

## A miospore assemblage at the Siluro-Devonian boundary from the Tawil Formation, Qatif Field, Saudi Arabia

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Two recently drilled, deep wells in the Qatif field attained total depth within the Tawil Formation and encountered moderately abundant and well-preserved miospores from section within 300 feet of the base of each well. The assemblages are derived wholly from ditch-cuttings samples. Nevertheless, their richness, distinctiveness, and location below some 300 ft of essentially barren, upper Tawil-lower Jauf sandstone succession, gives confidence to an assigned biozone and age, not appreciably compromised by down-hole caved contamination from palyniferous younger Devonian strata (upper Jauf and Jubah formations).

From control beyond the Qatif field the Tawil Formation is known to span the Late Silurian-Early Devonian (Ludlow-Pragian). It represents the maximum regression of a Silurian sea embodied lithostratigraphically by the underlying Qalibah Formation. The Tawil Formation is a quartz-rich, mostly medium to coarse-grained sandstone unit with minor interbedded siltstones and ferruginous layers. Depositional environments range from shallow marine to braided-stream fluvial. In the Eastern Province the upper Tawil is not readily differentiated from the base of the overlying Jauf Formation because of what is normally a sand-on-sand contact that, furthermore, is mostly poorly palyniferous.

More than 80 sporomorph species (cryptospores and miospores) have been identified in the Tawil samples from these two boreholes. The two suites contain essentially identical assemblages. Trilete spores, such as *Amicosporites splendidus*, *Synorisporites tripapillatus*, *Apiculiretusispora synorea*, etc., demonstrate that biostratigraphically the assemblages are younger than the base of the Euramerican *tripapillatus-spicula* Biozone that ranges from Pridoli to basal Lochkovian. Moreover, *Apiculiretusispora perfecta* and certain cryptospores (*Chelinohilates erraticus*, *C. sinuosus* var. *sinuosus*, *Hispanaediscus? irregularis*, *Qualiaspora kidstonii*) relate the assemblages to the *Apiculiretusispora* sp. E Biozone, previously recorded only from Scotland where it is assigned an earliest Lochkovian age (Wellman & Richardson, 1996).

The Tawil assemblages of Qatif are notable in that they lie at, or very near, the Siluro-Devonian boundary and curiously suggest a phytogeographic link with the Old Red Sandstone Continent at this early stage of land-plant evolution.