

In the past experimental pilot type work has been done by the Government at the Rifle plant. This work continues under a Government contract with the Colorado School of Mines Foundation. In some areas of technology and economics in which private groups have less interest, the Government might even elect to advance research via direct contracting from the beginning (as detailed in the Board's report under the heading "Federally Sponsored Research").

I, therefore, suggest that the Government prepare to pursue both approaches:

(1) To offer a few small tracts of a size suitable for R & D to companies wishing to do R & D on Federal land and with a capacity to do such work effectively. The companies would be expected to provide a basis for determining the size of the tract by indicating in general the kind of research they would do. Performance requirements should be established and might include stipulated annual expenditure in specified categories of work. Such leases or permits, might run for a period of up to five years, subject to annual review, to see that genuine and substantial research was actually being undertaken. Toward the end of the lease period the government and the company should consider whether to renew the lease with the same or changed conditions or to extinguish the lease with the land reverting to the government. In addition to acquiring valuable know-how, such companies could apply for patents on any new processes they might work out, in accordance with patent law and procedures. The government should permit sale or transfer of ownership of such leases, and of installations the holder may have developed, but the separate performance requirements for each lease unit should not be waived except when the public interest requires.

(2) To put itself in a position to contract for R & D with private companies or to conduct such research itself. This would insure that the public interest is served through advancing research along various promising lines, any one of which might later result in successful application. To accomplish this purpose efficiently the Government should without delay set up long-range research goals in this field that would enable it both to evaluate progress made by others and to appraise the need for the role it should play as an active contractor for or participant in research.

As a further way of inducing companies to undertake needed R & D, whether by research leases or research contracts, it is suggested that from the outset the Government make clear its intention of offering a limited number of commercial size tracts of public land for competitive leasing, say, five years from the date of the beginning of the R & D stimulation program. This might be in four years, six years, or some other period of time; the important point is that the government intention be made clear from the start.

These tracts of land should be suitable in acreage and oil content to support one commercial scale mining and processing unit. To give a special incentive to companies to undertake R & D, one might consider limiting the initial group of leases to those companies which have actually undertaken R & D, on public or private lands. Significant laboratory research might also qualify companies for this advantage. While it is true that such a selective approach calls for substantial judgment and discretion on the part of the Government to prevent abuse, this is no reason for disqualifying it. As an alternative, those companies which have done R & D might be given preference to the extent of accepting their bids if they were within, say, 10% of the lowest acceptable bid.

Certain conditions should be established as part of any commercial scale leases, whether they follow successful research done by permit or by contract. There should be suitable performance requirements; for example, commercial scale production would have to begin within, say, three years of the time the lease was signed, and would have to continue thereafter with suitable protection to the companies in case markets were not found for the product. The leases should also contain certain requirements regarding conservation as indicated in Section V which deals with this subject. Royalties would be collected on each barrel of oil produced. At present, 12½ percent of the value of each barrel of oil is collected in the case of oil produced on onshore public lands, and 16½ percent for oil from the offshore submerged lands. The government might also want to establish a minimum bonus based on the acreage of land, estimated reserve of oil, or some other suitable magnitude. There is no need for haste in setting desirable levels, since additional supplies of oil from this new source are not now urgently needed and competitive production of shale oil has not yet been demonstrated.

The commercial scale lease land might or might not include an R & D leased plot. Ways should be found so that companies which qualify to assume com-