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The Cavendish Field Development, Block 43/19a, UKCS Southern North Sea

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SUMMARY

The Cavendish Field is located in UKCS Southern North Sea block 43/19a on the Northern margin of the Outer Silverpit Basin some 160 km NE of the Lincolnshire coast. The field was discovered in 1989 by Britoil exploration well 43/19-1 which tested gas from two sandstone intervals within the Namurian (Upper Carboniferous) at rates of 33 and 15 MMSCFD. The field was appraised in 1991 by BP well 43/19-2A which tested gas from Westphalian A sandstones (Upper Carboniferous) at 17 MMSCFD. An additional appraisal well drilled by Amoco (43/19a-4z) in 1996 was located downdip on the NW flank but failed to encounter hydrocarbons and effectively delimits the field. The field is named after the eminent English scientist Henry Cavendish (1731-1810) who was renowned for his experiments on separating gasses from water.

The Cavendish structure is a SW dipping rotated fault block bounded to the NE by an inverted extensional fault. The structure is dip closed to the South, West and East and sealed by a combination of an intra Westphalian shale seal and the shales and evaporites of the Permian Silverpit Formation. The effective reservoir consists of NNE-SSW oriented fluvial and distributary channel sandstones of the Millstone Grit (Namurian) and Caister Coal Formations (Westphalian A). The estimated gas-in-place ranges from a minimum of 166 bcf to a maximum of 403 bcf with a most likely case of 311 bcf. Key uncertainties on gas-in-place are definition and distribution of effective reservoir sands and the position of the GWC. Based on numerous stochastic simulation models, a three well development is estimated to recover a most likely case 117 bcf of sales gas with a minimum of 85 bcf and a maximum of 181 bcf over a 10 year production life. Key uncertainties on gas recovery are GIIP, well type, the number of wells and their location(s), fault transmissibility and net sand distribution.

Cavendish will be developed by three high angle development wells drilled through a six slot minimum facility, Normally Unattended Installation (NUI), located in 18m of water on the environmentally sensitive Dogger Bank. Production is planned to be routed through a subsea gas cooler and a new 47 km 10" pipeline for gas processing and export via the ConocoPhillips operated CMS host facilities (Murdoch D). Gas will then be exported to the ConocoPhillips Theddlethorpe terminal for blending and onward transmission into the NTS.

The Cavendish project will be RWE Dea's first UKCS operated development and could provide a suitable offtake route for additional reserves proven up in the subsequent near field exploration programme. RWE Dea received Secretary of State approval in August 2005 with first gas expected in the second quarter of 2007. RWE Dea hold a 50% WI in the project with the other 50% held by Dana Petroleum plc.