

Thailand: RHADIANT fluid helped an operator to reach production faster with problem-free drilling and logging operation on ultra high temperature well

“RHADIANT[†] system performance together with well- planned drilling fluid engineering practice minimized NPT on one of the most challenging platforms.”

Abhijart Kongto, Project Engineer, Thailand.

Well Information

Location	Offshore, Thailand
Interval drilled.....	6-1/8" hole
Fluid system.....	RHADIANT
Mud weight.....	11.1 – 12.3 ppg
Maximum inclination.....	41.30° - 51.09°
Maximum BHST (recorded by wireline logging tools)	400° - 432° F (204° - 222° C)

The Situation

A platform in the Gulf of Thailand was planned using a slim-hole design. The reservoir section would be drilled with a 6-1/8" hole and a highly deviated well geometry. The formations temperatures are up to 432° F (222° C), and contain acid gases such as CO2 and H2S. The combination of narrow diameters, high temperatures and acid gasses requires extraordinarily stable drilling fluid to avoid any gelation of the fluid. This would result in unacceptable ECD during drilling and the inability to run open-hole wireline logs, which is the most important well objective. Based on the initial success with the RHADIANT system in the Gulf of Thailand, the operator awarded M-I SWACO an additional rig that was scheduled to drill this platform. A similar platform drilled by a competitor's system experienced severe fluid instability at high temperature leading to inability to log the majority of the wells.

The Solution

RHADIANT was selected to meet these requirements and allow the hole to be fully logged and evaluated. The concentration of MUL[†] XT, ONETROL[†] HT, and ECOTROL[†] HT was determined from extensive lab testing to confirm the performance and thermal stability of the system under expected downhole condition of this platform. Drilling fluid engineering practice based on M-I SWACO experience in the area was also an important element as the same drilling fluid would be reused from well to well on this twelve-well drilling program.

The Results

The RHADIANT fluid, with Saraline 185V base fluid, performed well as per expectation by delivering excellent HTHP fluid loss control and filter cake quality with excellent rheological properties in the 6-1/8" interval. The drilling fluid proved to be thermally stable, which was observed from minimal mud weight variation and break circulation pressure after prolonged logging operation (greater than 48 hours). This led to minimal reported NPT comparing with wells in the same temperature range.

The Details

The wells below were drilled, logged, and completed in less time than what the operator expected with their experience in the same area and downhole conditions.

Well Name	TD	Mud weight	Maximum inclination	Maximum BHST
Well 1	14,431 ft	11.1 ppg	41.30°	420° F
Well 2	13,758 ft	12.2 ppg	44.60°	412° F
Well 3	15,740 ft	11.1 ppg	51.09°	416° F
Well 4	15,960 ft	11.3 ppg	48.00°	404° F
Well 5	16,452 ft	12.3 ppg	48.86°	409° F
Well 6	14,630 ft	11.5 ppg	47.00°	435° F
Well 7	14,154 ft	11.7 ppg	46.49°	402° F
Well 8	14,010 ft	11.7 ppg	50.75°	400° F
Well 9	15,527 ft	11.7 ppg	47.06°	409° F
Well 10	15,916 ft	11.7 ppg	50.36°	419° F
Well 11	15,294 ft	11.8 ppg	50.54°	410° F
Well 12	14,930 ft	11.3 ppg	46.92°	416° F

Questions? We'll be glad to answer them.

If you'd like to know more about RHADIANT, please call the M-I SWACO office nearest you.



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