

the most readily available raw material.

The Board reported on the merits of alternative methods of increasing gas usage, especially as a fuel, to yield additional condensate to the liquid fuels system. After a year's detailed investigation on the merits of available alternative technologies, the Board recommended, and the government approved, a major gas to gasoline via methanol development, using the first commercial plant to use the Mobil process.

The Board subsequently recommended against introducing low-methanol petrol blends (M15), principally because of distributional problems.

New Zealand should be about 50% self-sufficient in liquid fuels by 1986. Currently the Board is investigating the possibilities of either increasing that level or producing liquid fuel in the post-gas era. Several options are being considered—high methol blends, potential ethanol-production from biomass, and options for major liquid fuels production from lignite, or from New Zealand's fast-grown wood.

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#### A Marine Geologic Map Series of California

A comprehensive geologic map series covering the California continental margin is currently in preparation as a collaborative effort between the State of California Division of Mines and Geology, the State of California Coastal Commission, and the United States Geological Survey. Geologic, geophysical, and seismological data are portrayed at a scale of 1:250,000 on NOS bathymetric base maps for the purpose of defining regional stratigraphy, structural patterns, tectonic history, and historic seismicity. Individual subject data sets are being compiled from existing literature as well as from current research activities. The map series consists of composite overlays depicting surficial and bedrock geology, character and recency of faulting, regional geologic structure, locations of historical earthquakes, well-defined focal mechanisms, gross regional Bouguer gravity, and regional magnetic anomalies.

The geologic information is derived in large part from subbottom seismic reflection profiles and to a lesser degree from core and dredge samples. The explanation of the geologic mapping is accompanied by interpretive line drawings constructed on actual seismic profiles. Each profile illustrates and defines, using symbols standardized for this project, specific geologic features shown on the map.

The purpose of this new marine geologic map series is to acquire and compile in a standard format all available geologic data along the California coastal zone. Although a considerable amount of geologic data exist for the California offshore, heretofore no attempt has been made to compile and present these data at a common scale using a standardized symbology. The compilation phase of this study is scheduled to continue through 1983. Contributions by individuals can be made, with credit assigned, up to mid-1983.

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#### Resource Driven Economic Potentials of Circum-Pacific Region

(No abstract)

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#### Methanol and Ethanol from Wood as a Resource

(No abstract)

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#### Geothermal Energy in United States: Directions and Results, 1976-1982

Development of the giant steam field at The Geysers, California, largely by private industry, has continued steadily, with over 900 Mw of generation online, and nearly 500 Mw additional under construction or design. The area of the field is at least 15 mi<sup>2</sup> (40 km<sup>2</sup>); production depth is from 0.8 to about 1.9 mi (1.3 to about 3 km). Immediately adjacent to the east, exploration of hot water resources (to 482°F, 250°C) is underway. In Imperial Valley, California, several small plants (10 to 50 Mw) are either operating or under development. These are located in a sedimentary basin, essentially nonvolcanic, but having an extremely thin crust. Brine salinities remain a major problem.

Geothermal power plants are under construction or design in Utah and Nevada. On Hawaii island, a pilot 3 Mw plant is operational. Total US geothermal generation is now about 1,000 Mw.

Research into power generation from low-temperature fluids (302°F, 150°C) has resulted in construction of a 5 Mw binary-cycle experimental station at Raft River, Idaho, using federal funds. Federal funds also are used in research into energy extraction from hot dry rocks and from high-pressure methane-bearing sands at great depths along the Gulf Coast.

Low-temperature utilization to date has been limited mostly to demonstration projects using public funds in Idaho, South Dakota, Texas, Oregon, etc, heating buildings with waters of 122 to 212°F (50 to 100°C). This segment of the geothermal industry continues to need public support in order to become competitive.

Perhaps the most significant change has been the growth of interest and activity by electric utilities, especially publicly owned utilities in California. Several now are investing in exploration, singly or in joint ventures with traditional exploration companies. Tax-exempt status, lower burrowing costs, and lack of profit demands add to their competitiveness.

Current exploration interest is focused on the volcanic Cascade Range, Imperial Valley, areas in northern Nevada, the Coso Range of California, and the greater Geysers-Clear Lake region.

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#### Hawaii's Renewable Energy Program

(No abstract)

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#### Volcanogenic Manganese Deposits in Western Cordillera

Our preliminary investigations suggest that numerous stratiform manganese deposits in the western United States were