



WATER-ALTERNATING-GAS (WAG) Project in Malaysia

PRESENTATION BY MALAYSIA

The WAG Project

- **WAG is a first EOR development project implemented in Dulang field, offshore Peninsular Malaysia.**
- **The R & D in EOR technology (Water-Alternating-Gas) has been aggressively pursued for Dulang Field as a case study.**
- **Why Dulang Field?**
 - **One of Malaysia's major production oil field OIIP: 1,168 Mstb ; EUR: 344 Mstb**
 - **Abundance of gas with anticipated maximum flaring of 68 MMscf/d in 2008.**
 - **Presence of water and gas injection facilities.**

THE EOR JOURNEY

- Started with thorough feasibility study in the laboratory and pilot since 1997.



2002: Pilot Launching

2007: Pilot WAG First Oil

- The main target in Dulang WAG implementation is to recover oil in non-water invaded area and attic oil.
- WAG injection (4 MMscfd gas and 3500 BPD water) for cycles of 3 months each in one of the fault block (S3).

THE FINDING

- **Sufficient gas available for Dulang field-wide WAG implementation.**
- **Statistical analysis shows what the expected incremental recovery from field-wide WAG in Dulang is very promising.**
- **Based on pilot S3 block performance, the field-wide WAG implementation will realize 18.5 MMstb incremental reserves at P50 (after risk), with WAG incremental rate of 8,000 stb/d.**
- **The gas utilization reduce venting in line with PETRONAS policy.**
- **The “First in the SEA” to implement WAG field-wide.**



THANK YOU