

SODIUM-SULFUR BATTERY DEVELOPMENT, PHASE III

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ERDA began supporting this effort in June, 1975. Phase IV of the program is being carried out with Ford Aerospace & Communications Corp. (FACC) and Ford Motor Co. as parties of a tripartite agreement with DOE.

The overall objectives of the program are to develop and demonstrate a large (~1 MW) sodium-sulfur battery for utility application and a battery for powering an electric vehicle. The Phase III work centered on development of cells with improved performance, reproducibility and durability. Improvements were required in cell design and materials and sealing technology. An additional goal was the definition of battery requirements for the electric vehicle application.

Design work led to demonstrating good performance with essentially complete reactant utilization for both load-leveling (~250 W h) and electric vehicle (~60 W h) cells. New seal designs were developed and work continued on the development of corrosion-resistant sulfur containers. (Efforts related to the demonstration of performance reproducibility for a larger number of load-leveling cells were carried out at FACC and are described in the report which follows.)

A packaging study of a Fiesta converted to an electric vehicle identified a front-wheel drive power-train arrangement with the battery located in the middle of the vehicle as the optimum configuration.

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The primary Phase III objectives were the development of the Mark I cell (~250 W h) and the demonstration of good, reproducible performance of a group of these cells. To accomplish these overall objectives, improvements in electrode design, container materials, and sealing technology were required.