

# **Correlation of sandstones using heavy minerals: an example from the Statfjord Formation of the Snorre Field, northern North Sea**

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## **ABSTRACT**

Correlation of sandstones using heavy minerals is dependent on the recognition and quantification of provenance-sensitive parameters. Suitable criteria include ratios of minerals that have similar hydraulic and diagenetic behaviour and properties of populations of individual mineral species. Sandstones of the Statfjord Formation in the Snorre Field display marked variations in their heavy mineral assemblages. Although hydraulic and diagenetic processes have played some part in generating these variations, major changes in the nature of the source material can be detected on the basis of heavy mineral ratio and varietal data. These changes in sand provenance can be used to produce a detailed stratigraphic breakdown of the sequence and to correlate from well to well. Eleven heavy mineral zones have been recognised on the basis of variations in monazite/zircon, garnet/zircon and rutile/zircon ratios, on the incoming of chloritoid, and on the composition of garnet populations. The marked changes in provenance result from the proximity of the depositional location to the hinterland, and it is considered unlikely that the detailed correlation made in the Snorre Field area applies to Statfjord sandstones in other parts of the northern North Sea. However, there is evidence for some degree of allogenic control on the heavy mineral variations, and therefore some events may have regional significance.