policy, and as a result the Regulations impose excessive requirements not contemplated by the Statement.

It is apparent from the "Basic Considerations" which preface the "Statement," and from Section 1 of the "Policy" itself, that public proprietorship of technology developed under government contracts is to be imposed where there have been large financial contributions by government to the technological development. For example, the first Basic Consideration states:

"The government expends large sums for the conduct of research and development which results in a considerable number of inventions and discoveries."

No government expenditure of any kind for oil shale research is contemplated in these Proposed Regulations. The public contribution consists only of the renting, at the rate of 50¢ per acre per year, of very small fragments of the public domain for research purposes. As to the commercial production phase, the royalties and other requirements proposed in these Regulations assure the public of a very high rate of payment for the production of public domain minerals. Nowhere is there involved any uncompensated "contribution" by the public, or any financial contribution whatever.

These provisions concerning technology are the clearest instance in the Proposed Regulations of their failure to meet the purposes stated for them by the Secretary and others. The Regulations were intended to "encourage" technological development in the interest of increasing the reliability of domestic liquid petroleum supplies. In so doing, they would also assure the public that its large oil shale reserves would not lie fallow and would instead generate tax and other revenues and produce substantial new employment and economic development. Instead, the Regulations so burden the use of the public domain reserves for research and development, and offer so little possibility of a return adequate to justify the risks of such programs, that they seem inadvertently designed to discourage rather than encourage utilization.

The Statement of Patent Policy has no relevance in this mineral leasing context, where the value of the public "contribution" is fairly, if not unduly, compensated by proposed rentals and royalties. Moreover, the practice of the petroleum industry to make useful technology readily available through widespread open licensing practices is sufficient assurance that any useful technology developed will be widely applied.

*F. Royalties*

In 1964, when this Corporation appeared before the Oil Shale Advisory Board appointed by the Secretary, it took the position that despite the absence of commercial production experience, the Department could enter into production leases without fear of overreaching or being overreached. We said there were several established devices to achieve this result and mentioned the net profits lease an an example.

The Proposed Regulations provide for determination of lease royalties in relation to profits through the device of an artificially defined "net income." Although the net profits lease is not the only available method, and would be poorly suited to a general program of commercial production leasing, we believe that it is acceptable to protect the public and private interests in production growing out of initial experimental leases.

However, two problems are raised by the manner in which the net profits concept has been embodied in the Proposed Regulations. The first concerns the economic costs imposed upon the producer; the second concerns the incompleteness of mechanics proposed for actual determination of payments.

In our view, the charges that would be imposed by the Proposed Regulations are unduly burdensome. The imposition of a minimum 3% royalty, regardless of cost or profit, will unavoidably tend to discourage the commercial production phase, even when the results of research are promising. A fixed royalty rate is a customary course where the economics of production are generally established (although it has been noted that the rate may prevent the continuation of production on marginal reserves). But to establish a fixed minimum royalty rate when production economics of new techniques are uncertain, may prevent the inception of production which would otherwise begin. They royalty would therefore frustrate the fundamental objectives of the proposed program.

Nor is the lessee's risk that the fixed rate may make production impossible offset by the possibility of substantial profit. Under the Proposed Regulations, that possibility is severely diminished by the alternative royalty rates, which escalate sharply.