ABSTRACTS OF TALKS

Use of Fluorescence For The Detection Of Oil Seepage In The Marine Environment By Barry Messent (WA Branch Luncheon Meeting, October 21st, 1999)

The use of fluorescence is a very effective method to directly detect seeping hydrocarbons in the marine environment. It can contribute significantly to understanding the risks associated with a petroleum system. With the use of a laser mounted in an aircraft, it is possible to cover large areas in a short time. The levels of seepage that can be detected vary from active slicks to concentrations of approximately 1:20,000 in the seawater. Thus the technique can monitor seepage from active to near passive systems. It is therefore in a unique position to assess, in detail, migration pathways.

The aromatic component of oil fluoresces. Comments can be made on maturity and level of biodegradation of oil and, in certain basins, source character. The technique, however, is unable to determine individual aromatic compounds.

The technique is detecting the presence of oil on the sea surface and is therefore subject to evaporation and other processes. In addition, fractionation may have occurred as the oil migrated from the source rock. These processes influence the fluorescent signature of the oil.

The technique can be applied to different problems associated with a petroleum system such as assessing the presence of an active source, migration pathways, and, potentially, leakage associated with traps. Examples were given from basins overseas and within Australia.

Biography

Barry Messent currently runs his own consultancy (Bast Enterprises) following his retrenchment from BHP in 1998. He was with BHP Petroleum for approximately 16 years where he worked in a number of roles from New Ventures to Operations. For the last two years of his time at BHP he was project leader for a team assessing the use of fluorescence in the marine environment and its integration with petroleum systems. Since leaving BHP Petroleum one of his roles is to assist World Geoscience Corporation in marketing and selling of their Airborne Laser Fluorescence Technology.