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Triassic Source Facies in High Paleo-Latitude Petroleum Systems

Oils derived from the Triassic Shublik Formation of the North Slope of Alaska are prolific and well studied. The Shublik is the dominant contributor to both the largest and second largest oil fields in the United States (e.g., Prudhoe Bay and Kuparuk River Fields). These North Slope, Alaska Triassic oils have some distinct characteristics when compared to Alaska Cretaceous, Jurassic, and Upper Paleozoic derived oils. Marine Triassic derived oils are isotopically negative, have high amounts of extended tricyclic terpanes, and generally possess dinosteranes and 4-methylsteranes. Other high paleo-latitude(circum-Arctic) basins also contain oils with these characteristics. Although these characteristics are not restricted to high paleo-latitudes they are more commonly found at high paleo-latitudes in the Triassic. Examples that will be discussed include: from high northern latitudes, Middle and Late Triassic derived oils from the North Slope, Alaska (Shublik Formation); Sverdrup Basin of Canada (Schei Point Formation); and the Barents Sea of Norway (Sassendalen Group). Similar characteristics are found in a high southern latitude, Early Triassic, oil from Perth Basin, SW Australia (Kockatea Shale). Marine Triassic oils from more temperate latitudes may also have these characteristics, Alberta Basin of Canada (Doig Formation) and Sichuan Basin, China. The extended tricyclic terpanes will be highlighted and a new parameter for source correlation will be proposed that is more robust with respect to biodegradation and thermal maturity. These compounds originate from marine organisms that are common in marine upwelling environments.