

Improved Water-flood and Adoption of Advance Drilling and Completion technology Pays Rich Dividend in Mumbai High North Field

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Mumbai High North field, the northern part of major offshore oil field Mumbai High, was discovered in 1974. Multilayered carbonate reservoir NL-III is the main producer and has been on production since 1976. Water injection was commenced in the field in 1984. Being on continuous production for last 34 years, the field is in mature stage of its producing life. The oil production rate from the field was of the order of 130000-bopd during 1982 to 1989. During early and mid nineties the field had entered a crucial decline phase and production level dropped to about 63000-bopd by Dec.1993 due to rise in GOR, injection water break through and closure of some high GOR and high water cut wells. Various remedial measures such as installation of gas lift, water and gas shut off jobs and reopening of some wells showing reduced GOR resulted in improving the production level to around 78000 bopd by Dec.1999. Further implementation of redevelopment project of Mumbai High North field initiated in 2000 resulted in improving production which reached to the level of 100000-bopd in Jun, 2005.

The unfortunate fire accident at MHN process platform on 27July, 2005 caused major disruption of offshore production systems of Mumbai High field. Restoring the oil production without having new process platform within a short period became a major challenging task. The systematic actions taken in the field restored the production level to 80% within six months. Focused water flood management keeping layer specific requirements and successful implementation of NA1 layer development scheme helped in further improving oil production to the level of 92000–bopd (restoring 92% oil production) in Sep.2007. The oil production currently being maintained at around 80000 bopd. The paper highlights the integrated Asset approach in reviving and improving oil production from the field after MHN accident. The adoptions of new techniques and technologies have further added in rejuvenation campaign of the field. With the implementation of current development plan and improved water flood strategy, oil production is likely to be enhanced further and this would help in achieving oil recovery to 33% from main reservoir of the field.