

hydro-treated permium oil and by-products is approximately \$106,000,000. But the final installed cost of erecting and commencing operation of such a facility is approximately \$128,000,000. What, in short, is the "original cost" of "capital assets used"? Moreover, which capital assets are to be included as part of the investment on the basis of which royalties are to be calculated? This question obviously relates to the prior question of the selection point at which the value of products is to be determined.

The "original cost" is to be diminished by "depreciation." By what method?

Apart from these ambiguities, the definition of investment appears deliberately to exclude the costs of up to ten years of research. Yet it is difficult to believe that the Department intends that the research lessee should have no opportunity to recover its predictably large "investment" in research, an investment which the proposed provisions on technology (see above) dedicates to the public.

Senator Moss. Our next witness is Mr. Royce A. Hardy, vice president, Duval Corp. It is necessary for him to leave town today, and we will make sure that we get to hear him.

Senator ALLOTT. I want to say that it is a pleasure to see a former Assistant Secretary of the Interior before us. We are glad to have you with us again.

Senator Moss. Indeed, we are.

STATEMENT OF ROYCE A. HARDY, VICE PRESIDENT, DUVAL CORP.

Mr. HARDY. Thank you, Senator Allott.

Mr. Chairman and members of the committee, I am Royce A. Hardy, vice president of Duval Corp. I appreciate the opportunity to appear before this committee.

Duval Corp. is in the solid minerals business, engaged primarily in the mining and milling of copper, molybdenum, and potash ores, the marketing of the resulting products and the mining and marketing of crude sulfur. Duval is the mining company affiliate of a group of companies principally engaged in oil and gas activities; namely, United Gas Corp. and Pennzoil Co. and their subsidiaries. As a mineral resource company, Duval is interested in the development of oil shale, which of course, appears in nature as a solid.

My professional experience in the mineral industry extends over a period of 21 years, during which time I spent approximately 3½ years in the Department of the Interior in the mineral resource area.

At the outset, I should like to point out that many of the technical aspects of mining, transporting and crushing oil shale are not unlike those applicable to other solid minerals. In fact, in many respects oil shale is more analogous to potassium, sodium, phosphate, coal, and other solid mineral reserves than to liquid and gaseous hydrocarbons.

The Department of the Interior is to be commended for proposing regulations for the development of federally owned oil shale reserves. The regulations specifically recognize the need for development of this important resource. Establishing the Government's policies with respect to the vast reserves in the public domain should also remove the primary existing obstacle to development of privately owned shale lands.

In order that the important objectives envisioned by the Department's regulations may in fact be realized, it is imperative in my opinion that manifest uncertainties now present in the proposed regulations be eliminated. Briefly, the chief uncertainties are the amount of royalties payable to the Government, the duration of the research