SEEPAGE DETECTION ON HYDROCARBON USING HYPERSPECTRAL REMOTE SENSING ANALYSIS

Muhammad Ikhwan Jamaludin[1] and Abd. Nassir Matori[2]

[1]Universiti Teknologi PETRONAS (UTP),
Bandar Seri Iskandar, 31750 Tronoh, Perak Darul Ridzuan, Malaysia,
ikhwan.jamaludin@gmail.com
[2]Universiti Teknologi PETRONAS (UTP),
Bandar Seri Iskandar, 31750 Tronoh, Perak Darul Ridzuan, Malaysia.
nasrat@petronas.com.my

Abstract: Phenomena of macro and micro seeps referred to the signs of hydrocarbon anomaly existence at the surface of the earth and water either through the vegetation's soils or sea. This scenario contributes to the global major problems such as oil spills and pipe leaks, polluting soils, air, vegetation and the water. Nevertheless in total, 85% of oil and gas reservoirs have the phenomena of oil seepage leakage throughout the surface. Nowadays current petroleum exploration used geological surveys and seismological methods for detecting possibilities and revealing the petroleum deposits from the geology underneath. As the above methods mention, it is clearly being time consuming, costly, involving many parties and surely harmful to the environment. The revolution of satellite remote sensing with hyperspectral sensor consist contagious bands offers a non-destructive investigation method and has significant added value rather than the typical oil and gas exploration and acquisition. As reported in Forestry Statistics, for the year 2011, almost 84.51% of the Malaysia covered by primary and secondary forest, mangrove, plantation and etc. That means the best medium to detect hydrocarbon is through the stress of vegetation. Therefore, this research shall investigate in detecting seepage hydrocarbon through the stress of vegetation using hyperspectral remote sensing analysis by combining image processing and laboratory work as direct and indirect detection of the hydrocarbon influence. It is anticipated that a relatively new method in identifying hydrocarbon seepage through hyperspectral remote sensing analysis shall be discovered.