

## **EFFECTIVE INTEGRATION OF CORE AND LOG DATA**

**Paul F Worthington**

**BP Research, Sunbury-on-Thames, UK**

### **ABSTRACT**

The primary purpose of core-to-log data integration is to reduce the uncertainty associated with formation evaluation. In so doing, we take advantage of both the higher precision of core data and the larger scale of investigation of log data. It is particularly important that when tying logs back to core, the calibration algorithm is as well defined as possible.

This paper examines ways of optimising the calibration process. A basic requirement is the definition of a common reference depth scale. A second requirement is to reconcile the different vertical resolutions by the depth-averaging of core data, the signal-enhancement of log data, or both. Essential to this process is the adoption of "key intervals" as control zones for data integration. These procedures can result in a reduced uncertainty which transmits through to reservoir appraisal.

Important new developments will facilitate the integration of core and log data where core recovery is incomplete. These include the ultrasonic monitoring of core entry into the core barrel, the multi-sensor scanning of whole core, and the interactive display of both core and log data in interrogative work-station mode.

Implementation of the optimal data-integration strategy, and of the new upcoming developments, will require cross-discipline collaboration between those responsible for core acquisition, core analysis and wireline log interpretation. A key factor will be the ability to develop interpretative algorithms for cross-scale application.