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## Lessons learnt from environmental impacts and social concerns associated with onshore petroleum exploration activities, NW Sarawak

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**Abstract:** The onshore Baram Delta, located in NW Sarawak is the birthplace of petroleum production in Malaysia. The Miri oilfield was first discovered in 1910 and abandoned in 1972 with intermittent exploration activities in the late 1980's to early 1990's. To rejuvenate exploration interest and to identify remaining hydrocarbon potential of the study area, in 2009-2010, JX Nippon acquired gravity, then regional 2D seismic data, followed-by exploration well drilling from 2011-2014. This presentation discusses the social-environmental impacts and concerns associated with the mentioned petroleum exploration activities, from acquisition of seismic where explosives and vibroseis were used as a source of propagating signal, to exploration drilling with petroleum chemicals such as water-based muds used to facilitate drilling operations. Overall, the inquiry addresses operational challenges, security of explosive storage and concern for handling explosives in the field, the social-environmental impacts of seismic acquisition operations, as well as removal of drilling fluid chemicals and disposal of contaminated cuttings. Containment procedures and mitigation measures undertaken to alleviate these social-environmental impacts are discussed according to the guidelines and regulatory requirements provided by the Environmental Impact Assessment (EIA), in conjunction with PETRONAS Procedures and Guidelines for Upstream Activities (PPGUA) and the company's Health, Safety and Environment (HSE) Management System. In the final analysis, significant environmental and social challenges

## PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

were certainly encountered while planning and conducting petroleum exploration activities in the study area. These challenges include problems related to topographic variabilities, permitting issues, compensations for affected lands and cash crops; layout constraints, drilling operations, well control measures for blowout prevention, traffic controls, potential damage to infra-structures, explosive and equipment transportation. However, with proper planning, regular communications with the local authorities, awareness sessions conducted for the affected parties, together with the support of the local community the operations have managed to mitigate these social and environmental concerns; and successfully acquired nearly 900-line km of seismic across many villages, longhouses, and city area. Subsequently, four exploration wells were also drilled successfully in the exploration block without untoward incidents. We are glad to report that both seismic and drilling operations were conducted safely with minimal interruptions to people and environment, while providing short-term employment opportunities for the locals.

**Keywords:** Environmental impacts, Miri, NW Sarawak, petroleum exploration, seismic acquisition