channels during Phase 3 of GSETT-2. Some countries that had earlier used WMO/GTS were able to establish computer-to-computer connections with EIDCs prior to the start of Phase 3 and made extensive use of these links.

GSETT-2 demonstrated that WMO/GTS in general proved useful for transmitting parameter data, from NDCs to EIDCs, when appropriate arrangements had been made well in advance. Attempts at transmitting large volumes of messages, such as wave-form data, from NDCs to EIDCs, and bulletins from EIDCs to NDCs, however, met with little success. It was noted that WMO/GTS is still the only means of transmitting seismic data in many parts of the world. Details on the use of WMO/GTS during GSETT-2 are given in the appendices.

Other types of links between NDCs and EIDCs

Approximately 99 percent of the messages sent from NDCs to EIDCs during Phase 3 of GSETT-2 were transmitted using other means than WMO/GTS. Examples of such other types of links were dedicated high-speed links, public networks like PSDN, Internet and Bitnet, and dial-up lines. Only minor problems were associated with the use of links in this broad category. A number of countries also established links for alternative routing of their messages to the EIDCs, and were able to use these when problems occurred with their "main" circuit.

The satellite-based INMARSAT system was tested and used for the first time for the exchange of parameter and wave-form data. It was noted that INMARSAT is a highly flexible system that can be used virtually all over the globe and thus offers a potential for communication to and from locations not serviced by other modern communication means. Data transfer rates on the INMARSAT system that will permit transmission of large volumes of data are available today or will be in the near future.

During GSETT-2, the vast majority of messages were exchanged by direct computer-to-computer file transfer, using a variety of different links and protocols. The largest volumes were exchanged using the ftp protocol. Three countries used the electronic mail (X.400 protocol) successfully. Other protocols used were VAXSPI, UUCP and Kermit. There were in general very few difficulties related to the use of communication protocols, and NDC and EIDC operators cooperated closely to solve the few problems that occurred.

5.3 Inter-EIDC network

To fulfil the basic GSETT-2 requirements of reliable and timely exchange of data between the EIDCs, high-speed dedicated links were established. The dedicated links installed were as follows: 9.6-kbps satellite link between Canberra and Washington, a 56-kbps fibre optical link between Washington and Stockholm, a 19.2-kbps satellite link between Washington and Moscow, and a 9.6-kbps phone line between Stockholm and Moscow.

During the first week of Phase 3 of GSETT-2, three of the inter-EIDC links were fully functional. The line between Moscow and Washington became operational on 29 April, seven days into the test. After this date, all