	21.5	20.9	18.4	8.5				
24	58	V	25	3576	30.5	64.3	16.1	23.3	19.8	9.3				
25	59	V	27	2733	30.9	66.0	12.3	23.7	20.7	9.5				
26	60	V	55	1905	30.6	58.8	13.7	21.7	18.2	8.7				
27	61	V	13	2282	28.7	64.2	19.8	21.7	18.6	8.7				
28	62	V	17	2182	31.5	57.2	14.3	21.2	18.1	8.5				
29	63	V	22	2529	32.6	63.1	4.3	23.9	20.4	9.6				
30	64	V	51	2733	30.4	63.1	4.0	24.1	20.6	9.7		7.8	22.6	API

57.8

29.2

13.13 19.7

7758 x 24 x .292 x .869 = 51183 BD/ac

avg. porosity 29.2

Gals/ton 19.7

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PR-3B, NW SW 8-12S-25E S.L.M. (3021 FNL, 1044 FWL),

LAND STATUS: SURFACE U.S. MINERALS U.S.

ELEVATION: 6361 GROUND TOTAL DEPTH: 1574

SPUD: 8/8/73 COMPLETE: 8/10/73

TOPS: SURFACE IN Parachute Creek TOP DATUM (msl)

PARACHUTE CREEK (Surface)

MAHOGANY OIL SHALE ZONE 40 6321

DOUGLAS CREEK 119 6242

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE

2 analyses averaged

Sample

DEPTH	VIS CLASS	PERMEABILITY BEFORE	PERMEABILITY AFTER	POROS. %	SATURATION OIL	SATURATION WATER	GALS / TON	% vol	% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
31 119	V	22	1964	27.7	69.3	5.1	22.75	19.35	9.0				
32 120	V	6.4	2686	28.7	60.9	4.2	20.30	17.65	8.15	0.45	7.4	22.8	API
33 121	V	32	1686	28.4	67.6	7.4	22.25	19.35	8.9				
34 122	V	20	1389	28.6	69.3	7.7	22.00	20.00	8.8				
35 123	V	27	1646	28.8	66.7	8.7	22.25	19.35	8.9				
36 124	V	7.0	2232	27.9	74.7	2.1	24.15	21.00	9.7				
37 125	V	6.1	1905	32.8	62.8	10.7	24.40	20.80	9.8				
38 126	V	34	1369	28.6	55.9	8.4	19.35	16.15	7.7				
39 127	V	19	2634	30.7	73.0	6.5	27.05	22.60	10.85				
40 128	V	23	843	29.1	76.3	5.5	26.35	22.45	10.55				
41 129	V	25	1778	25.8	61.3	5.4	19.10	15.95	7.6				
42 130	V	2.7	2584	32.4	61.7	8.6	26.10	21.80	10.45				
43 131	V	11	1706	29.7	70.7	11.1	24.4	21.20	9.8				
44 132	V	6.1	1240	28.3	66.2	12.0	21.25	18.85	8.5				
45 133	V	3.3	1944	27.9	71.7	11.8	23.70	20.20	9.55	0.42	7.0	21.0	API
46 134	V	1.3	1329	26.7	74.2	11.1	23.00	20.00	9.25				
47 135	V	7.0	664	27.7	67.6	13.3	21.75	18.95	8.75				
48 136	V	9.4	1311	27.0	69.3	6.7	22.25	18.95	8.95				
49 137	V	0.14	0.20	14.8	1.4	67.5	0.20	0.20	0.10	x			
50 138	V	4.5	2182	29.8	71.1	4.6	25.65	21.45	10.30				
51 139	V	4.2	1428	29.7	49.5	23.2	17.45	14.85	7.05				
52 140	V	2.4	744	29.2	51.7	27.7	17.20	15.25	6.95				
53 141	V	3.3	2033	31.4	67.4	12.7	25.7	21.45	10.40				
54 142	V	3.6	1944	28.5	67.4	5.6	22.75	19.40	9.30				
55 143	V	0.72	2778	28.6	67.0	8.8	22.30	19.40	9.00				
56 144	V	2.7	3477	33.8	61.6	13.0	25.25	21.05	10.15				
57 145	V	1.2	412	25.9	57.6	24.6	16.95	15.05	6.80				
58 146	V	0.29	159	25.6	54.4	26.1	15.45	14.05	6.25	0.30	7.5	21.3	
59 147	V	0.22	28	23.5	40.8	38.7	10.65	9.65	4.30				

29.55 11.83 21.85
 x (1000/1000) 30.07 9.84 22.62
 7758 x 28 x .3007 x .902 = 58918 BO/ac

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PR-3C, SW SW NW 8-12S-25E S.L.M. (2600 FNL, 467 FNL)

Uintah County, Utah

LAND STATUS: SURFACE U.S. MINERALS U.S.

ELEVATION: 6430 GROUND TOTAL DEPTH: 317

SPUD: 6/18/73 COMPLETE: 6/20/73

TOPS: SURFACE IN Parachute Creek TOP DATUM (msl)

PARACHUTE CREEK (Surface)

MAHOGANY OIL SHALE ZONE 130 6300

DOUGLAS CREEK 221 6209

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

Sample
Number

DEPTH	VIS CLASS	PERMEABILITY		POROS. %	PORE SATURATION		GALS / TON	2 analyses averaged		% Sulf	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
		BEFORE	AFTER		OIL	WATER		% vol	% wt				
60	222	V	4.8	1230	22.2	86.5	0.9	22.15	19.45	8.9	0.44	5.9	22.3
61	223	V	0.63	1259	24.5	74.6	6.9	20.85	18.6	8.4			
62	224	V	3.6	1349	22.5	79.5	0.9	20.3	18.15	8.2			
63	225	V	2.8	1506	25.9	85.3	3.5	25.3	22.5	10.1			
64	226	V	0.02	2003	25.2	87.7	6.6	25.3	22.5	10.1			
65	227	V	0.01	2782	25.3	89.2	1.6	25.8	22.9	10.3			
66	228	V	0.13	1746	26.3	87.5	1.5	26.3	23.35	10.5			
67	229	V	0.01	1667	26.7	79.8	6.4	24.35	21.6	9.75			
68	230	V	1.2	1210	25.3	82.2	3.6	23.85	22.5	10.1			
69	231	V	0.6	1647	27.0	75.6	4.4	23.85	20.7	9.55			
70	232	V	0.10	1845	22.8	70.2	8.8	17.75	17.25	7.1			
71	233	V	8.9	1190	18.3	72.7	0.5	15.55	13.7	6.25			22.1
72	234	V	0.01	2480	26.6	83.1	6.4	25.3	22.45	10.15			
73	235	V	0.01	3080	27.9	88.3	2.9	28.65	24.9	11.5	0.40	5.3	21.6
74	236	V	0.13	2529	28.9	89.3	0.7	30.1	26.15	12.1			
75	237	V	0.60	1726	26.5	80.1	1.5	25.25	21.2	9.6			
76	238	V	0.75	1409	27.2	83.9	4.4	27.2	23.15	10.9			
77	239	V	0.90	487	23.3	80.3	5.2	21.9	19.0	8.75			
78	240	V	0.27	3874	29.7	84.2	2.7	29.6	25.2	11.85			
79	241	V	0.01	1875	26.7	84.3	4.5	26.25	22.8	10.5			
80	242	V	0.15	1746	23.0	85.2	1.7	22.8	19.8	9.15			
81	243	V	0.01	2430	26.8	87.4	3.0	27.2	23.65	10.9			
82	244	V	0.01	1732	26.7	89.3	3.4	27.2	24.15	10.9			
83	245	V	0.01	2579	28.5	87.1	0.7	28.9	25.1	11.55			
84	246	V	0.01	2733	25.7	90.6	0.8	27.4	23.65	10.9			
85	247	V	0.01	1309	25.2	87.8	1.6	25.3	22.45	10.15	0.42	5.8	21.1
86	248	V	0.11	0.46	19.9	50.2	1.0	11.2	10.15	4.5			

7758 x 27 x .2535 x .974 = 51825 BD/ac

CORE HOLE NO. PR-3D, SW NE 7-12S-25E S.L.M. (2108 FNL, 1518 FEL)

DOUGLAS CREEK

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

2 analyses
averaged

Sample Number	DEPTH	VIS CLASS	PERMEABILITY		POROS. %	SATURATION		GALS / TON	average		% SULF	% EXT OIL	RET OIL	S / S RATIO
			BEFORE	AFTER		OIL	WATER		% vol	% wt				
87	376	IV	38	1309	29.0	44.9	12.7	15.4	13.1	6.25	0.43	8.6	20.3	4
88	377	IV	87	2831	31.5	20.3	39.3	7.7	6.45	3.1		1.01	0.932	2
89	378	IV	275	2831	32.4	40.2	25.3	15.4	13.1	6.25				4
90	379	IV	327	1686	30.5	36.1	40.0	13.05	11.25	5.3	0.48	6.7	20.0	3
91	380	IV	521	1746	31.7	23.1	53.4	8.5	7.35	3.45				2
92	381	IV	232	2034	31.8	27.1	43.3	10.2	8.65	4.1				2
93	382	IV	203	1885	31.2	37.9	30.1	14.05	11.95	5.7				4
94	383	IV	843	2865	28.4	35.3	42.6	11.6	10.1	4.75	0.46	7.2	19.0	3
					30.8		35.83	11.98						
					7758	8	308	442	12272	30/ac				

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PR-4, NW NW SW 5-13S-25E S.L.M. (2055 FWL, 992 FSL)

LAND STATUS: SURFACE U.S. MINERALS U.S.

ELEVATION: 7187 GROUND TOTAL DEPTH 195

SPUD: June 21, 1973 COMPLETE: June 22, 1973

TOPS: SURFACE IN Parachute Creek TOP DATUM (msl)

PARACHUTE CREEK (surface)

MAHOGANY OIL SHALE ZONE ?

DOUGLAS CREEK 57 7148

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

Sample
Number

DEPTH	VIS CLASS	PERMEABILITY		POROS. %	PORE SATURATION		GALS / TON	2 analyses averaged		% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
		BEFORE	AFTER		OIL	WATER		% vol	% wt				
95	58	IV	0.01	1031	22.3	83.8	4.0	20.5	18.55	8.2	0.43	11.2	21.6
96	59	IV	5.8	559	23.4	73.9	3.8	18.6	17.25	7.5			
97	60	III	9.4	0.55	30.3	37.6	6.3	13.15	11.4	5.3			
98	61	II	7.3	14	23.0	18.7	17.8	4.8	4.3	1.9	x		
99	62	III	26	449	26.7	43.4	7.9	13.35	11.6	5.4			
100	63	III	81	487	27.2	69.5	7.0	21.25	18.85	8.6			
101	64	III	2.8	6.0	20.6	34.4	32.4	7.65	7.1	3.05	x		
102	65	III	16	257	24.7	48.1	12.1	13.15	11.9	5.3			
103	66	III	65	863	31.0	59.4	3.9	21.5	18.25	8.6			
104	67	IV	37	1607	27.1	82.4	4.8	24.6	22.25	9.85			
105	68	IV	0.6	1220	27.2	82.1	3.7	25.5	22.15	10.2			
106	69	IV	16	1426	28.0	68.8	2.1	22.15	19.25	8.9			
107	70	IV	24	1170	28.4	70.4	7.4	22.9	19.9	9.15			
108	71	IV	11	1686	29.6	72.7	4.7	25.1	21.35	10.05			
109	72	IV	19	1369	28.5	76.1	3.2	24.35	21.6	9.75			
110	73	IV	5.2	11	25.1	34.6	5.2	9.75	8.7	3.95	x		
111	74	II	1.3	18	28.0	61.8	3.6	19.8	17.2	7.9			
112	75	III	1.1	5.2	25.6	52.0	6.6	15.25	13.25	6.1			
113	76	IV	0.10	1.8	27.5	62.2	7.6	19.6	16.95	7.8			
114	77	IV	39	89	31.0	71.3	8.1	25.3	21.95	10.15			

$26.76 \quad 7.41 \quad 18.41$

$x (-3 \text{ t/t}) \quad 27.44 \quad 5.69 \quad 20.35$

$7758 \times 17 \times 2744 \times 943 = 34,126 \text{ BO/ac}$

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PR-5, NE SW NE 34-12S-24E S.L.M. (1937 FNL, 1468 FEL)

LAND STATUS: SURFACE U.S. MINERALS U.S.

ELEVATION: 6437 GROUND TOTAL DEPTH 274

SPUD: July 24, 1973 COMPLETE: July 25, 1973

TOPS: SURFACE IN Parachute Creek TOP DATUM (msl)

PARACHUTE CREEK (Surface)

MAHOGANY OIL SHALE ZONE 80 ? 6357 ?

DOUGLAS CREEK 151 6286

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

Sample Number	DEPTH	VIS CLASS	PERMEABILITY		POROS. %	PORE SATURATION		2 analyses averaged			% SULF	GRAV EXT OIL	GRAV RET OIL	34/32 S/S RATIO
			BEFORE	AFTER		OIL	WATER	GALS / TON	% vol	% wt				
115	153	III	8.5	142	24.2	58.3	5.8	14.8	13.9	5.9				
116	159	V	19	232	24.2	53.7	7.0	14.3	12.9	5.8	0.55	12.6	21.1	API
117	160	V	3.6	232	27.7	62.1	4.7	19.3	17.1	7.7				
118	168	III	32	992	25.1	50.6	4.8	15.6	12.7	6.2	0.58	10.5	22.5	
119	169	III	6.0	281	29.2	58.3	5.8	19.2	17.0	7.6				
120	170	III	4.9	75	25.9	52.2	8.5	14.9	13.4	5.9				16.35
121	218	III	18	330	28.8	54.2	16.6	17.4	15.7	7.0	0.48	8.4	21.1	
122	219	III	4.9	515	27.1	68.9	6.3	20.7	18.7	8.3		1.012	0.927	
123	220	III	11	353	24.3	57.3	3.7	15.4	14.0	6.2				
124	225	IV	15	625	30.2	73.6	1.3	24.1	22.4	9.7	0.57	7.5	20.6	
125	226	IV	9.9	783	27.1	69.0	4.8	20.8	18.8	8.4		1.018	0.930	
126	227	IV	1.2	284	24.6	62.6	7.3	16.4	15.4	6.6				
127	239	III	8.9	625	19.3	38.9	5.7	10.1	7.5	4.1				17.84

Zone I 26.05 6.1 16.35 = 11.386 BD/BL

Zone II 25.91 6.53 17.84 = 13.156 "

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PR-6, E₂ SW SW 33-13S-22E S.L.M. (588 FSL, 1092 FWL)Uintah County, UtahLAND STATUS: SURFACE U.S. MINERALS U.S.ELEVATION: 6707 GROUND TOTAL DEPTH: 423SPUD: July 11, 1973 COMPLETE: July 20, 1973TOPS: SURFACE IN Parachute Creek TOP DATUM (msl)

PARACHUTE CREEK (Surface)

MAHOGANY OIL SHALE ZONE 65? 6642DOUGLAS CREEK 169 6541

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE

2 analyses

averaged

GRAV EXT OIL GRAV RET OIL S³⁴/S³²Sample
Number

DEPTH	VIS CLASS	PERMEABILITY BEFORE	PERMEABILITY AFTER	POROS. %	SATURATION OIL	SATURATION WATER	GALS / TON	% vol	% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
177	162	II	0.75	22	27.5	52.8	6.2	15.6	14.2	6.2			
178	163	II	0.03	23	28.2	78.7	3.2	23.6	21.9	9.4			
179	169	III	232	625	28.6	33.6	31.8	10.9	9.5	4.4			
180	170	III	1.5	382	18.3	77.6	7.1	15.1	14.0	6.0	0.50	14.1	23.6 API
181	171	III	3.6	287	14.2	45.1	31.6	6.6	6.3	2.6			
182	172	IV	0.30	493	24.9	81.8	5.2	22.2	20.2	8.9			
183	173	IV	1.3	96	19.2	40.1	32.8	7.8	7.6	3.1			
184	176	II	12	130	20.6	67.1	5.8	17.1	13.7	6.8	0.43	14.1	24.2
185	177	II	17	197	25.4	54.7	17.3	15.1	13.7	6.0		0.973	0.909
186	178	III	0.01	194	25.2	73.1	2.8	20.1	18.2	8.0			
187	179	II	3.9	287	23.7	64.2	11.0	16.6	16.5	6.6			
188	180	II	27	302	22.8	41.6	28.0	10.0	9.4	4.0			
189	181	II	9.4	191	22.0	71.4	7.3	16.3	15.3	6.5			
190	182	II	71	423	27.8	48.8	7.6	15.1	13.4	6.0			
191	183	II	307	674	29.2	38.0	19.5	12.1	11.0	4.8			
192	184	II	81	539	29.4	50.6	9.2	17.3	14.9	6.9			
193	185	III	0.01	1071	29.1	79.6	1.4	25.3	23.0	10.1			
194	192	II	12	188	31.1	55.1	11.2	19.6	17.0	7.8	0.48	11.6	22.5
195	193	II	0.17	64	27.9	55.3	2.9	17.6	15.3	7.1		0.987	0.919
196	229	III	0.01	11	18.9	59.9	5.8	12.2	11.6	4.9	0.45	6.0	22.3
197	230	III	4.6	635	20.6	48.5	1.9	11.0	10.2	4.4		1.029	0.920
198	235	IV	57	165	25.5	30.9	6.7	9.3	8.0	3.7			
199	236	IV	1.2	18.5	22.1	44.3	12.2	10.7	9.9	4.3			
200	237	IV	2.4	43	23.8	49.2	11.7	13.4	11.9	5.4			
201	238	IV	156	319	26.7	23.5	3.7	7.8	6.4	3.1			
202	239	IV	0.06	1.5	29.0	20.3	23.7	7.1	6.0	2.9			
203	240	IV	0.01	5.8	31.9	23.8	17.5	9.3	7.7	3.7			
204	241	IV	23	6.7	28.9	40.5	19.7	13.1	11.9	5.3			
205	242	IV	22	68	24.2	37.6	34.7	10.0	9.3	4.0			
206	243	IV	35	113	29.1	29.9	27.1	10.3	8.9	4.1			
207	244	IV	53	110	25.6	31.9	22.5	9.8	8.7	4.0			
208	245	IV	0.30	13	24.5	55.0	25.3	15.1	14.0	6.1			
209	246	IV	107	240	24.1	42.3	40.6	11.2	10.4	4.5			20.7
210	247	IV	53	133	29.7	26.9	14.5	9.5	8.1	3.8			
211	248	IV	121	330	27.7	38.3	19.5	11.9	10.9	4.8			
212	249	IV	330	714	26.9	23.4	23.4	7.3	6.4	3.0			
213	250	IV	21	226	27.4	35.3	15.3	11.0	9.5	4.4			

177-193

C

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO. PR-6 , 33-13S-22E

Uintah County, Utah

LAND STATUS : SURFACE U.S. MINERALS U.S.

ELEVATION: _____ GROUND TOTAL DEPTH: _____

SPUD: _____ COMPLETE: _____

TOPS: SURFACE IN _____ TOP DATUM (msl)

PARACHUTE CREEK

MAHOGANY OIL SHALE ZONE

DOUGLAS CREEK

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE SATURATION

2 analyses
averaged

Sample
Number

[illegible]

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PR-7, SW NW NE 14-14S-23E S.L.M. (965 FNL, 2324 FEL),
Uintah County, Utah

LAND STATUS: SURFACE U.S. MINERALS U.S.

ELEVATION: 6798 GROUND TOTAL DEPTH 212

SPUD: July 21, 1973 COMPLETE: July 23, 1973

TOPS: SURFACE IN Douglas Creek ? TOP DATUM (msl)

PARACHUTE CREEK (Surface)

MAHOGANY OIL SHALE ZONE (absent)

DOUGLAS CREEK ?(Surface?)

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE

2 analyses
averaged

Sample
Number

DEPTH	VIS CLASS	PERMEABILITY BEFORE	AFTER	POROS. %	SATURATION OIL	WATER	GALS / TON	% vol	% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
242	F 21	II	3.0	20	23.3	42.9	7.3	11.0	10.0	4.4			
243	E 27	II	7.9	595	25.6	3.5	50.4	1.0	0.9	0.4			
244	28	II	1.5	1042	27.9	64.8	22.5	20.9	18.1	8.3			
245	29	II	144	1369	27.9	32.2	32.2	10.3	9.0	4.1			
246	30	II	13	1875	30.9	27.8	27.8	10.1	8.6	4.0	0.48	9.9	24.0
247	31	III	0.33	1706	30.5	35.4	17.7	13.0	10.8	5.2			
248	32	III	1.9	1944	27.9	48.7	12.9	16.3	13.6	6.5			
249	33	V	11	1805	28.4	77.5	7.1	25.9	22.0	10.3			
250	34	V	3.6	1220	28.9	79.3	4.5	26.4	22.9	10.5			
251	35	V	0.01	2387	29.1	80.2	2.7	27.4	23.3	10.9			12.5
252	36	V	0.01	2634	28.0	67.2	2.9	23.0	18.8	9.2			
253	37	V	8.1	1905	23.5	71.5	5.5	19.0	16.8	7.6			
254	38	V	0.01	2833	29.8	78.2	2.7	27.4	23.3	10.9			
255	39	V	0.01	2530	28.6	87.8	4.5	28.3	25.1	11.3			
256	V 40	V	0.01	2182	29.7	87.3	3.0	29.3	26.0	11.7			
257	E 41	V	0.01	2033	29.0	86.2	2.8	28.8	25.5	11.5			
258	C 82	II	1.9	60	21.7	45.1	16.5	10.6	9.8	4.2			28.58
259	83	II	55	179	24.6	34.5	27.6	9.6	8.5	3.8			21.86
260	99	II	6.0	521	16.2	51.7	8.0	9.1	8.5	3.7			
261	100	II	11	734	25.6	53.6	6.7	15.8	13.8	6.3			
262	118	III	12	545	22.4	50.4	9.8	12.5	11.3	5.0			
263	C 119	III	0.45	3.0	19.3	70.1	14.5	13.9	13.5	5.6			
264	B 184	II	22	1200	20.6	43.1	15.0	9.6	8.9	3.8			

Zone I

28.58

10.63

21.86

=

27751

BO/ac

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PRS-1, SE NE NE 27-15S-23E S.L.M. (1040 FNL, 137 FEL)Uintah County, UtahLAND STATUS: SURFACE State MINERALS StateELEVATION: 8010 GROUND TOTAL DEPTH: 247SPUD: July 24, 1973 COMPLETE: July 26, 1973TOPS: SURFACE IN Douglas Creek TOP DATUM (msl)

PARACHUTE CREEK

MAHOGANY OIL SHALE ZONE

DOUGLAS CREEK

(Surface)

VISUAL CLASSIFICATION

CLASS	IMPREGNATION
V	VERY RICH
IV	RICH
III	MOD
II	WEAK
I	VERY WEAK

CORES

PORE

2 analyses
averagedSample
Number

DEPTH	VIS CLASS	PERMEABILITY BEFORE AFTER	POROS. %	SATURATION OIL WATER	GALS / TON	% vol	% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
265 27	II	16 20	16.4	35.4 13.4	6.2	5.8	2.5				
266 28	II	226 330	27.9	30.8 1.4	10.1	8.6	4.0				
267 29	II	2.1 9.6	26.3	51.4 4.9	14.8	13.5	5.9				
268 30	II	0.01 0.60	15.9	76.1 8.2	13.4	12.2	5.4				
269 31	II	119 156	24.1	25.7 1.7	7.2	6.3	2.9				
270 35	I	6.0 18	24.6	21.1 9.0	5.8	5.2	2.3				
271 36	I	499 574	18.3	24.6 17.5	4.8	4.5	1.9				11.0
272 37	I	24 41	35.2	13.3 20.5	5.3	4.7	2.2				
273 38	I	0.60 3.0	26.9	24.1 49.8	7.2	6.5	3.0				
274 39	I	9.1 127	27.4	47.1 24.4	13.9	12.9	5.6				
275 42	III	0.03 1.8	23.2	47.4 21.5	10.5	11.0	4.2	0.41	10.1	23.0	API
276 43	III	21 32	25.7	64.7 6.6	18.7	16.6	7.6		0.999	0.916	14.8
277 45	III	1.8 226	26.4	51.2 6.4	14.9	13.5	6.0				
278 47	III	0.03 0.75	20.0	38.9 31.4	9.6	16.0	7.8				
279 48	III	0.09 0.90	23.2	48.7 24.5	12.5	11.3	4.9				
280 49	III	1.5 359	20.9	62.2 10.5	14.4	13.0	5.8				
281 65	II	134 188	24.1	29.4 44.5	7.7	7.1	3.1				
282 68	II	3.3 6.1	30.6	13.7 34.0	4.8	4.2	1.9				
283 69	II	7.2 14	30.2	14.2 42.1	4.8	4.3	1.9				
284 74	II	0.17 1.8	31.8	30.7 13.8	10.5	9.8	4.2				
285 75	II	30 57	29.9	27.1 26.1	9.6	8.2	3.9				
286 76	II	19 41	30.8	25.6 32.5	9.1	7.9	3.7				
287 77	II	20 41	24.1	33.6 22.8	9.1	8.1	3.7				
288 78	II	15 45	26.9	48.4 14.5	14.4	13.0	5.8				
289 79	II	0.46 3.0	30.5	29.4 13.1	10.5	9.0	4.2				
290 80	II	6.0 74	22.2	49.2 11.7	12.0	10.9	4.8				
291 92	IV	10 24	24.8	22.1 17.3	6.2	5.5	2.5		(88' depth)	22.9	1
292 93	IV	55 113	27.3	18.3 22.7	5.8	5.0	2.3	0.40	11.3	21.0	1
293 94	IV	0.10 1.6	20.3	42.2 2.5	9.1	8.6	3.7		0.991	0.928	2
294 97	IV	302 481	32.9	15.5 16.7	6.2	5.1	2.5				2
295 98	IV	57 243	26.8	35.8 7.8	11.0	9.6	4.5				3
296 99	IV	104 394	31.2	30.1 14.4	11.0	9.4	4.5				3
297 100	IV	446 982	33.2	28.9 11.4	11.0	9.6	4.5				3
298 101	IV	43 302	33.0	34.3 4.9	13.8	11.4	5.6				15.8
299 102	IV	272 674	30.6	32.7 3.9	12.0	10.0	4.9				3
300 103	IV	67 654	33.6	52.3 4.8	20.5	17.5	8.3				5
301 104	IV	11 446	27.0	72.2 6.3	22.0	19.5	8.9				5

Zone I

E

Zone II

D

Zone III

C

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO. PRS-1, 27-15S-23EUintah County, Utah

LAND STATUS: SURFACE _____ MINERALS _____

ELEVATION: 8010 GROUND TOTAL DEPTH 247

SPUD: _____ COMPLETE: _____

TOPS: SURFACE IN _____ TOP _____ DATUM (msl) _____

PARACHUTE CREEK _____

MAHOGANY OIL SHALE ZONE _____

DOUGLAS CREEK _____

VISUAL CLASSIFICATION

CLASS	IMPREGNATION
V	VERY RICH
IV	RICH
III	MOD
II	WEAK
I	VERY WEAK

CORES

PORE SATURATION

2 analyses averaged

Sample Number

DEPTH	VIS CLASS	PERMEABILITY BEFORE	AFTER	POROS. %	OIL	WATER	GALS / TON	% vol	% wt	% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
302	105	IV	341	417	15.8	41.1	23.4	6.7	6.5	2.7			
303	106	IV	1924	2182	20.7	26.6	28.5	6.7	5.5	2.7			
304	107	IV	724	972	26.0	30.2	8.1	9.1	7.9	3.7			
305	108	IV	1200	1448	24.9	26.9	1.6	7.7	6.7	3.1			
306	109	IV	654	1190	29.0	37.3	7.2	12.4	10.8	5.0			
307	110	IV	96	645	29.7	34.4	1.3	12.0	10.2	4.9			
308	111	IV	154	783	28.9	33.2	2.8	11.5	9.6	4.7			
309	112	IV	101	615	25.1	45.5	4.0	13.2	11.4	5.3			
310	113	IV	57	664	28.4	43.0	2.8	14.3	12.2	5.8			
311	114	IV	7.8	813	29.9	50.2	4.0	17.2	15.0	6.9			
312	115	IV	1.2	625	30.7	79.6	7.2	26.7	24.2	10.8			
313	116	IV	0.45	714	25.2	80.6	7.1	21.5	20.4	8.7			
314	117	III	0.01	3.3	14.6	69.9	15.7	10.5	10.2	4.3			
315	159	IV	130	615	34.1	18.7	26.9	7.8	6.5	3.2	0.49	10.6	19.5
316	160	IV	3.4	551	35.4	26.5	30.0	11.1	9.5	4.5	0.995	0.937	27.04/12.42
317	161	IV	200	1686	27.5	42.6	3.6	13.5	11.8	5.5			
318	162	IV	1270	3080	34.0	35.3	11.8	14.5	12.1	5.9			
319	163	IV	744	2981	32.7	28.7	10.7	11.6	9.5	4.7			
320	164	IV	1309	3679	34.2	33.6	6.7	14.5	11.6	5.9			
321	165	IV	803	3080	36.1	30.7	19.1	14.0	11.3	5.7			
322	166	IV	893	1480	32.7	27.5	15.6	11.1	9.1	4.5			
323	167	IV	428	3179	27.9	59.5	15.4	18.8	16.7	7.6			
324	168	IV	90	1785	32.6	26.3	4.9	10.6	8.7	4.3			10.7
325	169	IV	521	2782	31.9	26.6	9.7	10.6	8.5	4.3			
326	170	IV	0.04	30	29.8	79.9	5.7	27.3	23.7	11.0			
327	171	IV	5.5	1468	25.4	82.3	5.1	22.5	20.9	9.1			
328	172	IV	0.01	2728	34.3	82.8	2.3	32.5	28.3	13.2			
329	173	IV	0.15	1989	27.7	81.2	2.9	25.9	22.5	10.5			
330	174	IV	0.01	3.1	29.8	91.1	1.3	31.1	27.1	12.6			
331	176	I	1.8	3973	12.1	47.1	35.5	6.2	5.7	2.5			31.63/17.33
332	177	I	4.5	6.0	32.9	16.1	42.0	5.8	5.3	2.4			
333	178	II	6954	6954	28.4	24.9	18.6	7.7	7.1	3.1			
334	179	II	9.8	35	27.7	32.1	16.2	9.6	8.9	3.9			
335	180	II	9930	9930	27.5	27.6	30.1	9.6	7.5	3.9			
336	181	IV	803	8928	25.9	85.7	7.0	24.0	22.2	3.9			
337	199	IV	20	704	32.2	34.7	13.6	13.4	11.2	5.5			
338	200	IV	223	1944	36.5	29.1	17.0	13.3	10.7	5.4	0.76	8.5	21.0
											1.010	0.928	

zone IV

B

63

zone IVa

B

B

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PRS-1 , 27-15S-23E ,
Uintah County, Utah

LAND STATUS: SURFACE _____ MINERALS _____

ELEVATION: 8010 GROUND TOTAL DEPTH 247

SPUD: July 24, 1973 COMPLETE: July 26, 1973

TOPS: SURFACE IN _____ TOP DATUM (msl) _____

PARACHUTE CREEK _____

MAHOGANY OIL SHALE ZONE _____

DOUGLAS CREEK _____

VISUAL CLASSIFICATION

CLASS	IMPREGNATION
V	VERY RICH
IV	RICH
III	MOD
II	WEAK
I	VERY WEAK

CORES

Sample Number	DEPTH	VIS CLASS	PERMEABILITY		POROS. %	PORE SATURATION		GALS / TON	2 analyses averaged		% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
			BEFORE	AFTER		OIL	WATER		% vol	% wt				
339	201	IV	6.0	1349	36.2	30.7	17.7	14.0	11.3	5.7				
340	202	IV	76	1746	29.8	48.3	20.1	16.4	14.6	6.6				
341	203	IV	605	2778	27.0	26.3	43.0	8.2	7.2	3.3				
342	204	IV	635	3769	35.0	25.1	23.8	10.6	8.9	4.3				
343	205	IV	1944	2166	31.4	28.6	12.4	11.0	9.1	4.5				
344	206	IV	1289	3874	34.7	21.9	24.2	9.2	7.7	3.7				
345	207	IV	417	3130	34.1	25.2	19.0	10.1	8.7	4.1				
346	208	IV	1408	4364	32.0	30.0	3.7	11.1	9.7	4.5				
347	209	IV	521	5450	27.1	36.1	11.0	12.6	9.9	5.1				
348	210	IV	1840	3130	35.6	30.6	22.4	13.1	11.3	5.2				11.6
349	211	IV	1091	5957	32.8	28.0	18.3	11.1	9.3	4.5				
350	212	IV	330	5455	30.6	39.3	2.6	14.5	12.1	5.9				
351	213	IV	57	3130	32.2	41.0	3.7	15.9	13.3	6.4				
352	214	IV	110	2166	31.8	48.4	6.6	17.8	15.5	7.2				
353	215	IV	57	3769	28.3	54.8	5.7	18.3	15.6	7.4				
354	216	IV	664	3769	30.7	35.9	2.6	13.5	11.1	5.5				
355	217	IV	188	3130	30.3	38.4	4.0	14.0	11.7	5.7				
356	218	IV	130	3878	22.4	53.6	1.8	16.2	12.1	6.5				
357	219	IV	104	6453	22.1	63.8	6.8	16.4	14.3	6.6				
358	220	IV	0.01	1002	27.7	50.9	6.1	16.4	14.3	6.6				
359	221	IV	2782	2529	32.0	7.8	16.5	3.1	2.6	1.3				
360	222	III	3477	3566	32.0	8.8	33.8	3.9	2.8	1.6				
					31.02			12.67						
Zone V		III			27.06		9.43	12.42	=	45546	80/A			
Zone B		IV			31.63		10.73	17.33	=	35060	"			
		V			31.02		14.01	12.67	=	49671	"			
										130277	"			

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PRS-2, NE SE NW 16-15S-23E S.L.M. (1767 FNL, 2558 FNL)Uintah County, UtahLAND STATUS: SURFACE State MINERALS StateELEVATION: 7702 GROUND TOTAL DEPTH 282SPUD: July 27, 1973 COMPLETE: July 29, 1973TOPS: SURFACE IN Douglas Creek TOP DATUM (msl)

PARACHUTE CREEK -

MAHOGANY OIL SHALE ZONE -

DOUGLAS CREEK

(Surface)

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

Sample
Number

DEPTH	VIS CLASS	PERMEABILITY		POROS. %	PORE SATURATION		2 analyses averaged			% SULF	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
		BEFORE	AFTER		OIL	WATER	GALS / TON	% vol	% wt				
361	E 62	II	87	142	28.6	30.7	7.0	10.4	8.8	4.2	0.73	7.7	20.5 APT
362	63	III	533	853	35.5	25.0	10.7	11.1	8.9	4.5			
363	64	III	1.5	21	26.2	47.7	5.0	14.2	12.6	5.7			
364	66	-	11	156	33.6	30.3	24.3	12.1	10.3	4.9			
365	67	-	1022	1448	39.3	23.4	33.7	11.1	9.3	4.5			
366	68	III	434	1904	30.0	41.3	24.3	16.4	12.4	6.6			
367	69	IV	0.60	1885	29.2	69.2	4.1	27.7	20.3	11.2			
368	75	III	1.3	16	22.7	54.2	8.4	15.4	12.4	6.2			
369	76	III	1.5	29	24.3	51.5	23.4	15.3	12.5	6.2	0.39	10.1	22.6
370	77	III	75	463	28.9	29.7	21.1	5.4	10.1	8.6		0.999	0.918
371	78	III	3.1	90	31.0	53.9	14.8	19.2	16.7	7.7			
372	79	III	0.90	2.7	31.0	32.3	9.0	12.0	10.0	4.8			
373	80	III	0.45	11	23.6	74.2	3.4	20.1	17.5	8.1			
374	E 81	III	341	1567	29.1	46.1	6.9	15.8	13.5	6.4			
375	C122	-	0.45	394	25.7	71.3	5.8	20.1	18.3	8.1			
376	123	IV	0.90	1220	27.4	76.7	4.8	23.7	21.1	9.5			
377	126	II	699	704	25.6	13.1	34.9	3.8	3.5	1.6			
378	127	II	81	96	20.4	18.6	10.3	4.3	3.8	1.8			
379	131	-	2.8	23	16.3	36.7	5.5	6.2	6.0	2.5			
380	132	II	113	330	16.3	42.8	16.5	7.2	7.0	2.9			
381	136	II	1.8	275	28.3	71.4	4.2	23.3	20.2	9.3			
382	137	II	26	40	34.4	14.8	56.4	6.0	5.6	2.4			
383	172	-	0.16	1.1	19.1	37.7	15.7	7.4	7.2	3.0			
384	173	-	0.30	6.4	20.4	35.2	27.4	7.4	7.2	3.0			
385	174	-	0.30	2.1	17.7	41.7	13.0	7.7	7.4	3.1			
386	175	I	0.90	8.5	22.7	26.9	10.6	6.7	6.1	2.7			
387	176	I	32	78	22.2	33.3	19.3	8.1	7.4	3.3			
388	177	I	7.5	29	22.3	33.1	13.5	8.1	7.4	3.3			
389	178	II	0.60	10	20.5	32.6	11.7	7.4	6.7	3.0			
390	C179	II	0.30	528	12.2	61.5	16.4	7.2	7.5	2.9			
391	B192	III	203	992	35.2	30.1	17.9	12.9	10.6	5.2			
392	193	III	165	1706	36.5	36.1	27.4	15.6	13.1	6.3	0.43	13.8	19.8
393	194	III	185	853	34.4	36.1	23.2	14.7	12.3	5.9		0.974	0.935
394	195	III	487	3278	33.0	39.5	26.0	15.1	12.9	6.1			
395	196	III	127	2325	31.4	49.0	20.1	17.5	15.2	7.1			
396	197	III	615	3675	34.6	38.8	19.1	15.9	13.3	6.4			
397	198	III	0.60	2325	27.7	64.7	7.2	20.8	17.8	8.5			

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO. PRS-2 , 16-15S-23E

Uintah County, Utah

LAND STATUS : SURFACE MINERALS

ELEVATION: 7702 GROUND TOTAL DEPTH 282

SPUD: _____ COMPLETE: _____

TOPS: SURFACE IN _____ TOP ' _____ DATUM (msl)

PARACHUTE CREEK

MAHOGANY OIL SHALE ZONE

DOUGLAS CREEK

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE

2 analyses
averaged

Sample
Number

[illegible]

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PRS-3, SW SE 32-14S-23E S.L.M. (1963 FEL, 683 FSL),
Uintah County, UtahLAND STATUS: SURFACE State MINERALS StateELEVATION: 7387 GROUND TOTAL DEPTH 242SPUD: July 30, 1973 COMPLETE: July 31, 1973TOPS: SURFACE IN Douglas Creek TOP DATUM (msl)

PARACHUTE CREEK -

MAHOGANY OIL SHALE ZONE -

DOUGLAS CREEK

(Surface)

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

Sample Number	CORES	DEPTH	VIS CLASS	PERMEABILITY		POROS. %	PORE SATURATION		2 analyses averaged		% Sulf	GRAV EXT OIL	GRAV RET OIL	S ³⁴ /S ³² RATIO
				BEFORE	AFTER		OIL	WATER	GALS / TON	% vol	% wt			
417		22	-	664	952	31.7	10.1	46.4	3.6	3.2	1.5			
418		23	III	714	1120	32.2	45.9	28.9	15.4	14.9	6.2			
419		24	III	14	87	31.9	21.3	41.4	7.7	6.8	3.1			
420		25	III	229	509	31.9	22.3	28.8	8.2	7.1	3.3	0.33	9.7	22.0 API
421		26	III	1135	1750	26.4	13.6	43.9	4.1	3.6	1.7			
422		27	III	40	850	29.7	32.3	38.1	10.6	9.6	4.2			
423		28	IV	307	1590	32.1	31.1	24.6	11.5	10.0	4.6			
424		29	IV	67	382	27.3	66.6	14.2	20.2	18.3	8.1			
425		30	IV	0.54	780	27.8	25.9	53.3	16.8	14.9	6.8			
426		31	IV	0.10	2485	24.0	59.6	17.9	15.9	14.4	6.4			
427		32	IV	0.01	3440	23.0	77.4	9.1	20.2	17.9	8.1			
428		33	IV	700	1520	29.4	30.2	27.5	11.1	8.9	4.4			
429		34	IV	880	2220	33.7	25.2	18.4	10.6	8.5	4.2			
430		35	V	685	2020	29.7	34.4	4.0	12.5	10.1	5.0			
431		36	V	290	2120	30.2	48.0	7.6	17.8	14.5	7.1			
432		37	V	72	1350	29.7	64.7	6.7	23.1	19.2	9.2			
433		38	V	29	2225	30.8	75.9	9.4	26.9	23.4	10.8			
434		39	V	0.70	715	29.7	67.4	11.4	22.6	20.0	9.0			
435		40	V	12	515	26.9	69.5	15.9	20.7	18.7	8.3			
436		41	V	0.30	194	26.8	74.8	7.8	22.6	20.0	9.0			
437		43	-	0.12	5.5	19.4	76.3	19.0	15.4	14.9	6.2			
438		46	I	0.46	4.9	20.2	39.0	11.4	8.2	7.9	3.3			28.77
439		47	III	1.9	90	18.7	57.3	25.1	11.1	10.7	4.4			15.11
440		63	II	1.6	5.2	26.5	35.4	20.7	10.6	9.4	4.2			
441		85	IV	1675	1440	32.2	17.7	52.6	6.2	5.7	2.5			
442		86	IV	18	1185	30.6	45.4	4.6	16.3	13.9	6.6	0.35	9.7	21.5
443		87	IV	8.7	371	33.4	39.6	16.7	15.9	13.2	6.4			
444		88	IV	3.4	104	29.0	51.3	14.8	16.8	14.9	6.8			
445		89	IV	95	2579	30.6	34.0	54.3	12.0	10.4	5.9			
446		90	IV	7.5	788	30.4	46.4	22.1	16.3	14.2	6.6			
447		91	IV	2.9	101	27.7	58.6	15.5	18.3	16.2	7.4			
448		92	IV	2.4	353	26.9	75.8	9.7	22.6	20.5	9.1			
449		97	III	1.1	47	28.4	33.8	22.9	10.6	9.6	4.3			
450		113	IV	0.02	0.19	25.7	19.4	28.0	5.5	5.0	2.2			
451		117	IV	1.3	46	24.2	33.4	26.4	9.1	8.1	3.7			
452		118	IV	0.09	670	27.1	51.7	14.0	15.9	14.1	6.4			
453		129	III	1.1	307	24.8	37.3	27.3	10.6	9.4	4.3			

Zone I

Zone II

UTAH GEOLOGICAL AND MINERAL SURVEY

CORE HOLE NO PRS-3 , 32-14S-23E

Uintah County, Utah

LAND STATUS : SURFACE MINERALS

ELEVATION: 7387 GROUND TOTAL DEPTH 242

SPUD: _____ COMPLETE: _____

TOPS: SURFACE IN _____ TOP ' _____ DATUM (msl)

PARACHUTE CREEK

MAHOGANY OIL SHALE ZONE

DOUGLAS CREEK

VISUAL CLASSIFICATION

CLASS	IMPREGNATION	
V		VERY RICH
IV		RICH
III		MOD
II		WEAK
I		VERY WEAK

CORES

PORE

2 analyses
averaged

[illegible]

441-455