

ABSTRACT  
APPLICATION OF LANDSAT ANALYSIS FOR  
GEOLOGIC EXPLORATION IN TEXAS

By:

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Over the past few years, satellite remote sensing data have become increasingly important in the search for energy resources. Many exploration companies now recognize the usefulness of satellite data for pinpointing areas that warrant further geologic investigation. Because of their accurate and broad coverage, satellite imagery can facilitate the search for mineral and petroleum deposits.

We recently examined Landsat data to assess its relative value as an exploration tool in Texas. Image processing techniques were used to restore, enhance, and extract information based on spectral signatures. This proved successful as a technique for revealing previously unknown fault or fracture systems, geobotanical alteration patterns, geologic anomalies, hydrocarbon traps, and mineralized zones. Remote sensing was especially effective when integrated with other sources of information such as seismic, gravity, magnetics, and well log data.

When used in conjunction with other geologic information, Landsat data analysis can lead to better understanding of the geologic processes controlling mineral or hydrocarbon accumulation. When data integration is used, prospect areas are more easily identified and the more expensive phases of exploration can be better planned.