the availability and use of satellite channels. Obviously, that will necessitate transmisssion units on the ground at the site where the data are gathered and receiving units on the ground at the central facility operated by the International Organization.

POTENTIAL PROBLEMS: Despite the high reliability of a process monitoring system containing quality hardware and software, there are many potential problems to be addressed to assure that the collected data are accurate, honest, and timely. Intentional and unintentional tampering with the monitoring instruments is not something that can be overlooked and may be very difficult to police especially without the presence of on-site inspectors. Nevertheless, a verification system cannot operate effectively unless these concerns are addressed.

It was suggested earlier that the quality of the data collected is dependent on the raw data generated by the measuring instruments. These instruments must be properly maintained and frequently calibrated to ensure accuracy. These actions are usually labor-intensive and highly dependent on the skills and knowledge of the technicians servicing the equipment. Sometimes, this operation may, of necessity, interfere with the production process--for example, pipe joints may leak in the sensing area creating hazardous situations which must then be secured. Or the instruments may interfere with smooth flow of materials through pipes or other equipment. Material flows may have to be stopped on occasion in order to repair an instrument problem.

Unfortunately, today's commercial instruments are not designed to be tamper-resistant. Intentional modification of the calibration can, for example, make large chemical flows appear to be small; or vice versa. In addition to incorporating such tamper-resistant features for treaty verification (e.g., enclosing sensors, instruments, and/or data transmitters in a box which can be opened only by authorized inspector personnel), a good material balance (perhaps using a simulation software package) may detect some tampering.