a major city located right at the interface. One would have to investigate other situations like this in hundreds or thousands of estuaries throughout the world to best locate fresh water supply intakes. It becomes rather important also in relation to fishing to identify the contact of fresh and salt water. I know in some European waters it is important to know ocean water temperatures to determine how the fishing is going to be today or tomorrow.

The next illustration is also contained in the briefing book. One of the major responsibilities of the Federal Government is to acquire a great deal of scientific information about the crust of the earth so we may indicate a mineral resource target which the private sector may then pursue. The private sector will risk large sums of money if there are ideas for them to work on. The target area is in bright color and it is our principal aim. The block below it, exploration, development, production, consumption, is entirely the area of the private sector. However, in order for us to lead to the target point, we need to throw in all the information which we can get. Now, here is a case where data from space, if it can be provided, gives another input. Because our feet cannot cover all the ground at the same time, the Eros Program can give us clues as to the structure and determination of the crust which will lead us to the target areas for resources.

We have mentioned the measurement of difference of heat. Here is a simple application—Mount Rainier taken from an airplane. The photo on the left shows snow as white and rock as black. On the right we have measured the different heat, again with the infrared system, from an aircraft. We can outline the areas of abnormally high temperature material. This has a real significance. Mount Rainier may still be a geologic hazard or it may not be. It is, also, possible that it could serve as a source of geothermal energy—in any event it bears watching, and we can watch it from aircraft or space.

The Taal volcano eruption in the Philippines a few years ago was a major catastrophe. We immediately put in a system of temperature measurement periodically with an aircraft to determine the point of later temperature buildup. Another eruption took place a couple of months later at this point. We think this kind of warning device and the attempt to locate geological hazards, if we can get this kind of coverage worldwide, would be a great service to mankind.

This system can point out other hot spots on the crust of the earth such as forest fires or geothermal regions. But if we can locate the hot spots which are warming up to erupt again it will be of real benefit to man.

Our scientists are applying both infrared and radar techniques to their study of geologic hazards associated with the San Andreas Fault in California. This effort is an adjunct to other Geological Survey studies that are predicated on the proposition that earthquakes are predictable. Readings with these new tools are adding to our understanding of the history of movement along the San Andreas Fault, and hopefully we will soon be able to interpret them in terms of the dynamics of earthquake regions.

The radar image shown in this exhibit is an example of the kind of small-scale imagery that is becoming a valuable aid in studying potential geologic hazards to obtain guidelines for safe urban development. The San Andreas fault is more than 600 miles long and goes

82-221 O—67——3