Simple and Efficient Representation of Faults and Fault Transmissibility in a Reservoir Simulator— Case Study from the Mad Dog Field, Gulf of Mexico

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ABSTRACT

The Mad Dog Field is one of BP's largest assets in the Gulf of Mexico. It was discovered in 1998 and came online in 2005. Further appraisal success has necessitated the Mad Dog 2 (MD2) development; with future production and injection wells tied back to a second floating facility. To create the predicted production profiles that underpin the planning for the MD2 development, the reservoir management team uses a full field reservoir simulation model. The simulation model is upscaled from the geomodel and reflects a snapshot of our integrated subsurface description at a point in time, with structure derived from seismic data and geologic and petrophysical properties derived from well results. The long cycle time of seismic processing, seismic interpretation, geomodel building, reservoir model building and history matching presents three challenges to the representation of faults in the dynamic simulator: Location, transmissibility and presence. This talk discusses how we've met these challenges in Mad Dog.