



A P R I L 27th, 2004

**CONFERENCE ROOM - 5th Office Building - Eni E&P
Via Emilia 1 -- S. Donato Milanese (MI)**

11:00 AM

SELECTING THE RIGHT DRILLING FLUID

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Distinguished Lecturer 2003-04

➤ ABSTRACT

There are increasing numbers of drilling fluid systems becoming available. Some of the more recent developments include formate-based muds, membrane-forming muds, and flippable systems. It seems the industry strives to produce the ultimate fluid and, in so doing, continually increases the options. It is clear the end user must stay abreast of the developments and be in a position to make a well-informed choice.

This lecture discusses the types of systems that are on offer today and the process for selecting the right fluid. It will begin by describing the drivers and challenges that the industry faces, such as tougher environmental constraints, deepwater challenges, and depleted reservoirs. This is followed by a brief overview of the various mud system types and a discussion of their technical merits. Generic systems only will be discussed, such as mineral and synthetic oil muds, simple gel systems, and the various inhibitive water-based muds. The technical piece then needs to be taken to the field situation. In order to select the appropriate fluid, the fluids specialist must have a full understanding of the well requirements. The key steps required in the planning process will be described. Factors to consider include environmental/waste disposal issues, completion design, lithology, logging/coring requirements, and, of course, offset data. Examples will be given of different approaches (e.g., using a simple water-based fluid that allows the hole to wash out but provides fast drilling and easy casing running, or using an expensive synthetic based fluid, perhaps in a narrow mud weight window situation where there is the risk of fracturing and losses). Finally, performance measurement will be mentioned—methods are needed to monitor performance and judge success!

➤ .BIOGRAPHY

Mark Aston studied at Reading U. and Bristol U. in the late 1970s/early 80s, specializing in chemistry and then emulsion science, and obtained BSc, MSc, and PhD degrees. After a brief time in the electronics industry, he joined BP in 1985 and worked for 6 years on various projects ranging from paint formulation and herbicide formulation to solid foams for building insulation and gas separation membranes. In 1991, he joined BP Exploration to specialize in drilling fluids. Starting at the research bench, he began work on novel water-based drilling fluid formulations before taking a wider role in managing research and technical service projects and gaining experience in Operations. Aston now supports BP globally in the area of drilling fluids; his current position is Senior Fluids Specialist BP, based in the drilling group at BP Sunbury. Current research interests are fracture gradient enhancement and dealing with lost circulation problems

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