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Mercury in SE Asia Produced Fluids – Holistic Approach to Managing Offshore Impacts

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Abstract

Mercury is a naturally occurring constituent of oil and gas. Mercury concentrations in produced fluids found in Asia are typically higher than those found in the rest of the world. Experience with mercury in produced fluids has been gained in the Gulf of Thailand, offshore Holland and Eastern Europe over the last 20 years. This experienced-based information can serve as a model for the industry but it is somewhat dispersed and lacks compilation. Procedures and policies adopted by experienced companies include implementing special safety precautions for workers, selecting materials and designing equipment to avoid degradation, developing procedures to decontaminate equipment, monitoring discharges for environmental protection and utilization of mercury removal systems to ensure product quality. In spite of the existing body of knowledge, when mercury is discovered in new offshore developments, operators often react to problems rather than apply plans developed in advance. An integrated, comprehensive and proactive approach to mercury management can minimize negative impacts and reduce operating cost. Consideration should be given to the consequence of mercury from the initial stages of field development. A holistic approach to managing potential impacts involves several steps:

- Forecasting reservoir mercury concentrations from geology
- Measuring mercury in drill stem tests
- Design of facilities to ensure integrity
- Confirming amounts in early production
- Modeling of mercury species to predict partition and deposition
- Analytical mapping to confirm predictions
- Training and education of workers
- Monitoring mercury in air in work environments
- Biological monitoring for selected work activities
- Planning platform turn-arounds to allow decontamination and special work procedures
- Development of mercury waste plan
- Provision of clear company policies and action levels
- Planning for decommissioning early on

Because the path to safe and efficient operations crosses many company organizational boundaries, comprehensive policies should be adopted with worker protection and process integrity paramount. Mercury in process fluids can be handled routinely with few negative consequences if a holistic and integrated plan is formulated and implemented early in field development.