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EXPLORATION APPLICATIONS OF REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS

HIGH RESOLUTION CONTINENT-WIDE IMAGE MOSAICS: GUIDE EXPLORATION STRATEGY

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ABSTRACT

Seamless mosaics of Landsat Thematic Mapper imagery covering Africa, Australia, the Middle East and North America (more than 3,000 Thematic Mapper scenes) provide a wealth of detail about regional geologic relationships and large-scale tectonic features that have gone unnoticed in other data sets. The high resolution (30 meters) and geodetic accuracy (root-mean-square error less than 50 meters) makes these digital mosaics the best maps available of many areas, as well as an excellent basis for interpreting regional geologic relationships. The digital format makes them compatible with most mapping systems.

A major fracture zone extends from the Rutbagh high of Iraq southeast for more than 1,800 km to Qatar. This fracture zone may mark the southwest edge of the Mesopotamian depositional shelf or be related to flexing of the Arabian plate as it subducts at the Zagros suture to the north. South of and parallel to the fracture zone is an anticlinal feature that persists for almost 900 km. This feature is untested.

The Mardin-Kelasia-Rutbagh north-south trend divides the Arabian plate. Silurian through Tertiary units thin across this high. Most Mid-East production lies to the east, in structural traps. The continuity and persistence of this feature suggest the possibility of large stratigraphic traps (reefs, pinchouts, etc.) both to the east and the west.

The mosaic of northwest Africa indicates areas of post-rifting, erosion, and deposition. This in turn relates to the volume and composition of deposition on the shelf and slope of the continent, which may suggest exploration provinces.