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## **Development and Installation of a Triple Wellhead on the Britannia Platform**

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### **Abstract**

The Britannia field is a gas condensate accumulation in the U.K. Central North Sea. The Britannia platform has 36 slots and was initially developed by single wells drilled from 25 of those slots. In 2003 the first of 8 double wellheads was installed enabling two wells to be drilled from each slot (16 wells). In September 2006 the first triple wellhead was installed and three 13 $\frac{3}{8}$  in casings were batch set at 3650 ft TVD. During 2007, three production wells were successfully drilled and completed from this triple wellhead.

This paper discusses the development and installation of the triple wellhead system utilising the experience and lessons learnt from the double wellhead system. Essential to the triple design was that there should be no reduction in hole/casing size, well step out, tubing size or Christmas tree bore size and therefore no drilling or production restrictions for a triple well compared with other wells on the platform. A design/implementation team was set up with operator personnel, contractor personnel and various service providers. This paper discusses the challenges faced by the team – design of the wellhead and tree, running 38 in x 46 in flush joint conductor, running the internal well splitter system on 5 $\frac{1}{2}$  in tubing and checking its alignment, running of the casing starter head from the production deck, the modelling and clash checking work done to ensure that the wellheads, trees and flowlines would fit in the space available and having the ability to perform wireline work on one or two of the triple wells when drilling on another.

The design objectives were all met and in early 2007 an extended reach well measuring 21580 ft with a step out of 16300 ft was the first well drilled and completed from the triple slot. The second well was a 14100 ft infill well and the third well in the triple slot was completed in November 2007 with a measured depth of 17680 ft MD and a step out of 9970 ft.

### **Introduction**

The Britannia Field is a large gas condensate accumulation which was discovered in 1975. It occurs across the U.K. Central North Sea blocks 15/29a, 15/30, 16/26, 16/27a and 16/27b (Figure 1). Britannia is located approximately 130 miles northeast of Aberdeen. The Britannia reservoir lies in the Upper to Lower Cretaceous Formations (Cromer Knoll Group) at approximately 12500 ft to 13000 ft TVD. The field went on production in 1998.

Britannia Operator Limited is a joint venture between ConocoPhillips (U.K.) Limited and Chevron North Sea Ltd. The company was established solely for operatorship of the Britannia field.

Field development was designed for two production centres: a fixed steel jacket production platform with a drilling unit located at the eastern side of the field in block 16/26, and a subsea centre located at the western side of the field in block 15/30. The platform was designed with 36 slots in the well bay with approximately 8.5 ft well spacing. The original platform development anticipated 31 slots to be used for 31 wells, leaving 5 spare slots.

In mid 2001 a project was initiated to look at increasing the number of platform wells to be drilled and the feasibility of splitting slots. The work concluded that there would be value in drilling at least 41 platform wells but probably not more than 46 (this work looked at the main platform area only and did not take into account upside to the north and west of the platform area). In 2003 the first double wellhead (Figure 2) was installed and a programme of drilling 16 wells out of 8 slots commenced.