

Oil Exploration Mapping

Environment and Resources Management

In January 1991, Chevron International (Yemen) Limited concluded an agreement with the newly established Republic of Yemen for oil exploration and production sharing in an area of Yemen known as the Shabwah Garden Block, an area characterized by rugged and varied terrain, including low relief desert, high plateaus, towering cliffs and deeply incised drainage.

To support field operations and logistics planning, the company needed detailed geologic and topographic maps, but only small-scale base maps of the area were available. Chevron therefore initiated a remote sensing project to develop a digital elevation model, and to generate large scale images, improved base maps and topo-

graphic maps. The job fell to Chevron Overseas Petroleum Inc. (COPI), San Ramon, California and COPI remote sensing supervisor James M. Ellis, with assistance from Chevron Oil Field Research's remote sensing laboratory at La Habra, California.

The remote sensing team used imagery from the NASA-developed Landsat Thematic Mapper (TM) and the French SPOT satellite, combining images from both into composite views to use the best capabilities of each system. **Below** is a TM/SPOT composite image of the Shabwah area typical of those used to extract a great deal of information for support of field operations: the white, gray and light blue shades in the west (left in image) are

areas of flat, sandy desert, dry river courses and cobble/gravel surfaces, readily accessible to vehicles; red and pink signify limestone and shale areas; brown represents sandstone and green massive sandstone. The green area at bottom center is an area of steep to vertical canyons and cliffs that bar vehicular operations.

The project was successfully concluded within the specified time of 11 months with delivery to the field of images, greatly improved base maps and unique topographic maps. COPI's James Ellis reported: "This project demonstrates that timely and practical application of remote sensing can support more efficient and cost-effective field operations."

