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Oil and Gas Potential of the Idaho Thrust Belt North of the Snake River Plain

The Thrust Belt north of the Snake River Plain in south-central Idaho has the elements necessary for major oil and gas accumulations: large traps, thick reservoir rocks, top seals, rich oil-source rocks and, in at least parts of the area, a favorable temperature history. Only drilling is lacking.

Two different oil and gas plays are in progress in the area. Some companies are looking for traps in Paleozoic rocks similar to thrusted anticlines of the Utah-Wyoming Thrust Belt fairway. Others are exploring the valleys looking for stratigraphically trapped oil generated from deeply buried Tertiary sediments. No holes have been drilled to test thrusted anticlines in Paleozoic strata in south-central Idaho. Only two holes have been drilled to test the Tertiary oil possibilities.

The Utah-Wyoming Sevier thrusting extended north of the Snake River Plain into southwestern Montana and south-central Idaho. After thrusting, large listric normal faults formed northwesterly trending valleys which were filled with Tertiary sediments. Styles of thrusting and resulting traps are similar to the Utah-Wyoming portion of the Thrust Belt. Paleozoic and Mesozoic strata are thrust over organic-rich Cretaceous and Permian (Phosphoria) source rocks in the eastern part of the area. Porous Paleozoic carbonates are thrust over thick organic-rich Mississippian shales in the western part of the area.

Paleozoic strata thicken westward from a normal cratonic sequence consisting of about 5,000 feet of chiefly carbonate rocks in the east to more than 30,000 feet of sandstones, conglomerates, shales and carbonates in the west. Of particular importance was the accumulation of about 3,000 feet of organic-rich Mississippian McGowan Creek Shale in a starved basin between the Antler Uplift on the west and the craton on the east. The McGowan Creek Shale is equivalent to the Bakken Shale and lower Madison Limestone of the craton. Outcrop samples of this shale contain from .8 to 6.3 percent total organic carbon. The shale's organic richness coupled with its great thickness indicates that many billion barrels of oil or many trillion cubic feet of gas could have been generated provided temperature history was favorable.

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