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A Sequence Stratigraphic Framework for Bangladesh

Cairn and Shell have been actively exploring in southern Bangladesh under several production sharing contracts with the Government of Bangladesh since 1994. Through the acquisition of several thousand kilometres of 2D seismic, the drilling of 10 wells, re-interpretation of the pre-existing database and extensive fieldwork, we have, for the first time in Bangladesh, defined a regionally applicable, sequence stratigraphic framework of genetically-related units. At the large scale these units are correlatable over thousands of km^2, consisting of three distinct Megasequences (MS1, 2 and 3), each with its own unique internal seismic character and bounding surfaces, reflecting major changes in delta morphology, sedimentation rates vs subsidence and shelf edge position. The deepest unit, MS1, is characterised by a forestepping, progradational sequence stack with sedimentation outpacing subsidence, while the overlying MS2 is dominated by aggradational sequence geometries, extensively dissected by a remarkable canyon system. MS3 records a much more stable aggradational to progradational shelf, with laterally continuous seismic reflectors and much less canyon incision and can be directly related to the current delta morphology.

In southern Bangladesh it has been possible to subdivide the Megasequences into seismically defined sequences and, in turn, through nanoplankton age-dating and environmental interpretation of drilled, core and outcrop samples, parasequence sets, within a chronostratigraphic framework. The result is a robust, regionally applicable stratigraphy which may be used to interpret the Miocene-Recent development of the Ganges-Brahmaputra depositional system. It is proposed to replace the previously established lithostratigraphic subdivisions, which are only locally applicable, with this new, country-wide framework.