Kamunsu East-1: Shell Malaysia's first step into deep water — designing and executing an exploration test in a challenging deep water environment

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Shell Malaysia's first deep water well, Kamunsu East-1 (KME-1, -S1), was drilled in 1998 off north-west Sabah in a water depth of 2,417 feet. The exploration success has increased the gas reserve base in a very prospective area. KME-1 was drilled and abandoned in 49 days, including 10 days rig move and with an extensive coring and logging programme. The final well cost of US$12 Million was US$7 Million below budget, and has shown that drilling in this deep water area need not be prohibitively expensive. This has had a major positive impact on the economic viability of the Sabah deep water acreage. The discovery has given added impetus to commercialise Sabah gas and future work will concentrate on developing the Kebabangan-Kamunsu area.

Sarawak Shell Berhad/Sabah Shell Petroleum Company's (SSB/SSPC) Kebabangan-Kamunsu Asset stretches from the shelf edge (water depths around 460 ft) into the deep water basin (around 5,600 ft). The area has a high prospectivity for gas within a sand-rich Miocene turbidite fairway. Prior to KME-1, SSPC's main asset was the Kebabangan gas discovery. Exploration assessments indicate geophysically well-defined prospects with gas scope volumes in the Tcf range. Significant Oil/NGL volumes have not yet been proven, though oil charge in the area has been demonstrated by sea bottom sampling and satellite slick detection. In the cluster of prospects, Kamunsu East was drilled as the best-defined geophysically, with the highest POS and the highest volumetric potential. The well was, however, economically 'strategic' in that the prospect was likely gas-bearing and would be a challenge to commercialise in the short-term.

The exploration highlights of the well will be discussed, and the main learning points from the planning and operations, specifically:

- Integrated well planning, tapping into Shell Group experience of deep water operations.
- 2D vs 3D well proposals and optimisation of the well trajectory.
- 3D location selection and Visualisation/Body checking.
- Pre-Stack Depth Migration (PSDM).
- Pressure prediction using seismic velocities.
- Logging and coring, but NOT testing.
- No Site Survey.
- Calculated risk-taking: use of an upgraded rig and drilling during the monsoon.

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