USA in that it occupies an area of late Cenozoic, north-trending grabens and half-grabens, with a very high geothermal gradient, near the western margin of a continent. Similarities in the tectonic setting of the two regions include their location east of an inactive magmatic arc, the presence of a late Cenozoic transform fault to the west, a marginal basin to the southwest, and existence to the southeast of a major plateau, uplifted in the late Cenozoic. These similarities suggest plate boundary events in and west of northern Thailand, comparable to those in the Great Basin region. Mineral deposits of probable late Cenozoic age in northern Thailand are confined largely to fluorite and antimony; comparison with the Great Basin suggests a possible lineament control on their location. Absence in northern Thailand of the late Cenozoic silver-gold deposits, so widespread in the Great Basin, may reflect the lack of late Cenozoic basaltic and rhyolitic flows forming potential source rocks, although the large basaltic bodies postulated at depth in the region suggest that subsurface precious metal or mercury deposits could be present.

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Tertiary Dismemberment of Western North America

Before coastal California began moving along the San Andreas fault, strike-slip faults displaced two other large terranes, thereby affecting petroleum maturation and migration. During the early Eocene, the Pacific plate converged against North America, because at that time it moved parallel to the Emperor Seamounts hot-spot trace. Later, when the Pacific plate began to move parallel to the Hawaiian Ridge (43 m.y. ago), the Pacific-Farallon spreading axis was contacting North America at Oregon. Strike-slip faulting, as evidenced by displaced Tertiary paleolatitudes in Alaska, then detached the Wrangellia-Chugach terrane from the Pacific Northwest and began to move it northward. Today, this block, with a pointed leading edge at the Alaska Peninsula, lies between the Aleutian Trench and the Denali fault. Local deformation indicates that during the Pliocene it curved to the west and came to rest along an ancestral Aleutian subduction zone. Magnetic lineations show that in the middle Tertiary another segment of the Pacific-Farallon spreading axis intersected the continent at northern Baja California. A terrane from Vizcaino Bay to the Olympic Peninsula, which included the Sierra Nevada and Klamath Mountains, moved northward along a fault that joined the earlier strike-slip fault near Vancouver Island. This terrane juxtaposed Obispo-block Franciscan rocks from Vizcaino Bay against Salinian-block potassium-rich plutons at the back side of the Sierra Nevada batholith. At the end of the Miocene, the East Pacific rift jumped east and established the present plate boundary, which is detaching continental rocks only from the Gulf of California to Cape Mendocino.

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Geology and Geothermal Energy Development at Coso KGRA

The Coso geothermal area, located east of the Sierra Nevada about 150 mi (240 km) north of Los Angeles, is in an oval structural basin 25 to 28 mi (40 to 45 km) across that is defined by arcuate faults. The basin is underlain by fractured Mesozoic granitic rocks that have been intruded and partly covered by late Cenozoic basalt, dacite, and rhyolite. A partly molten silicic magma body <1 m.y. old is interpreted to underlie the central part of the basin. Fumaroles are associated with the youngest volcanics ($\sim$ 0.3 m.y. old) which occur along the upfaulted north-trending Coso Range in the center of the basin. Snow melt patterns along the Coso fault zone, east of the range, indicate high heat flow. Measured heat flow values in exploratory wells indicate >10 HFU in a 11.6 km^2 (30 km^2) area within the basin. Several young faults cut Pleistocene lavas and offset Holocene alluvium by as much as 10 ft (3 m). The principal structural controls of subsurface fluid flow are fractures, dominantly of north-south, but also of northwest and northeast trend. Maximum measured temperature of surface water is 96.7°C. Compositions of test well fluids indicate reservoir temperatures as high as 250°C and suggest the presence of an extensive chloride-rich hot water system. Development of the geothermal power-generating potential of 3,000 acres (1,215 ha.) within the 72,640 acre (29,400 ha.) Coso KGRA by California Energy Co., under contract with the Department of the Navy, was begun with the siting of four wells in early 1981. The initial exploratory drilling phase will be completed by the 2d quarter of 1982. Commercial power production is anticipated by 1985.

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Recent Regional Studies in Central Eromanga Basin Area in Southwestern Queensland, Australia

Interest in the petroleum potential of the central Eromanga basin area has been simulated by recent discoveries of oil and gas in the Eromanga and Cooper basin sequences in southwestern Queensland.

The Bureau of Mineral Resources, in cooperation with the Geological Survey of Queensland, is assisting in petroleum exploration of this area by providing new regional information on the structural and depositional history of the Eromanga and underlying Cooper, Galilee, and Adavale basins. Several regional seismic reflection traverses up to 186 mi (300 km) long are being recorded over major structural features in the Eromanga basin, over the eastern margin of the Cooper basin, the southwestern Galilee basin, and the underlying Adavale basin. The seismic surveys are tied to existing seismic data to provide good quality structural and stratigraphic information. Seismic refraction, gravity, and magnetic, and magneto-telluric surveys are providing additional information on both sedimentary and basement structures; Landsat imagery studies are providing new perspectives on many regional features; and geochemical and source rock maturation studies are providing a basis on which a sound assessment of the petroleum prospectivity of the areas can be made.

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Seismic Reflection and Mineral Prospecting

Prospecting for minerals becomes increasingly difficult when targets lie at depth, or where basement expression is masked by thick sedimentary cover. Geophysical techniques such as gravity and magnetics are generally used as aids in reconnaissance, but rarely yield unambiguous solutions, while electrical methods suffer because the often highly conductive overburden limits current penetration. Recent advances in extending the resolving power of the seismic reflection method suggest that it is ap-