

## Abstract

Unconventional resources have been widely discovered within the Ordovician rocks (Hamra Quartzite reservoir) of a number of basins in [Algeria](#), including the giant Hassi Messaoud oil-field. This study aims to provide an appraisal of the major characteristics of the Hamra Quartzite reservoir within the southern peripheral area of the Hassi Messaoud field. Petrographically, quartz grains in this reservoir are considered to be mature quartz arenites characterized by pervasive quartz overgrowth. Reservoir porosity is dominated by secondary intergranular dissolution porosity. The diagenetic sequence of the Hamra Quartzite reservoir occurred in three phases: eodiagenesis (early), mesodiagenesis (mid), and telodiagenesis (late) phases. These phases are directly related to tectonic events that affected the study area, and are controlled mainly by the Hercynian unconformity. The Hamra Quartzite reservoir was highly silicified during the pre-Hercynian phase. Compaction and cementation are the principal factors controlling reservoir degradation. The reservoir is faulted and fractured, and fractures ranging from partially open to closed are observed in cores. Petrophysically, the reservoir displays low porosity and permeability values. However, moderately porous and permeable sandstone is present toward the southeastern part of the studied reservoir