LABORATORY ANALYSIS SHEET 15/3017014

ANVIL POINTS OIL SHALE RESEARCH CENTER

Date Sampled 6-7-67 Run No. C1042 Startup

Sample Time: RS 0400; SS _____

DFM FISCHER ASSAY

(X) RAW SHALE ( ) SPENT SHALE

30.4	.	Gal/Ton
.910	.	S.G., g/ml
11.6	.	Oil, wt %
1.7	.	Water, wt %
84.6	.	Sp. Shale, wt %
2.1	.	Gas & Loss, wt %
SLIGHT		COKING TENDENCY

EA MINERAL CO_2

(X) 17.1 ( ) . wt %

EA ASH (SHALE)

(X) 66.4 ( ) . wt %

EA MOISTURE

(X) 0.37 ( ) . wt %

EA CARBON

(X) 18.2 ( ) . wt %

EA HYDROGEN

(X) 2.02 ( ) . wt %

BENZENE EXTRACTABLES

( ) . ( ) . wt %

( ) RETORT SHALE MOISTURE

_____ wt %

EA (✓) RAW SHALE FISCHER ASSAY MOISTURE

~~.76~~ 0.84 wt %

( ) SHALE RICHNESS DISTRIBUTION (See attached graph)

( ) SCREEN ANALYSIS (See back of this sheet)

All results are "as received" unless noted. "Moisture" designates the moisture content of the -48 mesh material used for "Ash", "Mineral CO_2", "Carbon", and "Hydrogen". The "FA Moisture" is for the sample used for the Fischer Assay.

COMMENTS _____

DATE COMPLETED JUN 9 1967 CHECKED BY RCP

OSRC-12A
Revised 6/20/66

LABORATORY ANALYSIS SHEET

ANVIL POINTS OIL SHALE RESEARCH CENTER

Date Sampled 6-7-67 Run No. C-1042-Start up

Sample Time: RS 1815 ; SS _____

FISCHER ASSAY

(X) RAW SHALE ( ) SPENT SHALE

28.4	.	Gal/Ton
.910	.	S.G., g/ml
10.8	.	Oil, wt %
1.7	.	Water, wt %
85.6	.	Sp. Shale, wt %
1.9	.	Gas & Loss, wt %
SLIGHT		COKING TENDENCY

MINERAL CO_2

(X) 17.0 ( ) . wt %

ASH (SHALE)

(X) 67.4 ( ) . wt %

MOISTURE

(X) 0.41 % ( ) . wt %

CARBON

(X) 17.2 ( ) . wt %

HYDROGEN

(X) 1.88 ( ) . wt %

BENZENE EXTRACTABLES

( ) . ( ) . wt %

( ) RETORT SHALE MOISTURE

_____ wt %

(X) RAW SHALE FISCHER ASSAY MOISTURE

0.70 wt %

( ) SHALE RICHNESS DISTRIBUTION (See attached graph)

( ) SCREEN ANALYSIS (See back of this sheet)

All results are "as received" unless noted. "Moisture" designates the moisture content of the -48 mesh material used for "Ash", "Mineral CO_2", "Carbon", and "Hydrogen". The "FA Moisture" is for the sample used for the Fischer Assay.

COMMENTS _____

DATE COMPLETED JUN 9 1967 CHECKED BY _____

OSRC-12A
Revised 6/20/66

LABORATORY ANALYSIS SHEET

ANVIL POINTS OIL SHALE RESEARCH CENTER

Date Sampled 6-7-67 Run No. C1042 Startup (2)cc

LIQUID PRODUCTS

	D 3 PUMPOUT				T-3 PUMPOUT	
	1	2	3	4	1	2
WATER, WT %	25.8					
GRAVITY, °API	19.7					
OIL ASH, WT %						

DISTILLATION (See attached sheet - OSRC-24)

VENT PURGE PRODUCT

WT OIL, GM	292.5
VOL WATER, ML	50.0
OIL GRAVITY, °API	32.3

VENT GAS

MAJOR COMPONENTS

CO_2	.	vol %
O_2	.	"
N_2	.	"
CH_4	.	"
CO	.	"
H_2	.	"
Ar	.	"
Others	.	"

C_1 thru C_4, plus n-Pentane

CH_4	.	vol %
C_2H_4-C_2H_6	.	"
C_3H_8	.	"
C_3H_6	.	"
i C_4H_{10}	.	"
n C_4H_{10}	.	"
ϕC_3H_6	.	"
n C_5H_{12}	.	"

CARBON, lbs/MSCFDG . HYDROGEN .

COMMENTS

DATE COMPLETED JUN 8 1967 CHECKED BY

OSRC-12B

LABORATORY ANALYSIS SHEET

ANVIL POINTS OIL SHALE RESEARCH CENTER

Date Sampled 6-7-67 Run No. START UP C 1042 (0900 hrs)

LIQUID PRODUCTS

	D 3 PUMPOUT				T-3 PUMPOUT	
	1	2	3	4	1	2
WATER, WT %	48.8	X	X	X		
GRAVITY, °API	19.7					
OIL ASH, WT %						

DISTILLATION (See attached sheet - OSRC-24)

VENT PURGE PRODUCT

WT OIL, GM

VOL WATER, ML

OIL GRAVITY, °API

VENT GAS

MAJOR COMPONENTS

CO_2	.	vol %	
O_2	.	"	
N_2	.	"	
CH_4	.	"	
CO	.	"	
H_2	.	"	
Ar	.	"	
Others	.	"	

C_1 thru C_4, plus n-Pentane

CH_4	.	vol %	
C_2H_4-C_2H_6	.	"	
C_3H_8	.	"	
C_3H_6	.	"	
i C_4H_{10}	.	"	
n C_4H_{10}	.	"	
$\emptyset C_3H_6$	.	"	
n C_5H_{12}	.	"	

CARBON, lbs/MSCFDG .

HYDROGEN .

COMMENTS

DATE COMPLETED JUN 8 1967 CHECKED BY

OSRC-12B

SCREEN ANALYSIS DATA SHEET (TY-LAB)

RUN NO. C10-2 Stratigraphy SAMPLE NO. 1 DATE 6/7/67

UNIT Robinson #3 DESCRIPTION TY LAB

APPROX. SHALE SIZE ¼ to 1" SHAKING TIME 10 min ANALYSIS BY [illegible] Anderson

TOTAL SAMPLE WT. GROSS 174.9 – TARE 29.6 = NET 145.3

SCREEN SIZE			WEIGHTS		
SCREENS REQD.	OPENING SIZE	MESH	GROSS LBS.	TARE LBS.	NET WT. RETAINED
	4.25				
	3.00				
	2.50				
	2.00				
	1.50				
	1.05 –		49.4	38.4	11.0
	0.742		101.3	41.0	60.3
	0.525		73.2	37.0	36.2
	0.371		52.7	38.4	14.3
	0.263	3	50.1	36.6	13.5
	0.185	4	43.5	38.6	4.9
	0.131	6	39.8	38.8	1.0
	0.093	8	41.4	41.4	.0
	0.065	10	39.3	38.8	.5
	PAN		45.8	41.8	4.0
TOTAL ON SCREENS AND PAN					145.7
LOSS (BY DIFFERENCE)					~~.4~~
TOTAL SAMPLE WEIGHT					145

SCREEN SIZE	Di *	1/Di	% RETAINED	CUM. % RETAINED	% PASSING
4.25					
3.00	(3.125)	(0.3200)			
2.50	(2.625) 2.750	(0.3809) 0.3636			
2.00	2.250	0.4444			
1.50	1.750	0.5714			(00.00)
1.05	(1.087) 1.275	(0.9199) 0.7843	7.55		92.46
0.742	0.896	1.116	41.39		51.07
0.525	0.634	1.577	24.85		26.22
0.371	0.448	2.232	9.81		16.41
0.263	0.317	3.154	9.27		7.14
0.185	0.224	4.464	3.36		3.78
0.131	0.158	6.329	0.69		3.09
0.093	0.112	8.928	0.00	96.92	3.09
0.065			0.34		2.75
PAN			2.75		0.00
LOSS			–	–	–
TOTAL			100.01	–	–
				–	–

* NUMBERS IN PARENTHESES SHOULD BE USED WHEN THESE SCREEN SIZES REPRESENT THE TOP OF THE SHALE SIZE RANGE.

$\Sigma^{m}_{+8m} Di$	0.69242	$\Sigma^{m}_{+8m} Xi$	
$1/\Sigma^{m}_{+8m} Di$	1.628214	$\Sigma^{m}_{+8m} Xi / Di$	
Da	0.59524	$\Sigma^{m}_{+8m} Xi\ Di$	
Dv	0.71442		

REMARKS: run 2 TY LABS

OSRC-4

LABORATORY ANALYSIS SHEET

ANVIL POINTS OIL SHALE RESEARCH CENTER

Date Sampled 6-8-67 Run No. 61042 PT

Sample Time: RS 0615; SS 1115

FISCHER ASSAY			
(X) RAW SHALE	(X) SPENT SHALE		
27.1	8.8	Gal/Ton	
.914	—	S.G., g/ml	
10.3	3.3	Oil, wt %	
1.8	0.6	Water, wt %	
85.6	95.3	Sp. Shale, wt %	
2.3	0.8	Gas & Loss, wt %	
Slight	None	COKING TENDENCY	

( ) RETORT SHALE MOISTURE _____ wt %

(X) RAW SHALE FISCHER ASSAY MOISTURE 0.75 wt %

MINERAL CO_2			
(X) 17.3	(X) 14.9	wt %	
ASH (SHALE)			
(X) 67.6	(X) 78.8	wt %	
MOISTURE			
(X) 0.24%	(X) 0.07	wt %	
CARBON			
(X) 11.8	(X) 9.37	wt %	
HYDROGEN			
(X) 1.75	(X) 0.73	wt %	
BENZENE EXTRACTABLES			
( ) .	( ) .	wt %	

( ) SHALE RICHNESS DISTRIBUTION (See attached graph)

( ) SCREEN ANALYSIS (See back of this sheet)

All results are "as received" unless noted. "Moisture" designates the moisture content of the -48 mesh material used for "Ash", "Mineral CO_2", "Carbon", and "Hydrogen". The "FA Moisture" is for the sample used for the Fischer Assay.

COMMENTS

DATE COMPLETED JUN 9 1967 CHECKED BY

OSRC-12A
Revised 6/20/66

LABORATORY ANALYSIS SHEET

ANVIL POINTS OIL SHALE RESEARCH CENTER

Date Sampled 6-8-67 Run No. C-1042 R.T.

LIQUID PRODUCTS

	D-3 PUMPOUT				T-3 PUMPOUT	
	1	2	3	4	1	2
WATER, WT %	9.6					
GRAVITY, °API	20.0					
OIL ASH, WT %						

DISTILLATION (See attached sheet - OSRC-24)

VENT PURGE PRODUCT

WT OIL, GM	432.0
VOL WATER, ML	150.0
OIL GRAVITY, °API	39.6

VENT GAS

MAJOR COMPONENTS

CO_2	.	vol %	
O_2	.	"	
N_2	.	"	
CH_4	.	"	
CO	.	"	
H_2	.	"	
Ar	.	"	
Others	.	"	

Sample was dumped PKM

C_1 thru C_4, plus n-Pentane

CH_4	.	vol %	
C_2H_4-C_2H_6	.	"	
C_3H_8	.	"	
C_3H_6	.	"	
i C_4H_{10}	.	"	
n C_4H_{10}	.	"	
ϕC_3H_6	.	"	
n C_5H_{12}	.	"	

CARBON, lbs/MSCFDG .

HYDROGEN .

COMMENTS

DATE COMPLETED JUN 9 1967 CHECKED BY

OSRC-12B

LABORATORY ANALYSIS SHEET

ANVIL POINTS OIL SHALE RESEARCH CENTER

Date Sampled 6-8-67 Run No. C1042-1

Sample Time: RS 1400 ; SS _____

FISCHER ASSAY

(X) RAW SHALE ( ) SPENT SHALE

29.7	.	Gal/Ton
.912	.	S.G., g/ml
11.3	.	Oil, wt %
1.8	.	Water, wt %
84.8	.	Sp. Shale, wt %
2.1	.	Gas & Loss, wt %
Sl.		COKING TENDENCY

MINERAL CO_2

RX (X) 17.2 ( ) . wt %

ASH (SHALE)

RX (X) 66.7 ( ) . wt %

MOISTURE

RX (X) 0.33 ( ) . wt %

CARBON

EA (X) 17.8 ( ) . wt %

HYDROGEN

EA (X) 1.91 ( ) . wt %

BENZENE EXTRACTABLES

( ) . ( ) . wt %

( ) RETORT SHALE MOISTURE _____ wt %

RX (X) RAW SHALE FISCHER ASSAY MOISTURE 0.72 wt %

( ) SHALE RICHNESS DISTRIBUTION (See attached graph)

( ) SCREEN ANALYSIS (See back of this sheet)

All results are "as received" unless noted. "Moisture" designates the moisture content of the -48 mesh material used for "Ash", "Mineral CO_2", "Carbon", and "Hydrogen". The "FA Moisture" is for the sample used for the Fischer Assay.

COMMENTS

DATE COMPLETED JUN 9 1967 CHECKED BY _____

OSRC-12A
Revised 6/20/66

SCREEN ANALYSIS DATA SHEET (TY-LAB)

RUN NO. C-[illegible]-PT SAMPLE NO. _____ DATE 5-5-67

UNIT [illegible] DESCRIPTION [illegible]

APPROX. SHALE SIZE ½-1" SHAKING TIME [illegible] ANALYSIS BY [illegible]

TOTAL SAMPLE WT. GROSS 95.1 – TARE [illegible] = NET 89.1

SCREEN SIZE			WEIGHTS		
SCREENS REQD.	OPENING SIZE	MESH	GROSS LBS.	TARE LBS.	NET WT. RETAINED
	4.25				
	3.00				
	2.50				
	2.00				
	1.50				
	1.05		24.6	19.1	5.5
	0.742		59.3	20.7	38.6
	0.525		41.8	18.5	23.3
	0.371		31.8	19.2	9.6
	0.263	3	29.3	19.4	9.9
	0.185	4	21.1	19.4	1.7
	0.131	6	19.7	19.4	.3
	0.093	8	20.5	20.5	.1
	0.065	10	19.4	19.3	.1
	PAN		21.8	21.0	.8
TOTAL ON SCREENS AND PAN					89.0
LOSS (BY DIFFERENCE)					.1
TOTAL SAMPLE WEIGHT					89.1

SCREEN SIZE	Di *	1/Di	% RETAINED	CUM. % RETAINED	% PASSING
4.25					
3.00	(3.125)	(0.3200)			
2.50	(2.625) 2.750	(0.3809) 0.3636			
2.00	2.250	0.4444			
1.50	1.750	0.5714			100.00
1.05	(1.087) 1.275	(0.9199) 0.7843	6.18		93.83
0.742	0.896	1.116	43.60		50.23
0.525	0.634	1.577	26.18		24.05
0.371	0.448	2.232	10.79		13.26
0.263	0.317	3.154	10.00		3.26
0.185	0.224	4.464	1.91		1.35
0.131	0.158	6.329	0.34		1.01
0.093	0.112	8.928	0.00	99.00	1.01
0.065			0.11		0.90
PAN			0.90		0.00
LOSS			—	—	—
TOTAL			100.01	—	—
			—	—	—

95.9

* NUMBERS IN PARENTHESES SHOULD BE USED WHEN THESE SCREEN SIZES REPRESENT THE TOP OF THE SHALE SIZE RANGE.

$\Sigma^{m}_{+8m} Di$	0.76867	$\Sigma^{m}_{+8m} Xi$	
$1/\Sigma^{m}_{+8m} Di$	1.61920	$\Sigma^{m}_{+8m} Xi / Di$	
Da	0.61137	$\Sigma^{m}_{+8m} Xi\ Di$	
Dv	0.71582		

REMARKS: _____

OSRC-4