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Aurora Borealis: Shining Light on Two New North Slope Alaska Satellite Fields

Aurora and Borealis are two new Alaska North Slope fields that will offset the declining production from Prudhoe Bay Field. Aurora and Borealis were discovered in 1999 and 1969, respectively, and are satellite accumulations to Prudhoe Bay infrastructure. The Aurora and Borealis fields are located east of the Kuparuk River Field and overlap with the western extremes of the deeper Prudhoe Bay Field. Both Aurora and Borealis produce from the C member of the lower Cretaceous Kuparuk River Formation. The Kuparuk C is interpreted as lower to middle shoreface sandstones and mudstones. The Kuparuk Formation has produced over 2 billion BO from several fields.

Biostratigraphy, 3-D seismic, petrologic data, core analysis, geochemistry and production data were integrated into a sequence stratigraphic framework to produce a robust reservoir description. The intention of this approach was to produce an early reservoir description that is updateable and flexible enough to address a range of issues from well planning in undeveloped portions of the fields to water flood implementation in more mature areas. Ultimately, the reservoir description needs to be robust enough to use as the basis for a 3D geocellular model. Specific technical challenges include structural compartmentalization and associated uncertain fluid contacts, complex mineralogy well log response, and stratigraphic continuity. Business challenges were to build a reservoir description early in the fields' history while simultaneously planning and managing ongoing development/appraisal drilling. Additionally, the modest size of the two fields (134 MMBO combined recoverable), require careful development to meet North Slope economic hurdles.