(Not Presented) **Paper 32**

Hydrocarbon generation from peat? Comparison of rock-eval pyrolysis data from cold-temperate and tropical peats and coal

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Rock-eval pyrolysis was used to examine differences in the hydrocarbon content of woody and herbaceous peat types forming from different plant communities under different climatic settings. The objective was to determine properties inherited from the peat phase which might influence the occurrence and distribution of hydrogen-rich vitrinites observed in many coal seams which are thought to provide a source of oil. The sample suites (n=41) came from vertical profiles in 2 Holocene peat deposits with ash contents <5%: a 6 m peat in Bruce Bay, South Island, New Zealand and a 12 m peat in the Baram River area, Sarawak, East Malaysia. Random vitrinite reflectance ranges from .23 to .40, increasing with decomposition and decreasing moisture content (from 95 to 85%). To determine hydrocarbon potential, the results were compared to rock-eval data from Pleistocene–Holocene Chatham Island peat known to produce wax (n=8) and from Pliocene to Oligocene coals (n=14; Rv=.4-.6) from Indonesia. For the peat, S1 peaks ranged from 4 to 59, S2 from 49 to 230, S3 from 29 to 126 mg HC/gm; TMax ranged from 389 to 423°C. On average no significant trends could be observed between general peat types, but the more herbaceous New Zealand peats yielded larger S1 peaks than the woody Sarawak peats. On a HI/OI plot, all peats straddled the Type III kerogen line, with more samples plotting above the line. More interesting differences occurred between the peats and coals. All peats contained more free hydrocarbon (S1) and CO2 (S3) than the coal, but less pyrolyzable hydrocarbon (S2), except for the lignite. On a plot of S1 to S1+S2, all peats show a direct correlation between free and total hydrocarbons, but the coals show no correlation and fall beneath the 10 mg HC/gm S1 line. The drop in magnitude of free hydrocarbons (from 5-60 to <10) from peat to coal suggest that an abundance of easily generated hydrocarbons are lost during early burial and before thermal maturation.

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