HANDOUT 2 - RHC

15130230 50

STAGE II ESTIMATED EXPENDITURES TO SEPTEMBER 15, 1967

Actual Cash Disbursements to 8/31/67	$4,115,558
Accrued Costs to 9/15/67	223,442
Estimated Total Expenditures to 9/15/67	$4,339,000
Total Stage II Budget	4,500,000
Stage II Funds Remaining 9/15/67	$ 161,000

MANPOWER 0001 HOURS SEPTEMBER 16, 1967

Participating Parties			17
Research Foundation -	Authorized	32	
	Actual	32	32
Total			49

CJVerdeur
9/18/67

DECISIONS AND FUNDING REQUIRED BY ANVIL POINTS

Stage II Funds Remaining 9/15/67 - $161,000

Decision required by October 1, 1967 whether to retain Anvil Points on standby basis or restore facility to U. S. Department of Interior, per R. W. Schiessler's August 25 telegram.

Plan I Retain on Standby

Remaining Stage II Costs	$161,000	(Existing funds)
Standby to March 1, 1968	90,000	(New funds required)
Restoration	70,000	(New funds required, estimate)
Estimated Total	$321,000	

Plan II Restore Facility to U. S. Department of Interior

Remaining Stage II Costs	$161,000	(Existing funds)
Restoration(1)	76,000	(New funds required, estimate)
Estimated Total	$237,000	

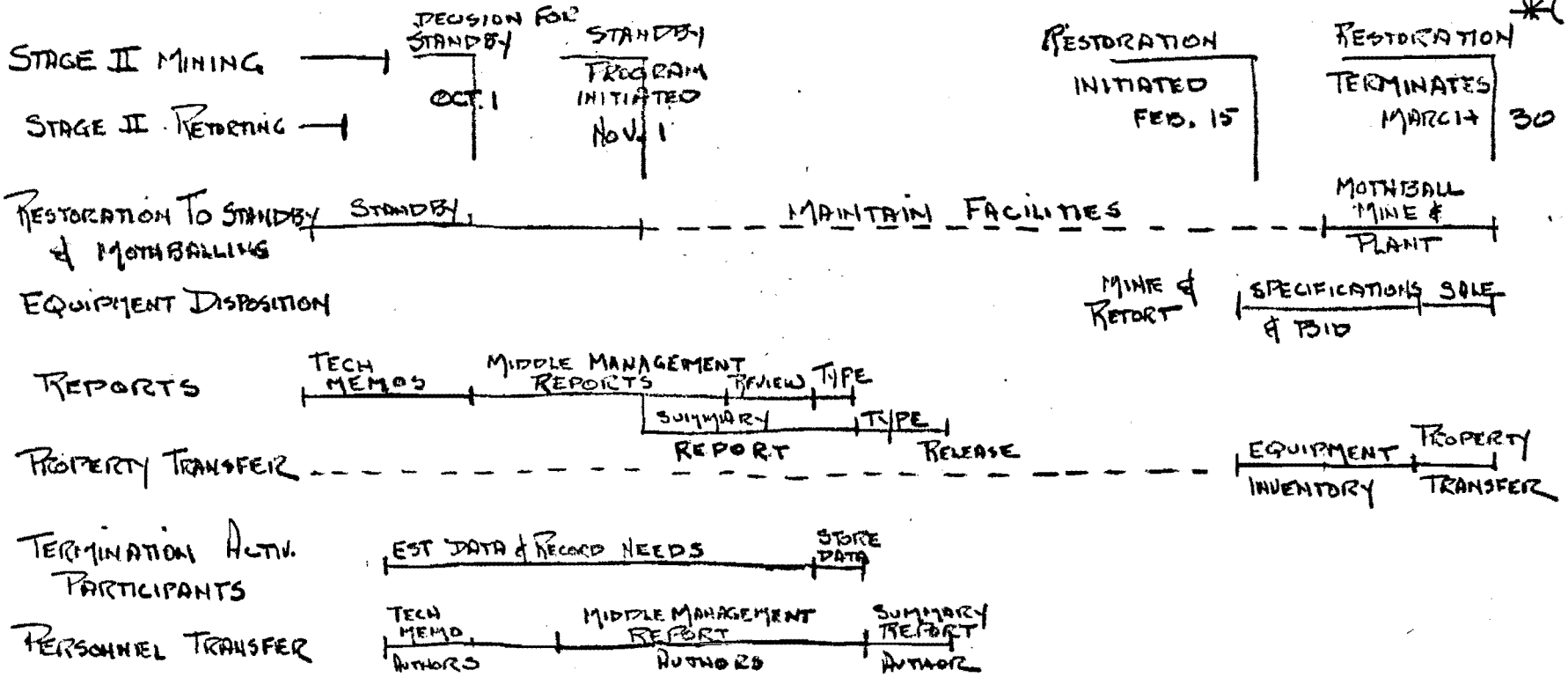
(1) The standby decision date for Plan I and the restoration commencement date for Plan II are both October 1. However, the Research Foundation by contract must be given 10 days notice to decide what they want to do with the facilities and upon their decision to return the facilities, 30 days notice must be given to the Department of Interior. This results in the restoration taking 10 days more in Plan II.

CJVerdeur
9/18/67

HANDOUT 4 RHC

PLAN I

STANDBY PROGLAIM OPTION



RESEARCH FOUND.	STAGE II	142-69-2828	25	20	7	7	7	0	0	0	0	0	0	0
STAFF LEVELS	STANDBY				12½	12½	12½	17	17	17	17	13	0	0
	RESTORATION											4	17	17
PARTICIPATING PARTIES	STAGE II		20	17	13	11	11	9½	9½	3	0	0	0	0	0
	STANDBY					1	1	1	1	0	0	0	0	0	
	RESTORATION											1	2	2

SEPT OCT NOV DEC JAN FEB MARCH

1967 1968

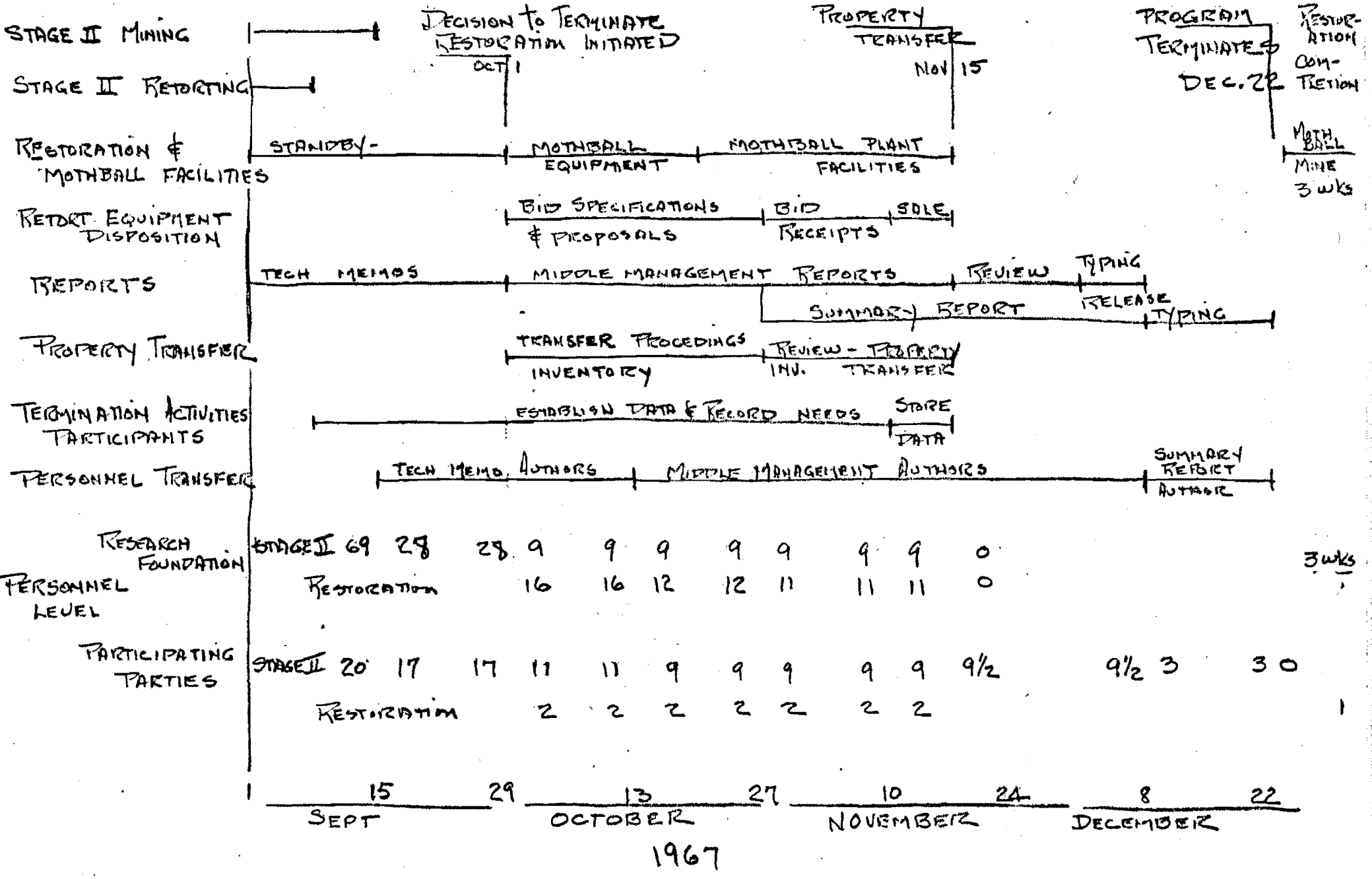
*(1) FURTHER STANDBY OPTION MAY DELAY RESTORATION UNTIL AFTER JUNE 1

WSB
9-12-67

HANDOUT 5 RHC

PLAN II

PROGRAM TERMINATION OPTION



WSO
9-12-67

Engineering Department
September 12, 1967

[redacted]

Memorandum To File

FILE 019-00
P&PE 321
ENGINEERING EVALUATION OF RETORTING

I. Summary

At the request of the TAC, a committee of representatives of the six participating companies met on August 31 and September 1, and September 6 through 8, 1967, at the New York offices of Mobil Oil Corporation. The agenda was to determine the feasibility and structuring of a Study Group to perform an engineering appraisal of retorting. The committee concluded, that while a considerable number of legal questions will require resolution, the Study is technically feasible and four to six proposals can be evaluated in depth by a group of 13 senior engineers over a time interval of approximately 24 weeks. It is recommended that the group be made up from the participating companies' personnel, and they be located in rented offices in Tulsa, Oklahoma. Cost estimates indicate that the Study will entail the expenditure of about $370,000.

The committee, with the assistance of A. L. Gaboriault, considered the various legal ramifications of making the study. The objective was to pinpoint any obvious legal problems which would inhibit or direct their discussions and planning. These preliminary considerations did not develop any legal obstacles which seemed insurmountable. Several guidelines were developed:

1. It appears advisable that any agreement to carry out the retorting engineering study be formulated under the existing Anvil Points research agreement prior to its termination.

2. The original Anvil Points research agreement terminates when the allocated 4.5 million dollars has been expended.

3. It appears advisable that the Study Group perform their work at a place other than Anvil Points.

4. It was agreed that the present committee would not consider proposed retort modifications until after an agreement to participate in the study had been reached.

Other important legal implications which will have to be resolved prior to the preparation or signing of a Study Group agreement are discussed later.

Tulsa was selected as a convenient location at which to base the Study Group. It is close to four of the participants and will provide reasonable rented facilities and adequate services. Details of the costs of such facilities are presented in Table I.

The question of constituting the study group with participating companies' personnel as compared to using the services of an engineering contractor was discussed in detail. It was agreed that our own personnel should perform the study. It was deemed feasible to use a contractor, and the cost of such services are believed to be essentially the same. The use of a contractor seems less desirable, however, because of the increased legal complexities relating to information disclosures, and the obvious difficulties of study management and control with regard to oil shale retorting know-how. A comparison of Contractor versus Oil Company study cost is presented in Table I.

Figures 4 and 1 present a Work Flow Sheet and a recommended Study Group Organization Chart. The Organization Chart provides for a Control Group, composed of one person from each company, which will utilize the knowledge of shale retorting developed at Anvil Points at appropriate times to provide guidance and control. Such a function will be critical during the initial screening of proposals, and during the study when questions which require retorting expertise arise. This will allow the actual study group to be composed of engineers whose experience is not necessarily in oil shale, though this is desirable.

Because there are considerable problems of logistics in allocating manpower from the companies and a preparation of formal proposals, it has been estimated that the earliest possible target date for setting up the Study Group may be mid-November. Based on this estimate and the fact that the Work Flow Chart calls for the formal proposals to be in the hands of the Control Group three weeks prior to this date, the formal proposals should be ready for transmittal by October 25.

III. Recommendations

1. An engineering evaluation group should be formed and staffed by the participating parties. If participating company personnel cannot be made available, the services of a qualified contractor could be used in place of the engineering evaluation group.

2. A control group of oil shale technologists, one from each participating party, should select the cases for engineering appraisal and define the design basis. The group would provide guidance regarding revisions of alternatives as the work progresses.

3. The target date for submitting proposals to the control group should be about October 25, 196[illegible]

4. The engineering evaluation group should be formed by mid-[illegible] at Tulsa, Oklahoma, for the duration of their work. If an engineering contractor is used, the [illegible] would be [illegible] contractor's home office.

5. There should be [illegible] group [illegible] during the [illegible]

6. The evaluation group should be sensitive to the research effort that might be required to develop each proposal to a commercial plant.

III. Discussion

A. Organization Chart

In the construction of the three organization charts (A, B and C) shown in Figures 1, 2 and 3, the following principles were inherent and paramount:

1. There should be equal company participation and voice in progressing and directing the efforts of the study.

2. Oil shale expertise that has built up in the participating companies should be efficiently injected into the evaluation when needed throughout the course of the study.

3. Company support in the form of experts, computer time, etc. would be made readily available.

4. Maximum authority would be vested in the evaluation manager to direct and control his study within initially defined scope. This also applies to the individual designated as the formal contact with the contractor.

5. The requirement that feedback be provided to the participating companies on a routine and/or demand basis.

6. The desirability to keep communication and authority lines as direct and short as possible but to clearly define same.

7. The desirability to keep all groups as small as possible and to avoid two levels of task supervision.

Of the three organization charts shown, two depict staffs which might occur assuming a 100 percent participating company effort and the third contemplates the use of an engineering contractor. All charts assume participation by six oil companies although it is recognized that this might not be so. A brief discussion of the rationale leading to the selection of these three staffs out of the many possible, follows:

Chart A - Probably requires revised participating company agreement.

Each company would appoint one representative per company to the Control Group. The Control Group would by appropriate methods designate a chairman to whom the evaluation manager is directly responsible. The evaluation manager is responsible for the supervision, organization, administration, etc. of his cadre, and also responsible for all formal contacts and reporting. Although responsible to the chairman of the Control Group, it is the intent that the evaluation manager be vested with a high degree of responsibility and authority within the scope of his initial charge and budget.

Chart B - Probably the situation under existing Anvil Points research agreement.

As before (Chart A) the companies would appoint one representative per company to the Control Group and this group would designate a chairman for formal contact with the TAC and with the project manager (Mobil). The evaluation manager in this instance is responsible to the project manager (Mobil) and all his formal contacts flow through Mobil. His other responsibilities are unchanged from those described for Chart A.

Chart A vs Chart B - Discussion

The ad hoc committee designated to consider this matter recommends Chart A as the preferred method of organization. It is believed that such organization has the prime advantage of introducing a mechanism ensuring equally weighted consideration being given to each participating company's suggestions, equitable resolution of differences and thus clearly defined guidance and direction being given to the evaluation manager.

Chart C - Use of outside contractor.

This chart reflects the same philosophy as Chart A. It provides for direction of the contractor's efforts by one designated participating oil company individual. It also provides liaison between the oil companies and the contractor by physically headquartering an oil company liaison man in the contractor's office. The Control Group directs the effort of the study through its designated chairman who is responsible for formal contact with the TAC and the individual designated to direct the contractor.

B. Method of Operation

The flow of work is shown in Figure 4. All process proposals would be submitted by a mutually-agreed deadline date (October 25) and these would be reviewed by a screening committee. Each company would have one representative and each of the men would be expert in the field of shale retorting.

The screening committee would reduce the number of proposals to an acceptable number, perhaps 4-6 cases. As indicated in the time sequence, the entire evaluation group, or the part that had been organized by the time screening is complete, would spend several days reviewing and discussing the cases to familiarize themselves with the projects. Assignments would be made and as shown in stage 3, simplified conceptual flow sheets of each case would be prepared by those most proficient in shale retorting.

At this point detailed calculations of heat and material balances for the plant would be prepared. Simultaneously, where possible, equipment design would also be started and would progress essentially in parallel. For example, crusher and screen design could start as soon as size range has been selected. In this same period, equipment specifications would be prepared.

In stage 6, detailed flow sheets are prepared showing process flows, heat requirements, equipment sizes and other pertinent information. Any other drawings required to clarify the process and equipment would also be prepared. Simultaneously in stages 7 and 8 P&I (piping and instrument) diagrams and plot plans would be prepared.

In stage 9 all equipment is cost estimated to arrive at a total battery limits plant investment. This material is tentatively given to the economic evaluation engineer who would begin developing an approximate economic picture. At the same time, in step 11, engineering re-evaluation is progressing. Step 12 involves the preparation of operating costs such as utilities, chemicals, manpower needs, etc. and these are continuously channeled to the economics calculations.

Stage 13 encompasses the preparation of final, simplified P&I diagrams and step 14 is the revision of any of the drawings previously made as required.

The last step is the preparation of the report which will present the evaluation team findings. The report will contain both a technical and economic evaluation of each case studied.

Although it is not shown specifically for all situations on the diagram, it is expected that there will be cross communication from engineers in essentially each of the stages back and forth for purposes of clarification and revision as needed.

C. Legal Questions

With the assistance of A. L. Caboriault, a number of legal questions were explored. These discussions were intended to point out any obvious problems that would inhibit or direct the discussions and planning. As a result of the discussions with Mr. Caboriault, the committee came to the following conclusions:

1. It was understood that the engineering evaluation study would probably best be accommodated under the terms of the existing research agreement, amended as necessary.

2. It was agreed that the present committee would not, as a group, consider the technical merits of any proposed retort modifications prior to an agreement to participate in the evaluation program. Accordingly, the committee directed its attention to suggesting a mechanism for evaluating the potential of each modification.

3. The original Anvil Points research agreement terminates when the allocated 4.5 million dollars has been expended.

4. It appears advisable that the evaluation group perform their work at a location other than Anvil Points.

Other important legal questions which were discussed but not resolved are the following:

1. What is the impact of studying a third party's processes for the purpose of comparison?

2. What is the impact of studying processes which constitute a radical departure from the gas combustion process?

3. What is the impact of studying participating parties' proprietary processes?

4. What must be done to retain the Anvil Points facilities while the evaluation study is carried out?

5. Is the unanimous participation in the evaluation study required to keep the existing agreement in force?

D. Quality of Work Effort

1. Objective - The overall objective of the engineering appraisal is to (a) determine the economic implications of the current and possible future status of the gas combustion retorting process and (b) the relative economic positions of the gas combustion process, modifications thereof, and other retorting processes having potential technical and/or economic advantages.

2. Scope - For purposes of this study, the retorting process will be considered to start with mine run shale at the retort site and end with spent shale disposal and raw shale oil as recovered from the process. All cases will be considered on a battery limits basis. It will be assumed that construction for each of the cases will be consistent with what is adjudged to be an adequate time for development.

   It is expected that the Control Group will reduce the proposed processes to approximately 4-6 cases (stage 1 of Work Flow Chart) which it judges are both technically and economically feasible. The Control Group will be sensitive to the state of development of the process and the probable time required to develop the process.

3. Depth - Each complete case will be developed with the following information:

   a. Process Flow Sheet with material and energy balances and equipment duties
   b. Piping and Instrumentation Diagram
   c. Major Equipment Specifications
   d. Tentative Plot Plan
   e. Project Schedule
   f. Cost Estimate
   g. Economic Evaluation taking into account the time value of money and covering ranges of raw shale and raw shale oil values

Inso[illegible] as possible, there will be developed on comparable bases, recognizing that the information available may differ in quality from case to case. Some cases may be developed as modifications of others either in process or previous, without requiring completely independent development.

This information will be developed only to the detail needed to [illegible] reasonable assurance that valid comparisons can be made between cases. This will allow more logical selection of an optimum [illegible] of action in further experimental development of [illegible] oil recov[illegible] [illegible]es. It may also allow each participating [illegible] to take [illegible] consistent with its specific requirements.

[illegible] [illegible] Member of the Committee

[illegible]llowing me[illegible] contributed to the preparation of the above [illegible]:

[illegible] - Chairman		Mobil Oil
[illegible]		Pan American Petroleum Corporation
[illegible]		Continental Oil Company
[illegible]		Phillips Petroleum Corporation
[illegible]		Mobil Oil
[illegible]		Esso Research and Engineering Company
[illegible]		Sinclair Oil Company

[illegible]

[illegible] ([illegible]/67)		Esso Research and Engineering Company

[illegible] to Committee

[illegible] - Legal		Mobil Oil
[illegible] - Con[illegible]tracting		Mobil Oil

[illegible]

F. N. FAGAN, Chairman

TABLE I

PROJECT COST

A. Participating Party Personnel

		$/Month
1. Running Costs		
Direct Professional Effort 13 men @ $130/day		37,300
Indirect Support Office Rental, Secretaries Travel, Living Expenses Draftsmen, etc.		21,800
Participating Company Technical Support Manpower and Computer Time @ 25% of Direct Professional Effort		9,400
Total		68,500

2. Total Costs	Absorbed by Companies	Project
Control Group, TAC	Cost Difficult to Estimate Absorbed by Companies	
Screening 6 Professional Men for 3 Weeks Support	$20,000	
Evaluation Study 13 Men for 20 Weeks @ 68,500/month		$312,000
Reporting, Close-Out, etc. 13 Men for 1 Month ex Participating Company Support		59,000
Total	$20,000	$371,000

B. Alternate - Contractor

Contractor 16 Men for 24 Weeks(1) 1 Contact Man in Contractor's Office	330,000(2)

(1) 16 men are used since this includes 3 men which in Case A are provided under support.
(2) Requires confirmation by direct survey of contractors.

TABLE II

PROFESSIONAL MANNING FOR
EVALUATION GROUP

Function	Professional Types(1)	Average Number Required
Process Engineer	Ch.E. mostly	4
Equipment Designer	M.E., Ch.E.	2
Cost Estimation	---	1
Engineering Economics	Ch.E., M.E.	1
Mechanical Engineer	M.E.	2
Layout, Project Scheduler	Ch.E., other	2
		12
Evaluation Study Manager	Ch.E., M.E.	1
		13

(1) Men assumed to be senior levels (mostly 10+ years experience) or with broad enough experience to serve more than one function.

ORGANIZATION CHARTS

CHART A

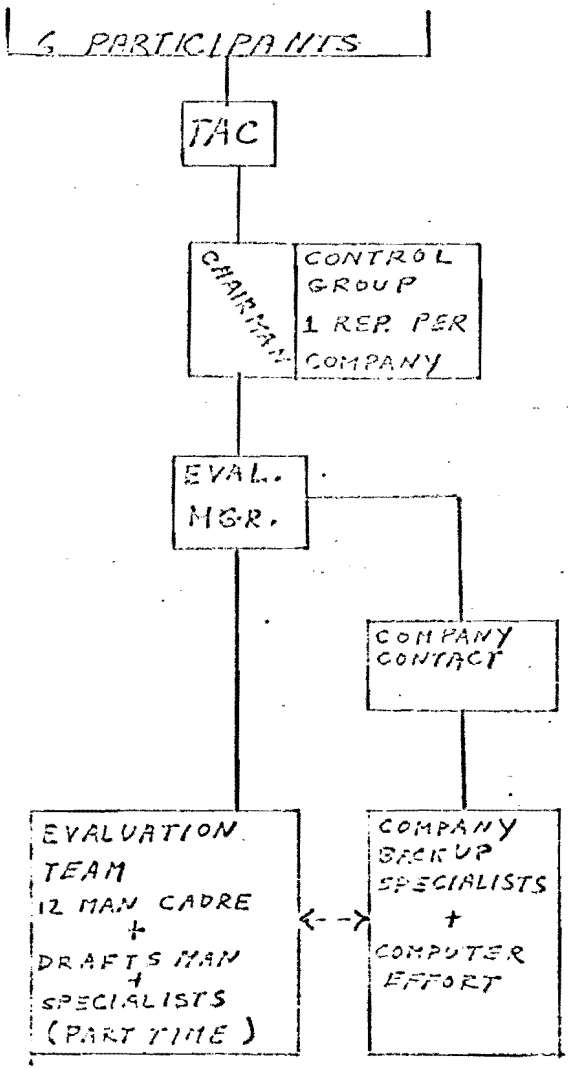


FIGURE 1

CHART B

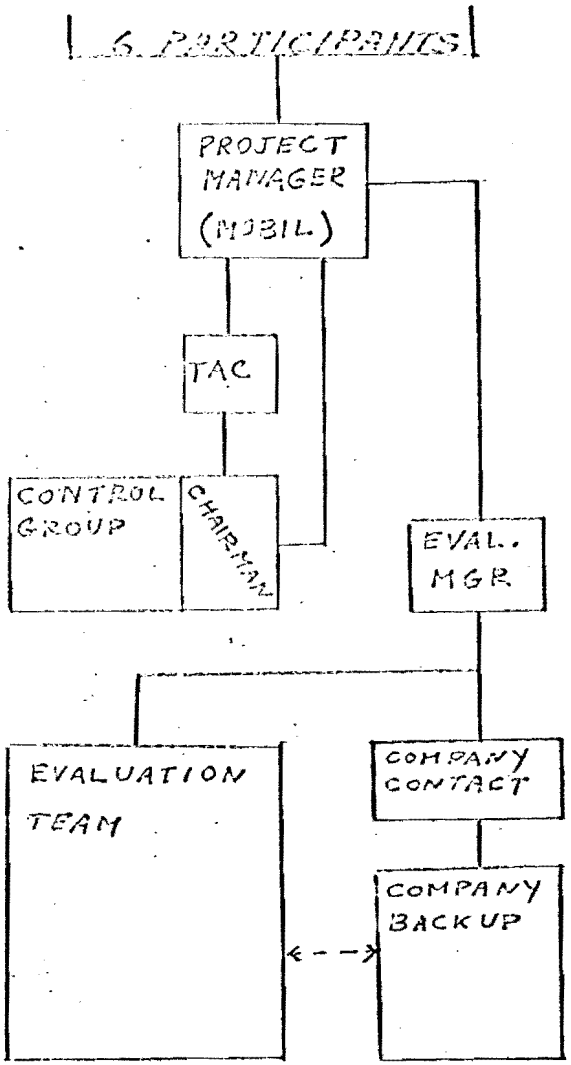


FIGURE 2

CHART C

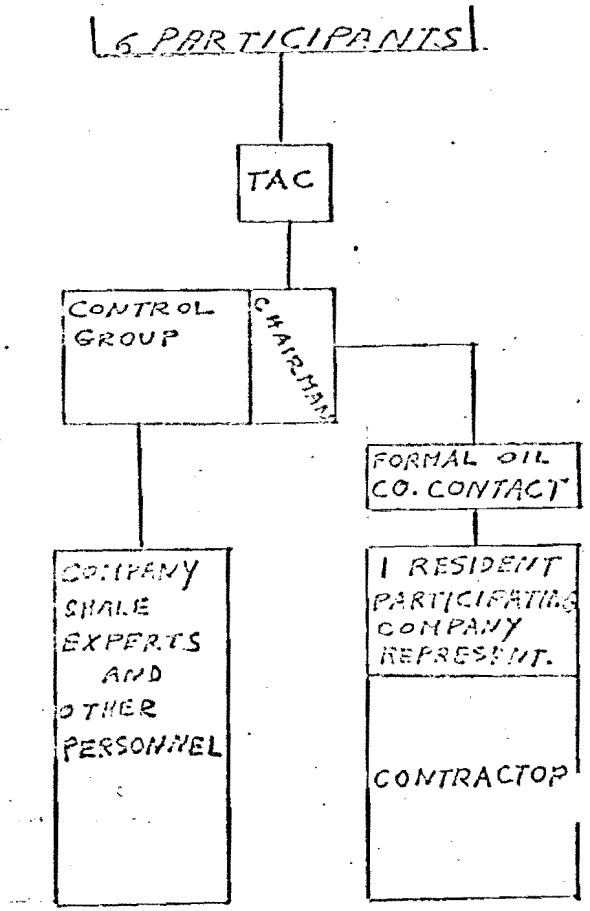


FIGURE 3

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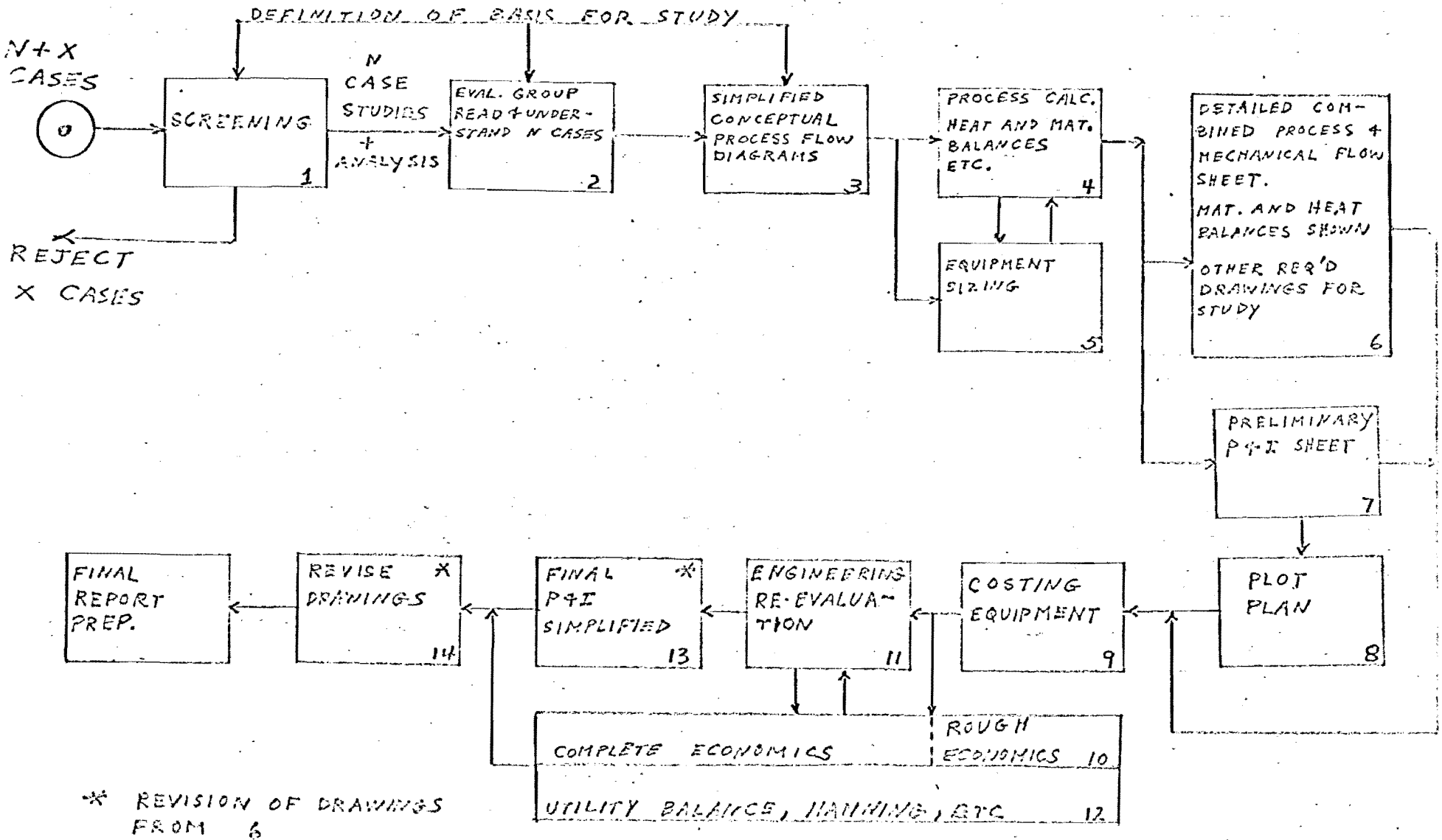
WORK FLOW CHART



* REVISION OF DRAWINGS FROM 6

ALL FEEDBACK HAS NOT BEEN SHOWN

FIGURE 4

DFP
9-12-67