

Conversation Pieces

Prospecting for Minerals with Mini-Computers

Some of the most valuable photographs of earth from space are not very spectacular to look at. In fact, their most interesting features are often so subtle that they can only be brought out by skillful manipulation of the raw, digital data, from which the pictures are made. After enhancement, a lot of expert interpretation is needed before even speculative decisions can be made. But the results are beginning to interest some very perceptive executives of petroleum and mining companies.

To do this kind of work both quickly and economically, TRW has gradually built up a specially equipped laboratory. It's staffed by people who got their early experience using computers to enhance pictures of the Moon. They now routinely process data from NASA's Landsat spacecraft, which provide synoptic views of earth's surface geology and vegetation.

Data for particular colors can then be computer-enhanced to bring out significant details. Anomalies in rock formations, variations in the overburden, even slight differences in the color of vegetation can indicate the presence of oil-bearing strata or mineral deposits.

Not only does TRW's system use inexpensive mini-computers instead of big, costly machines but certain repetitive functions are completely automated by a TRW system that helps speed the whole process. As Dr. Gary Kang, who runs the lab, points out: "Prospecting by satellite and mini-computer is a lot quicker than doing it with a burro, or even a jeep. From the businessman's point of view, it saves a lot of money, too. You can get synoptic surveys of promising locations and zero in on the best of them. Then, the really promising sites can be explored by drilling teams and evaluated on the basis of actual test cores."



System analysts scrutinize imagery from single pass landsat before enhancing specific area of interest from multi-pass data.

The problem, of course, is to find potentially useful needles of information in the haystacks of recorded data. The first step is to define areas of interest and put the tapes for those areas through a processing system based on mini-computers. Spacecraft position and attitude data are fed in at the same time and the computer is programmed to compensate for distortions caused by spacecraft motion and sensor errors. The result is a set of dimensionally accurate color separations, formatted into a map projection that suits the user's needs.

For more detailed information on this capability, please write on your company letterhead to:

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