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**SOURCE CHARACTERISTICS OF TERANG-SIRASUN
BACTERIAL GAS FIELD, E. JAVA SEA**

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ABSTRACT

The Terang-Sirasun gas field is located in the East Java Sea, approximately 100 km north of the island of Bali. Current gas reserves are approximately 1 TCF. Reservoir facies occur within the Plio-Pleistocene Paciran Formation, which comprises good quality sandstone and foraminiferal limestone intervals. The gas consists of over 99% methane, with a carbon-13 isotope ratio of -65 per mil (rel. to PDB) and deuterium isotope ratio of -185 per mil (rel. to SMOW). The methane is clearly interpreted to be of microbial origin, formed by methanogenic bacteria in an anoxic marine setting via the CO₂ reduction

pathway. Source sediments for biogenic gas are usually quite difficult to identify, since they do not have the same characteristics as typical petroleum source rocks. A systematic evaluation of the sedimentary section from Miocene to Pleistocene was therefore undertaken in an effort to pinpoint the source of the Terang-Sirasun gas. TOC levels, kerogen type, temperature, pressure, burial history and seal timing were all used to locate the gas source, and define the conditions under which gas accumulation occurred. Source rock identification was further enhanced through the use of specific isoprenoid biomarkers that are unique indicators of methanogenic bacterial activity. Recognition of the source facies for this gas field has resulted in a better understanding of the depositional and burial history conditions that are likely to result in significant bacterial gas accumulations.

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