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Mobil

Socony Mobil Oil Company, Inc.

PAULSBORO, NEW JERSEY 08066

RESEARCH DEPARTMENT
PAULSBORO LABORATORY

December 1, 1964

K. L. Berry	- Pan American Petroleum Corp.
W. H. Decker	- Sinclair Research, Inc.
R. T. Ellington, Jr.	- Sinclair Research, Inc.
K. M. Elliott	- Socony Mobil Oil Company, Inc.
J. R. Felix	- Esso Research & Engineering Co.
C. D. Geiger	- Humble Oil & Refining Company
W. L. Jensen	- Continental Oil Company
R. P. Lehman	- Phillips Petroleum Company
R. Mungen	- Pan American Petroleum Corp.
D. C. Smith	- Phillips Petroleum Company
J. H. Smith	- Continental Oil Company

Gentlemen:

Attached is a copy of the minutes of the third Shale Oil Technical Advisory Committee meeting held at Socony Mobil Oil Company, Inc., on October 30, 1964.

S. L. Meisel

S. L. Meisel

eaw

Attachment

cc: R. H. Cramer

Minutes of Third Meeting
of the

SHALE OIL TECHNICAL ADVISORY COMMITTEE

held at
Socony Mobil Oil Company, Inc.
150 E. 42 Street, New York, N. Y.
on
Friday, October 30, 1964

The third meeting of the Shale Oil Technical Advisory Committee was held at Socony Mobil headquarters office, 150 E. 42 Street, New York, N. Y., on Friday, October 30, 1964.

Those present were:

S. L. Meisel, Chairman	- Socony Mobil Oil Company, Inc.
R. H. Cramer, Program Manager	- Socony Mobil Oil Company, Inc.
K. L. Berry	- Pan American Petroleum Corp.
W. H. Decker	- Sinclair Research, Inc.
R. T. Ellington, Jr.	- Sinclair Research, Inc.
K. M. Elliott	- Socony Mobil Oil Company, Inc.
J. R. Felix	- Esso Research & Engineering Co.
C. D. Geiger	- Humble Oil & Refining Company
W. L. Jensen	- Continental Oil Company
R. P. Lehman	- Phillips Petroleum Company
R. Mungen	- Pan American Petroleum Corp.
D. C. Smith	- Phillips Petroleum Company
J. H. Smith	- Continental Oil Company

I. Chairman Meisel called the meeting to order at 10:00 a.m. New participating parties were stated to be Continental Oil Company, Sinclair Research, Inc., Phillips Petroleum Company, and Pan American Petroleum Corp. Order of execution of agreements will be determined by next meeting.

II. General Information for New Participating Parties

A. Mr. Cramer distributed copies of following to the new members of the Committee:

1. Minutes of all previous Technical Advisory Committee meetings
2. Research Center organization chart
3. Research Center 1965 Budget

4. All previous Monthly Balance Sheet and Expense Statements
5. Report of August, 1964 Audit
6. Minutes of meeting (CJVerdeur, 7/17/64) describing procedure for transmittal of information to U. S. Bureau of Mines
7. Letter (CDGeiger/RHCramer, 10/5/64) requesting program data on behalf of Humble
8. All previous Monthly Progress Memoranda

B. Chairman Meisel reviewed some of the key sections of the Agreements and the minutes of previous meetings for the new members. Subjects reviewed included:
   1. Appointment and duties of Permanent Secretary
   2. Functions and responsibilities of Committee and Participating Parties
   3. Schedule of Committee meetings
   4. Reports and memorandum that will be issued by Program Manager
   5. Recent audit of Anvil Points by Socony Mobil and Humble

III. <u>Old Business</u>

A. Approval of minutes: Minutes of previous meeting were approved by those present.

B. The 1965 budget was tentatively approved but it was agreed that new members of the Committee should have the right to raise points in connection with the budget at the next meeting.

C. Mr. Cramer reported that the recreational program has been implemented at Anvil Points. Mr. Cramer also advised that 200 chairs to be used both for technical meeting and recreational purposes will be purchased.

IV. New Business

A. It was announced that C. D. Geiger of Humble will be the next Chairman of the Advisory Committee.

B. It was decided that the next meeting of the Committee will be held in Tulsa, Oklahoma, on January 8, 1965.

V. Summary of Previous Work and Discussion Thereof

Mr. Cramer referred the Committee members to the Research Center Organization Chart and reviewed the relationships and qualifications of key personnel. He then reviewed in capsule-fashion the planning and implementation of the Research Center rehabilitation.

Several questions were raised as to what kinds of data were transmitted to the U. S. Government and how these differed from the data transmitted to the Participating Parties. Mr. Cramer pointed out that the Government receives RAW DATA ONLY and that the Participating Parties receive RAW DATA plus INTERPRETATION. Messrs. Elliott and Meisel will check with the Socony Mobil Legal Department to determine how long program files should be maintained.

Several questions were raised on the feasibility of stationing observers at Anvil Points. Mr. Cramer replied that it was the contractual right of the Participating Parties, as long as the observers were stationed at their own expense. Mr. Cramer was requested to set up a visit of representatives of the new Participating Parties to Anvil Points during November.

The major technical objective of the Stage I program was reviewed, which is to increase retort throughput over the level studied by the Bureau of Mines by two to three times, without large sacrifices in yield. The strategy is to predict retort performance based on the Socony Mobil Math Model; to modify Retort No. 1 until it approaches Math Model results and to use Retort No. 1 for process studies; then to scale-up operations to Retort No. 2 based on results from Mechanical Model studies and Retort No. 1 process studies.

The initial objective was to reproduce Bureau of Mines Runs 222 and 334F. The results of this work are presented on Handout No. 1. Dr. J. R. Felix repeatedly expressed concern over the quality of material balances obtained during this work. Mr. Cramer replied that he was not satisfied with them either, and had assigned two men to work on the problem continuously. The precision of tests run by the Analytical Laboratory, shown in Handout No. 2, was also reviewed.

The next objective was to improve temperature distribution in Retort No. 1. A sketch of the peripheral air distributor, which showed promise, is presented in Handout No. 3. Temperature profiles obtained with this air distributor are shown in Handout No. 4.

The next objective was to establish the effects of brine and water, as nucleating agents, on oil yields. The outline for this study is shown in Handout No. 5, and some of the results obtained to date are shown in Handout No. 6.

The next study planned involves the use of preheated combustion air and is outlined in Handout No. 7.

Some discussion of the Mechanical Model work, which is proceeding concurrently with the retort studies, was held. Pictures of the equipment were shown. The Mechanical Model program is outlined in Handout No. 8.

The rehabilitation and modification of Retort No. 2, scheduled for completion November 30, was discussed. PERT diagrams and drawings (not attached) were distributed.

VI. Meeting was adjourned at 3:00 p.m.

S. L. Meisel

S. L. Meisel
Permanent Secretary

eaw

December 1, 1964

Attachments

AGENDA

THIRD SHALE OIL TECHNICAL ADVISORY COMMITTEE
150 E. 42nd Street, New York City, N. Y.
Friday, October 30, 1964

I. New Participating Parties

II. Old Business

- A. Review of Past Meetings
- B. Approval of Minutes
- C. 1965 Budget
- D. Safety Program
- E. Recreational Program
- F. Other

III. New Business

- A. Appointment of New Chairman
- B. Arrangements for Next Meeting
- C. Report of Program Manager
    1. Summary of Previous Work
    2. Current Status of Program
        - a. New Administrative Manager & Transition
        - b. No. 1 Retort Program
          Reproduction of Bureau of Mine Results
          Air Distributor Studies
          Mist & Nucleation Studies
          Future
        - c. Mechanical Model Studies
        - d. No. 2 Retort Construction
- D. Other

IV. Executive Session

S. L. Meisel

COMPARISON OF BUREAU OF MINES AND RESEARCH CENTER DEMONSTRATION UNIT TEST DATA

	B[1]	RC[2]	[illegible]	RC	RC
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Raw Shale Rate lb/(hr)(ft²)	233	228	299	283	278
Raw Shale Fischer Assay, gal/ton	29.0	26.2	26.7	28.[illegible]	28.8
Spent Shale Fischer Assay, gal/ton	0.3	0.2	0.1	0.1	0.1
Recycle SCF/Ton Raw Shale	16,500	15,830	13,400	12,170	12,450
Air SCF/Ton Raw Shale	3,750	4,710	4,270	4,400	4,480
Dilution Gas SCF/Ton Raw Shale	–	1,440	1,400	1,524	1,5[illegible]3
Water gal/ton Raw Shale	–	–	1.[illegible]	0.0	3.6
Yield, Vol. % F.A.	[illegible]	84.0	91.8	91.2	89.1
Gravity, °API	20.[illegible]	19.1	19.1	19.4	19.6
Overall Material Balance, % Wt.	101	96.6	98	97.9	98.1

[1] Bureau of Mines
[2] Anvil Points Oil Shale Research Center

October 23, 1964

File 770

[illegible] OF PRECISION OF ANALYTICAL TESTS

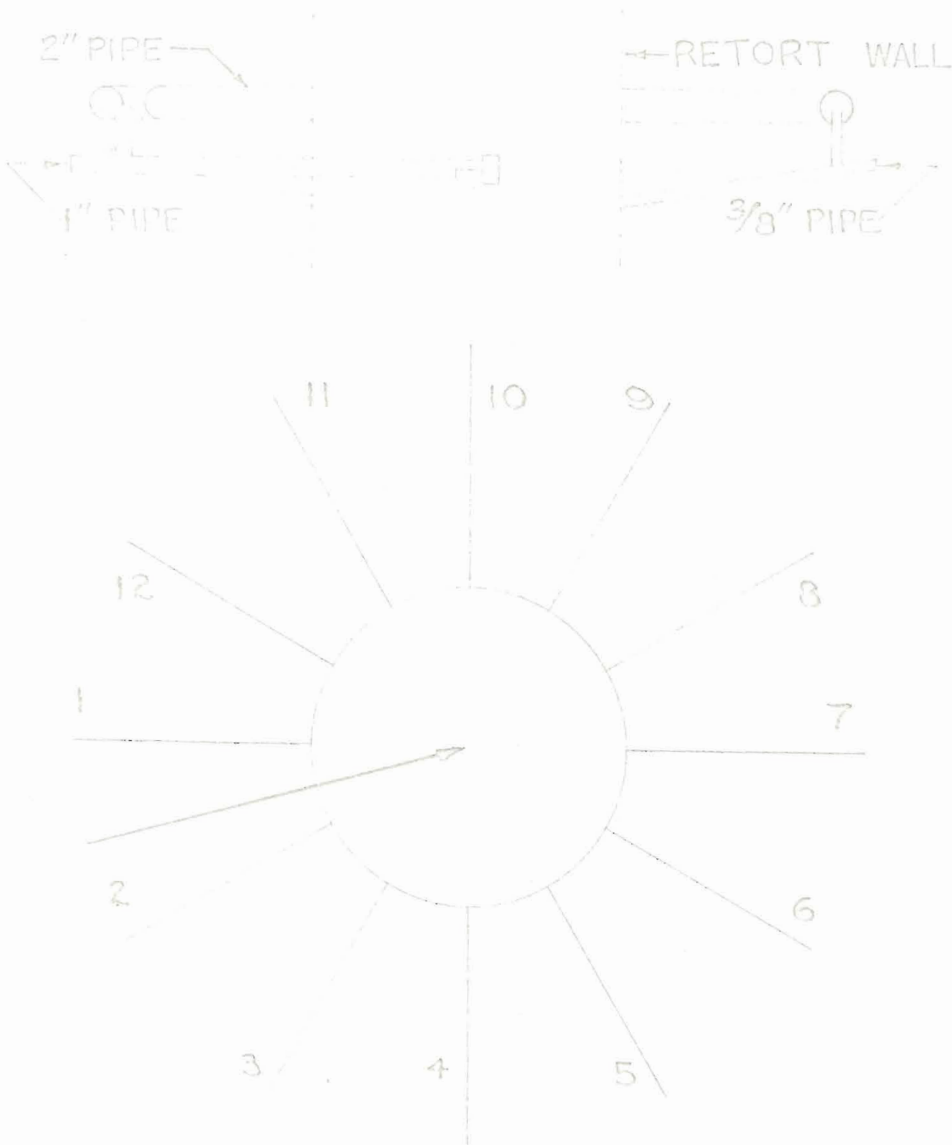
Below are listed our current best estimates of the precision, on an absolute basis, of the laboratory tests. Some of these figures are calculated from limited data from our quality control program, some are based upon ASTM data, and some are strictly estimates.

The initial phase of our quality control program should be finished by the latter part of November. At this time realistic precision data for the tests will be available.

Test	Level	2σ	Remarks
Fischer Assay	27 gal/ton	0.8	N=36
Mineral CO_2	16%	0.5	N=18
Ash (Shale)	63%	0.3	N=5
Ash (Shale)	[illegible]	0.4	N=5
Moisture	0.30%	0.12	N=6
Carbon (oil)	84%	0.7	Estimate
Carbon (shale)	[illegible]	0.3	Estimate
Hydrogen (oil)	11%	0.3	Estimate
Hydrogen (shale)	[illegible]	0.1	Estimate
Nitrogen	2%	0.2	Estimate
Gravity (API)	20	0.1	Estimate
Viscosity @ 130° F	150 Sec.	2.2	N=11
Viscosity @ 210° F	54 sec.	0.5	N=9
Ramsbottom Carbon	[illegible]	95% repeatability=0.1% ASTM D-524 95% reproducibility=0.2% ASTM D-524	
Water in oil	0.4 - 1.5%	95% repeatability=0.2	ASTM D-96
Sediment in oil	0.5 - 1.5%	95% repeatability=0.2	ASTM D-96
Pour Point	Read to nearest 5° F		ASTM D-97
Ash (oil)	0.10	0.03	Estimate
Gas Analysis	100% (total)	2	Estimate

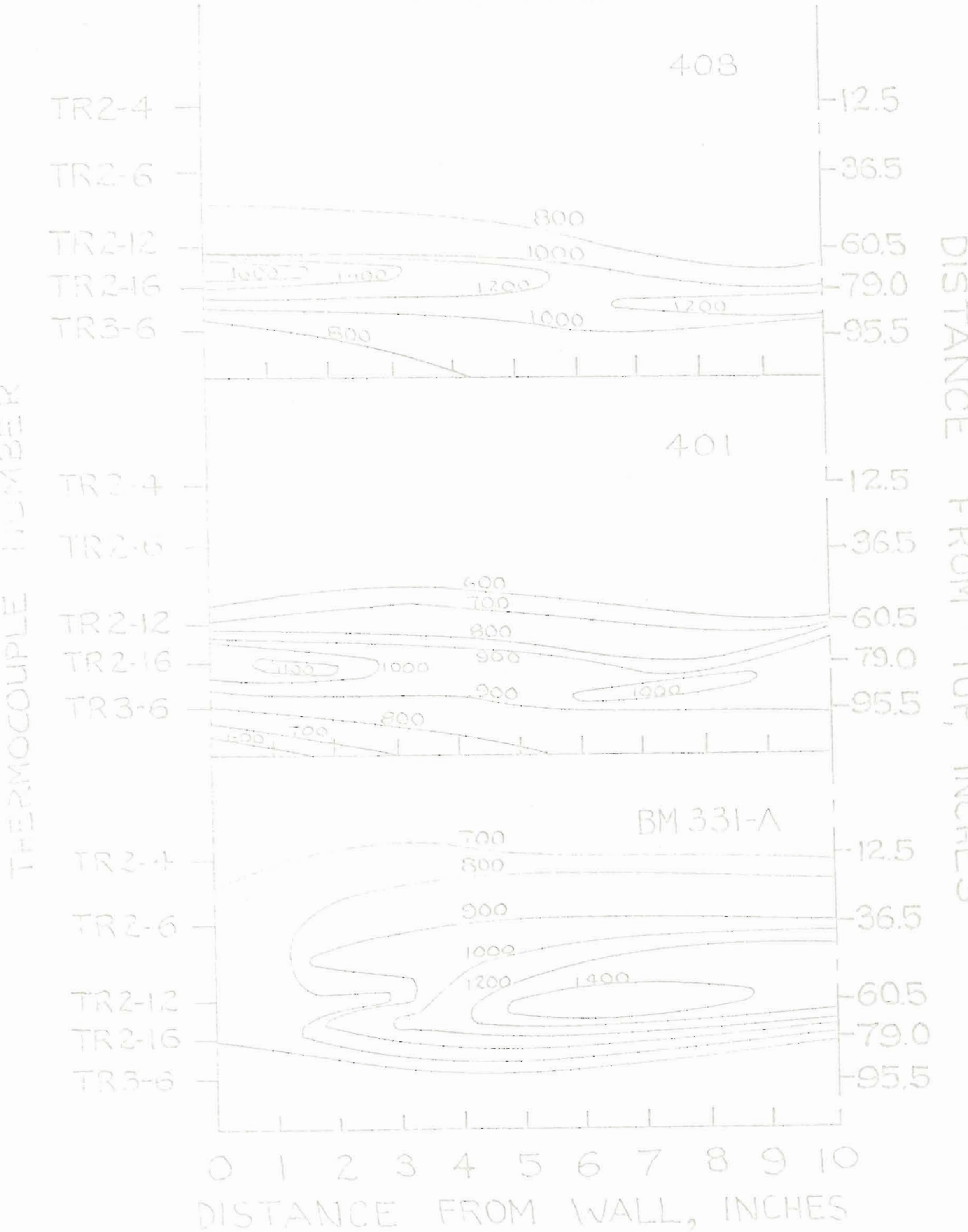
B. L. Beck

CONFIGURATION AND TYPICAL GAS VELOCITIES IN PERIPHERAL AIR DISTRIBUTOR



GAS VELOCITIES IN PERIPHERAL AIR DISTRIBUTOR FOR THE [illegible] CONDITIONS: RAW SHALE-[illegible], AIR-5140 SCF/T, DILUTION-2060 SCF/T

AIR PREHEAT TEMPERATURE F°	GAS VELOCITIES [illegible]						
	1" PIPE	4-4 PORTS	4-8 PORTS	4-12 PORTS	4 PORTS ONLY	8 PORTS ONLY	12 PORTS ONLY
32	185.0 128.3 91.1	42.0	14.5	7.6	94.0	23.5	10.4
100	211.0 146.0 104.0	42.8	16.5	8.6	107.2	26.8	11.9
1000	550.0 380.0 268.0	124.0	42.8	22.8	280.0	69.8	31.0


408
401
BM 331-A
TR2-4
TR2-6
TR2-12
TR2-16
TR3-6
12.5
36.5
60.5
79.0
95.5
600
700
800
900
1000
1200
1400
0 1 2 3 4 5 6 7 8 9 10
DISTANCE FROM WALL, INCHES
THERMOCOUPLE NUMBER
DISTANCE FROM TOP, INCHES

CO-273
(2-51)

INTEROFFICE CORRESPONDENCE

[illegible] | October 23, 1964
Anvil Points Oil Shale Research Center
Rifle, Colorado | File 745

R. L. Cramer
J. H. Tanson

NUCLEATION STUDY

Objective: To establish whether brine or water addition have significant effects on oil yield.

In a memorandum of October [illegible], 1964 ([illegible], [illegible]/[illegible], [illegible] File 745) a nucleation study was proposed. The operating conditions have been modified after an exploratory run ([illegible]) so that the program as it is now being carried is as follows:

Group	Run	Shale Rate lb (hr)(ft^2)	Total Recycle Rate SCF/Ton	Air Rate SCF/Ton	Brine or Water Addition(1)
I	21	500	[illegible]	6,000	B
I	22	500	[illegible]	5,000	O
I	23	500	16,000	6,000	O
I	24	500	[illegible]	5,000	B
I	25	300	[illegible]	6,000	O
I	26	300	[illegible]	5,000	B
I	27	300	[illegible]	6,000	B
I	28	300	16,000	5,000	O
II	31	500	16,000	6,000	O
II	32	500	18,000	5,000	W
II	33	500	16,000	6,000	W
II	34	500	16,000	5,000	O
II	35	300	18,000	6,000	W
II	36	300	[illegible]	5,000	O
II	37	300	[illegible]	6,000	O
II	38	300	16,000	5,000	W

(1) B - 2[illegible].7 lb/ton of 9.7[illegible]% NaCl
W - 2[illegible].1 lb/ton of H_2O
O - [illegible]

The following conditions will be held constant throughout these runs:

Raw Shale properties	
Fischer Assay	27 gal/ton
Feed size	1/4 - 1 inch
Dilution gas rate	0.4 SCF/SCF air
Air Inlet Temperature	1,000° F

K. I. Jagel, Jr.

[illegible] Tyson, Jr.

cc: [illegible]
[illegible]
[illegible]

NUCLEATION STUDY
(Conditions Are Nominal - Data Are Preliminary)

Run No.	Raw Shale Rate lb/(Hr)(Ft2)	Total Recycle Rate SCF/Ton	Air Rate SCF/Ton	Brine[1] or Water Addition lb/Ton	Oil in Spent Shale % FA	Oil Yield, % FA		Oil Specific Gravity °API
						Actual Recovery	Yield Corrected For Recovery System Loss	
415	500	16,000	6,000	Brine - 26.7		80	82	20.0
416	500	16,000	5,000	0		87	89	21.2
423	500	16,000	6,000	0				
424	500	16,000	5,000	Brine - 26.7				
420	300	16,000	6,000	0				
419	300	18,000	5,000	Brine - 26.7				
411	300	16,000	6,000	Brine - 26.7	1	84	85	20.3
412	300	16,000	5,000	0	0	82	84	21.1
417	500	16,000	6,000	0		84	85	20.9
418	500	16,000	5,000	Water - 24.1				
409	500	16,000	6,000	Water - 24.1	1	68	75	21.7
408,410	500	16,000	5,000	0	10	69	70	22.2
414	300	16,000	6,000	Water - 24.1		84	85	20.9
413	300	16,000	5,000	0	2	75	76	21.0
421	300	16,000	6,000	0				
422	300	16,000	5,000	Water - 24.1				

(1)Brine - 2.75% NaCl

CO-273 (2-61)

INTEROFFICE CORRESPONDENCE

[illegible]
[illegible] Research Center
[illegible]

October 23, 19[illegible]

File 730

[illegible]
[illegible]

[illegible] STUDY

Objective: To determine whether or not air preheat is necessary for [illegible] No. 1 Retort at high shale rates.

Procedure: Since the study is a preliminary one a 2-level 1/2 factorial design is [illegible]. This design set overlaps the mist recovery set such that the [illegible] can be interpolated. The experimental conditions are given in the following table:

[illegible], scf/ton SS	0								?							
Total [illegible], scf/ton SS	[illegible],000				1?,000				16,000				1?,000			
Air, scf/ton SS	[illegible],000		[illegible],000		[illegible],000		[illegible],000		[illegible],000		[illegible],000		[illegible],000		[illegible],000	
Raw Shale, lb/(hr)(ft2)	[illegible]	700	500	700	500	700	500	700	500	700	500	700	500	700	500	700
Preheat [illegible]		(1) x	(2) x		(4) x			(6) x		(7) x	(8) x			(10) x	(11) x	
Preheat 1,[illegible]	0		(3)		(5) x	0		0		0	(9) x	0		0		(12) x

These experiments [illegible] the 16 given by the 2-level 1/2 factorial design. [illegible] which are marked by a "0" are the ones proposed in the mist recovery study. As one can see, 4 of the 16 proposed experiments [illegible] have already been done leaving 12 experiments in this study. A constant diluent/air volumetric ratio of 0.4 will be maintained during the entire test. The sequence will be as numbered. With a 12 hour test duration and a four hour transition time the entire test will require 192 operating hours or around 8 days of steady operations.

M. H. Gifford

[illegible] Gifford

T. A. Jeffcoat

T. A. Jeffcoat

cc: D. [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

October 27, 1964

PROGRAM OF INITIAL MECHANICAL MODEL STUDIES

SHALE FLOW STUDIES

The initial shale flow studies will be carried out with two particle size ranges: a "typical" size of 1/4 - 1 inch and a "desired" range of 1/4 - 3 inch. In addition a comparison of the flow characteristics of spent and raw shale will be made.

A. Determine Basic Flow Characteristics of Oil Shale - 12/31/64

1. Flow capacity of pipes.
2. Flow characteristics through:
    a. Pipe Nipples
    b. Orifice Plates
    c. Rectangular Slots

    (Includes the effect of inlet geometry on flow)
3. Angles of flow and repose.
4. Coning heights in moving shale beds.

B. Develop Drawoff Schemes which will Provide Uniform Shale Flow Through Large Vessels - 6/30/65

1. Multi-level drawoff schemes.
2. Baffle drawoff schemes.
3. Other schemes which are available commercially.

C. Carry Out Shale Flow Studies to Develop a Drawoff Scheme Specifically For Retort No. 2 - 11/30/64

AIR DISTRIBUTOR STUDIES

A. Design and Construct Model For Evaluating Air Distributor Schemes - 11/30/64

B. Investigate Various Air Distributor Designs with Respect To:

1. Degree of mixing of air-dilution gas and recycle gas.
2. Degree of mixing of gas streams and shale.

Scheme 1 - Injection of Air From Orifices Located in a Horizontal Run of Pipe - 12/31/64

a. Pipe to pipe spacing

b. Orifice spacing along each pipe

c. Injection velocity (orifice size)

d. Angle of injection into bed.

TCLyons:lt

10

NOV 10 1964

Ponca City, Oklahoma
November 10, 1964

Memorandum to File

TECHNICAL ADVISORY COMMITTEE MEETING - OCTOBER 30, 1964
ANVIL POINTS OIL SHALE RETORTING PROJECT

The first meeting of the subject committee since the addition of four new participating parties to the project, supported initially by Socony-Mobil and Humble, was held in New York on the above date. The new participating parties are: Continental Oil Company, Pan American, Sinclair and Phillips. Representatives for the committee were introduced and are as shown on the attached mailing list. A copy of the agenda for the meeting is also attached. The meeting, in general, was conducted so as to review for the new participating parties the history of the project to date and was, I thought, quite effective in this respect. The following are somewhat random notes taken during the course of the meeting. Official minutes will issue and be available shortly. Both Jack Smith and I were provided with copies of previous minutes, monthly progress memoranda, etc.

(1) Interest in revising the Anvil Points experimental and demonstration facilities came primarily from Socony-Mobil. One of their employees, B. Guthrie, was apparently one of the top people involved in the Bureau of Mines project; and, currently is functioning as a consultant to the new project. Socony had made a mathematical model of the retorting process, as devised at Anvil Points, and had calculated optimum operation. From this data, it was concluded that this type retort could be made to operate on a 2 1/3-3 times faster rate of throughput. At these increased rates, the economics apparently appear considerably more favorable. The objective is to determine if the No. 1 Pilot Retort can be made to operate in this manner. If so, operation of two other larger pilot retorts should indicate any scale-up problems. The objective is not to "repeat" the work of the Bureau of Mines at Anvil Points although occasional check-points runs will be made.

(2) Rehabilitation of the Anvil Points experimental facilities began on May 4, 1964. The No. 1 (6 tons/day) Retort began a 5-day, 3-shift operation on August 31, 1964. The No. 2 (25 tons/day) Pilot Retort is currently being rehabilitated with operation anticipated around the first of the year. The program for Stage I consists of operating these two pilot retorts and from a study of variables, determining optimum operation. There are 5,000 tons of oil shale on hand so that no actual mining operation is scheduled in Stage I.

(3) It was interesting that for the rehabilitation of the Anvil Points facility and for the current rehabilitation of the No. 2

Pilot Retort, Mr. Cramer and his group have used the PERT method for scheduling. Also, their proposals for certain studies of variables in the No. 1 Retort have been statistically designed.

(4) The budget for operating expenses for 1964 was $910,000. Their actual rate of expenditure, however, has been somewhat less so that the current estimate is for an expenditure of $800,000 in 1964. In 1965, expenditures will increase somewhat as the first retort goes to a 7-day, 3-shift operation and the second retort goes on stream. It is estimated that the $2 million planned for Stage I will cover approximately eleven months in 1965, making the period of time for Stage I to be 19 months rather than the original estimate of 18 months. Continental will be billed immediately for its share of this work to date, plus its share of a $200,000 advance or imprest funds supplied as working capital. The latter will be returned to the participating parties at the conclusion of the program. From now on, we will be billed once per month for operating costs.

(5) One of the most important advantages to Continental from being a participating party will be to get some first-hand experience with the problems of retorting oil shale. A key step will be the assignment of an "observer" to the facility at Anvil Points. At the committee meeting, it was stated that if a company elects to have an observer on either a permanent or long-term basis, they would like to have such people help with the program in some manner. The Program Manager recommended, however, that assignment of observers be for 2-3 week periods out of every 6 weeks-2 months. The Bureau of Mines, which had been maintaining the facility on a standby basis, has stationed three observers at Anvil Points. Two are professional and one is non-professional. The Bureau of Mines will be supplied with all raw data from the project but will not be given reports which interpret or otherwise treat this data. The Bureau must keep all this data confidential for three years past the conclusion of each major phase of the project.

(6) General operation of the Anvil Points facility, its upkeep, etc., is done by the Colorado School of Mines Research Foundation, which has contracted with the Government for the operation of the facility. The technical side, and actual research program, is conducted by personnel from Socony-Mobil and Humble who have been assigned to Anvil Points. The Program Manager is Mr. R. H. Cramer and he has some 14 professional people on his staff at this point. His total staff number 18. The Colorado School of Mines Research Foundation's staff is 77, giving a total of 95 operating personnel at Anvil Points.

(7) Jack Smith and I, as representatives for Continental on the Technical Advisory Committee, will receive two copies of all formal reports, etc. We should determine what distribution and/or disposition we wish to make with these four copies. I am sure if we wish more, we can get them. It will also be possible to get copies of the actual raw data as, for instance, run sheets, etc. All such requests, however, must be in writing, and we propose to ask for one copy to be held by Jack Smith's office.

(8) From the work to date, it appears that one technical problem is the question of an overall organic carbon mass balance. The actual oil recovered in retorting runs so far is somewhat low and insufficient to account for available oil, as indicated by before-and-after analyses of the shale itself. It was felt that this problem must be resolved before proceeding very far into the program for examination of variables affecting the process.

(9) With the addition of the new participating parties, a majority of the committee reside in the Southwest. The meetings of the committee are held every two months, and the next one will be in Tulsa on Friday, January 8, 1965. Two of the meetings each year are to be held at the Anvil Points facility. The Research Agreement requires that the chairmanship of the committee be rotated every three months and the chairman be selected in the order of the participating parties' joining the program. The first chairman was Dr. Meisel of Socony-Mobil. The chairman for the next three months will be Mr. Geiger of Humble. Following this, it will be necessary to select a chairman from Continental.

Warren L. Jensen

Warren L. Jensen

WLJ-BH
Attachs.
Copies to:
Dr. M. L. Sharrah (3)
Mr. J. H. Smith

AGENDA

THIRD SHALE OIL TECHNICAL ADVISORY COMMITTEE
150 E. 42nd Street, New York City, N. Y.
Friday, October 30, 1964

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        - b. No. 1 Retort Program
          Reproduction of Bureau of Mine Results
          Air Distributor Studies
          Mist & Nucleation Studies
          Future
        - c. Mechanical Model Studies
        - d. No. 2 Retort Construction
- D. Other

IV. Executive Session

S. L. Meisel

MAILING LIST

K. L. Berry ("K")
Pan American Petroleum Corp.
Research
Box 591
Tulsa, Oklahoma

R. H. Cramer (Bob)
Socony Mobil Oil Co., Inc.
Anvil Points Research Center
Rifle, Colorado

W. H. Decker (Hal)
Director of Process Development
Sinclair Research, Inc.
400 E. Sibley Blvd.
Harvey, Illinois

R. T. Ellington, Jr. (Rex)
Director, Exploitation Research
Sinclair Research, Inc.
5300 E. Skelly Drive
P.O. Box 7190
Tulsa, Oklahoma

K. M. Elliott (Ken)
Socony Mobil Oil Co., Inc.
Engineering & Products
150 East 42nd Street
New York, N.Y.

J. R. Felix (Jim)
Esso Research & Engineering Co.
Linden, New Jersey

C. D. Geiger (Don)
Humble Oil & Refining Co.
Box 2180
Houston, Texas

W. L. Jensen (Warren)
Manager
Research & Development Dept.
Continental Oil Company
Ponca City, Oklahoma

R. P. Lehman (Ike)
Phillips Petroleum Company
Exploration & Production
Bartlesville, Oklahoma
A.B. Geology, Kansas

S. L. Meisel (Cy)
Socony Mobil Oil Co., Inc.
Paulsboro Laboratory
Paulsboro, New Jersey
Ph.D. Organic Chemistry

R. Mungen (Dick)
Pan American Petroleum Corp.
Research
Box 591
Tulsa, Oklahoma
Ph.D. Chemical Engineering

D. C. Smith (Don)
Phillips Petroleum Company
Research Center
Bartlesville, Oklahoma
Ph.D. Physics

J. H. Smith (Jack)
Process Engineering
Continental Oil Company
Ponca City, Oklahoma

THIRD SHALE OIL TECHNICAL ADVISORY COMMITTEE

MAILING LIST

K. L. Berry ("K")
Pan American Petroleum Corp.
Research
Box 591
Tulsa, Oklahoma

R. M. Cramer (Bob)
Socony Mobil Oil Co., Inc.
Anvil Points Research Center
Rifle, Colorado

H. H. Decker (Hal)
Director of Process Development
Sinclair Research, Inc.
400 E. Sibley Blvd.
Harvey, Illinois

R. T. Ellington, Jr. (Rex)
Director, Exploitation Research
Sinclair Research, Inc.
6300 E. Shelly Drive
P.O. Box 7190
Tulsa, Oklahoma

K. M. Elliott (Ken)
Socony Mobil Oil Co., Inc.
Engineering & Products
150 East 42nd Street
New York, N.Y.

J. R. Felix (Jim)
Esso Research & Engineering Co.
Linden, New Jersey

C. D. Geiger (Don)
Humble Oil & Refining Co.
Box 2180
Houston, Texas

W. L. Jensen (Warren)
Manager
Research & Development Dept.
Continental Oil Company
Ponca City, Oklahoma

R. P. Lehman (Ike)
Phillips Petroleum Company
Exploration & Production
Bartlesville, Oklahoma

S. L. Meisel (Cy)
Socony Mobil Oil Co., Inc.
Paulsboro Laboratory
Paulsboro, New Jersey

R. Mungen (Dick)
Pan American Petroleum Corp.
Research
Box 591
Tulsa, Oklahoma

D. C. Smith (Don)
Phillips Petroleum Company
Research Center
Bartlesville, Oklahoma

J. H. Smith (Jack)
Process Engineering
Continental Oil Company
Ponca City, Oklahoma

AGENDA

THIRD SHALE OIL TECHNICAL ADVISORY COMMITTEE
150 E. 42nd Street, New York City, N. Y.
Friday, October 30, 1964

I. New Participating Parties

II. Old Business

- A. Review of Past Meetings
- B. Approval of Minutes
- C. 1965 Budget
- D. Safety Program
- E. Recreational Program
- F. Other

III. New Business

- A. Appointment of New Chairman
- B. Arrangements for Next Meeting
- C. Report of Program Manager
  1. Summary of Previous Work
  2. Current Status of Program
     - a. New Administrative Manager & Transition
     - b. No. 1 Retort Program
       Reproduction of Bureau of Mine Results
       Air Distributor Studies
       Mist & Nucleation Studies
       Future
     - c. Mechanical Model Studies
     - d. No. 2 Retort Construction
- D. Other

IV. Executive Session

S. L. Meisel