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STATEMENT OF  
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BEFORE THE  
SUBCOMMITTEE ON LEGISLATION AND NATIONAL SECURITY  
OF THE  
HOUSE COMMITTEE ON GOVERNMENT OPERATIONS

ON

INTERNATIONAL REACTION TO THE  
PROPOSED COMMERCIALIZATION  
OF LANDSAT

Mr. Chairman and Members of the Subcommittee:

At the request of your Subcommittee we are currently conducting an inquiry into the possible effects of the proposed sale of the National Oceanic and Atmospheric Administration's remote sensing satellite systems. Our final report will provide information on how the sale might affect federal programs, national security, and non-federal users of Landsat and the weather satellites. We have also discussed the proposed sale of Landsat with representatives of 10 countries that use Landsat data: the United Kingdom, the Federal Republic of Germany, France, Italy, Japan, India, Thailand, Brazil, Argentina, and Peru. We are here today, at your request, to discuss what these officials said about their use of Landsat and their concerns about the proposed sale.

HOW OTHER COUNTRIES GET LANDSAT DATA

Countries obtain Landsat data in several ways. Many countries purchase data directly from the Department of the Interior's Earth Resources Observation Systems Data Center in

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Sioux Falls, South Dakota. According to the Data Center's records, foreign users bought 45 percent of the Landsat tapes and photographic images sold at the Center in fiscal year 1982. Receipts from foreign users represented one-third of the Center's \$2.9 million sales during the same period. Landsat products sold at the Data Center are priced to recover the costs of operating but not building Landsat.

Some foreign countries receive the data directly from Landsat at their own ground stations, which are operated under agreements with the United States requiring them to pay a \$600,000 annual fee and a fee for each Landsat product distributed. These countries also sell the data received by their ground stations to other interested countries. In 1982, the 11 foreign ground stations received revenues of \$2.5 million from distributing about 59,000 Landsat tapes and images.

Foreign countries also obtain Landsat data through cooperative activities with federal government agencies. The largest federal user of Landsat data for international projects--the Agency for International Development--budgeted about \$500,000 for Landsat data in fiscal year 1983. Other federal agencies that use Landsat to aid in various international efforts include

- the U.S. Geological Survey, Department of the Interior, which has sponsored Landsat training courses for the international user community;
- the Bureau of Land Management, Department of the Interior, which has cooperated with Mexico and Australia on projects involving Landsat data; and

--the Defense Mapping Agency, Department of Defense, which provides satellite data to assist other nations in mapmaking.

Finally, foreign countries obtain Landsat data through projects funded by international organizations such as the World Bank, the United Nations, and the Inter-American Development Bank.

#### HOW OTHER COUNTRIES USE LANDSAT

We spoke with government officials responsible for space and remote sensing programs in 10 countries about how Landsat data is used. Almost all of the countries operate their own Landsat receiving stations or are members of the European Space Agency which operates two receiving stations. In addition, we spoke with officials of several international organizations that use Landsat data: the World Bank, the Inter-American Development Bank, the Asian Institute of Technology, and some United Nations agencies. Generally, these officials told us that:

--Landsat has demonstrated value in a number of areas, but is used mostly on a research and development or demonstration basis rather than an operational basis.

--The uses of Landsat data are expected to increase in number and variety as users gain experience and satellite technology advances.

--Investments made by developing countries in acquiring the capability to receive and use Landsat data represent significant commitments of their governments' resources.

--Landsat has unique advantages over other survey techniques for obtaining broad-scale geographic information.

--A commercial market for Landsat data is years away.

In the countries we visited, Landsat has been used for a variety of purposes, including mapmaking and inventorying and monitoring natural resources. These Landsat uses are particularly important for the developing countries where less is known about the land and its resources than in the more industrialized nations. Some examples of Landsat's uses follow:

--Brazilian officials said that Landsat had proven especially valuable for monitoring sugar cane--an important crop used both as food and in manufacturing synthetic fuels.

Brazilian space agency officials said that the satellite data was needed because Brazil's large land area made the use of aerial photography for surveying the crop impractical.

--Peru has acquired Landsat data from Brazil and the United States to produce its first nationwide topographic map. Peruvian officials said that the nature and location of the nation's natural resources are not fully known, because about two-thirds of the nation has never been accurately mapped. The officials said mapmaking through aerial photography is too expensive and that flying in remote regions of Peru is too dangerous. The officials added that the speed at which Landsat provides information is especially important in a country like Peru, where natural disasters such as earthquakes, landslides, droughts, and floods can rapidly change roads, rivers, and agricultural conditions.

--Thai officials told us that increasing population has caused more and more land to come under cultivation. The impact of this expanded farming was not clear until Landsat images showed deforestation occurring at an alarming rate.

Ground surveys and aerial photography had not disclosed the full dimensions of the problem. After seeing the Landsat pictures, the Thai government strengthened controls on the clearing of forests.

--In India, Landsat's images of shrinking lakes provided graphic evidence of the effects of recent droughts and contributed to government decisions to provide relief to affected areas.

The more industrialized countries use Landsat data for a variety of purposes, including mapping, urban planning, agriculture, and research. For example, the National Remote Sensing Center in Farnborough, England, provides data to governmental entities, commercial organizations, and academic institutions. Governmental entities have accounted for 53 percent of the data sales from this center in recent years.

The European countries we visited, generally speaking, believe that while Landsat data is very useful, a commercial market has not yet been developed and is anywhere from 5 to 15 years away.

Foreign officials also told us of some future uses of Landsat:

--Brazil hopes to use Landsat on an operational basis for agricultural crop surveys and improved identification of deforested areas.

--Peru wants to use Landsat for land use monitoring, monitoring marijuana and coca leaf production, monitoring the effects of floods and droughts, and identifying landslides.

CONCERNS EXPRESSED BY  
COUNTRIES OVER THE COMMERCIALIZATION  
OF LANDSAT

Officials of the countries we visited were not opposed to the commercialization of Landsat per se, but were concerned about possible changes that private ownership might bring. Specifically, they expressed concern about the potential for

- data sales policies contrary to their economic or national security interests;
- termination of direct satellite transmission to their ground stations or changes in the satellite signal, requiring expensive ground station alterations; and
- increased prices forcing reductions in data purchases.

The United States has traditionally followed a policy of making Landsat data available to everyone on equal terms. Foreign countries in turn are required by their agreements with the United States to distribute data acquired by their Landsat ground stations in the same manner. This data distribution policy has muted criticism by countries about surveillance within their boundaries. Representatives of the developing countries we visited believed that their governments would object if a commercial satellite operator changed this policy. For example, they said that if Landsat data on natural resources in their own countries could be acquired on an exclusive or preferential basis by outsiders, they would be placed at an unfair economic disadvantage. In addition, they were concerned that as sensors on board the satellites become more sophisticated, the satellites could be used to acquire and distribute military intelligence harmful to their national interests.

Representatives of the Indian Space Research Organization said that one country's use of remotely sensed data from another country raises issues of national sovereignty. They cited a paper prepared for a 1982 United Nations conference on "The Exploration and Peaceful Uses of Outer Space" in which the Indian government said:

"India has always maintained that surveillance and remote sensing are but two faces of the same coin. . . . This very contentious issue arises out of conflicting national needs and interests which lead to deep mistrust and mutual suspicion of each other's motives among contending nations.

. . . . .

"Clearly . . . there is a need for timely and unrestricted supply of data from the sensing state to the sensed state. But dissemination of data to third countries should not take place without following accepted and agreed procedures."

Indian officials said that a policy which did not give India equal access to all data acquired on India might lead to complaints by the Indian government.

In a message delivered to the same United Nations conference, the President of Brazil expressed concern over the possibility that remote sensing could be used against the interests of a sensed country:

". . . [remote sensing from space] affects traditional concepts of security, violating the notion of national privacy and . . . marching towards the violation of individual privacy. Remote sensing impinges on the

sovereignty of States over their natural resources and it may prejudice the capacity of countries of negotiating the sale of their agricultural products at fair and equitable prices. This is an instrument both valuable and dangerous."

Officials from several countries were also concerned that a private sector satellite owner would stop broadcasting to foreign ground stations. Representatives of the developing countries, in particular, believed that their governments had made major investments in equipment, software, and training to receive and use Landsat data and would react negatively to the loss of direct reception. For example, Thai officials reported that about half of the annual budget of their National Research Council, the principal government agency for sponsoring scientific research, is used for operating a Landsat ground station and processing Landsat data. The officials said that Thailand had recently spent about \$10 million constructing the Landsat receiving station and buying equipment, an amount which they consider a major outlay for scientific purposes. Thai officials also said that developing countries would find it very difficult to understand a cutoff of data to their ground stations in view of their significant investments. Thai officials said that Thailand provides a benefit to the entire Southeast Asian region by making data available to other countries at less than its own costs to receive and process it.

The President of Argentina's space agency reiterated to us a position taken by eight Latin American countries represented on the United Nation's Committee on the Peaceful Uses of Outer Space. These countries took the position that nations operating



remote sensing satellites should assure countries operating ground stations of continued access to data and assistance in making ground station modifications required by technical changes in the satellites. Representatives of Brazil, one of the countries adopting this position, told us that Brazil had spent about \$40 million over 10 years to receive and use Landsat data.

Another concern frequently expressed by foreign officials was that commercial operation of Landsat might result in sharp price increases which would force them to limit their acquisition of data. Government officials generally said that funds for Landsat data were limited, especially since most Landsat uses were in the research and development area. Representatives of several countries said that recent increases in the price of Landsat products had already reduced sales.

In summary, it was clear from our discussions with foreign officials that they regarded Landsat as an important tool for resource management and other purposes and were concerned about disruptions that commercial ownership might bring. Officials in several countries we visited said that the United States had built considerable goodwill abroad and provided effective foreign economic aid by supplying Landsat data worldwide at relatively low prices.

Mr. Chairman, this completes my prepared statement. We shall be glad to answer your questions.