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Protocol to the Treaty Between The United States of America and The Union of Soviet Socialist Republics on Underground Nuclear Explosions For Peaceful Purposes

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Confirming the provisions of the Treaty Between the United States of America and the Union of Soviet Socialist Republics on Underground Nuclear Explosions for Peaceful Purposes of May 28, 1976, hereinafter referred to as the Treaty,

Taking into account the fact that nuclear explosions for peaceful purposes are conducted outside national nuclear test sites under various geological conditions,

Convinced of the necessity to ensure effective verification of compliance with the Treaty,

Have agreed as follows:

SECTION I. DEFINITIONS

In addition to the definitions of terms set forth in Article II of the Treaty, for the purposes of this Protocol:

1. The term "emplacement hole" means the entire interior of any drill hole, shaft, adit or tunnel in which an explosive, associated cables, and other equipment are installed for the purposes of carrying out an explosion.
2. The term "Verifying Party" means the Party entitled to carry out, in accordance with this Protocol, activities related to verification of compliance with the Treaty by the Party carrying out an explosion.
3. The term "Designated Personnel" means personnel appointed by the Verifying Party from among its nationals and included on its list of Designated Personnel, in accordance with Section IX of this Protocol, to carry out activities related to verification, in accordance with this Protocol, in the territory of the Party carrying out the explosion.
4. The term "Transport Personnel" means personnel appointed by the Verifying Party from among its nationals and included on its list of Transport Personnel, in accordance with Section IX of this Protocol, to provide transportation for Designated Personnel, their baggage, and equipment of the Verifying Party between the territory of the Verifying Party and the point of entry in the territory of the Party carrying out the explosion.
5. The term "point of entry" means Washington, D.C. (Dulles International Airport) with respect to the United States of America; and Moscow (Sheremetyevo-2 Airport) with

respect to the Union of Soviet Socialist Republics. Other locations may serve as points of entry for specific explosions, as agreed by the Parties.

6. The term "on-site inspection" means activities carried out by the Verifying Party in the territory of the Party carrying out the explosion, in accordance with Section VII of this Protocol, for the purposes of independently obtaining data on conditions under which the explosion will be conducted and confirming the validity of data provided by the Party carrying out the explosion.

7. The term "hydrodynamic yield measurement method" means the method whereby the yield of an explosion is derived from on-site, direct measurement of the position of the shock front as a function of time during the hydrodynamic phase of the ground motion produced by the explosion.

8. The term "local seismic network" means the array of seismic stations and the control point temporarily deployed, in accordance with this Protocol, for the purpose of identifying the number of individual explosions in a specific group explosion.

9. The term "Joint Consultative Commission" means the Commission established in accordance with Article V of the Treaty.

10. The term "Coordinating Group" means a working group of the Joint Consultative Commission, established in accordance with Section XI of this Protocol.

11. The term "Nuclear Risk Reduction Centers" means the Centers located in Washington, D.C., and Moscow, established in accordance with the Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Establishment of Nuclear Risk Reduction Centers of September 15, 1987.

SECTION II. EXPLOSION DEPTH AND COMPOSITION

1. No explosion shall be conducted at a distance in meters from the ground surface less than 30 times the 3.4 root of the planned yield of that explosion in kilotons.

2. No group explosion shall have an aggregate yield exceeding 150 kilotons unless the Parties agree on specific procedures to implement appropriate provisions of this Protocol so as to permit identification of each individual explosion and determination of the yield of each individual explosion in the group.

3. No explosion having a planned yield exceeding 35 kilotons shall be conducted in a cavity having a volume exceeding 20,000 cubic meters, unless the Parties agree on verification measures for such an explosion.

SECTION III. VERIFICATION MEASURES

1. For the purposes of the Treaty, all underground nuclear explosions conducted outside national nuclear test sites shall be considered underground nuclear explosions for peaceful purposes subject to all the provisions of the Treaty. For purposes of verification of compliance with the Treaty, in addition to using available national technical means, the Verifying Party shall have the right:

- (a) to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, to measure the yield of each explosion that the Party carrying out the explosion notifies, in accordance with paragraph 3 of Section IV of this Protocol, to have a planned yield exceeding 50 kilotons;
- (b) to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, to monitor the yield of each individual explosion in a group explosion that the Party carrying out the explosion notifies, in accordance with paragraph 3 of Section IV of this Protocol, to have a planned aggregate yield exceeding 50 kilotons;
- (c) to use, in conjunction with the use of the hydrodynamic yield measurement method, a local seismic network, in accordance with Section VI of this Protocol, for each group explosion that the Party carrying out the explosion notifies, in accordance with paragraph 3 of Section IV of this Protocol, to have a planned aggregate yield exceeding 150 kilotons; and
- (d) to carry out on-site inspection, in accordance with Section VII of this Protocol, with respect to any explosion that the Party carrying out the explosion notifies, in accordance with paragraph 3 of Section IV of this Protocol, to have a planned yield exceeding 35 kilotons and, with respect to any explosion having a planned yield exceeding 50 kilotons, only if the Verifying Party has decided not to use the hydrodynamic yield measurement method.

2. The Party carrying out the explosion shall bear full responsibility for, and have exclusive control over, the conduct of the explosion.

3. Designated Personnel shall be responsible for the working of their equipment, its timely installation and operation, for participating in such operations, including dry runs, as the Party carrying out the explosion may request, and for recording data at the time of the explosion. The Party carrying out the explosion shall be under no obligation to change the time of the explosion because of any malfunction of the equipment of the Verifying Party or inability of Designated Personnel to carry out their functions, unless actions of the Party carrying out the explosion have caused such a situation to arise.

SECTION IV. NOTIFICATIONS AND INFORMATION RELATING TO EXPLOSIONS

1. Unless the Parties otherwise agree, all notifications provided for in this Protocol shall be transmitted through the Nuclear Risk Reduction Centers. The Nuclear Risk Reduction Centers may also be used, as appropriate, to transmit other information provided in accordance with this Protocol.

2. Not later than July 1 following entry into force of the Treaty, and each July 1 thereafter, each Party shall inform the other Party whether or not it intends to conduct, during the following calendar year, any individual or group explosion for peaceful purposes having a planned aggregate yield exceeding 35 kilotons, and, if so, how many. On the date of entry into force of the Treaty, information specified by this paragraph shall be provided by each Party for the remainder of the calendar year in which the Treaty enters into force and for the period from January 1 through December 31 of the succeeding year. In the event of changes in the information provided in accordance with this paragraph, such changes shall be immediately provided to the other Party.

3. No less than 180 days prior to the planned date of the beginning of emplacement of the explosive or explosives for every explosion having a planned yield exceeding 35 kilotons, the Party carrying out the explosion shall notify the Verifying Party of its intention to carry out the explosion and shall provide the Verifying Party with the following information, to the extent and degree of accuracy available at the time when it is provided:

- (a) the planned date of the explosion;
- (b) the planned date of the beginning of emplacement of the explosive or explosives;
- (c) the purpose of the explosion;
- (d) the location of the explosion, expressed in geographic coordinates to the nearest minute;
- (e) the planned yield of the explosion;
- (f) the number of explosives, and the planned yield of each individual explosive;
- (g) the planned depth of emplacement of each explosive to the nearest 10 meters;
- (h) the type or types of rock in which the explosion will take place, including the depth of the water table; and
- (i) a description of specific technological features of the project of which the explosion is a part that may affect determination of its yield and confirmation of its purpose.

4. Following receipt of information specified in paragraph 3 of this Section, the Verifying Party shall inform the Party carrying out the explosion, no less than 150 days prior to the planned date of the beginning of emplacement of explosives, in a single notification, whether or not it intends to carry out one of the following activities related to verification:

- (a) with respect to an explosion having a planned yield exceeding 35 kilotons, to carry out on-site inspection in accordance with Section VII of this Protocol; or
- (b) with respect to an explosion having a planned yield exceeding 50 kilotons, to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, and, with respect to a group explosion having a planned aggregate yield exceeding 150 kilotons, to use, in conjunction with the hydrodynamic yield measurement method, a local seismic network, in accordance with Section VI of this Protocol.

5. If the Verifying Party:

- (a) declares its intention not to conduct activities described in paragraphs 4(a) and 4(b) of this Section, it shall thereby forfeit its right to conduct such activities unless the Party carrying out the explosion provides notification, in accordance with paragraph 9 of this Section, of a change in the location by more than one minute of latitude or longitude or of a change in the planned date of the explosion that changes the date indicated in the initial notification by 60 days or more. Within 30 days of notification by the Party carrying out the explosion of any such change in location or planned date of the explosion, the Verifying Party shall have the right to revise the notification it provided in accordance with paragraph 4 of this Section. In the event the Verifying Party elects to revise its notification and to use the hydrodynamic yield measurement method or to carry out on-site inspection, the beginning of emplacement of explosives shall not occur less than 90 days from the date of the Verifying Party's revised notification, unless the Parties otherwise agree. The Party carrying out the explosion shall thereafter provide the Verifying Party with the information specified in paragraph 6 or 7 of this Section; or
- (b) decides not to conduct the activities related to verification specified by it in its initial notification, after technical and logistical support requirements for these activities have been agreed upon in the Coordinating Group, in accordance with paragraph 6 of Section XI of this Protocol, the Verifying Party shall reimburse the Party carrying out the explosion for costs for such technical and logistical support incurred by the Party carrying out the explosion prior to receipt of notification that the Verifying Party will not carry out the initially-declared activities related to verification.

6. In the event of receipt by the Party carrying out the explosion of notification from the Verifying Party of its intent to use the hydrodynamic yield measurement method, the Party carrying out the explosion shall provide the Verifying Party not less than 60 days prior to the planned date of the beginning of emplacement of explosives with the following information:

- (a) the number of explosives; the planned yield of each explosive; the planned depth of emplacement of each explosive with an accuracy of 10 meters; the planned point of emplacement of each explosive to be used in a group explosion relative to all other explosives in the group with an accuracy of 10 percent of the distance between that explosive and the nearest other explosive, but in no case shall the error be greater than 100 meters; and the planned time intervals between individual explosions in each group explosion with an accuracy of 0.1 second;
- (b) a description of the geological and geophysical characteristics of the site of each explosion that could influence determination of the yield, which shall include: the depth of the water table; a stratigraphic column above each emplacement point; the position of each emplacement point relative to nearby geological and other features that influenced the design of the project of which the explosion is a part; and the estimated physical parameters of the rock within each

hydrodynamic measurement zone, including bulk density, grain density, compressional and shear-wave velocities, porosity, and total water content;

- (c) the locations and purposes of facilities and installations that are associated with the conduct of the explosion;
- (d) the planned date of the beginning of emplacement of each explosive;
- (e) a topographic chart, marked with geographic coordinates accurate to one minute of latitude and longitude, of the areas circumscribed by circles of 15 kilometer radius centered on points on the surface of the earth above the points of emplacement of each explosive, at a scale of 1:24,000 or 1:25,000 with a contour interval of 10 meters or less. The planned location of each explosive shall be marked on this chart with an accuracy of 50 meters;
- (f) the length of each canister in which an explosive will be contained, hereinafter referred to as an explosive canister;
- (g) the dimensions of any pipe or other device that will be used to emplace each explosive canister;
- (h) the planned cross-sectional dimensions of each emplacement hole within the hydrodynamic measurement zones;
- (i) a description of materials, including their densities, to be used to stem the emplacement hole within each hydrodynamic measurement zone; and
- (j) the location and configuration of any known voids larger in volume than one cubic meter within each hydrodynamic measurement zone.

7. In the event of receipt by the Party carrying out the explosion of notification from the Verifying Party of its intent to carry out on-site inspection, the Party carrying out the explosion shall provide the Verifying Party, not less than 60 days prior to the planned date of the beginning of emplacement of explosives, with the following information:

- (a) the number of explosives; the planned yield of each explosive; the planned depth of emplacement of each explosive with an accuracy of 10 meters; the planned point of emplacement of each explosive to be used in a group explosion relative to all other explosives in the group with an accuracy of 10 percent of the distance between that explosive and the nearest other explosive, but in no case shall the error be greater than 100 meters; and the planned time intervals between individual explosions in each group explosion with an accuracy of 0.1 second;
- (b) a description of the geological and geophysical characteristics of the site of each explosion that could influence determination of the yield, which shall include: the depth of the water table; a lithologic column above each emplacement point; the position of each emplacement point relative to nearby geological and other features that influenced the design of the project of which the explosion is a part; and the estimated physical parameters of the rock within each hydrodynamic measurement zone, including bulk density, grain density, porosity, and total water content;
- (c) the locations and purposes of facilities and installations that are associated with the conduct of the explosion;
- (d) the planned date of the beginning of emplacement of each explosive;

- (e) a topographic chart, marked with geographic coordinates accurate to one minute of latitude and longitude, of the areas circumscribed by circles of 15 kilometer radius centered on points on the surface of the earth above the points of emplacement of each explosive, at a scale of 1:24,000 or 1:25,000 with a contour interval of 10 meters or less. The planned location of each explosive shall be marked on this chart with an accuracy of 50 meters;
- (f) the planned cross-sectional dimensions of each emplacement hole within the hydrodynamic measurement zones; and
- (g) the location and configuration of any known voids larger in volume than one cubic meter within each hydrodynamic measurement zone.

8. For each explosion, the Party carrying out the explosion shall inform the Verifying Party, no less than two days prior to the explosion, of the planned time of detonation of each explosive, with an accuracy of 0.1 second. In the event the Party carrying out the explosion decides to change the detonation time, the Verifying Party shall be notified of this change immediately after this decision has been taken. No more than 10 days following the explosion the Verifying Party shall be informed of the actual detonation time.

9. The Party carrying out the explosion shall immediately notify the Verifying Party of any change in any information provided in accordance with paragraph 3, 6, or 7 of this Section. If the Verifying Party has provided notification under paragraph 4 of this Section of its decision to use the hydrodynamic yield measurement method or to carry out on-site inspection, the emplacement of explosives shall not begin less than 90 days following notification of any change in any information provided in accordance with paragraph 3, 6, or 7 of this Section that requires more extensive verification procedures than are required on the basis of initial information, unless an earlier date for the beginning of emplacement of explosives has been agreed upon by the Parties. Such changes include:

- (a) change in the location of the explosion by more than one minute of latitude or longitude;
- (b) change in the number of explosives in a group explosion;
- (c) change in the yield of the explosion;
- (d) change in the purpose of the explosion; and
- (e) delay in the planned date of the explosion by more than 90 days.

10. In using an explosion to decrease the consequences of an emergency situation related to an unforeseen set of circumstances and requiring immediate action, by virtue of which it would be practically impossible to adhere to the requirements of paragraph 3 of this Section concerning the time period, the following conditions shall be fulfilled:

- (a) the Party making the decision to carry out an explosion for such a purpose shall notify the Verifying Party of this decision immediately after it has been made and shall describe the circumstances and provide the planned yield for such an explosion;

(b) the planned aggregate yield for such an explosion shall not exceed 100 kilotons and the explosion shall not include more than three individual explosions, unless the Parties otherwise agree;

(c) the Party carrying out such an explosion shall provide the Verifying Party with the information specified in paragraphs 3 and 6 of this Section, to the extent such information is available, after making the decision on carrying out the explosion, but no less than 60 days prior to the beginning of emplacement of explosives; and

(d) if, within 15 days following receipt of notification of such an explosion, the Verifying Party has made the decision to carry out verification of that explosion using the hydrodynamic yield measurement method, it shall deliver hydrodynamic yield measurement equipment to the point of entry in the territory of the Party carrying out the explosion no less than 35 days prior to the planned date of the beginning of emplacement of explosives, in accordance with paragraphs 8(b), 8(c), 8(d), 8(e), and 8(f) of Section VIII of this Protocol. This equipment shall be handed over, in the same condition as that in which it was received, to Designated Personnel at the site of the explosion for emplacement, installation, and use no less than 20 days prior to the planned date of the beginning of emplacement of explosives.

11. The Party carrying out an explosion shall have the right to make changes in the schedule of operations related to the conduct of the explosion. In the event the Verifying Party exercises its rights to use the hydrodynamic yield measurement method or to carry out on-site inspection, in accordance with Section III of this Protocol, the Party carrying out the explosion shall immediately inform the Verifying Party of any such change in the schedule of operations. In the event the Verifying Party has provided notification, under paragraph 4 of this Section, of its decision to use the hydrodynamic yield measurement method or to carry out on-site inspection, the explosion shall not be carried out more than five days prior to the planned date of the explosion indicated in the initial notification, unless the Parties otherwise agree.

12. The Verifying Party may at any time, but no more than one year after the explosion, request from the Party carrying out the explosion clarification of any point of information provided in accordance with this Section. Such clarification shall be provided in the shortest possible time, but no more than 30 days following receipt of a request.

SECTION V. HYDRODYNAMIC YIELD MEASUREMENT METHOD

1. The hydrodynamic measurement zone for each explosive means a cylindrical region coaxial with the emplacement hole of that explosive. This region extends in the direction of the entrance to the emplacement hole from the midpoint of the canister containing that explosive to the point at which the axis of the emplacement hole intersects a spherical surface whose radius, measured from the midpoint of the canister containing the explosive, is equal in meters to 10 times the cube root of the planned yield in kilotons of that explosive, or 25 meters, whichever is greater. The length of this region in the opposite direction from the same midpoint of the canister is equal in meters to three times the cube root of the planned yield in kilotons of that explosive, or 7.5 meters, whichever

is greater. The radius of this region is equal in meters to three times the cube root of the planned yield in kilotons of that explosive, or 7.5 meters, whichever is greater.

2. For hydrodynamic yield measurement the following procedures shall apply:

(a) Designated Personnel shall emplace, for each explosive, the equipment specified in paragraph 5(a) of Section VIII of this Protocol in the same emplacement hole as the explosive. The equipment specified in paragraphs 5(a) and 5(b) of Section VIII of this Protocol shall be installed, in accordance with installation instructions provided in accordance with paragraph 8(a)(i) of Section VIII of this Protocol, by Designated Personnel under observation of personnel of the Party carrying out the explosion and with their assistance, if Designated Personnel have requested such assistance. The location of each recording facility and the command and monitoring facility of the Verifying Party shall be determined by agreement of the Parties with respect to each particular explosion. This equipment shall be operated by Designated Personnel;

(b) for each explosive, the equipment specified in paragraph 5(a) of Section VIII of this Protocol shall be installed so that the end point of the equipment farthest from the emplacement hole entrance is three meters from the surface of the explosive canister closest to the emplacement hole entrance as measured along the axis of the emplacement hole. The location of this equipment relative to the axis of the emplacement hole shall be agreed upon by the Parties. No more than six sensor channels shall be installed for each explosive. Each Party shall make documented records of measured distances to the sensors. These records shall be exchanged by the Parties;

(c) explosive canisters with a length greater than 10 meters or a diameter greater than three meters shall be used only if prior agreement has been reached between the Parties establishing, in each specific case, provisions for their use; and

(d) the Party carrying out the explosion shall fill all voids other than the explosive canister within the hydrodynamic measurement zone of each explosive in each emplacement hole with stemming material. This stemming material, beginning no more than three meters from each explosive canister cover towards the entrance of the hole, and proceeding in that direction, shall have a bulk density no less than 70 percent of the average density of the surrounding rock. An alternate stemming material may be used for filling the remainder of the hydrodynamic measurement zone of that explosive. For any explosive emplaced in an emplacement hole whose diameter is less than 30 centimeters and emplaced at a distance of more than 1.5 kilometers from the entrance of the hole, an alternate stemming material may be used for filling the entire hydrodynamic measurement zone of that explosive. If more than one explosive is emplaced in a single emplacement hole, the Parties shall agree upon an alternate stemming material for filling the entire hydrodynamic measurement zone of each explosive other than the explosive nearest the entrance of the emplacement hole if the emplacement hole diameter is greater than 30 centimeters but less than 60 centimeters. Any alternate stemming material shall have a bulk density no less than 1.2 grams per cubic centimeter. Pipes located within the hydrodynamic measurement zone need not be filled with

stemming material if they have a cross-sectional area less than 10 square centimeters, or if they have a cross-sectional area less than 100 square centimeters and a length less than one meter. Costs incurred by the Party carrying out the explosion to ensure, within the hydrodynamic measurement zone, a density of stemming material no less than 70 percent of the average density of the surrounding rock shall be borne by the Verifying Party.

3. For a group explosion the Party carrying out the explosion shall ensure that the emplacement point of each explosive canister, the detonation sequence, and the time intervals between individual explosions are such that no explosion in the group shall interfere with the hydrodynamic yield measurement of any other individual explosion. With the exception of group explosions provided for in paragraph 2 of Section II of this Protocol, if the technological characteristics of the project of which the group explosion is a part make it impossible to satisfy this requirement, the Parties, prior to the beginning of emplacement of explosives, shall agree upon alternative hydrodynamic or other verification procedures.

4. In preparation for the use of the hydrodynamic yield measurement method, the Verifying Party shall have the right to confirm the validity of the geological and geophysical information provided in accordance with Section IV of this Protocol, in accordance with the following procedures:

(a) Designated Personnel may analyze relevant studies and measurement data, including logging data, of the Party carrying out the explosion, the core samples or rock fragments extracted from each emplacement hole within the hydrodynamic measurement zone, as well as any logging data and core samples from existing exploratory holes, which shall be provided to Designated Personnel upon their arrival at the explosion site, if the Party carrying out the explosion carried out relevant studies, measurements, and coring; and

(b) Designated Personnel shall have the right to observe logging and the extraction of core samples or rock fragments from locations agreed upon by the Parties within the hydrodynamic measurement zone in the emplacement hole or from an exploratory hole at depth intervals agreed upon by the Parties. Any such exploratory hole shall be no farther from the emplacement hole than a distance in meters of 10 times the cube root of the planned yield in kilotons of the emplaced explosive; or

(c) if the Party carrying out the explosion does not take core samples or rock fragments in accordance with subparagraph (b) of this paragraph or does not drill an exploratory hole meeting the requirements specified in subparagraph (b) of this paragraph, the Verifying Party shall have the right to extract sidewall rock samples from the emplacement hole with its own equipment, to drill such an exploratory hole, and to core this hole. Such operations shall be conducted in the presence of personnel of the Party carrying out the explosion. Such an exploratory hole shall be stemmed by the Party carrying out the explosion, at the expense of the Verifying Party; and

(d) Designated Personnel shall have the right to examine and remove from the territory of the Party carrying out the explosion logging data, core samples, sidewall rock samples, and rock fragments referred to in subparagraphs (a), (b), and (c) of this paragraph, as selected by Designated Personnel.

5. While using the hydrodynamic yield measurement method, Designated Personnel shall have the right:

(a) to confirm by direct measurement the validity of the information provided in accordance with paragraphs 6(f), 6(g), and 6(h) of Section IV of this Protocol;

(b) to confirm the validity of the information provided in accordance with paragraph 6(i) of Section IV of this Protocol, and to receive, upon request, a sample of each batch of stemming material as this material is placed in the emplacement hole within the hydrodynamic measurement zone; and

(c) to confirm the validity of the information provided in accordance with paragraphs 6(b) and 6(j) of Section IV of this Protocol, by observing, upon request, relevant field measurements being made by the Party carrying out the explosion if such measurements are made by the Party carrying out the explosion, and by making field measurements with its own logging equipment, to include determination of the location and configuration of any voids within each hydrodynamic measurement zone or, at the option of the Verifying Party under leasing conditions, with the logging equipment of the Party carrying out the explosion, if the Party carrying out the explosion has such equipment. Such field measurements shall be made in the presence of personnel of both Parties. All of the data produced by either Party, including calibration data, shall be duplicated, and one copy of the data shall be provided to each Party. Calibration data for the equipment shall include information to confirm the sensitivity of the equipment under the conditions in which it is utilized for this explosion.

6. Designated Personnel shall have the right:

(a) to have access to the site of the explosion and to facilities and structures related to the conduct of the explosion, along agreed routes;

(b) to observe the emplacement of each explosive canister, to confirm, by direct measurement, the depth of emplacement of each explosive canister and, for explosives in a group, the relative location of their points of emplacement, and to observe the stemming of each emplacement hole;

(c) to have access to their equipment associated with the use of the hydrodynamic yield measurement method from commencement of its use by Designated Personnel at the explosion site until the departure of all personnel from the explosion area prior to the explosion;

(d) to unimpeded visual observation of the entrance area to each emplacement hole at any time from the moment of emplacement of each explosive until the departure of all personnel from the explosion area prior to the explosion;

- (e) to observe remotely by means of closed-circuit television equipment their hydrodynamic yield measurement equipment specified in paragraphs 5(b) and 5(c) of Section VIII of this Protocol;
- (f) to observe the explosion; and
- (g) to monitor electrically the integrity and performance of their equipment in each recording facility from the command and monitoring facility, to transmit the hydrodynamic yield measurement data from each recording facility to the command and monitoring facility, and to transmit the commands required for operation of each recording facility from the command and monitoring facility to each recording facility.

7. The Party carrying out the explosion shall produce, at the request of the Verifying Party, a timing reference command signal to each recording facility at two minutes, plus or minus 100 milliseconds, before the moment of the explosion, or before the first explosion in a group, and a zero-time reference signal to each corresponding recording facility for each explosion, with an accuracy of plus or minus one microsecond. The parameters for these signals, produced by the Party carrying out the explosion, and procedures for their transmission and reception shall be agreed upon by the Parties. At the Verifying Party's option, it shall have the right to generate a timing reference signal for each explosion, using the electromagnetic pulse from its hydrodynamic measurement cables. These timing reference signals shall be transmitted, used, and recorded by the Verifying Party without intervention by the Party carrying out the explosion.

8. Designated Personnel shall have the right to acquire photographs taken by the Party carrying out the explosion, with photographic cameras provided by the Verifying Party, under the following conditions:

- (a) the Party carrying out the explosion shall identify those of its personnel who will take photographs;
- (b) photographs shall be taken as requested by, and in the presence of, Designated Personnel. If requested by Designated Personnel, such photographs shall show the size of an object by placing a measuring scale, provided by the Verifying Party, alongside that object during the photographing;
- (c) Designated Personnel shall determine whether photographs conform to those requested and, if not, repeat photographs shall be taken; and
- (d) before completion of any photographed operation related to emplacement, and prior to the time at which an object being photographed becomes permanently hidden from view, Designated Personnel shall determine whether requested photographs are adequate. If they are not adequate, before the operation shall proceed, additional photographs shall be taken until the Designated Personnel determine that the photographs of that operation are adequate. This photographic process shall be carried out as expeditiously as possible, and in no case shall the cumulative delay resulting from this process exceed two hours for each emplacement operation, unless the Parties otherwise agree.

9. Designated Personnel shall have the right to obtain photographs of the following:

- (a) the exterior of installations and structures associated with the conduct of the explosion;
- (b) the emplacement of each explosive canister and stemming of each emplacement hole as specified in paragraph 6(b) of this Section;
- (c) geological samples used for confirming the validity of geological and geophysical information as provided for in paragraph 4 of this Section, and equipment used in obtaining such samples;
- (d) emplacement and installation of hydrodynamic yield measurement method equipment and cables associated with it;
- (e) containers, facilities and structures for storing and operating the equipment used by Designated Personnel; and
- (f) with the agreement of the Party carrying out the explosion, other activities of Designated Personnel directly related to the use of the hydrodynamic yield measurement method.

10. Equipment identified by the Party carrying out the explosion, in accordance with paragraph 8(h) of Section VIII of this Protocol, as unacceptable for use at the time of the explosion shall be sealed by both Parties and placed in the custody of the Party carrying out the explosion at a time agreed upon by the Party carrying out the explosion and by Designated Personnel.

11. Two individuals from the Party carrying out the explosion shall have the right to join Designated Personnel in the command and monitoring facility at the time of the explosion, to observe command and monitoring of the recording equipment and acquisition and duplication of data transmitted from each recording facility, and to receive a copy of the data. Designated Personnel, in the presence of personnel of the Party carrying out the explosion, shall recover all recordings of data taken at the time of the explosion and prepare two identical copies of such data. Personnel of the Party carrying out the explosion shall select one of the two identical copies by lot, and Designated Personnel shall retain the other copy. Designated Personnel shall retain no other such data, and shall have no further access to their recording facilities, their command and monitoring facility, and their equipment until these are returned to the Verifying Party, in accordance with paragraph 11 of Section VIII of this Protocol, unless the Parties otherwise agree, in which case access of the Designated Personnel to their recording facilities, their command and monitoring facility, and their equipment shall be under the observation of personnel of the Party carrying out the explosion. Designated Personnel shall provide the Party carrying out the explosion with information on sensor location in relation to the explosive canister. With respect to digital recording of signals, the Verifying Party shall provide a description of the recording format and a sample of the computer program for reading digital data. The program shall be provided by Designated Personnel upon their arrival at the point of entry.

12. Designated Personnel shall not be present in areas from which all personnel of the Party carrying out the explosion have been withdrawn in connection with carrying out an explosion, but shall have the right to reenter those areas at the same time as personnel of the Party carrying out the explosion.

SECTION VI. LOCAL SEISMIC NETWORK

1. For any group explosion that the Party carrying out the explosion has notified to have a planned aggregate yield exceeding 150 kilotons, and with respect to which the Verifying Party has notified its intention to measure the yield of the explosion using the hydrodynamic yield measurement method, Designated Personnel, in addition to using the hydrodynamic yield measurement method, shall have the right to install and use, under the observation and with the assistance of personnel of the Party carrying out the explosion if Designated Personnel request such assistance, a local seismic network.

2. Such a network shall be installed and used at locations agreed upon by the Parties within an area circumscribed by circles of 15 kilometer radius centered on points on the surface of the earth above the points of emplacement of the explosives. The number of stations of the network shall be determined by the Verifying Party, but shall not exceed the number of explosives in the group plus eight.

3. The control point of the local seismic network shall be installed at a location that the Parties agree is outside the areas specified in paragraph 12 of Section V of this Protocol and within the area specified in paragraph 2 of this Section, unless the Parties otherwise agree. Designated Personnel shall have the right to have access to their equipment in the control point at any time from commencement of installation of the local seismic network until five days following the explosion, subject to the provisions of paragraph 12 of Section V, if applicable, and paragraph 10(e) of Section VIII of this Protocol.

4. Installation of a local seismic network may commence 20 days prior to the planned date of the explosion, and its operation shall continue no more than three days following the explosion, unless the Parties otherwise agree.

5. Designated Personnel shall have the right to use radio communication for the transmission and reception of data and control signals between seismic stations and the control point of the local seismic network. Frequencies and maximum power output of radio transmitters, frequency range and sensitivity of radio receivers, orientation of transmitting and receiving antennas, and period of operation of the local seismic network radio transmitters and radio receivers prior to the explosion shall be agreed upon by the Parties. Operation of the radio equipment following the explosion shall continue for no more than three days, unless the Parties otherwise agree.

6. Designated Personnel shall have access along agreed routes to the stations and the control point of the local seismic network for the purpose of carrying out activities related to the installation and use of the local seismic network.

7. In installing and using a local seismic network, Designated Personnel shall have the right to use and retain the topographic chart provided in accordance with paragraph 6(e) of Section IV of this Protocol.

8. Designated Personnel shall have the right to obtain photographs associated with the local seismic network, which shall be taken by the Party carrying out the explosion at the request of Designated Personnel in accordance with applicable provisions of paragraph 8 of Section V of this Protocol.

9. Within five days following the explosion, Designated Personnel shall provide the Party carrying out the explosion with the original and one copy of the data from the local seismic network stations recorded on the primary medium, graphic representation of recording materials on a paper medium, and the results of calibration of seismic channels. Upon receipt of these materials the Party carrying out the explosion, in the presence of Designated Personnel, shall select and retain either the copy or the original of each recording, graphic representation, and results of calibration of the seismic channels. The set of data not selected by the Party carrying out the explosion shall be retained by Designated Personnel. For digital recording of seismic signals, the Verifying Party shall provide the description of the recording format and a sample of the computer program for reading digital data. Designated Personnel shall provide the program sample upon arrival at the point of entry. Seismic recordings provided to the Party carrying out the explosion shall cover a time period beginning no less than 30 seconds prior to the time of arrival of the first explosion-generated P-wave at any station of the local seismic network and ending no more than three days after the explosion, unless the Parties otherwise agree. All seismic recordings shall include a common time reference agreed upon by the Parties.

SECTION VII. ON-SITE INSPECTION

1. In carrying out on-site inspection, the Verifying Party shall have the right to confirm the validity of the geological and geophysical information provided in accordance with paragraphs 3 and 7 of Section IV of this Protocol in accordance with the following procedures:

(a) Designated Personnel may analyze relevant studies and measurement data, including logging data, of the Party carrying out the explosion, the core samples or rock fragments extracted from each emplacement hole from the bottom of the hole to a distance above the point of emplacement in meters equal to 40 times the cube root of the planned yield in kilotons of the emplaced explosive, as well as any logging data and core samples from existing exploratory holes, which shall be provided to Designated Personnel upon their arrival at the explosion site, if the Party carrying out the explosion carried out relevant studies, measurements, and coring;

(b) Designated Personnel shall have the right to observe logging and the extraction of core samples or rock fragments from locations agreed upon by the Parties within the portion of the emplacement hole specified in subparagraph (a) of this paragraph or from an exploratory hole, provided that it is located no farther from the emplacement hole than a distance in meters equal to 10 times the cube root of the planned yield in kilotons of the emplaced explosive at depth intervals

agreed upon by the Parties if such operations are carried out by the Party carrying out the explosion;

(c) Designated Personnel shall have the right to use their own equipment for logging the emplacement hole and extracting sidewall rock samples within the portion of the emplacement hole identified in subparagraph (a) of this paragraph. Such operations shall be conducted in the presence of personnel of the Party carrying out the explosion; and

(d) all logging data produced by either Party, including calibration data, shall be duplicated, and one copy of the data shall be provided to each Party. Calibration data shall include information needed to confirm the sensitivity of the equipment under the conditions in which it is used. Designated Personnel shall have the right to examine and remove from the territory of the Party carrying out the explosion core samples, sidewall rock samples, and rock fragments specified in subparagraphs (a), (b), and (c) of this paragraph, as selected by Designated Personnel.

2. In carrying out on-site inspection, Designated Personnel shall have the right:

(a) to confirm by direct measurement the validity of the information provided in accordance with paragraph 7(f) of Section IV of this Protocol;

(b) to confirm the validity of the information provided in accordance with paragraph 7(g) of Section IV of this Protocol, by observing relevant measurements being made, and by having access to the data obtained if such measurements are conducted by the Party carrying out the explosion, and by making measurements with their own equipment to determine the location and configuration of any voids within each hydrodynamic measurement zone;

(c) to have access to the site of the explosion and to facilities and structures related to the conduct of the explosion, along agreed routes;

(d) to observe the emplacement of each explosive canister, to confirm the depth of its emplacement and the relative location of explosives in a group, and to observe the stemming of each emplacement hole;

(e) to have access to their equipment associated with carrying out on-site inspection from commencement of its use by Designated Personnel at the explosion site until the departure of all personnel from the explosion area prior to the explosion;

(f) to unimpeded visual observation of the entrance area to each emplacement hole at any time from the moment of emplacement of each explosive until the departure of all personnel from the explosion area prior to the explosion; and

(g) to observe the explosion.

3. Designated Personnel shall have the right to obtain photographs associated with carrying out on-site inspection, which shall be taken by the Party carrying out the explosion at the request of Designated Personnel, in accordance with paragraphs 8 and 9 of Section V of this Protocol.

SECTION VIII. EQUIPMENT

1. Designated Personnel, in carrying out activities related to verification in accordance with this Protocol, shall have the right to bring into the territory of the Party carrying out the explosion, install, and use the following equipment:

- (a) if the Verifying Party has provided notification of its intent to use the hydrodynamic yield measurement method, part or all of the equipment specified in paragraph 5 of this Section;
- (b) if the Verifying Party has provided notification of its intent to use a local seismic network, part or all of the equipment specified in paragraph 6 of this Section;
- (c) if the Verifying Party has provided notification of its intent to carry out on-site inspection, part or all of the equipment specified in paragraph 7 of this Section;
- (d) geologist's field tools and kits, geodetic equipment, topographic survey equipment, equipment for recording of field data, and equipment for rapid photo processing;
- (e) portable short-range communication equipment, whose power and frequency shall conform to restrictions established by the Party carrying out the explosion;
- (f) mobile work stations and temporary facilities;
- (g) medical and health physics equipment and supplies, personal protective gear, personal computers, recreational and other items as may be agreed by the Parties; and
- (h) satellite communications equipment, if the Party carrying out the explosion does not provide satellite communications for Designated Personnel.

2. At the choice of the Party carrying out the explosion, closed-circuit television equipment shall be provided by the Verifying Party or the Party carrying out the explosion, for the purpose of remote observation by the Verifying Party, in accordance with paragraph 6(e) of Section V of this Protocol.

3. Designated Personnel, in carrying out activities related to verification in accordance with this Protocol, shall have the right to bring into the territory of the Party carrying out the explosion, for use by the personnel of the Party carrying out the explosion in accordance with paragraph 8 of Section V of this Protocol, photographic cameras, film, and related photographic equipment.

4. No less than 120 days prior to the planned date of the beginning of emplacement of explosives, the Parties shall agree upon the list of such additional equipment as may be requested by the Verifying Party, and which shall be supplied by the Party carrying out the explosion for use by Designated Personnel. Such additional equipment with its description and operating instructions shall be provided to Designated Personnel upon arrival at the site of the explosion.

5. The complete list of equipment for hydrodynamic yield measurement shall include:

- (a) sensing elements and associated cables for use in the emplacement hole;
- (b) the recording facility or facilities, including equipment for sending and recording commands, equipment for generation of a timing reference signal from hydrodynamic measurement cables, and equipment for data acquisition, recording and processing, and, with respect to a group explosion in which any individual explosion in the group is separated from any other explosion by more than two kilometers, radio equipment for monitoring the operational status of the equipment and for transmitting and receiving control signals. Frequencies and maximum power output of radio transmitters, frequency range and sensitivity of radio receivers, and orientation of transmitting and receiving antennas shall be agreed upon by the Parties. Operation of the radio equipment shall begin at the time of the beginning of emplacement of sensing elements and associated cables and shall end at the time of the explosion. Designated Personnel shall notify the Party carrying out the explosion in advance of any activation or deactivation of the radio equipment;
- (c) cables for above-ground transmission of electrical power, control signals and data;
- (d) electrical power supplies;
- (e) measuring and calibration instruments, support equipment, maintenance equipment, and spare parts necessary for ensuring the functioning of sensing elements, cables and equipment of the recording facilities and the command and monitoring facility;
- (f) logging and sidewall rock sampling equipment necessary for confirming geological and geophysical characteristics of the emplacement hole as well as for obtaining data on the spatial location of points of emplacement of each explosive canister;
- (g) coring equipment and drilling equipment for the drilling of an exploratory hole for coring purposes. Upon agreement between the Parties, the Verifying Party, under leasing conditions, may use for these purposes the coring and drilling equipment of the Party carrying out the explosion; and
- (h) the command and monitoring facility, with equipment, including computers, for generating and recording command and monitoring signals, for transmitting and receiving command and monitoring signals between each recording facility and the command and monitoring facility, as well as for retrieving, storing, and processing hydrodynamic data.

6. The complete list of equipment for a local seismic network shall include:

- (a) seismic stations, each of which contains seismic instruments, an electrical power supply and associated cables, and radio equipment for receiving and transmitting control signals and data;
- (b) equipment for the control point, including electrical power supplies, equipment for sending and recording control signals and data, and data processing equipment; and

(c) measuring and calibration instruments, support equipment, maintenance equipment, and spare parts necessary for ensuring the functioning of the complete network.

7. The complete list of equipment for on-site inspection shall include logging and sidewall rock sampling equipment necessary for confirming geological and geophysical characteristics of the emplacement hole as well as for obtaining data on the spatial location of points of emplacement of each explosive canister.

8. The following procedures shall be followed with respect to the equipment for hydrodynamic yield measurement, the equipment for on-site inspection, and the equipment for a local seismic network:

(a) no less than 140 days prior to the planned date of the beginning of emplacement of explosives, the Verifying Party, if it has declared its intention to use the hydrodynamic yield measurement method, shall provide the Party carrying out the explosion with the equipment and information specified in subparagraph (a)(i) of this paragraph and, if the Verifying Party has declared its intention to use a local seismic network, the equipment and information specified in subparagraph (a)(ii) of this paragraph; or, if it has declared its intention to conduct on-site inspection, equipment and information specified in subparagraph (a)(iii) of this paragraph, in order to enable the Party carrying out the explosion to familiarize itself with such equipment, if such equipment and information have not previously been provided. If, upon completion of familiarization with the equipment provided in accordance with this subparagraph, the Party carrying out the explosion concludes that use of any element of the equipment provided would be inconsistent with its containment or security requirements, the Party carrying out the explosion shall promptly, but no less than 120 days prior to the planned date of the beginning of emplacement of explosives, so inform the Verifying Party, and shall specify the modifications that must be made in this equipment to satisfy the requirements of the Party carrying out the explosion. The equipment provided in accordance with this subparagraph shall be returned in the same condition as that in which it was received to the Verifying Party at the point of entry no less than 90 days prior to the planned date of the beginning of emplacement of explosives. The following equipment and information shall be provided:

- (i) one set of equipment specified in paragraphs 5(a), 5(b), 5(c), 5(d), 5(e), 5(f) and 5(h) of this Section, as well as electrical and mechanical design information, specifications, and installation and operating instructions for this equipment;
- (ii) one set of equipment specified in paragraph 6 of this Section, including one seismic station, as well as electrical and mechanical design information, specifications, and installation and operating instructions for this equipment; and
- (iii) one set of equipment specified in paragraph 7 of this Section, as well as electrical and mechanical design information, specifications, and operating instructions for this equipment;

(b) no less than 50 days prior to the planned date of the beginning of emplacement of explosives, the Verifying Party shall deliver in sealed containers, to the point of entry in the territory of the Party carrying out the explosion, two identical sets of each type of equipment that it intends to use for activities related to verification for that explosion, with a complete inventory of equipment, specifying any components that do not perform functions directly related to measurements during the explosion. These sets of equipment shall have the same components and technical characteristics as the equipment specified in subparagraph (a) of this paragraph, or, if specified by the Party carrying out the explosion in accordance with subparagraph (a) of this paragraph, shall contain modifications made in accordance with the requirements of the Party carrying out the explosion with regard to containment and security. Each of the two identical sets shall include the following:

(i) if the Verifying Party has provided notification of its intent to use the hydrodynamic yield measurement method, equipment specified in paragraphs 5(a), 5(b), and 5(h) of this Section; and

(ii) if the Verifying Party has provided notification of its intent to use a local seismic network, equipment specified in paragraphs 6(a) and 6(b) of this Section;

(c) the Party carrying out the explosion shall choose one of the two identical sets of each type of equipment for use by Designated Personnel;

(d) at the point of entry the Party carrying out the explosion shall affix its own seals to the sealed containers in which the equipment chosen for use arrived, shall ensure protection of this equipment throughout the entire period it is in the territory of the Party carrying out the explosion, and shall transport that equipment to the site of the explosion. Prior to shipment to the site of the explosion, the set of equipment chosen for use shall be kept sealed at the point of entry, and the time of its shipment to the site of the explosion shall be determined by the Party carrying out the explosion. The Party carrying out the explosion shall consult with Designated Personnel regarding plans and schedule of shipment of the equipment no less than 48 hours in advance of the shipment. Designated Personnel shall have the right to unimpeded verification of the integrity of their seals, to observe their equipment, and to accompany their equipment. This equipment shall be handed over to Designated Personnel at the site of the explosion for emplacement, installation, and use no less than 20 days prior to the planned date of the beginning of emplacement of explosives, and it shall thereafter remain under the control of Designated Personnel; seals affixed to the equipment specified in paragraph 5(a) of this Section shall not be removed prior to preparation for installation of such equipment, at which time the seals shall be removed by Designated Personnel in the presence of personnel of the Party carrying out the explosion, and personnel of the Party carrying out the explosion thereafter shall have the right to observe all activities relating to the installation of such equipment;

(e) seals of the Verifying Party shall be removed from equipment not chosen for use, in the presence of personnel of both Parties, and thereafter this equipment shall be retained for inspection by the Party carrying out the explosion without the presence of Designated Personnel for a period ending no more than 30 days

following the explosion, at which time such equipment shall be returned in the same condition as that in which it was received to the Verifying Party at the point of entry;

(f) no less than 50 days prior to the planned date of the beginning of emplacement of explosives, the Verifying Party shall provide, at its option, either one or two sets of the equipment that the Verifying Party intends to use for activities related to verification for this explosion, other than equipment specified in paragraph 8(b) of this Section. A complete inventory of such equipment, specifying any components that do not perform functions directly related to measurements during the explosion, shall be provided to the Party carrying out the explosion at least one week prior to the planned arrival of the equipment at the point of entry. If only one set of equipment is provided by the Verifying Party, the Party carrying out the explosion shall have the right to inspect this equipment upon its arrival at the point of entry for up to 30 days, without the presence of Designated Personnel. Upon conclusion of the inspection, the Party carrying out the explosion shall identify any equipment that it deems unacceptable for delivery to the site of the explosion, in which case such equipment shall be removed by the Verifying Party and returned to its territory. All equipment deemed acceptable for delivery to the site of the explosion shall be shipped to the site of the explosion so as to enable Designated Personnel to carry out their activities related to verification as set forth in the coordinated schedule specified in paragraph 6 of Section XI of this Protocol, but in no case less than 20 days prior to the beginning of emplacement of explosives. The Party carrying out the explosion shall transport this equipment in such a manner as to ensure that it is delivered to Designated Personnel in the same condition as that in which it was received. If two sets of equipment are provided by the Verifying Party, the procedures specified in paragraphs 8(b), 8(c), 8(d), and 8(e) of this Section for selection and inspection of equipment shall be followed. If the Verifying Party under leasing conditions uses coring and drilling equipment of the Party carrying out the explosion, such equipment shall be provided to Designated Personnel at the site of the explosion so as to enable Designated Personnel to carry out their activities related to verification as set forth in the coordinated schedule referred to in paragraph 6 of Section XI of this Protocol, but in no case less than 20 days prior to the beginning of emplacement of explosives, unless the Parties otherwise agree;

(g) with respect to the equipment specified in paragraphs 5(a) and 5(c) of this Section, the Party carrying out the explosion shall have the right to retain for its own purposes up to 150 meters of each type of cable in the set being inspected. The cable segments to be retained may be taken from any place along the length of the cable, but the number of individual segments shall not exceed the number of reels of cable in a set of equipment; and

(h) after inspecting the equipment in accordance with paragraphs 8(e) and 8(f) of this Section, the Party carrying out the explosion shall inform Designated Personnel what equipment of that delivered to the site of the explosion it deems unacceptable for use during the explosion.

9. Prior to the beginning of emplacement of explosives, Designated Personnel shall certify in writing to the personnel of the Party carrying out the explosion that the equipment delivered to the site of the explosion is in working condition.

10. Personnel of the Party carrying out the explosion shall have the right to observe use of equipment by Designated Personnel at the site of the explosion, with access to the recording facilities, the command and monitoring facility, the control point, and seismic stations of the local seismic network of the Verifying Party being subject to the following:

(a) at any time prior to the explosion that Designated Personnel are not present in the recording facilities, in the command and monitoring facility, in the control point, or at the seismic stations, these facilities, control point, and stations shall be sealed by the seals of both Parties. Seals may be removed by Designated Personnel only in the presence of personnel of the Party carrying out the explosion;

(b) prior to the explosion, personnel of the Party carrying out the explosion may enter the recording facilities, the command and monitoring facility, or the control point of the Verifying Party for the purpose of conducting operations that require the participation of both Parties only with the agreement of the Designated Personnel Team Leader and when accompanied by the Designated Personnel Team Leader or his designated representative;

(c) at all other times prior to the explosion, personnel of the Party carrying out the explosion may enter the recording facilities, the command and monitoring facility, or the control point of the Verifying Party only at the express invitation of the Designated Personnel Team Leader and when accompanied by the Designated Personnel Team Leader or his designated representative;

(d) following the explosion, Designated Personnel shall have the right to enter the recording facilities for data recovery only when accompanied by personnel of the Party carrying out the explosion. No later than the final dry run, Designated Personnel shall inform the Party carrying out the explosion of procedures for recovering such data and shall advise the Party carrying out the explosion at the time of data recovery of any changes the Designated Personnel make in those procedures and the reasons for such changes. Personnel of the Party carrying out the explosion shall observe the process of data recovery from instrumentation in the recording facilities and the command and monitoring facility, and shall leave the recording facilities and the command and monitoring facility at the same time as Designated Personnel; and

(e) at any time following the explosion, personnel of the Party carrying out the explosion shall have the right to observe the activities of Designated Personnel in the control point. Personnel of the Party carrying out the explosion shall be present in the control point to observe recovery of the initial data, which shall take place within one hour following the explosion. At any time following the explosion that Designated Personnel are not present in the control point, the control point shall be sealed with the seals of both Parties. The seals may be removed by Designated Personnel only in the presence of personnel of the Party

carrying out the explosion. Within five days following the explosion, Designated Personnel shall leave the control point at the same time as personnel of the Party carrying out the explosion.

11. Following data recovery, the equipment used for activities related to verification in accordance with this Protocol may be retained by the Party carrying out the explosion and be subject to its exclusive control for a period ending no more than 30 days following data recovery, at which time this equipment shall be returned, in the same condition as that in which it was received, to the Verifying Party at the point of entry. Elimination of information stored in memories shall not be deemed damage to the equipment.

SECTION IX. DESIGNATED PERSONNEL AND TRANSPORT PERSONNEL

1. No later than 10 days following entry into force of the Treaty, each Party shall provide the other Party with a list of its proposed Designated Personnel who will carry out the activities related to verification in accordance with this Protocol and a list of its proposed Transport Personnel who will provide transportation for these Designated Personnel, their baggage, and equipment of the Verifying Party. These lists shall contain name, date of birth, and sex of each individual of its proposed Designated Personnel and Transport Personnel. The list of Designated Personnel shall at no time include more than 200 individuals, and the list of Transport Personnel shall at no time include more than 200 individuals.

2. Each Party shall review the list of Designated Personnel and the list of Transport Personnel proposed by the other Party. If the Party reviewing a list determines that an individual included thereon is acceptable to it, it shall so inform the Party providing the list within 20 days following receipt of the list, and such an individual shall be deemed accepted. If the Party reviewing a list determines that an individual included thereon is not acceptable to it, it shall so inform the Party providing the list of its objection within 20 days following receipt of the list, and such an individual shall be deemed not accepted and shall be deleted from the list.

3. Each Party may propose the addition or substitution of individuals on its list of Designated Personnel or its list of Transport Personnel at any time, who shall be designated in the same manner as is provided for in paragraph 2 of this Section with regard to the initial lists. Annually, no more than 40 individuals from the list of Designated Personnel shall be subject to substitution. This limitation shall not apply to the replacement of individuals due to permanent physical incapacity or death, or to deletion of an individual from the list of Designated Personnel in accordance with paragraph 5 of this Section. Replacement of an individual due to permanent physical incapacity, death or deletion from the list shall be accomplished in the same manner as is provided for in paragraph 2 of this Section.

4. Following receipt of the initial list of Designated Personnel or the initial list of Transport Personnel or of subsequent changes thereto, the Party receiving such information shall prepare for the issuance of such visas and other documents as may be

required to ensure that each individual on the list of Designated Personnel or the list of Transport Personnel to whom it has agreed may enter and remain in its territory for the purpose of carrying out activities related to verification in accordance with this Protocol. Such visas and documents shall be provided by the Party carrying out the explosion only to the individuals whose names are included on the lists provided by the Verifying Party, in accordance with paragraph 3 of Section X of this Protocol, upon receipt of such lists. Such visas and documents shall be valid for multiple entry throughout the period of preparation and conduct of the particular explosion.

5. If a Party determines that an individual included on the list of Designated Personnel or the list of Transport Personnel of the other Party has violated the provisions of this Protocol or has ever committed a criminal offense in its territory, or has ever been sentenced for committing a criminal offense, or has ever been expelled from its territory, the Party making such a determination shall so notify the other Party of its objection to the continued inclusion of this individual on the list. If at that time this individual is present in the territory of the Party raising the objection, the other Party shall immediately recall this individual from the territory of the Party raising this objection and immediately thereafter delete that individual from the list of Designated Personnel or from the list of Transport Personnel.

6. Designated Personnel with their personal baggage and equipment of the Verifying Party shall be permitted to enter the territory of the Party carrying out the explosion at the designated point of entry, to remain in that territory and to exit through the designated point of entry.

7. Designated Personnel and Transport Personnel shall be accorded the following privileges and immunities for the entire period they are in the territory of the Party carrying out the explosion and thereafter with respect to acts previously performed in the exercise of their official functions as Designated Personnel or Transport Personnel:

- (a) Designated Personnel and Transport Personnel shall be accorded the inviolability enjoyed by diplomatic agents pursuant to Article 29 of the Vienna Convention on Diplomatic Relations of April 18, 1961;
- (b) living and working quarters occupied by Designated Personnel and Transport Personnel carrying out activities in accordance with this Protocol shall be accorded the inviolability and protection accorded the quarters of missions and diplomatic agents pursuant to Articles 22 and 30 of the Vienna Convention on Diplomatic Relations;
- (c) archives, documents, papers and correspondence of Designated Personnel and Transport Personnel shall enjoy the inviolability accorded the archives, documents, papers and correspondence of missions and diplomatic agents pursuant to Articles 24 and 30 of the Vienna Convention on Diplomatic Relations. In addition, the aircraft or other transport vehicles of the Verifying Party shall be inviolable;
- (d) Designated Personnel and Transport Personnel shall be accorded the immunities accorded diplomatic agents pursuant to paragraphs 1, 2, and 3 of

Article 31 of the Vienna Convention on Diplomatic Relations. Immunity from jurisdiction of Designated Personnel or Transport Personnel may be waived by the Verifying Party in those cases in which it is of the opinion that immunity would impede the course of justice and it can be waived without prejudice to the implementation of the provisions of this Protocol. Waiver must always be express;

(e) Designated Personnel and Transport Personnel carrying out their activities in accordance with this Protocol shall be accorded the exemption from dues and taxes accorded diplomatic agents pursuant to Article 34 of the Vienna Convention on Diplomatic Relations;

(f) living and working quarters occupied by Designated Personnel and Transport Personnel carrying out their activities in accordance with this Protocol shall be accorded the exemption from dues and taxes accorded mission premises pursuant to Article 23 of the Vienna Convention on Diplomatic Relations; and

(g) Designated Personnel and Transport Personnel shall be permitted to bring into the territory of the Party carrying out the explosion, without payment of any customs duties or related charges, articles for their personal use, with the exception of articles the import or export of which is prohibited by law or controlled by quarantine regulations.

8. Designated Personnel and Transport Personnel shall not engage in any professional or commercial activity for personal profit in the territory of the Party carrying out the explosion.

9. Without prejudice to their privileges and immunities, Designated Personnel and Transport Personnel shall be obliged to respect the laws and regulations of the Party carrying out the explosion and shall be obliged not to interfere in the internal affairs of that Party.

10. If the Party carrying out the explosion considers that there has been an abuse of privileges and immunities specified in paragraph 7 of this Section, consultations shall be held between the Parties to determine whether such an abuse has occurred and, if so determined, to prevent a repetition of such an abuse.

SECTION X. ENTRY, TRANSPORT, FOOD, LODGING AND PROVISION OF SERVICES FOR DESIGNATED PERSONNEL AND TRANSPORT PERSONNEL

1. The Party carrying out the explosion shall ensure Designated Personnel and Transport Personnel access to its territory for the purposes of carrying out activities related to verification, in accordance with this Protocol, and shall provide these personnel with such other assistance as may be necessary to enable them to carry out these activities. Following notification by the Verifying Party of its intention to conduct hydrodynamic yield measurement or to carry out on-site inspection, Designated Personnel shall have the right to be present at the site of the explosion to carry out activities in accordance with this Protocol at such times and for such periods as required to carry out these activities.

The specific times and periods for carrying out such activities shall be specified in the coordinated schedule specified in paragraph 6 of Section XI of this Protocol.

2. The number of Designated Personnel shall not exceed:

- (a) when exercising their rights and functions associated with drilling, logging, hole surveying, and coring, if this work is carried out by Designated Personnel operating their own equipment or equipment leased from the Party carrying out the explosion, 25;
- (b) when exercising their rights and functions associated with observing drilling, logging, hole surveying, and coring performed by the Party carrying out the explosion, or when Designated Personnel perform logging, hole surveying, or sidewall rock sampling, 10;
- (c) when exercising their rights and functions associated with the confirmation of the validity of geological and geophysical information, the number of emplacement holes plus three;
- (d) when exercising their rights and functions associated with the use of hydrodynamic yield measurement equipment, the number of explosives plus three, plus the number of recording facilities specified in paragraph 5 of Section VIII of this Protocol multiplied by seven; and, with respect to group explosions in which radio controlled recording facilities are employed, three per recording facility, plus seven for the command and monitoring facility;
- (e) when exercising their rights and functions associated with the use of a local seismic network, 15;
- (f) for administrative, coordination, clerical, and health and safety matters, when Designated Personnel described in subparagraphs (a), (b), (c), (d), and (e) of this paragraph are present, eight; and
- (g) if the Verifying Party provides food and housing for Designated Personnel identified in subparagraphs (a), (b), (c), (d), (e), and (f) of this paragraph, six.

3. No less than 20 days prior to the planned arrival of its Designated Personnel or equipment at the point of entry to carry out activities related to verification of a particular explosion, the Verifying Party shall provide the Party carrying out the explosion with:

- (a) a list of the names of the Designated Personnel, their passports and documentation, and a list of the names of the Transport Personnel, their passports and documentation, who will carry out activities related to verification of a particular explosion;
- (b) the names of the Designated Personnel Team Leader and deputy team leader, and the names of those individuals from the Designated Personnel who will escort equipment of the Verifying Party to the site of the explosion;
- (c) confirmation of the point of entry to be used;
- (d) the scheduled date and the estimated time of arrival of Designated Personnel at the point of entry; and
- (e) designation of the mode of transport to be used.

No more than 15 days following receipt of the lists, passports, and documentation specified in subparagraph (a) of this paragraph, the Party carrying out the explosion shall return those passports to the Verifying Party with the visas and documents specified in paragraph 4 of Section IX of this Protocol.

4. If a transport aircraft other than a regularly scheduled commercial aircraft is used for transportation, its flight path shall be along airways that are agreed upon by the Parties, and its flight plan shall be filed in accordance with the procedures of the International Civil Aviation Organization applicable to civil aircraft, including in the remarks section of the flight plan a confirmation that the appropriate clearance has been obtained. The Party carrying out the explosion shall provide parking, security protection, servicing, and fuel for the aircraft of the Verifying Party at the point of entry. The Verifying Party shall bear the cost of such fuel and servicing.

5. The Party carrying out the explosion shall ensure that any necessary clearances or approvals are granted so as to enable Designated Personnel, their baggage, and equipment of the Verifying Party to arrive at the point of entry by the estimated arrival date and time.

6. The Party carrying out the explosion shall assist Designated Personnel and Transport Personnel and their baggage in passage through customs without undue delay. The Party carrying out the explosion shall provide transportation between the point of entry and the site of the explosion for Designated Personnel, for their baggage and equipment of the Verifying Party, so as to enable such personnel to exercise their rights and functions in the time periods provided for in this Protocol.

7. The Party carrying out the explosion shall have the right to assign its personnel to escort Designated Personnel and Transport Personnel while they are in the territory of the Party carrying out the explosion.

8. Except as otherwise provided for in this Protocol, movement and travel of Designated Personnel and Transport Personnel shall be subject to the authorization of the Party carrying out the explosion.

9. During the period Designated Personnel and Transport Personnel are in the territory of the Party carrying out the explosion, the Party carrying out the explosion shall provide food, living and working facilities, secure places for storing equipment, transportation, and medical services for such personnel. If the Verifying Party desires to provide its own food or housing units for its Designated Personnel, or food for its Transport Personnel during their stay in the territory of the Party carrying out the explosion, the Party carrying out the explosion shall provide such assistance as may be necessary for such food and housing units to arrive at the appropriate locations. If the Verifying Party provides its own housing units, they shall be delivered to the point of entry no less than 30 days prior to the arrival of Designated Personnel. The Party carrying out the explosion shall have the right to inspect these housing units upon their arrival at the point of entry for a 30-day period, without the presence of personnel of the Verifying Party.

10. The Party carrying out the explosion shall ensure the Designated Personnel Team Leader or his designated representative access at all times to means of direct communications between the site of the explosion and the embassy of the Verifying Party, and shall provide Designated Personnel with telephone communications between their working facilities and living accommodations at the site of the explosion. The Designated Personnel Team Leader or his designated representative shall also have the right to use at all times satellite communications to ensure communications via the International Maritime Satellite Organization (INMARSAT) commercial satellite system, or a system of equivalent performance, between the site of the explosion and the telephone communications system of the Verifying Party. If the Party carrying out the explosion does not provide such communications, Designated Personnel shall have the right to use their own equipment specified in paragraph 1(h) of Section VIII of this Protocol. In this case, installation and alignment of all such equipment shall be done jointly. All equipment of this system, except the remote control unit, shall be locked and placed under seals of both Parties, and neither Party shall have access to this equipment except under the observation of personnel of the other Party. Designated Personnel shall have exclusive use of the remote control unit. If the Verifying Party provides satellite communications equipment, personnel of the Party carrying out the explosion shall have the right, under the observation of Designated Personnel, to make the following modifications provided they do not degrade the quality of communications:

- (a) install bandpass filters, to limit the frequency range, in the antenna signal transmission and reception lines;
- (b) modify the remote control unit to prevent manual tuning; and
- (c) modify the satellite communications equipment to allow the Party carrying out the explosion to monitor all transmissions.

11. At the site of the explosion, Designated Personnel shall observe all safety rules and regulations applicable to the personnel of the Party carrying out the explosion, as well as those additional restrictions with regard to access and movement as may be established by the Party carrying out the explosion. Designated Personnel shall have access only to the areas where they will directly exercise their rights and functions in accordance with Sections V, VI, and VII of this Protocol.

12. Designated Personnel shall not be given or seek access by physical, visual or technical means to the interior of the explosive canister, to documentary or other information descriptive of the design of an explosive, or to equipment for control and firing of explosives. The Party carrying out the explosion shall not locate documentary or other information descriptive of the design of an explosive in such ways as to impede Designated Personnel in carrying out their activities in accordance with this Protocol.

13. With the exception of those cases in which the Parties otherwise agree, all costs related to the activities of Designated Personnel and Transport Personnel carried out in accordance with this Protocol shall be borne by the Verifying Party, including costs for materials, equipment, leased equipment, and services that have been requested by and provided to the Verifying Party, as well as costs for transportation, food, living and

working facilities, provision of medical assistance, and communications. These costs shall be billed at the standard or official rates existing in the territory of the Party carrying out the explosion.

14. The Verifying Party shall have the right to include among its Designated Personnel a medical specialist, who shall be allowed to bring medications, medical instruments, and portable medical equipment agreed upon by the Parties. If Designated Personnel are treated in a medical facility of the Party carrying out the explosion the medical specialist shall have the right to consult on the recommended treatment and monitor the course of medical treatment at all times. The medical specialist of the Verifying Party shall have the right to require the Party carrying out the explosion to provide emergency evacuation of any individual of Designated Personnel who is ill or suffered an accident to a mutually agreed medical facility in the territory of the Party carrying out the explosion or to the point of entry for emergency medical evacuation by the Verifying Party. Designated Personnel shall have the right to refuse any treatment prescribed by medical personnel of the Party carrying out the explosion, and in this case the Party carrying out the explosion shall not be responsible for any consequences of such refusal. Such refusal must always be express.

SECTION XI. PROCEDURES FOR CONSULTATION AND COORDINATION

1. To facilitate the implementation of this Protocol, the Parties shall use the Joint Consultative Commission, as provided for in the Treaty, that shall meet at the request of either Party. For each explosion for which activities are carried out in accordance with this Protocol, the Parties shall establish a Coordinating Group of this Commission.

2. The Coordinating Group shall be responsible for coordinating the activities of the Verifying Party with the activities of the Party carrying out the explosion.

3. The Coordinating Group shall operate throughout the entire period of preparing and carrying out of the activities related to verification for a particular explosion, until the departure of Designated Personnel from the territory of the Party carrying out the explosion.

4. The Representative of the Verifying Party to the Coordinating Group shall be the Designated Personnel Team Leader, whose name shall be provided simultaneously with the notification of intent to carry out activities related to verification for a particular explosion. All members of the Coordinating Group from the Verifying Party shall be drawn from the list of Designated Personnel. Within 15 days following receipt of this notification, the Party carrying out the explosion shall provide the Verifying Party with the name of its Representative to the Coordinating Group.

5. The first meeting of the Coordinating Group shall be convened in the capital of the Party carrying out the explosion within 25 days following notification by the Verifying

Party of its intent to conduct activities related to verification for a particular explosion. Thereafter, the Coordinating Group shall meet at the request of either Party.

6. At the first meeting of the Coordinating Group, the Party carrying out the explosion shall present a list, including times and durations, of all its planned activities that are to be carried out as from the first day of this meeting and affect the rights of the Verifying Party provided in this Protocol. The Verifying Party shall provide a preliminary statement of its requirements for technical and logistical support for the activities related to verification that it intends to carry out. Within 10 days the Parties shall develop and agree upon a coordinated schedule, including specific times and durations for carrying out activities related to verification, that shall ensure the rights of each Party provided in this Protocol.

7. Agreement of the Representative of each Party in the Coordinating Group shall constitute agreement of the Parties with respect to the following specific provisions of this Protocol:

- (a) Section I: paragraph 5;
- (b) Section IV: paragraphs 9, 10(b), and 11;
- (c) Section V: paragraphs 2, 3, 4(b), 6(a), 7, 8(d), 9(f), 10, and 11;
- (d) Section VI: paragraphs 2, 3, 4, 5, 6, and 9;
- (e) Section VII: paragraphs 1(b) and 2(c);
- (f) Section VIII: paragraphs 1(g), 4, 5(b), 5(g), and 8(f);
- (g) Section X: paragraphs 4 and 13; and
- (h) Section XI: paragraph 6.

8. Upon completion of activities related to verification at the site of an explosion, the Designated Personnel Team Leader shall prepare, at his option, either at the site of the explosion or in the capital of the Party carrying out the explosion, a report of the activities provided for in this Protocol that were carried out by Designated Personnel. The report shall be factual, and shall list the types of activities in chronological order. Lists of information, of photographs, and of data required in accordance with this Protocol and provided by Designated Personnel to the Party carrying out the explosion and received by Designated Personnel from the Party carrying out the explosion in the course of conducting activities related to verification on the territory of the Party carrying out the explosion shall be appended to the report. The report shall be provided to the Party carrying out the explosion in its capital by the Designated Personnel Team Leader within 15 days following completion of activities related to verification at the site of the explosion.

9. If, in the course of implementing activities related to verification in accordance with this Protocol, questions arise requiring prompt resolution, such questions shall be considered by the Coordinating Group. If the Coordinating Group is unable to resolve such questions, they shall immediately be referred to the Joint Consultative Commission for resolution.

10. Within 30 days after the Party carrying out the explosion provides notification of its intent to carry out a group explosion having a planned aggregate yield exceeding 150 kilotons, a meeting of the Joint Consultative Commission shall be convened at the request of either Party with the goal of reaching agreement on specific procedures as specified in paragraph 2 of Section II of this Protocol. The explosion shall be conducted no less than 150 days following agreement of the Parties upon such procedures.

11. The Joint Consultative Commission may, as necessary, establish and amend procedures governing the activities of the Coordinating Group.

SECTION XII. RELEASE OF INFORMATION

1. Nothing in the Treaty and this Protocol shall affect the proprietary rights of either Party in information provided by it in accordance with the Treaty and this Protocol, or in information that may be disclosed to the other Party or that may become known to the other Party in preparing for, or carrying out, explosions. Claims to such proprietary rights, however, shall not impede implementation of the provisions of the Treaty and this Protocol.

2. Public release of the information provided in accordance with this Protocol or publication of material using such information may take place only with the agreement of the Party carrying out an explosion. Public release of the results of observation or measurements made by Designated Personnel may take place only with the agreement of both Parties.

SECTION XIII. ENTRY INTO FORCE

This Protocol is an integral part of the Treaty. It shall enter into force on the date of entry into force of the Treaty and shall remain in force as long as the Treaty remains in force.

DONE at Washington, in duplicate, this first day of June, 1990, in the English and Russian languages, both texts being equally authentic.

For the United States
of America:

George Bush

President of the United
States of America

For the Union of Soviet
Socialist Republics:

Mikhail Gorbachev

President of the Union of
Soviet Socialist Republics