private action, and thus delay development of the resource. Prompt resolution of the contested titles would be most desirable. Such resolution is not seen, however, as a necessary precondition to more active research and development work.

X. INDIVIDUAL STATEMENTS

The following are individual statements of the Board members:

VIEWS OF ORLO E. CHILDS

MEANS OF STIMULATING OIL SHALE DEVELOPMENT

In the report of the Oil Shale Advisory Board, three alternative courses are outlined as guidelines for the Department of the Interior in action to be taken to encourage the development of shale oil industry. As indicated by Secretary Udall at the start of Board deliberations ". . . the major public policy questions need to be identified and evaluated at the onset." Clearly the most basic policy question is "Will public lands be made available by lease arrangements to allow a shale oil industry to be spawned, developed, and carried forward by private enterprise in the American mineral resource tradition?" To the writer, a positive position on this question seems to be the development of the strongest possible policy to insure economic and efficient development and use of one of our nation's greatest untapped fuel resources. Too much government intervention in the form of tight regulations or threat of production competition can only retard or eliminate the interest of private capital, thus leaving government alone to invent an industry and control and economy into which it must fit that industry.

In the stimulation of shale oil development beyond that now under way, alternative number (3) as stated could only be considered as a very small enlargement of the present opportunity to do research. At present, eight oil companies are pursuing shale oil research under a permit contract with Interior, using facilities under lease to the Colorado School of Mines Research Foundation, Inc. Any other company as it deems advisable can enter into other research arrangements to do work at Anvil Points. The interest already shown can only be expected to decline if a policy of making public oil shale lands available is not soon adopted and announced. Surely the announcement of research leases alone, without the promise of available commercial holdings, could not be expected to function as a stimulant. It could hardly be an appetite appeaser.

Alternative number (2) as described in the report, or a comparable policy that might be announced by the Secretary in the near future, would, in the opinion of the writer, create the greatest stimulus to shale oil development. The lack of announced government policy as it affects three *basic problems* has caused the reticence with which many companies view the imponderable economic aspects of a new shale oil industry. It is hoped that the first problem, that of depletion allowance both as to amount and point of application, might soon be solved under the full realization of economic impact on the industry.

The second problem, the conditions of availability of public lands would approach solution with conditions as outlined in alternative (2). Some companies have gone ahead with research to determine processes for developing private holdings, others have worked in anticipation of favorable policies to be developed. Certainly all must be able to foresee every possible economic aspect of an emerging industry before it is possible to face the enormous initial costs of commercial scale development.

The third problem, the need for research, is also tied to the conditions under which public land is to be made available. We must not think that all process research can be restricted to a preliminary phase of oil shale development. Because of many unknowns, once basic processes are decided upon, research must go hand in hand with daily production. Differences in marlstone composition, in sedimentary structures within the rock, and sulphur content together with other impurities may require vast changes in process planning from day to day. Research *and* production costs are part of the development of the natural resource. Production requirements within a lease should recognize all these expenditures as true effort toward resource development. When recognized, this work is a safeguard against speculative land holding.

The determining factor that will allow a shale oil industry is the energy economic climate. In order to assess the true competitive position of shale oil, as many costs as possible must be entered into the operational equation. The size