The Ekofisk Field (past-present-future)

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The Ekofisk field reservoir is an elongated anticline covering some 35 km^2. The large areal extend and an oil coloumn exceeding 300 meters make the Ekofisk field one of the largest oil fields on the Norwegian Continental Shelf. Current estimates of initial oil in place is 6,9 billion STB of oil.

The field produces from two fractured chalk formations, common to the southern North Sea, the Ekofisk and Tor formations. These formations are characterized by very high porosities exceeding in some areas more than 40% and low permeability. Formation productivity is enhanced by the natural fracture system allowing commercial production from this field. The high porosity chalk has a relatively low mechanical strength. With reservoir pressure depletion, the chalk compacts. As a result, significant seabed subsidence is experienced in the central areas of the field. To secure long term production from the field, the central production facilities were jacked-up by 6 meters in 1987.

Through development drilling the production peaked in excess of 350,000 barrels of oil in 1977. The field went on rapid production decline and it was early recognized that a pressure maintenance process would be needed to extract additional volumes from the field. Consequently, a full field waterflood was implemented in 1987 through 1994 which resulted in increasing the daily production from a low of 75,000 barrels to over 300,000 barrels.

Through June 2006 the field has produced 3,2 billion barrels of oil equivalents. Total income from crude and gas sales and process/transport tariffs is at 2006 year end 1420 billion NOK (2006 NOK), Figure 1.

Further field development and infill drilling has resulted in a significant increase in the fields expected recovery. Initially, it was estimated that 17% of the original oil in place could be recovered through the planned depletion strategy. With the current knowledge of the field and the current reservoir management strategy, a recovery factor exceeding 50% might be achieved, Figure 2, within the license period up to 2028.

Several initiatives are currently underways to evaluate further improvements to field oil recovery and efficient field operations. Long term R&D activities evaluating various water additives, gas injectant scenarios in addition to a secondary depletion strategy is being evaluated for maximizing the economic recovery from the field. Continuous improvement philosophies and Integrated Operations programs are being launched to continuously improve operating efficiency and cost.

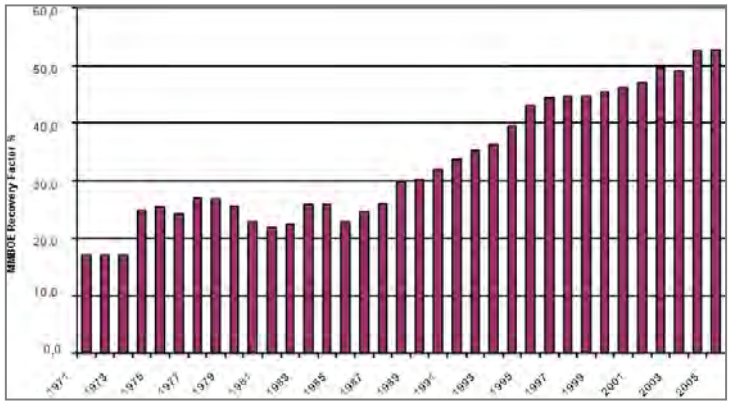

Figure 1: Ekofisk total income 1969-2006

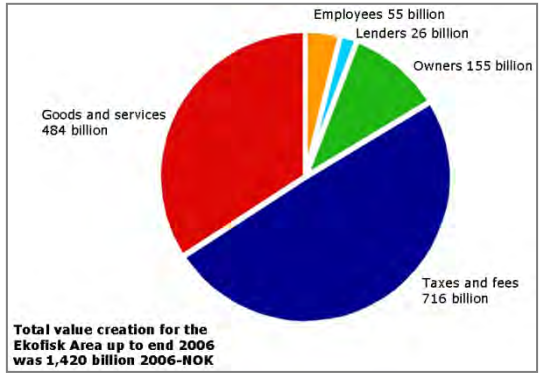

Figure 2: Ekofisk Field expected recovery factor at field life