Work at the Oak Ridge National Laboratory under AEC sponsorship during this time has included studies of the optimum coupling of nuclear powerplants and large desalting systems, development of analytical systems simulation for the analysis and design of control systems of coupled nuclear power and desalting systems, studies of siting requirements, investigation of industrial processes for use in multipurpose plants, and economic analyses of various nuclear desalting concepts. AEC's effort has amounted to about $11 million since 1964 with approximately 80 percent of this total through Oak Ridge National Laboratory.

As part of our desalting endeavors, we have also participated with the Office of Saline Water in cooperative studies of the engineering and cost potentials of large-scale desalting for applications in the United Arab Republic, Israel, Greece, Mexico, New York, southern California, and Utah. There have been recent discussions, as Secretary Smith mentioned, between representatives of the United States and Mexico which indicate that follow-on studies and technical activities of a cooperative nature between our two countries could be mutually beneficial. And, the power and water and university organizations of the State of Arizona have been quite interested in these studies and we have been keeping them informed on our progress.

An outgrowth of the power-desalting studies has been the energy center concept.[2] This is the concept where a large nuclear energy source forms the nucleus for an integrated power intensive industrial complex which could incorporate intensive and scientifically managed agriculture. A study of one industrial type complex, or nuplex, for the southern coast of Puerto Rico was recently completed and the study of nuclear agro-industrial complexes for the Middle East is nearing completion. The latter study was undertaken in response to Senate Resolution 155 of the 90th Congress, introduced by Senator Baker, which called on the administration to explore the potential of large nuclear desalting projects in providing fresh water and power for arid regions in the Middle East.

I might interpolate here to mention that some of the ideas back of this concept were provided by Mr. Frank Di Luzio when he was Assistant Secretary of the Interior and by Mr. Lewis Strauss as a part of the Strauss-Eisenhower plan for the Middle East.

Through studies such as those noted above, it has been indicated that large-scale desalting plants using low-cost energy from nuclear reactors can produce fresh water at costs considered economically viable for many municipal and industrial uses. With further advances in technology it appears that, within the foreseeable future, desalted water could also be economic for agriculture in selected applications.[3]

I believe it is interesting to note that the AEC-OSW effort was one of the first to identify the benefits of dual-purpose and multipurpose plant operation, especially with respect to the more effective and efficient uses of energy and to achieve reductions in thermal discharges from powerplants. It is from such a basic that many of the proposed beneficial uses of waste heat have been developed and the future role of nuclear energy in the process industry identified.

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[2] "Nuclear Energy Centers, Industrial and Agro-Industrial Complexes, Summary Report," Oak Ridge National Laboratory (ORNL–4291), July 1968.

[3] R. Philip Hammond, "Agricultural Innovations and the Agro-Industrial Complex," a paper presented at Agricultural Research Institute annual meeting, Washington, D.C., October 14–15, 1969.