

costs because of the inability to foresee all eventualities. In any case, there is no known way to start a shale oil industry with a small investment. To effect the requisite economies of scale, it is necessary to start with a plant producing at least 50,000 barrels of synthetic crude per day, requiring a minimum investment in the neighborhood of \$150,000,000, assuming that existing pipelines to existing refineries may be used. The financial exposure is extremely high with substantial risk of failure to compete economically.

In response to the invitation of Secretary Udall, my letter of January 27, 1964, provided the Director of the Bureau of Land Management with Pan American's specific recommendations concerning revision of the shale oil regulations. We believe the comments set out in that letter provide a sound basis upon which realistic regulations can be promulgated. For purposes of convenient reference, a copy of that letter is attached as Appendix II.

Very truly yours,

F. R. YOST, *President.*

## APPENDIX I

### ANALYSIS

#### A. *Proposed Oil Shales Regulations (43 CFR, Part 3170)*

Section 3170.1. *Designation of Available Lands.* The first sentence indicates that "The Secretary will from time to time publish notices in the Federal Register designating areas of oil shale bearing lands and deposits for the conduct of particular types of mining, extraction, or processing activities which will be made available for leases for research and development and for subsequent commercial operations in accordance with these regulations." The foregoing sentence allows the Secretary to specify a particular type of operation on a given site, but there does not seem to be any compelling reason in the public interest why the Secretary should restrict in the first instance the types of proposals to be submitted; certainly, control in the Secretary permits meritorious projects to be encouraged and contemplates the rejection of valueless proposals.

The second sentence broadly refers to selecting areas with a view to encouraging research with a variety of processes, also taking into account the principles of conservation. It is submitted that the initiation of an industry is the prime objective, rather than the encouragement of theoretical or pure research. Moreover, regarding conservation principles, the richest oil shale deposits should initially be made available to furnish impetus to the commencement of an oil shale industry; this sequence is the historical pattern followed in the case of other minerals. By way of illustration, there would be no point whatever, in our opinion, in trying to encourage research, now, on very low grade oil shale deposits—the means should first be found to exploit the "flush" or rich deposits of shale, after which, degree by degree, technology would probably improve to permit the industry to extract crude from progressively poorer deposits.

The third sentence states that no more than 30,000 acres will be designated for lease. There does not seem to be any compelling reason for this restriction, considering Federal ownership of over 500,000 acres of shale land in the Piceance Creek Basin in Colorado, alone. In any case, it is suggested that this "built-in" restriction be removed and that the course of research and development, together with the interest of private industry, indicate to the Secretary whether, in his discretion, more or less acreage should be offered for lease.

Section 3171.2. *Form and Contents of Applications.* Emphasis in this section should be directed to the formal qualifications of the applicant for lease, including, as well, minimal information regarding the technical and financial capability and intention of the lessee to conduct bona-fide research. It is suggested that no useful purpose is served in stating in detail such items as "the goals of the research plan; the nature, location and cost of plants and equipment to be utilized," etc. [see 3171.2 (10)].

Additionally, the requirement that an applicant for lease furnish information on other holdings of shale oil and petroleum goes far beyond what the Secretary should logically need to determine the lessee's qualifications and technological ability [see 3171.2 (7) and (11)].

Section 3172.2. *Term of Lease.* If the district research and commercial production terms for oil shale leases are adhered to, as contemplated by these proposed regulations, it seems reasonable that the research term should be for a flat ten year term in all cases, or, at least, for a term which is *not less than* ten years.