fied in extraordinarily sensitive equipment kept at a very low temperature—minus 250 degrees C., equal to that of liquefied helium gas. Special systems were developed to keep the amplifiers operating continuously at this temperature.

The Arvi station is linked by a line-of-sight microwave system to Bombay, India's terminal for overseas communications via satellite. Along the 240-kilometre route between the two points, three repeater stations have been located at Giravali, Chikli and Matheran. These are automatic stations. In case some fault develops, standby equipment immediately takes over and ensures uninterrupted service.

In keeping with the magnitude of the project, the Bombay terminal is a 76-metre high skyscraper topped by a 45-metre microwave tower, which rises in the heart of Bombay's commercial centre. Adjacent to the Central Telegraph Office, it facilitates interconnection between the satellite channels and the national network. Called the Videsh Sanchar Bhavan, the new landmark stands on the site of an earlier one—Queen Victoria's statue, which dominated the area for almost 100 years.

The most modern equipment and facilities distinguish the terminal. One floor accommodates the international telegraph operating room with 80 teleprinters. Two other floors provide the support-equipment and maintenance facilities for the telegraph. In addition, there are a television room, booths for overseas telephone calls, the most modern facilities for staff use, and a completely-equipped conference hall.

The Department of Atomic Energy had the turn-key responsibility for the Arvi project, but the Overseas Communications Services (OCS) of the Government of India is in charge of operations and maintenance. Mr. K. M. Balchandani, Director-General of the OCS, has commented on the rapid development of international satellite communications. "Its impact on mankind has been tremendous. Till the satellite came, TV could not be flashed across oceans. Last year, when man stepped on the moon, this was watched by 800 million people of different nations and continents. This ringside seat was possible only by the revolutionary advance in space technology. The latest Intelsat satellite has a capacity of 1,200 voice channels. The next series, now under manufacture, will have the capacity of 5,000 channels each. Capacity of the order of 100,000 voice circuits is considered possible in future generations of satellites."

In constructing the Arvi Earth Station, the aim was to depend as little as possible on imported materials, to make the greatest use of indigenous talent, and to develop technological self-reliance. (The giant iron wheel that turns the antenna, for example, is the largest in the country.) In completing the project, one million dollars in foreign exchange was saved. "But," according to Project Administrator, Wing Commander K. R. Rao of the Department of Atomic Energy, "the gain that cannot be evaluated in terms of money is the confidence and competence gained by Indians in undertaking and executing such projects... We are now ready to erect such stations in other countries." His team set up the experimental satellite communications earth station at Ahmedabad in 1967.

The Arvi Earth Station will track the Indian Ocean communications satellite, Intelsat III, which rotates around the earth at approximately the same speed as the earth and so appears to be stationary. Its coverage extends from Goonhilly in the United Kingdom to Yamaguchi in Japan, both of which have earth stations and will be linked to Arvi.

The estimated cost of the receiving station and the terminal facilities was eighty million rupees. A Canadian Development Loan of four million dollars met the foreign exchange requirement for the import of Canadian services and equipment. The services included the overall design concept for the antenna and the electronics. Equipment supplied included transmitting and receiving components, antenna subreflector and feed systems, no-break power system, microwave repeaters linking Arvi with Bombay, test equipment, multiplex and switching equipment, and partial supply of the tracking system. The RCA Company of Montreal provided technical collaboration services to the Department of Atomic Energy and provided the overall design concept, along with detailed design drawings and manufacturing rights for the 97 foot antenna and installation supervision of the Canadian supplied subsystems.

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