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Special challenges in the Operation of International Monitoring System Stations

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The Comprehensive Nuclear Test Ban Treaty (CTBT) is a global treaty that bans nuclear test explosions in any environment. The treaty was opened for signature on 24 September 1996. To date, 177 countries have signed the treaty and 141 have ratified it. Among those having ratified are 34 of 44 required for the treaty to enter into force. The three pillars that support the treaty are the International Monitoring System (IMS) to detect test explosions, the International Data Centre (IDC) to produce and distribute both automatic and analyst reviewed data products, and On Site Inspection (OSI) to clarify whether a detected event was, in fact, a nuclear test explosion. The IMS is a globally distributed network of four technologies. Three wave-form technologies are designed to detect the waves produced by nuclear test explosions underground, in the air, and underwater. A radionuclide particulate network and noble gas experiment are designed detect radioactive isotopes generated by nuclear explosions. The diverse nature of the network presents a number of special challenges to the Network and Data System Operations Section of the IDC (NDSO), the group responsible for the effective operation of the IMS. One challenge faced by NDSO is the diversity of the equipment and software suppliers. There are currently many companies supplying equipment and technology for the 321 station IMS. This poses problems of consistency in operator training and in the applications of standard operating procedures. One solution to this problem was the development of the Standard Station Interface (SSI). The extensive geographical distribution of the stations presents another challenge to effective IMS operations. The IMS includes stations in such remote locations as Soccorro Island, Tristan de Cunha, and the Antarctic and Sub-antarctic regions. Each of these locations

presents its own set of challenges in terms of environment, logistics, and availability of qualified personnel.