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Imagined Global Unconventional Natural Gas Resources and a Real Basin Center: Producing Example in the Middle East

Each of the eight global regions examined in the USGS 2000 World Petroleum Assessment contains indications or examples of significant continuous (unconventional) natural gas accumulations. Twenty four assessments units (AU) containing such accumulations were defined, but not assessed. These included coalbed methane, basin center, and shallow gas AUs. Additionally, many more continuous occurrences were recognized. There is a close association of major conventional, water-buoyed, natural gas occurrences in proximity (commonly at shallower depths) relative to major continuous natural gas total petroleum systems. An excellent example of a basin-center gas accumulation is the Risha field in eastern Jordan, which is highly productive in tight (≤ 8% porosity), fractured Ordovician sandstone reservoirs sourced from Silurian "hot shales". This accumulation is now estimated to be at least a half trillion cubic feet and extends into surrounding regions of Iraq and Saudi Arabia. The field has been producing since 1987, mostly from 5 wells averaging about 30 mmcf/d, and powering a nearby electric generating plant. Electricity is then transmitted a distance of 400 km to Amman, Jordan, providing about 10 percent of Jordan's electrical needs. This basin-center accumulation is in the Horst/Graben–related Oil and Gas AU within the Paleozoic Qusaiba/Akkas/Abba/Mudawwara Total Petroleum System. It demonstrates the viability of a much more widespread, continuous natural gas resource in the Arabian Peninsula.