

MAR 2 1 1968

Mobil Research and Development Corporation

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Report to	File
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BAC	
RESEARCH DEPARTMENT	
PAULSBORO, NEW JERSEY 08066	
AKP	
S. L. MEISEL	
MANAGER	GS
APPLIED RESEARCH & DEVELOPMENT	
MA	

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AKP
S. L. MEISEL
MANAGER GS
APPLIED RESEARCH & DEVELOPMENT
MA

March 15, 1968

- | | |
|----------------------|--------------------------------------|
| K. L. Berry | - Pan American Petroleum Corp. |
| G. A. Blaine | - Sinclair Research, Inc. |
| F. R. Conley | - Continental Oil Company |
| H. P. Dengler | - Esso Research & Engineering Co. |
| R. T. Ellington, Jr. | - Sinclair Gas and Oil Company |
| K. M. Elliott | - Mobil Research & Development Corp. |
| R. Mungen | - Pan American Petroleum Corp. |
| D. C. Smith | - Phillips Petroleum Company |
| J. H. Smith | - Continental Oil Company |
| R. V. Smith | - Phillips Petroleum Company |
| W. O. Taff | - Humble Oil & Refining Company |

MAR 26 1968

Gentlemen:

Attached for your information is a copy of the fourth annual report concerning Anvil Points which was submitted by the Research Foundation to the Secretary of Interior. This report is required by the provisions of Appendix I to the Lease Agreement.

S. L. Meisel
S. L. Meisel

ses
Attachment

cc: E. H. Crabtree - (w/o att.)
R. H. Cramer

COLORADO SCHOOL OF MINES RESEARCH FOUNDATION, INC.

GOLDEN, COLORADO 80401

Office of the Director

February 5, 1968

~~SECRET~~
Refer to

The Honorable Stewart L. Udall
Secretary of the Interior
Washington DC 20240

Dear Mr. Secretary:

This letter is our fourth annual report required under Article III and Appendix I, Article 1 of our Lease Agreement relating to the Anvil Points Demonstration Facility near Rifle, Colorado. It covers the year of 1967.

The experimental work currently contemplated under Stage II of the Initial Program was concluded on September 15, 1967. Funding for Stage II had been increased from the \$3,000,000 contemplated in the Lease Agreement to \$4,500,000 primarily to allow more intensive mining research. Final reporting for this phase of the project was essentially completed by the end of 1967.

Retort No. 3 and the crushing plant had been substantially modified and rehabilitated during 1966, at a cost of about \$920,000. This work was performed, under contract, by F. C. Torkelson Company of Salt Lake City, Utah. Retort No. 3 was placed in operation on November 15, 1966.

During 1967, pilot plant studies were concentrated on the operation of Retort No. 3. This unit was operated extensively to determine the effect of shale particle size and size range, shale throughput, and gas rates on process yields and operability. Large scale equipment evaluation was conducted to investigate suitability of system designs developed during 1964, 1965 and 1966. Retort operation was halted on August 31, 1967.

Intensive mechanical model studies were carried out to improve the design of systems and equipment for uniform shale flow, shale drawoff, air-gas distributor design and to investigate other problems affecting retorting. The results of these studies were incorporated in modifications to Retort No. 3.

The Anvil Points mining operation was substantially increased in size and scope after the start of Stage II. Development of a new mining area on property adjacent to the Naval Oil Shale Reserve was

undertaken. This was necessary to supply the large tonnages of shale required for operation of Retort No. 3. Mining research on a substantial scale was performed. Fundamental work on rock mechanics properties, contracted to a Denver firm, was completed. Sophisticated measuring equipment was installed in the new mine area to determine changes in rock properties in place during mining operations. Large scale equipment of novel types was evaluated to implement research in the drilling, powdering, blasting, loading, and hauling operations. Work for the joint account was halted on September 15, 1967, although Mobil continued mining for its own account under terms of a new agreement.

Engineering and economic evaluations were made to guide the research program.

On December 1, 1967 Mobil, Humble, Continental, Pan American, and Sinclair began a comprehensive engineering evaluation of the retorting results of the Initial Program. During this evaluation, and until March 1, 1968, the Anvil Points facilities were held on a standby basis. This activity was funded for \$150,000. Phillips has elected not to participate in this extension of the program.

While the number of accidents increased during 1967 to 13 from 11 during the previous year, the number of lost man-days was reduced from 18 in 1966 to 10 in 1967. Total man-hours of exposure during 1966 was 176,122 and in 1967, 226,058. There were no fatalities or permanent disabilities. A Safety Committee including CSMRF and Participating Party personnel was active during the entire year. Fire fighting training was conducted during the year for employees of the Research Center. Regular fire drills were held.

A peak of 139 CSMRF employees and 23 Participating Party personnel was reached in August 1967. On December 31, 1967 there remained 45 CSMRF employees and six Participating Party personnel. The average number of employees during 1967 was 110 CSMRF and 20 Participating Party. With the exception of some difficulty in obtaining qualified electricians and instrument technicians, the labor supply for the Research Center was adequately available locally. Most of the employees of CSMRF were from Mesa and Garfield Counties. Pre-employment physical examinations were required of all new employees prior to starting work.

February 5, 1968

All available housing at the site was utilized to the maximum during that portion of the year preceding the September 8, 1967 cutback.

Our Contract with Oil, Chemical and Atomic Workers Union, signed April 4, 1966 for a two-year period, covered the entire year of 1967. In accordance with this Contract, a 10-cent-per-hour increase was made effective April 3, 1967 for all CSMRF employees in the bargaining unit.

A total of nine grievances was filed during 1967. Of these, one was settled in favor of the Union, seven by mutual agreement, and one extended to arbitration. This arbitration was heard on September 11, 1967, but no decision had been rendered by the Arbitrator at the end of the year.

Enclosed is a financial statement and manpower graph.

We, again, appreciate the fine cooperation we have received from all the Interior Department personnel and personnel of state and other federal agencies.

Sincerely,

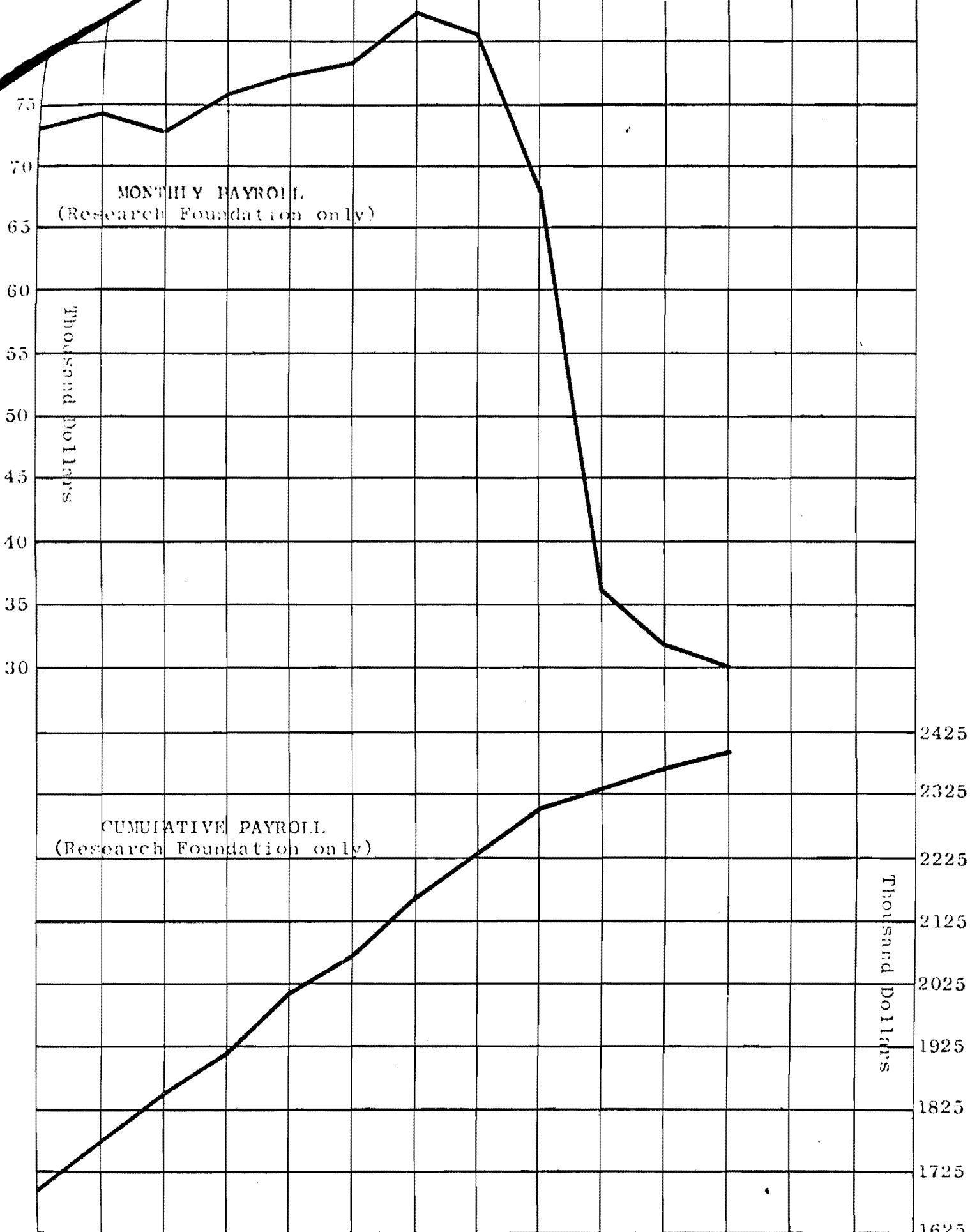


E. H. Crabtree
Director

EHC/arh

attachments

Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.



Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

Thousand Dollars

2425
2325
2225
2125
2025
1925
1825
1725
1625

TABLE I

PROJECT EXPENDITURES THROUGH 31 DECEMBER 1967 - Page 1 of 2

	<u>Stage I</u>	<u>Stage II</u>	<u>Stage II Extension Standby</u>
Expenditures prior to start-up of operations 1 April 1964 - 31 August 1964	\$ 261,305.86	-0-	-0-
Expenditures 1 September 1964 - 31 December 1964	521,646.79	-0-	-0-
Expenditures during the year 1965	1,402,671.53	-0-	-0-
Expenditures during the year 1966	534,375.82	2,463,516.93	-0-
Expenditures during the year 1967	<u>-0-</u>	<u>1,944,659.93</u>	<u>32,589.71</u>
Total Project Expenditures	\$2,720,000.00	\$4,408,176.86	\$ 32,589.71

Page II
Extension
Standby

	<u>Mobil Mining</u>	<u>Total</u>	<u>Rehabilitation</u>	<u>Operating</u>
-0-	-0-	\$ 261,305.86	\$ 64,441.75	\$ 196,864.11
-0-	-0-	521,646.79	97,822.91	423,823.88
-0-	-0-	1,402,671.53	55,804.73	1,346,866.80
-0-	-0-	2,997,892.75	1,001,892.84	1,995,999.91
<u>589.71</u>	<u>137,550.74</u>	<u>2,114,800.38</u>	<u>14,008.33</u>	<u>2,100,792.05</u>
589.71	\$137,550.74	\$7,298,317.31	\$ 1,233,970.56	\$6,064,346.75

ANALYSIS OF PROJECT EXPENDITURES THROUGH 31 DECEMBER 1967 - Part 2 of 2

	Stage I	Stage II	Stage II Extension Standby
Salaries and Wages	\$1,262,877.64	\$1,609,328.10	\$ 14,041.51
Other Employee Expenses: Fringe Benefits, Living Allowances, Travel, Moving & Miscellaneous	388,803.11	414,041.11	1,557.55
Purchases of Equipment, Materials and Supplies	643,695.69	1,265,973.12	981.40
Leased Equipment and Sub-Contracts	114,924.93	841,693.06	380.55
Other Project Expenditures	309,698.63	277,141.47	15,628.70
Total Project Expenditures	\$2,720,000.00	\$4,408,176.86	\$ 32,589.71

age II
tension
standby

,041.51

,557.55

981.40

380.55

,628.70

589.71

Mobil Mining

\$ 63,708.78

6,518.60

29,640.43

32,812.97

4,869.96

\$137,550.74

Total

\$2,949,956.03

810,920.37

1,940,290.64

989,811.51

607,338.76

\$7,298,317.31

Rehabilitation

\$ 86,846.67
9,930.82
-0-
-0-
\$ 96,777.49

-0-
-0-
-0-
-0-
\$ -0-

100,673.09
436,848.26
-0-
-0-
\$ 537,521.35

29,828.24
569,843.48
-0-
-0-
\$ 599,671.72

-0-
-0-
-0-
-0-
\$ -0-

\$ 1,233,970.56

Operating

\$1,176,030.97
1,599,397.28
14,041.51
63,708.78
\$2,853,178.54

\$ 388,803.11
414,041.11
1,557.55
6,518.60
\$ 810,920.37

543,022.60
829,124.86
981.40
29,640.43
\$1,402,769.29

85,096.69
271,849.58
380.55
32,812.97
\$ 390,139.79

309,698.63
277,141.47
15,628.70
4,869.96
\$ 607,338.76

\$6,064,346.75