REQUEST FOR PROPOSAL

To: ALL BIDDERS

CTBTO Ref. No.: 2018-0190/STOMOV
(PLEASE QUOTE ON ALL COMMUNICATIONS)

Tel. No.: +43 (1) 26030-6350
Fax No.: +43 (1) 26030 5948
E-mail: procurement@ctbto.org

Date: 30 Oct 18

Attn: Phone:
Fax:
Email:

Subject: ESTABLISHMENT OF INFRASTRUCTURE, INSTALLATION AND INITIAL TESTING FOR THE RADIONUCLIDE PARTICULATE STATION RN02 SALTA, ARGENTINA

Deadline for Submission: 12 Dec 18

Vienna Local Time: 17:00

The Preparatory Commission for the Comprehensive Nuclear Test-Ban-Treaty Organization (hereinafter referred to as the 'Commission') hereby invites you to submit a proposal that meets the requirements of the attached documents.

You are kindly requested to complete and return the acknowledgement form by fax or email as soon as possible.

If you have any questions you should contact the email address indicated above.

Yours Sincerely,

[Signature]
Courtney Linley
Chief, Procurement Section
# ACKNOWLEDGEMENT FORM

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<td>Title:</td>
<td>ESTABLISHMENT OF INFRASTRUCTURE, INSTALLATION AND INITIAL TESTING FOR THE RADIONUCLIDE PARTICULATE STATION RN02 SALTA, ARGENTINA</td>
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**Procurement Staff:** Alexandre Stomov  
**CTBTO Req. No.:** 0010012240

Please complete 'A' or 'B' or 'C' and Return

**WITHIN FIVE (5) DAYS**

THE PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION (CTBTO)

by email to procurement@ctbto.org

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**A: We shall submit our proposal**

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**B: We may submit and will advise**

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**C: We will not submit a proposal for the following reason(s)**

- our current workload does not permit us to take on additional work at this time;
- we do not have the required expertise for this specific project;
- insufficient time to prepare a proper submission;
- we consider the funds are insufficient to carry out the work required;
- other (please specify) __________________________

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1. GENERAL

1.1 Content of Request for Proposal (RFP)

The documents included in the RFP are as follows:

(i) Letter of Invitation;
(ii) Instructions to Invitees (ITI);
(iii) List of State Signatories;
(iv) Statement of Confirmation;
(v) Vendor Profile Form
(vi) Model Contract with Annexes:
   - Annex A – Clauses of Specific Application
   - Annex B – Schedule of Prices
   - Annex C – General Conditions of Contract
   - Annex D – Terms of Reference

Note: In the event of award, the Proposal will be incorporated as Annex E to the Contract.

1.2 Amendment of RFP Documents

At any time prior to the closing date for submission of Proposals, the Commission may, for any reason, modify the RFP documents by amendment. The Commission may consider extending the deadline in order to allow adequate time for considering the modifications in the preparation of the Proposal.

1.3 Proprietary Information

All documentation and information contained in this RFP are proprietary to the Commission and shall not be duplicated, used or disclosed in whole or in part for any purpose other than to evaluate them and respond to the Commission's Request for Proposal or otherwise without prior written agreement of the Commission.

2. PREPARATION AND SUBMISSION OF PROPOSAL

2.1 Proposal

(a) The Proposal shall be comprehensive and detailed. The Proposal shall meet all the requirements stated in the Terms of Reference. For this project, the Commission is seeking capabilities, which will ensure that the tasks are accomplished expeditiously and at a reasonable cost.

(b) The length of time to accomplish the work described in the Terms of Reference has been estimated on the basis of the requirements of the Commission.

2.2 Documents comprising Proposal

(a) The Proposal submitted by the invitee shall comprise the Technical Proposal and Financial Proposal.

(b) The Technical Proposal shall be submitted in a sealed envelope in 1 (one) original and 3 (three) copies, each clearly marked “Original Technical Proposal” or “Copy of Technical Proposal” and “Do Not Open Before the Closing Date”. The sealed envelope shall have the references of the RFP given above.
2.3 **Format and Signing of Proposal**

The Proposal must be typed or written in indelible ink, dated and signed by an official legally authorized to enter into contracts on behalf of your organisation. The Proposal shall not contain any interlineation, erasures or overwriting except as necessary to correct errors made by the invitee, in which case such corrections shall be initialled by the authorized person(s) signing the Proposal.

2.4 **Language of Proposal**

The Proposal and all correspondence and documents relating to it shall be in English.

2.5 **Validity of Proposal**

The Proposal shall be valid for 90 (ninety) days after the deadline for its submission to the Commission, unless an extension of validity has been requested by the Commission.

2.6 **Submission of Proposal**

(a) The two sealed envelopes shall be clearly marked with the name of your company, designated as technical Proposal or financial Proposal as well as with the following labels:

- **NAME OF PROJECT**: [Description indicated in the Letter of Invitation]
- **CLOSING DATE**: [Date indicated in the Letter of Invitation]
- **CTBTO REF. NO.**: [Number indicated in the Letter of Invitation]
- "DO NOT OPEN BEFORE THE CLOSING DATE"

(b) The two sealed envelopes shall be submitted to the Commission as follows:

Chief, Procurement Section  
CTBTO, Office E0918  
P.O. Box 1200  
Vienna International Centre  
Wagramer Strasse 5  
A-1400 Vienna, Austria

(c) The two sealed envelopes shall indicate the name and address of the Bidder to enable the Proposal to be returned unopened in case it is declared “late.” If the envelope is not sealed marked as required by this RFP, the Commission will assume no responsibility for the Proposal’s misplacement or premature opening. In the event of any discrepancy between copies and the original Proposal, the original shall govern.

2.7 **Closing Date**

The Proposal must be received by the Commission by the closing date indicated in the Letter of Invitation. Any Proposal received after the closing date will be rejected by the Commission and returned to the invitee unopened. The Commission may, at its discretion, extend the deadline for submission of the Proposal.
2.8 Modification and Withdrawal of Proposal

Bidders may modify or withdraw their Proposal after its submission, provided that written notice of the modification or withdrawal is received by the Commission by the closing date for submission of Proposal. The Proposal shall not be modified subsequent to the closing date.

2.9 Cost of Preparation of Proposal

The bidder shall bear all the costs associated with the preparation and submission of the Proposal and the Commission will not be responsible or liable for those costs, regardless of the conduct or outcome of this RFP.

3. CONTENT OF PROPOSAL

3.1 CONTENT OF THE TECHNICAL PROPOSAL

The Technical Proposal shall contain, but not necessarily be limited to, the following information:

Section 1 - Statement of Confirmation and Vendor Profile Form
The attached Statement of Confirmation and Vendor Profile Form (if not submitted to the Commission in the past) shall be duly signed and submitted together with the Proposal.

Section 2 - Scope of Work
(a) This Section of the Proposal shall reflect the invitee’s understanding of the work to be performed and the overall operational plan for the execution of the work to be contained within a fully integrated management plan for the establishment of the Station.

(b) This Section, Scope of Work, shall be organized according to the major sections of the Terms of Reference.

(c) The total length of the technical description, i.e. Scope of Work, shall not exceed 100 (one hundred) pages.

Section 3 - Time Schedule
Please provide a detailed time schedule in the form of a bar chart for the performance of all phases of the work. This bar chart shall indicate as a minimum:

(i) duration of the project in terms of days/weeks of each work task listed in the Terms of Reference;

(ii) the milestones for submission of all Reports;

Section 4 - Key Personnel
Please provide:

(a) a list of sufficient number of capable and experienced personnel from your own organisation to be assigned to the project;

(b) Curriculum vitae, function of each of the key staff proposed for this contract, such as
Project Manager or Team Leader, Chief Engineer, etc., and duration of their assignment.

**Section 5 - Subcontractor(s)**
In case the bidder requires the services of subcontractors, the Proposal shall include:

(a) the names, addresses, legal status and qualifications of major sub-contractor(s) proposed by your organisation.

(b) the scope of work and nature of subcontracting; and

(c) a statement that your organisation, will act as main contractor, and shall be fully responsible for the performance of your subcontractors, and shall be alone entitled to receive instructions from the Commission.

**Section 6 – Manufacturer’s Part Number**
The Proposal shall include the Manufacturer’s Part Number for each Good required by the Commission under this Request for Proposal.

**Section 7 - Model Contract**
This Section shall provide the Commission with a statement that the bidder has carefully reviewed the Model Contract and is in agreement with its terms and conditions.

**Section 8 - Deviations**
Deviations, if any, from the terms and conditions of the Model Contract or Terms of Reference shall be included in this Section. However, the attention of the invitee shall be drawn to paragraph 4.2 of the Instructions to Invitees (Responsiveness of Proposal) below.

**Section 9 - Other**
The Technical Proposal shall include:

a) Demonstration that the bidder has experience in the installation and operation of HPGe detector systems. This has to be reflected in the proposal;

b) A comprehensive overview (‘General Plan’) of the proposed technical solution, providing a complete description of the Equipment proposed, their functions and the system integration between various types of Equipment. The General Plan shall describe the steps the Contractor will follow to ensure well-functioning end-to-end systems, from sampling to communications to the Commission;

c) The expected time line of work. The time line should be in units of weeks or months from the signing of the contract. The time line should show the expected times, within the fixed overall time limit specified in Section 7 of the Terms of Reference, for the achievement of the tasks highlighted in Section 3 of the Terms of Reference:

d) The manufacturers and model numbers of all major Equipment components that would be supplied by the Contractor as part of the complete technical solution;

e) A description of the acceptance procedures followed by the Contractor for all major Equipment;

f) Training program.
3.2 CONTENT OF THE FINANCIAL PROPOSAL

Section 1 - Summary of Price
This Section shall include:

(a) a cost summary sheet shall be provided giving costs in these categories for major tasks.

(b) a total price in US Dollars or Euro shall include all costs for all goods and services offered;

(c) the prices quoted for all services shall include all costs of any taxes levied in respect of the work, but such costs shall be stated separately;

(d) shall the bidder require an advance payment, the Commission would require a bank guarantee from a reputable bank acceptable to the Commission for the amount of the advance payment. Please refer to Attachment 1 (Bank Guarantee) to these ITI.

(e) In principle the Commission is exempt from taxes. Since the arrangement under which such exemption is respected varies from country-to-country, the selected bidder will be informed by the Commission whether tax exemption will occur at source or whether taxes paid by the selected bidder will be reimbursed by the Commission upon submission of the original supporting documentation. “Taxes” means all direct and indirect taxes (including value added tax, general sales tax or goods and services tax), assessments, fees, customs duties, liens and charges in as much as they are levied in conclusion or implementation of the Contract, including customs restrictions and charges of similar nature in respect of articles imported or exported for the Commission’s official use.

(1) For Austrian companies
The price quoted shall be net of Taxes. All applicable Taxes payable by the selected bidder at the conclusion or implementation of the Contract in respect of the goods/services shall be quoted separately or be separately identified on the Proposal together with information on the nature of the tax and its method of calculation.

(2) For European Union (EU) Companies [FOR PURCHASE FROM EU COUNTRIES]
The price quoted shall be net of Taxes. All applicable Taxes payable by the selected bidder at the conclusion or implementation of the Contract in respect of the goods/services shall be quoted separately or separately identified on the Proposal together with information on the nature of the Tax and its method of calculation. Due to the VAT exemption applicable to the Commission, no VAT will be charged to the Commission by the EEC Suppliers under the Contract (Ref. EU VAT Council Directive 2006/112/EC, Article 151).

(3) For Non-EU Companies (FOR PURCHASE FROM NON-EU OR NON-EUROPE COUNTRIES)
The price quoted shall be net of Taxes. All applicable Taxes payable by the selected bidder at the conclusion or implementation of the Contract in respect of the goods/services shall be quoted separately or be separately identified on the Proposal
together with information on the nature of the tax and its method of calculation. For deliveries to Vienna, Austria, and due to the tax exemption at source applicable to the Commission, no Taxes shall be charged to the Commission under the Contract.

Section 2 - Breakdown of Price

Please provide the required information below:

(a) a breakdown of the total price shall be quoted under each task described in the Terms of Reference. It shall separately identify the costs related to:

   (i) Contractor’s Equipment;
   (ii) Materials and supplies;
   (iii) Transportation;
   (iv) Insurance;
   (v) Warranty;
   (vi) Labour costs at home office and in the field;
   (vii) Travel and per diem;
   (viii) Subcontractor costs;
   (ix) Overheads;
   (x) Other (communications, visas, etc)

Any applicable Taxes shall be quoted separately as specified in Section 3.2(d) of these ITI;

(b) for the inspection to be carried out by the Commission’s Representatives, the invitee shall exclude the daily subsistence allowances for the Commission’s staff or its authorized representatives.

Section 3 - Other

The Cost proposal shall include:

(a) all items necessary to fulfill the requirements described in Section 3 of the Terms of Reference. The price quotation of the sets should be broken down to be able to judge the price quotation of each of the major components of a system;
(b) all consumable materials, which normally are required as initial supplies during performance testing and commissioning, and for yearly operation, detailing specifications and suppliers;
(c) spare parts and maintenance tools necessary for the upkeep and maintenance of all Equipment for a period of 24 months, specifying type, quantities and price estimates;
(d) a description of the main elements of a training program for facility operation and maintenance and cost it;
(e) Tuning and one-month Initial Testing, as clarified in Sections 3.7 and 3.8 of the Terms of Reference. If the Initial Testing takes longer, unless due to the Commission, any extra costs arising from the extended period shall be borne by the Contractor. After Initial Testing, the Testing of the Station will go on until required by the Commission according to Section 3.8 of the Terms of Reference, therefore the Contractor shall include in the Proposal the cost of Testing per day;
(f) a plan with the time schedule suggested for the regular maintenance of the Station. The Contractor shall also provide a draft proposal with fees for regular maintenance and unscheduled servicing. The plan and the draft proposal for Service and Maintenance will be considered during the evaluation of the Proposal.
(g) In preparing the cost proposal, the Contractor shall classify expenses in the following general categories:
- Administrative costs: Management, licences, permits, authorisations, overhead (if applicable);
- Infrastructure: Site preparation, housing, security, lightning protection, power management, shipping (if applicable), travel cost (if applicable);
- Equipment: Cost of the system and of major components (e.g. detector system: detector, cryostat, lead shield, electronic, software, etc.), consumables;
- Installation: Support during the installation (if applicable), training, travel cost (if applicable), post-installation on-call maintenance (if applicable), spare parts;
- Documentation: Plans and drawings, manuals, reports, translation (if applicable);
- Testing: Tuning, initial testing, travel cost (if applicable), other costs, taxes (if applicable).

4. OPENING AND EVALUATION OF PROPOSALS

4.1 Opening of Proposals

After the deadline for submission of Proposals the Tender Opening Panel of the Commission will open only Technical Proposals received by the closing date referred to in the Letter of Invitation. The Financial Proposals shall be opened subject to the technical acceptability of the Technical Proposals described in paragraph 4.3 below. If the Technical Proposal is considered to be unacceptable, the Financial Proposal will not be considered.

4.2 Responsiveness of the Proposal

(a) Prior to the detailed evaluation, the Commission will determine if the Proposal is of acceptable quality, is complete and is substantially responsive to the RFP. For the purposes of the of this determination, a substantially responsive Proposal is one that conforms to all terms, conditions and specifications of the RFP without material deviations, objections, conditionalities or reservations.

(b) A material deviation, objection, conditionality or reservation is:

(i) one that affects in any substantial way the scope and quality of the work or performance of the contract;
(ii) that is inconsistent with the RFP; or
(iii) rectification that would affect unfairly the competitive bidding and position of other invitees.

(c) If the Proposal is substantially non-responsive, it may not be corrected and, therefore, it will be rejected.

4.3 Evaluation of Proposal

(a) The Commission will perform a detailed technical evaluation of the Technical Proposal previously determined as substantially responsive in order to determine if the Technical Proposal fully satisfies the technical requirements of the Terms of Reference.
The technical evaluation shall include the following evaluation criteria:

(i) compliance of the proposed system with the general technical specifications;
(ii) overall management plan, which identifies work tasks, time schedule, risks associated with the design, the manufacturing process, and installation of the proposed system of the Station;
(iii) cost-effectiveness over a multi-year operational period;
(iv) cost-effectiveness of the training, service and maintenance proposals;
(v) ease of upgrading to accommodate upcoming requirements, for example with new data formats and protocols, a new command interface, or a key management system;
(vi) the Commission will evaluate the compliance with technical requirements not only on individual units but also on how well the integrated system works in term of performance, maintainability, flexibility.

Subject to the conformance of the Technical Proposal to the technical requirements of the Terms of Reference, as referred to in paragraph 4.3 (b) above, the Financial Proposal shall be opened and examined for its commercial acceptability. The Commission will evaluate the following:

(i) contractual compliance;
(ii) commercial acceptability;

The Commission, based on the evaluation method given above, will determine the “least costly technically acceptable Proposal”.

4.4 Correction of Errors

The Commission will check the Proposal for any arithmetic errors. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected.

5. NEGOTIATIONS AND AWARD

The Commission reserves the right to request clarifications of the Proposal and to enter into negotiations regarding technical or commercial aspects of the Proposal. If and when the Proposal, including any amendment resulting from such negotiations, is fully agreed, the Commission will notify the invitee in writing of the contract award.

6. SIGNING OF CONTRACT

Pursuant to paragraph 4 of these ITI above, the Commission will send the successful invitee the contract documents incorporating all agreements between the parties. The successful invitee shall sign and date the contract and return it to the Commission no later than 5 (five) days after receipt of the contract documents.

7. CONTACTING THE COMMISSION

Except in the case of responding to a request from the Commission for clarification of a Proposal, no invitee shall contact the Commission on any matter relating to its Proposal, from the time the Proposal is opened until the written notification of contract award to a successful invitee. Any effort by an invitee to influence the Commission in its evaluation process or in its contract award decision shall result in the rejection of the invitee’s Proposal. Information
relating to the examination, clarification, evaluation, contract negotiations and award shall not be disclosed to the invitees or to any other persons not officially concerned with such process.

8. THE COMMISSION’S RIGHT TO ACCEPT OR REJECT ANY PROPOSAL

The Commission reserves the right to accept or reject any Proposal submitted, or to annul the selection process and reject all Proposals at any time prior to award of contract, without thereby incurring any liability for these actions or invitees or any obligation to inform the affected invitee or invitees of the grounds for the Commission’s action.

9. ELIGIBLE GOODS AND SERVICES

The goods and services (including those from subcontractors) to be rendered under this project shall have their origin in the States Signatories of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), the list of which is enclosed hereto. For purposes of this paragraph, "the origin" means the place where the materials, goods and/or from which the services are supplied.
ATTACHMENT 1 - FORM OF BANK GUARANTEE

TO: THE PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION (THE COMMISSION),
ADDRESS: A-1400, Wagramerstrasse 5, VIC, P.O. Box 1200, Vienna, Austria.

WHEREAS, (... Name and Address of Contractor...) (hereinafter referred to as the “Contractor”) has undertaken, in pursuance of Contract No. (...) dated (...) to execute (...Name of Contract and Brief Description of Services...) (hereinafter referred to as the “Contract”);

WHEREAS, it has been stipulated by the Commission in the said Contract that the Contractor shall furnish to the Commission with an irrevocable and unconditional Bank Guarantee by a recognized bank within 1 (one) month of the signing of the Contract for the sum specified therein as security for compliance with the Contractor's obligations of the said Contract; and

WHEREAS, we have agreed to give the Contractor such a Bank Guarantee;

NOW, THEREFORE we hereby affirm that we, (...Name of the Bank), are the Guarantor and responsible to you, on behalf of the Contractor:

a) up to a total of United States Dollars (...Amount of Guarantee...) (...in words...), within the period from the signature of the Contract until receipt and acceptance by the Commission of the Final Report and until the expiry of the Warranty period of 2 (two) years thereafter, and;

b) we undertake to pay the Commission, upon the Commission’s first written demand and without cavil or argument, any sum or sums within the above-mentioned limit of US $ (...Amount...) (...in words...) or US $ (...Amount...) (...in words...), without your needing to prove or to show grounds or reasons for your demand for the sum or sums specified therein, it being understood that our maximum liability under this guarantee will not exceed US $ (...Amount of Guarantee...) (...in words...).

We hereby waive the necessity of the Commission demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Work to be performed there under or of any of the Contract documents, which may be made between the Commission and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive the notice of any such change, addition or modification.

This guarantee is effective from the date of its issue and shall remain in full force and effect until the date of receipt and acceptance by the Commission of the Final Report/Revised Final Report and until the expiry of the Warranty period of 2 (two) years thereafter.

This guarantee is to be returned to us as soon as it is no longer required.

SIGNATURE AND SEAL OF THE GUARANTOR __________________________

Name of Bank ______________________________________________________

Address ___________________________________________________________

Date ____________
CTBTO Member States

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STATEMENT OF CONFIRMATION

On behalf of (name of firm or organization): ______________________________, I hereby attest and confirm that the firm/organization:

a) Possesses the legal status and capacity to enter into legally binding contracts with the Commission for the supply of equipment, supplies, services or work.

b) Is not insolvent, in receivership, bankrupt or being wound up, and not under administration by a court or a judicial officer, and that it is not subject to the suspension of its business or legal proceedings for any of the foregoing reasons.

c) Has fulfilled all its obligations to pay taxes and social security contributions.

d) Has not, and that its directors and officers have not, within the last five years been convicted of any criminal offense related to professional conduct or the making of false statements or misrepresentations as to their capacity or qualifications to enter into a procurement or supply contract.

e) That the Commission, in the event that any of the foregoing should occur at a later time, will be duly informed thereof, and in any event, will have the right to disqualify the firm/organization from any further participation in procurement proceedings.

f) That the Commission shall have the right to disqualify the firm/organization from participation in any further procurement proceedings, if it offers, gives or agrees to give, directly or indirectly, to any current or former staff member of the Commission a gratuity in any form, an offer of employment or any other thing of service or value, as an inducement with respect to an act or a decision of, or a procedure followed by, the Commission in connection with a procurement proceeding.

Name (print): _________________________ Signature: _________________________

Title/Position: _________________________

Place (City and Country): ________________________________

Date: _______________________________
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<tr>
<td>1. Name of Company:</td>
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<td>2. Street Address:</td>
<td>3. Telephone:</td>
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<td>P.O. Box :</td>
<td>4. Fax :</td>
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<td>City:</td>
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<td>Zip Code :</td>
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<td>5. E-Mail :</td>
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<td>6. Contact Person:</td>
<td>Title:</td>
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<td>7. Legal Status (e.g. Partnership, Private Limited Company, Government Institution)</td>
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<td>8. Year Established:</td>
<td>9. Number of Employees:</td>
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<td>10. Gross Annual Turnover (US$m)*:</td>
<td>11. Annual Export Turnover (US$m)*:</td>
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<tr>
<td>12. Type of Business/Products: Manufacturer</td>
<td>Sole Agent</td>
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<tr>
<td>13. Type of Business/Services/Work: Engineering</td>
<td>Civil Work</td>
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<td>14. References (your main customers, country, year and technical field of products, services or work): **</td>
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<td>15. Previous Supply Contracts with United Nations Organizations (over the last 3 years)**</td>
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<td>Organization:</td>
<td>Value in US$ Equivalent:</td>
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<tr>
<td>Organization:</td>
<td>Value in US$ Equivalent:</td>
</tr>
<tr>
<td>16. Summary of any changes in your company’s ownership during the last 5 years:</td>
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</table>

* Please provide a copy of the most recent audited annual report and accounts. Note: Export includes services or work performed abroad or for foreign clients.

**Please provide supplementary documentation on these items.
17. List of Products/Services/Work offered (please indicate the Product/Service/Work # as per attached sheet):

<table>
<thead>
<tr>
<th>Product/Service/Work #</th>
<th>Product/Service/Work Description</th>
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Questionnaire completed by:

18. Name: ___________________________ Title: ___________________________ Signature: ___________________________ Date: __________

FOR CTBTO USE ONLY

19. Evaluated By: ___________________________ Initials: ___________________________ Date: __________

20. Updated By: ___________________________ Initials: ___________________________ Date: __________

21. Remarks:

22. Vendor Registration Number Allocated: ___________________________ Not Accepted: __________

* Please provide a copy of the most recent audited annual report and accounts. Note: Export includes services or work performed abroad or for foreign clients.

**Please provide supplementary documentation on these items.
MODEL CONTRACT

between

THE PREPARATORY COMMISSION
FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION

and

[INSERT NAME OF THE CONTRACTOR]

ESTABLISHMENT OF INFRASTRUCTURE,
INSTALLATION AND INITIAL TESTING FOR THE
RADIONUCLIDE PARTICULATE STATION RN02 SALTA,
ARGENTINA

This Contract comprises this cover page, a table of contents, 13 (thirteen) pages of text including a signatories page, a List of Annexes and 5 (five) Annexes (A through E)

[Month, year]
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LIST OF ANNEXES

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ANNEX A – CLAUSES OF SPECIFIC APPLICATION
ANNEX B – SCHEDULE OF PRICES
ANNEX C – GENERAL CONDITIONS OF CONTRACT
ANNEX D – TERMS OF REFERENCE
ANNEX E – PROPOSAL

MODEL CONTRACT FOR ESTABLISHMENT OF IMS STATIONS
MODEL CONTRACT

This Contract is entered into between the PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION (hereinafter referred to as the “Commission”), having its office located at Wagramer Strasse 5, A-1400 Vienna, Austria, and [ENTER NAME OF THE CONTRACTOR] (hereinafter referred to as the “Contractor”), having its principal office located at [ENTER ADDRESS OF THE CONTRACTOR].

WHEREAS, the Commission has the responsibility to take all the necessary measures for the establishment of the International Monitoring System (hereinafter referred to as the “IMS”) under the Comprehensive Nuclear-Test-Ban Treaty (hereinafter referred to as the “Treaty”);

WHEREAS, in this connection the Commission desires to engage a contractor to provide, in accordance with this Contract, the goods and services for the establishment of the IMS station(s) specified in the Annexes; and

WHEREAS, the Contractor represents that it is ready, willing and able to provide such goods and services.

NOW, THEREFORE, the Parties, as defined below, hereto mutually agree as follows:

1. DEFINITIONS

1.1 In the Contract the following words and expressions shall have the meanings hereby assigned to them:

“Annex A” means Clauses of Specific Application for the Task(s) specified therein.

“Annex B” means the Schedule of Prices indicating the Contract Price.

“Annex C” means the Commission’s General Conditions of Contract.
“Annex D” means the Commission’s Terms of Reference.

“Annex E” means the Contractor’s Proposal(s).

“Clauses of Specific Application” means the terms and conditions of particular application for each Task.

“Commission’s Equipment” means the equipment, materials, spare parts, tools, technical documentation and any other goods to be provided by the Commission and/or the Commission’s Equipment Supplier.

“Commission’s Equipment Supplier” means a supplier contracted by the Commission under a separate contract to supply and, if required, install the Commission’s Equipment.

“Contract” means this document, its Annexes and any further modifications or such further documents as may be expressly incorporated in this Contract by the Parties in accordance with Clause 6.12 below.

“Contract Price” means the sum of the prices for all Tasks, as specified in Annex B, to be paid by the Commission to the Contractor for the full and proper performance of its obligations under this Contract.

“Contractor” means the legal entity named in the preamble of this Contract or its successors. The Contractor shall be the only interface for all matters pertaining to execution of the Work under this Contract.

“Contractor’s Equipment” means the equipment, materials, spare parts, tools, technical documentation and any other goods to be provided by the Contractor or its subcontractor(s) for the execution of the Work under this Contract.

“Cost” means all expenditure properly incurred or to be incurred in connection with the Work, whether on or off the Site/Station, including overhead and other charges properly allocable thereto but not including any allowance for profit.

“Equipment” means the Commission’s Equipment and the Contractor’s Equipment.

“Party(ies)” means the Commission and/or the Contractor, as the context requires.

“Rule(s)” means any regulation(s), official directive(s), ordinance(s), guideline(s), customs and practices.

“Site(s)” means the location(s) at which the Station(s) will be established as described in detail in each Task.

“Station(s)” means the IMS station(s) or facility(ies) described in detail in Annex D.
“Task” means such part of the Work in respect of an individual Station as described in detail in Annexes A, D and E.

“Tax(es)” means all direct and indirect taxes (including value added tax, general sales tax or goods and services tax), assessments, fees, customs duties, liens and charges in as much as they are levied in conclusion or implementation of this Contract, including customs restrictions and charges of similar nature in respect of articles imported or exported for the Commission’s official use.

“Terms of Reference” means the technical specifications for the performance of each Task.

“Work” means the goods and services to be provided by the Contractor for the performance of the Tasks(s) including as the case may be but not limited to, the design, drawings, technical specifications, site preparation and construction, supply and installation of the Contractor’s Equipment, its spare parts and supplies, installation of the Commission’s Equipment, provision of the installation support to the Commission and the Commission’s Equipment Suppliers and any other goods, and the services to be provided by the Contractor or its subcontractors, as applicable for each Task, in order to fulfil the Contractor’s obligations in accordance with this Contract, and the remedying of any defects therein.

1.2 The Parties agree that words and abbreviations, not specifically defined above, but which have well known technical or trade meaning, are used in this Contract in accordance with such recognized meaning.

1.3 Any word in the singular shall include the plural and vice versa, where the context so requires.

1.4 The headings in this Contract are for indicative purposes and shall not be taken into consideration for its interpretation.

2. AIM OF THE CONTRACT

The aim of this Contract is to perform the Work as required by each Task for the establishment of the Station(s) in accordance with Annexes D and E.
3. RESPONSIBILITIES OF THE CONTRACTOR

3.1 Statement of Work
(a) The Contractor shall perform the Tasks as described in Annex A.
(b) The Contractor shall carry out each Task in accordance with this Contract.
(c) The Contractor shall fully perform and complete the Work, including modifications, if any. Partial delivery or completion of the Work under each Task shall not be acceptable without prior written agreement of the Commission.

3.2 Commencement of the Work
The commencement date of the Work shall be the date indicated in Annex A for each Task.

3.3 Completion of the Work
The completion date of the Work shall be the date indicated in Annex A for each Task.

3.4 Contractor's Key Personnel
(a) The Key Personnel to be provided by the Contractor shall be as specified in Annex A for each Task and is considered essential for the Work to be performed under this Contract.
(b) Any replacement of the Key Personnel shall be made in accordance with Clause 7 of Annex C.

3.5 Commission’s Equipment
The Contractor shall comply with the requirements applicable to the Commission’s Equipment set out in Annexes A, D and E for each Task, as applicable.

3.6 Contractor’s Equipment
The Contractor shall comply with the requirements applicable to the Contractor’s Equipment set out in Annexes A, D and E for each Task, as applicable.

3.7 Insurance of Equipment
Without prejudice to Clause 9 of Annex C, the Contractor shall comply with the
insurance requirements applicable to the Equipment set out in Annex A for each Task, as applicable.

3.8 Reports
(a) Under each Task the Contractor shall prepare and submit to the Commission the reports set out in Annexes A, D and E for each Task, as applicable.
(b) The reports shall contain sufficient information for the Commission to determine the extent of the Work carried out by the Contractor and confirm that satisfactory progress in the implementation of this Contract has been achieved.
(c) The Contractor shall comply with the deadlines stipulated in Annexes A, D and E for each Task, as applicable.
(d) Unless otherwise stipulated, the Contractor shall provide the reports in 1 (one) original and 2 (two) copies, in English, and dispatched by registered, express mail. The reports must be suitably packed and carefully marked with the following information: the Contract number, title of the report, as well as description of contents.
(e) The Contractor shall provide any additional information or clarification to the relevant report upon request of the Commission.

3.9 Warranty
The Contractor shall provide a warranty as stipulated in Annex A.

3.10 Other Facilities and Services
Except as otherwise stipulated in this Contract, the Contractor shall provide all the facilities and services required by its employees or subcontractor’s employees for the execution of this Contract. Expenses of every kind incurred in this regard shall be borne by the Contractor. Such expenses shall include, but shall not be limited to, the cost of wages, housing, food, travel, medical care and insurance.
3.11 **Review of the Conditions of Sites**

(a) The Contractor shall visit the Site(s) and ascertain conditions and gather information pertaining to or affecting its Work under given conditions at the Site(s), including but not limited to:

(i) the condition of the surface and all structures thereon, both natural and artificial, the surface and ground water level and water supplies;

(ii) the nature, location and character of the Site(s) as well as available labour and equipment supply;

(iii) the quantity and quality of all materials, supplies, tools, equipment, labour and professional services necessary to complete the Work as required in this Contract; and

(iv) all pertinent national, local laws and Rules, in particular building permissions and construction regulations.

(b) By executing this Contract, the Contractor hereby represents and warrants that it has examined the Site(s) and ascertained its physical and other conditions and considered the above mentioned issues at the Site(s) in view of the requirements of this Contract. None of the conditions or/and circumstances referred to in Clause 3.11 (a) above shall justify non-compliance with the provisions of this Contract.

3.12 **Permits, Notices, Laws and Ordinances**

(a) The Contractor shall obtain and pay for all permits and inspections necessary for the proper execution and completion of the Work that are customarily obtained upon execution of this Contract and that are legally required at the time the Proposal is received by the Commission.

(b) The Contractor shall give all notices and comply with all laws and Rules required by the nature of the Work.

(c) If the Contractor notices that the Work or any part thereof required under this Contract is not in accordance with applicable laws and Rules, or with technical or safety standards, it shall promptly notify the Commission thereof in writing.

3.13 **Protection of Persons and Property**

(a) The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programmes in connection with the Work.
(b) The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury and loss to:

(i) all employees at each Station and all other persons who may be affected thereby;

(ii) all the Work, Equipment, its spare parts, materials and supplies to be incorporated therein, whether in storage on or off each Station, which is under the care, custody or control of the Contractor or any of its subcontractor(s); and

(iii) other property at each Station or adjacent thereto.

(c) The Contractor shall give all notices and comply with all applicable laws and Rules bearing on the safety of persons, property and/or their protection from damage, injury and loss.

(d) The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection of persons and property, including posting danger signs and other warnings against hazards and promulgating safety regulations.

(e) When the use or storage of combustible, explosive or other hazardous materials is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.

(f) The Contractor shall be responsible for the prevention of accidents at the Sites/Stations during the execution of the Work.

(g) In any emergency affecting the safety of persons or property, the Contractor shall promptly act to prevent threatened damage, injury and loss.

(h) The Contractor shall promptly remedy all damage and loss to any property, referred to in Clause 3.13 (b) above, caused in whole or in part by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under Clause 3.13 (b) above, except damage and loss attributable to the acts or omissions of the Commission or anyone directly or indirectly employed by it, or by anyone for whose acts the Commission may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to its obligations under Clause 9 of Annex C.
3.14 **Standard of Work**

The Contractor shall furnish the highest skill and judgement and cooperate with the Commission, including all the Commission's consultants and agents, in best furthering the interests of the Commission and the aim of this Contract. The Contractor shall provide efficient business administration and supervision, and it shall perform the Work in the best way and in the most expeditious and economical manner consistent with the requirements set forth in this Contract.

4. **RESPONSIBILITIES OF THE COMMISSION**

The Commission shall designate members of its staff to act as points of contact for the Contractor to ensure that the Work is carried out in accordance with Annexes A, D and E for each Task, and promptly notify the Contractor thereof. The Commission shall respond promptly to requests for information by the Contractor regarding the Work.

5. **CONTRACT PRICE AND TERMS OF PAYMENT**

5.1 **Contract Price**

The Contract Price shall be set out in Annex B. The Contract Price shall cover all expenses, excluding Taxes, incurred by the Contractor for the performance and completion of the Work.

5.2 **Taxes**

If applicable, Taxes shall be as identified in Annexes A, B and E of the Contract. The Contractor shall be reimbursed by the Commission for such taxes on the basis of actual amounts paid and duly documented by the Contractor as per Clause 5.5 below.

5.3 **Exclusion of Escalation**

The Contract Price shall be firm and fixed and shall not be subject to escalation. The Contractor shall not do any work, provide any materials or equipment, or perform any services which may result in any charges to the Commission over and
above the Contract Price without the prior written consent of the Commission and a formal written amendment to this Contract.

5.4 Progress Payments
(a) Progress payments shall be made in accordance with Annex A for each Task and as described in Clause 5.6 below.
(b) The making of any payment hereunder by the Commission shall not be construed as an unconditional acceptance by the Commission of the Work accomplished by the Contractor up to the time of such payment.

5.5 Contractor’s Invoice
(a) The Contractor shall submit an invoice in 1 (one) original and 2 (two) copies or electronically, from the Contractor’s official e-mail address in PDF format, duly signed and stamped by the Contractor and submitted to the Commission’s email address specified in Annex A. Each invoice shall contain the Contract number (CTBTO and SAP numbers), detailed banking instructions, including the name and address of the Contractor’s bank, account number, account holder’s name and SWIFT, IBAN and/or ABA codes for payment by electronic transfer.
(b) Applicable Taxes payable by the Contractor and/or its subcontractor(s) in respect of the Work shall be invoiced separately or be separately identified on the invoice. Actual payment of the Taxes must primarily be supported by original documentation such as bank account statements, transfer orders, or receipts issued by the local tax or customs authorities. If submission of such original documentation is not possible for justifiable reasons, their copies could be accepted by the Commission provided that they are duly signed and certified by local tax or customs authorities. In case the currency in which the taxes are levied is not the currency of the Contract, bank statements (or equivalent) showing the exchange rate used for the conversion should be submitted to the Commission, in addition to any other supporting documentation.

5.6 Mode of Payment
The Commission shall make all payments in **US Dollars or Euro** to the Contractor on the basis of an invoice submitted by the Contractor. All payments shall be made within 30 (thirty) days of the receipt of the original invoice, provided that the Work
has been satisfactorily completed and has been accepted by the Commission.

6. **GENERAL PROVISIONS**

6.1 **Entire Agreement**

(a) This Contract represents the final agreement in respect of the Work and shall supersede all prior agreements and representations between the Parties in this respect.

(b) Annexes A through E shall constitute integral parts of this Contract and shall be of full force and effect.

6.2 **Entry into Effect and Duration of the Contract**

This Contract shall enter into effect on the date of the last signature by the authorized signatories of the Parties and remain in force until the Commission specifies otherwise by a written notice.

6.3 **Discrepancies**

If there are discrepancies or conflicts between any of the documents that are part of this Contract, the document to prevail shall be given the precedence in the following order:

(i) this document and Clauses of Specific Application (Annex A);
(ii) Schedule of Prices (Annex B);
(iii) General Conditions of Contract (Annex C);
(iv) Terms of Reference (Annex D);

6.4 **Commission’s General Conditions of Contract**

The Parties hereto agree to be bound by the Commission’s General Conditions of Contract, which are attached hereto as Annex C.

6.5 **No Waiver**

Failure by a Party to enforce a right shall not be deemed to be a waiver of that right unless otherwise expressly provided in this Contract.
6.6 **Severability**

If any term and/or provision of this Contract is or becomes invalid, illegal, or unenforceable, the validity, legality and enforceability of the remaining provisions of this Contract shall not in any way be affected or impaired thereby.

6.7 **Contractor’s Claims and Remedies**

In no event shall the Contractor make any claim against the Commission for or be entitled to additional costs or compensation resulting from any delays in the progress or completion of the Work or any portion thereof, whether caused by the acts or omissions of the Commission, including, but not limited to, damages related to overhead, loss of productivity, acceleration due to delay and inefficiency. The Contractor's sole remedy in such event shall be an extension of time for completion of the Work, provided the Contractor otherwise meets the requirements and conditions set forth in this Contract.

6.8 **Delays and Extension of Time**

(a) If the Contractor is delayed at any time in the progress of the Work by any act or omission of the Commission or by its employee, or by any other contractor employed by the Commission, or by changes in the Work ordered by the Commission, or any causes beyond the Contractor's reasonable control, or by any other cause which the Commission determines may justify the delay, then the time for completion of the Work shall be extended by an amendment to this Contract in accordance to Clause 6.12 below for such reasonable time as the Commission may determine.

(b) Any request for extension of the time for reasons referred to in Clause 6.8 (a) above shall be submitted to the Commission not later than 20 (twenty) days after the commencement of the delay, otherwise said request shall be deemed to be waived. Such request shall state grounds for the delay and shall provide an estimate of the probable effect of such delay on the progress of the Work.

6.9 **Temporary Suspension of Work**

The Commission may, at any time, temporarily suspend the Work, in whole or in part, being performed by the Contractor under this Contract by giving 30 (thirty) days advance notice in writing to the Contractor. The Work so suspended shall be
resumed by the Contractor on the basis of a revised time schedule and on terms and conditions to be mutually agreed upon between the Parties.

6.10 Transmission of Notices, Invoices, Reports and other Documents

Notices, invoices, reports and any other documentation under the Contract shall be delivered or sent to the relevant Party to the address indicated in Annex A or to such address or facsimile number or the email address as the Party may substitute by notice after the date of the Contract.

6.11 Effectiveness

(a) Except as provided below, any communication in connection with the Contract will be deemed to be given as follows:

(i) if delivered in person, at the time of delivery;
(ii) if by registered mail or courier, when received;
(iii) if by fax, when received in legible form.

(b) A communication given under Clause 6.11 (a) above but received on a non-working day or after business hours in the place of receipt will only be deemed to be given on the next working day in that place.

6.12 Contract Amendment

No modification of, or change in, this Contract, or waiver of any of its provisions, or additional contractual relationship with the Contractor shall be valid unless approved in the form of a written amendment to this Contract, signed by duly authorized representatives of the Contractor and of the Commission.
IN WITNESS WHEREOF, the duly authorized representatives of the Parties hereto have executed this Contract.

For and on behalf of the PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION:

[Full name and position]

Date: ____________________________ .   Place: Vienna, Austria.

For and on behalf of [INSERT NAME OF CONTRACTOR]:

[Full name and position]

Date: ____________________________ .   Place: ____________________________ .
LIST OF ANNEXES

ANNEX A – CLAUSES OF SPECIFIC APPLICATION
(Task 1 – “________________________”)  
ANNEX B – SCHEDULE OF PRICES  
ANNEX C – GENERAL CONDITIONS OF CONTRACT  
ANNEX D – TERMS OF REFERENCE
(Task 1 – “________” dated _____ 200_)  
ANNEX E – PROPOSAL
(Technical Proposal dated _____ 200_)  
(Financial Proposal dated _____ 200_)
ANNEX A
CLAUSES OF SPECIFIC APPLICATION

TASK NO. 1

“ESTABLISHMENT OF INFRASTRUCTURE, INSTALLATION AND INITIAL TESTING FOR THE RADIONUCLIDE PARTICULATE STATION RN02 SALTA, ARGENTINA”

RADIONUCLIDE STATION RN 02, SALTA, ARGENTINA

<table>
<thead>
<tr>
<th>№</th>
<th>Reference Clause</th>
<th>Clauses of Specific Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.1 (a) Statement of Work</td>
<td>The Contractor shall perform the following:</td>
</tr>
<tr>
<td></td>
<td>(i) Work Tasks</td>
<td>In accordance with Annex D.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Contractor shall be responsible for all deviations, discrepancies, errors or omissions in the, as well as the other technical documentation that the Contractor has prepared regardless whether the Commission has approved the specifications or not.</td>
</tr>
<tr>
<td>2</td>
<td>3.2 Commencement of the Work</td>
<td>Upon entry into force of the Contract on the date of its last signature.</td>
</tr>
<tr>
<td>3</td>
<td>3.3 Completion of the Work</td>
<td>The Work shall be completed within 49 (forty nine) weeks after entry into force of the Contract.</td>
</tr>
<tr>
<td>4</td>
<td>3.4 Contractor’s Key Personnel</td>
<td>The Contractor’s Key Personnel are: [insert the names]</td>
</tr>
<tr>
<td>5</td>
<td>3.5 Commission’s Equipment</td>
<td>The Contractor shall act as a consignee of the Commission’s Equipment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Contractor shall, upon the delivery of the Commission’s Equipment at the Site/Station, receive and examine the Commission’s Equipment for physical damage. If the Commission’s Equipment is found to be damaged, the Contractor shall notify the Commission without delay.</td>
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<td></td>
<td></td>
<td>The Contractor shall be responsible for customs clearance of the Commission’s Equipment.</td>
</tr>
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<td></td>
<td></td>
<td>The Contractor shall arrange and provide the transport of the Commission’s Equipment from the point of entry into the country to the Site/Station.]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In the event the storage of the Commission’s Equipment is necessary, the Contractor shall provide an adequate storage from its receipt until its installation.</td>
</tr>
<tr>
<td></td>
<td>3.6 Contractor’s Equipment</td>
<td>The Contractor shall purchase and deliver the Contractor’s Equipment to the Site/Station and bear all the costs and risks related to such delivery to the Site/Station. The Contractor shall be responsible for the safety and storage of the Contractor’s Equipment at the Site/Station until acceptance of the Final Report/Revised Final Report as applicable. In the event of loss or damage to any of the Contractor’s Equipment during shipment, transportation, or storage, or in the event of the Contractor’s Equipment being found defective, unusable or ineffective for the purpose for which it (they) was (were) supplied, the Contractor shall promptly replace or repair, at its own expense, such Contractor’s Equipment by whatever means of transport or personnel services are most suitable and reasonable in the circumstance.</td>
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<tr>
<td>7</td>
<td>3.7 Insurance of Equipment</td>
<td>Insurance for the Contractor’s Equipment shall be arranged for the full replacement cost and for an additional sum of 10% (ten percent) of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage, including professional fees and the cost of demolishing and removing any part of the equipment and of removing any related debris.</td>
</tr>
<tr>
<td></td>
<td>Commission’s Equipment</td>
<td>The Contractor shall, without limiting its or the Commission’s obligations and responsibilities under the Contract, arrange and bear the costs of the insurance for the Commission’s Equipment from the date of its receipt at the Site/Station until the Commission’s acceptance of the Final/Revised Final Report.</td>
</tr>
<tr>
<td></td>
<td>Contractor’s Equipment</td>
<td>The Contractor shall, without limiting its or the Commission’s obligations and responsibilities under the Contract, arrange and bear the costs of the insurance for the Contractor’s Equipment from the date of purchase/shipment until the Commission’s acceptance of the Final/Revised Final Report as applicable.</td>
</tr>
<tr>
<td></td>
<td>3.8 Reports</td>
<td>The Contractor shall submit the Reports as described in Section 4 of Annex D.</td>
</tr>
<tr>
<td></td>
<td>Equipment Housing Plan</td>
<td>The Contractor shall submit Equipment Housing Plan as described in Section 4.1 of Annex D.</td>
</tr>
<tr>
<td></td>
<td>Progress Report</td>
<td>The Contractor shall submit Progress Report as described in Section 4.2 of Annex D.</td>
</tr>
<tr>
<td>Installation Report</td>
<td>The Contractor shall submit Installation Report, as described in Section 4.3 of Annex D.</td>
<td></td>
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<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Final Report / Revised Final Report</td>
<td>The Contractor shall submit Final Report / Revised Final Report, as described in Section 4.4 of Annex D.</td>
<td></td>
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<tr>
<td></td>
<td>If the Commission, after the review of the Final Report or at the time of the Inspection, referred to in Section 5 of Annex D, comes to the conclusion that any part of the Work has not been performed in accordance with the Terms of Reference or the Contractor’s Proposal and/or the Commission requires further information or a remedial action on the part of the Contractor in respect of any part of the Work, the Commission will instruct the Contractor to submit such additional information and/or to carry out a remedial action. Within 6 (six) weeks of the receipt of the Commission’s instruction, the Contractor shall undertake any remedial action requested and provide a Revised Final Report that describes the remedial action taken and contains the additional information requested to satisfy the instruction of the Commission.</td>
<td></td>
</tr>
<tr>
<td>9 3.9 Warranty</td>
<td>Clause 28 of Annex C shall apply to the Work performed under this Task and every reference to “Goods” therein shall be read to mean “Work”. The warranty shall start at the date of the acceptance of the Final/Revised Final Report.</td>
<td></td>
</tr>
<tr>
<td>12 5.4 Progress Payments</td>
<td>The progress payment schedule under Task 1 shall be as follows:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[Payment schedule to be determined during negotiations]</td>
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<tr>
<td></td>
<td>[A progress payment schedule based on milestone deliveries may be included in the proposal. Any applicable Taxes shall be identified separately, and not be included in the Contract amount, i.e. “Upon [milestone] the amount of [EURO/US$] ______ [in numbers and words], and [indicate the applicable Tax] in the amount of [EURO/US$] ______ [in numbers and words”].]</td>
<td></td>
</tr>
<tr>
<td>13 6.10 Transmission of Notices, Invoices, Reports and other Documents</td>
<td>Notices submitted to the Commission by the Contractor shall be addressed to:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For Contractual Issues:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chief, Procurement Section</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)</td>
<td></td>
</tr>
</tbody>
</table>
Vienna International Centre  
Wagramerstrasse 5, P.O. Box 1200  
1400 Vienna, Austria  
Tel: + (43 1) 26030 6350  
Fax: + (43 1) 26030 5948  
E-mail: procurement@ctbto.org

For invoices and related enquiries:  
Accounts Payable  
CTBTO Financial Services Section  
Vienna International Centre  
Wagramerstrasse 5, P.O. Box 1200  
1400 Vienna, Austria  
Tel: + (43 1) 26030 6292  
E-mail Payments@ctbto.org

Notices to the Contractor shall be addressed to:  
_________________  
_________________  
[insert the name of the authorized representative, address and contact details]
ANNEX B

SCHEDULE OF PRICES

CONTRACT NO. 2018-xxxx

“ESTABLISHMENT OF INFRASTRUCTURE, INSTALLATION AND INITIAL TESTING FOR THE RADIONUCLIDE PARTICULATE STATION RN02 SALTA, ARGENTINA”

RADIONUCLIDE STATION RN 02, SALTA, ARGENTINA

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>“<strong><strong>” [Insert the title of Task 1] - EURO/US$</strong></strong> (Euro/United States Dollars________) [add if applicable] and [indicate the applicable Tax] in the amount of [EURO/US$] _____ [in numbers and words”].</td>
</tr>
<tr>
<td>TOTAL</td>
<td>In accordance with Clause 5.1 of this Contract, the total Contract Price shall be EURO/USD____ (United States Dollars________) [add if applicable] and [indicate the applicable Tax] in the amount of [EURO/US$] _____ [in numbers and words”].</td>
</tr>
</tbody>
</table>
ANNEX C

General Conditions of Contract

1. DEFINITIONS
(a) In these general conditions of contract the terms beginning with a capital letter shall have the meaning as defined in the Contract.
(b) “Services” means all services to be rendered under the Contract.
(c) “Goods” shall mean all goods, equipment, materials and/or other supplies to be provided under the Contract.
(d) “Taxes” shall mean all direct and indirect taxes (including value added tax, general sales tax or goods and services tax), assessments, fees, customs duties, liens and charges in as much as they are levied in conclusion or implementation of the Contract, including customs restrictions and charges of similar nature in respect of articles imported or exported for the Commission’s official use.

2. LEGAL STATUS
The Contractor shall be considered as having the legal status of an independent contractor vis-à-vis the Commission. Neither the Contractor and any subcontractor, nor their personnel shall be considered to be an employee or an agent of the Commission.

3. ASSIGNMENT
The Contractor shall not assign, transfer, pledge or make other disposition of the Contract or any part thereof, or any of the Contractor’s rights, claims or obligations under the Contract except with the prior written consent of the Commission.

4. SUBCONTRACTING
In the event the Contractor requires the services of one or more subcontractors, the Contractor shall obtain the prior written approval and clearance of the Commission for such subcontractor(s). The Commission's approval of a subcontractor shall not relieve the Contractor of any of his obligations under the Contract, and the terms of any subcontract shall be subject to and in conformity with the provisions of the Contract.

5. SOURCE OF INSTRUCTIONS
(a) The Contractor shall neither seek nor accept instructions from any authority external to the Commission in connection with the performance of its obligations under the Contract. The Contractor shall refrain from any action which may adversely affect the Commission and shall fulfill its commitments with the fullest regard to the interests of the Commission.
(b) While present at the Commission’s premises, personnel of the Contractor shall, at all times, obey and conform to all requests and instructions of the Commission’s officials and the United Nations Security Staff.

6. CONTRACTOR’S RESPONSIBILITY FOR EMPLOYEES
The Contractor shall be responsible for the professional and technical competence of its employees and will select, for the performance under the Contract, reliable individuals who will perform effectively in the implementation of the Contract, respect the local customs and conform to a high standard of moral and ethical conduct.

7. ASSIGNMENT OF PERSONNEL
(a) The Contractor shall not replace or withdraw any personnel referred to in the Contract for the performance of the Services without the prior written approval of the Commission or unless requested by the Commission.
(b) Prior to assignment, replacement or withdrawal of personnel for the performance of the Services, the Contractor shall submit to the Commission for its consideration, the curriculum vitae or detailed justification to permit evaluation by the Commission of the impact which such assignment, replacement or withdrawal would have on the Services.
(c) In the event of withdrawal of personnel, all costs and additional expenses resulting from the replacement, for whatever reasons, of any of the Contractor’s personnel shall be for the account of the Contractor. Such withdrawal shall not be considered as termination in part or in whole of the Contract.

8. CONFLICT OF INTEREST
No employee, officer, adviser, agent and/or subcontractor of the Contractor assigned to perform Services under the Contract shall engage, directly or indirectly, in any business, profession or occupation connected or related to the Services or Goods to be provided under the Contract if this constitutes a conflict of interest.
9. INSURANCES

(a) The Contractor shall provide and thereafter maintain appropriate insurance, or its equivalent, with respect to its employees to cover claims for personal injury or death in connection with the Contract.

(b) The Contractor shall provide and thereafter maintain insurance against all risk in respect of its property and any equipment used for the execution of the Contract.

(c) The Contractor shall also provide and thereafter maintain liability insurance in an adequate amount to cover third party claims for death, bodily injury, loss of and damage to property arising from any operations carried out by the Contractor in performing its obligations in connection with the Contract or from operation of any vehicles, boats, airplanes and other equipment owned or leased by the Contractor or its agents, servants, employees or subcontractors.

(d) Except for insurance mentioned in paragraph (a), the insurance policies under this clause shall:
   (i) Name the Commission as additional beneficiary;
   (ii) Include a waiver of subrogation of the Contractor’s rights to the insurance carrier against the Commission.

(e) The Contractor shall, upon request, provide the Commission with satisfactory evidence of the insurance required under the Contract.

(f) Any amounts not insured, not recovered from or not claimed by the insurer shall be borne by the Contractor.

(g) Information concerning reduction of coverage shall be furnished by the Contractor to the Commission with at least thirty (30) days prior written notice.

(h) The Contractor undertakes that provisions to the same effect as the provisions in sub-clauses (a) through (c) above will be inserted in all subcontracts made in performance of the Contract, except sub-contracts exclusively for furnishing Goods.

10. ENCUMBRANCES/LIENS

The Contractor shall not cause or permit any lien, attachment or other encumbrance by any person to be placed on file in any public office or on file with the Commission against any monies due or to become due for any Services or Goods provided under the Contract, or by reason of any other claim or demand against the Contractor.

11. OBSERVANCE OF THE LAW

(a) The Contractor shall comply with all laws, ordinances, rules and regulations, including but not limited to health, environmental and labour laws bearing upon the performance of its obligations under the terms of the Contract.

(b) In particular, the Contractor shall comply with the labour laws of the country in which the Services or Goods are to be furnished providing for benefits covering injury or death in the course of employment.

12. CONFIDENTIALITY

(a) All technical, financial or other documentation and data the Contractor compiled for or received from the Commission under the Contract shall be treated as confidential and shall be delivered only to the Commission’s authorized officials on completion of the Services or as requested by the Commission.

(b) Either Party acknowledges that all knowledge and information concerning the other Party that may be acquired in connection with the performance of its obligations under the Contract, including but not limited to, any information relating to its operations and procedures, are confidential and proprietary information of the other Party and it shall receive such confidential and proprietary information of the other Party in confidence and shall not disclose or permit disclosure of any such knowledge or information to any person and/or entity without the prior written consent of the other Party.

(c) The Contractor shall not, at any time, use such confidential information to its own advantage.

(d) The restrictions on confidentiality shall not apply to the information which:
   (i) presently is in the public domain;
   (ii) hereafter becomes part of the public domain without the other Party’s fault;
   (iii) was in the possession of the other Party at the time of the disclosure, as shown by written evidence;
   (iv) is disclosed to the other Party at any time hereafter by a third Party.

   (v) is required to be disclosed to governing bodies, or to governmental authorities to the extent required by law or to obtain needed authorization to perform the Contract or pursuant to reporting requirements imposed by those governing bodies or the government of the State of the Contractor.

(e) These obligations do not lapse upon satisfactory completion of the Services, delivery of the Goods or termination of the Contract by the Commission.

13. LANGUAGES, WEIGHTS AND MEASURES

Unless otherwise specified in the Contract, the English language shall be used by the Contractor in all written communications to the Commission with respect to the Services or Goods to be provided and all documents procured or prepared by the Contractor. The Contractor shall use metric units, except when otherwise specified in the Contract.

14. PUBLICITY

(a) The Contractor shall not advertise or otherwise make public the fact that it is providing or has provided Services and Goods for the Commission. Also, the Contractor shall not, in any manner whatsoever, use the name, emblem or official seal of the Commission or any abbreviation of the name of the Comprehensive Nuclear-Test-Ban Treaty Organization in connection with its business or otherwise.

(b) These obligations do not lapse upon satisfactory completion of the Services, delivery of the Goods or termination of the Contract.
15. OFFICIAL NOT TO BENEFIT/CONTINGENT FEES

(a) The Contractor warrants that:
   (i) No person or selling agency has been employed or retained by it to solicit or secure the Contract upon an agreement or understanding for a commission, percentage, brokerage, contingent fee or retainer, except regular employees or bona fide and officially established commercial or selling agencies maintained by the Contractor for the purpose of securing business;
   (ii) No official or servant or retired employee of the Commission who is not a regular employee of the Contractor, has been or shall be admitted by the Contractor to any direct or indirect benefit arising from the Contract or the award thereof.

(b) In case of breach by the Contractor of the warranties referred to in previous clauses, the Commission shall have the right to deduct from the Contract Price, or otherwise recover from the Contractor, the full amount of any such commission, percentage, brokerage, contingent fee or retainer so paid.

16. INTELLECTUAL PROPERTY AND OTHER PROPRIETARY RIGHTS

(a) Except to the extent the Contractor has granted a license to the Commission, the Commission, shall be entitled to all intellectual property, including but not limited to copyrights, patents and trademarks, with regard to products, documents or other materials which bear a direct relation to or are produced or collected under the Contract. The Contractor shall take all necessary steps, prepare and process all necessary documents and assist in securing such property rights and transferring them to the Commission and/or to the government where the Services or Goods are to be provided, in compliance with the requirements of the applicable law.

(b) The Contractor declares that it does not know of any intellectual property rights of third parties, which might be infringed in the execution of the Contract. Should, contrary to the Contractor’s expectation, claims be raised against the Commission charging it with infringement of intellectual property rights, the Contractor shall hold harmless the Commission and shall indemnify it to the full extent of any damages or awards arising from such claims. This obligation of the Contractor shall continue to be in full force and effect up to the expiration of such intellectual property rights.

(c) The Commission shall give the Contractor due notice in writing of any charges of infringement brought against the Commission and of the filing of any suit for infringement of intellectual property rights of third parties due to the execution of the Contract, and, without prejudice to the immunity enjoyed by the Commission as an international organization from every form of legal process, including enforcement and execution, the Commission shall give the Contractor the opportunity to defend the Commission against the said suit at its discretion and shall not, without the Contractor’s consent in writing, make any admission or consent to any claim of any third party, which might be prejudicial to the Contractor’s position.

17. DEFAULT BY THE CONTRACTOR

(a) In case the Contractor fails to fulfil its obligations and responsibilities under the Contract and provided the Contractor has not remedied such failure(s) within thirty (30) days of having been given written notification by the Commission of the nature of the failure(s), the Commission may, at its entire discretion and without prejudice to its right to withhold payment(s), hold the Contractor in default under the Contract.

(b) When the Contractor is thus in default, the Commission may, by giving written notice to the Contractor, terminate the Contract as a whole or such part or parts thereof in respect of which the Contractor is in default. Upon such notice, the Commission shall have the right to seek completion, at the Contractor’s expense, of that part or those parts of the Contract with respect to which the Contractor is in default.

(c) The Contractor shall, in this case, be solely responsible for any reasonable costs of completion of the Services and/or delivery of Goods, including such costs, which are incurred by the Commission over and above the originally agreed Contract Price.

18. WITHHOLDING OF PAYMENT

(a) The Commission may withhold any payment to the Contractor or, on account of subsequently discovered evidence, nullify the whole or part of any payment approval theretofore given, to such an extent as may be necessary to protect the Commission from loss under the Contract on account of:
   (i) The Contractor’s failure to carry out its obligations or to make adequate progress with the obligations, except for failure arising out of force majeure;
   (ii) The Contractor’s failure to remedy unsatisfactory performance, when such failure has been drawn to his attention by the Commission;
   (iii) The Contractor’s failure to submit on time the reports required.

(b) The withholding by the Commission of any interim payment shall not affect the Contractor’s obligation to continue performance of his obligations under the Contract.

(c) No interest shall accrue on payments eventually withheld by the Commission in application of the stipulations of this paragraph.

19. LIQUIDATED DAMAGES

Subject to Clause 20 below (force majeure), if the Contractor fails to deliver any or all of the Services and/or Goods within the latest time period(s) specified in the Contract, the Commission may, without prejudice to its other remedies under the Contract, deduct from the Contract Price as liquidated damages, a sum equivalent to 0.2 per cent of the portion of the Contract Price for the delayed Services and/or Goods for each working day of
delay until actual performance, up to a maximum of sixty (60) working days. The recovery by the Commission of proven damages shall not be excluded.

20. FORCE MAJEURE

(a) Force majeure as used herein shall mean acts of God, industrial disturbances, acts of the public enemy, civil disturbances, explosions and any other similar cause of equivalent force not caused by nor within the control of either party and which neither party is able to overcome.

(b) As soon as possible after the occurrence of any cause constituting force majeure, the Contractor shall give notice and full particulars in writing to the Commission of such force majeure if the Contractor is thereby rendered unable, wholly or in part, to perform its obligations and meet its responsibilities under the Contract.

(c) In this event, the following provisions shall apply:

(i) The obligations and responsibilities of the Contractor under the Contract shall be suspended to the extent of its inability to perform them and for as long as such inability continues;

(ii) The term of the Contract shall be extended for a period equal to the period of suspension taking, however, into account any special conditions which may cause the time for completion of the obligations to be different from the period of suspension;

(iii) If the Contractor is rendered permanently unable, wholly or in part, by reason of force majeure to perform its obligations and meet its responsibilities under the Contract, the Commission shall have the right to terminate the Contract on the same terms and conditions as are provided for in the Termination Clause of the Contract, except that the period of notice may be seven (7) days instead of thirty (30) days;

(iv) For the purpose of the preceding sub-clause, the Commission may consider the Contractor permanently unable to perform in case of any period of suspension in excess of ninety (90) days. Any such period of ninety (90) days or less shall be deemed temporary inability to perform.

21. INSOLVENCY AND BANKRUPTCY

Should the Contractor be insolvent, adjudged bankrupt, or should the Contractor make a general assignment for the benefit of its creditors, or should a receiver be appointed on account of the Contractor’s insolvency, the Commission may, without prejudice to any other right or remedy it may have under the terms of the Contract, terminate the Contract forthwith by giving the Contractor written notice of such termination.

22. INDEMNIFICATION

The Contractor shall indemnify, hold and save harmless and defend at its own expense the Commission, its officers, agents, servants and employees from and against all suits, claims, demands and liability of any nature or kind, including cost and expenses arising out of acts or omissions of the Contractor or its employees or subcontractors in the performance of the Contract. This requirement shall extend, inter alia, to claims or liabilities in the nature of workers’ compensation and to claims or liabilities pertaining to intellectual property rights. The obligations under this clause do not lapse upon termination of the Contract.

23. AMICABLE SETTLEMENT

The parties shall use their best efforts to settle amicably through negotiation any dispute, controversy or claim arising out of, or relating to, the Contract or the breach, termination or invalidity thereof. If the parties cannot reach such amicable settlement through negotiations, the matter shall first be referred to conciliation, by a request by either party for conciliation procedures. The conciliation shall take place in accordance with the United Nations Commission on International Trade Law (UNCITRAL) Conciliation Rules then prevailing, or according to such other procedure as may be agreed between the parties, within a time period of ninety (90) days. There shall be one conciliator. The conciliation shall be in Vienna, Austria, and it shall be conducted in the English language.

24. ARBITRATION

(a) In the event of a failure to reach an amicable settlement in accordance with Clause 23 above (amicable settlement), any dispute arising out of the interpretation or application of the terms of the Contract or any breach thereof shall be settled in accordance with the arbitration rules established by UNCITRAL as at present in force. The number of arbitrators shall be one. The arbitration shall be in Vienna, Austria, and it shall be conducted in the English language.

(b) The arbitrator shall take into account the internationally recognized general principles of commercial transactions. The arbitrator shall have no authority to award punitive damages, nor to award interest in excess of five (5) per cent, and any such interest shall be simple interest only. The parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such dispute.

25. PRIVILEGES AND IMMUNITIES

Nothing in or relating to the Contract shall be deemed a waiver of any of the privileges and immunities of the Commission and its employees.

25(a). TAX EXEMPTION

In principle, the Commission is exempt from all Taxes. Since the arrangement under which such exemption is respected varies from country-to-country, the Contractor shall collaborate with the Commission to achieve Tax exemption at source or to pursue reimbursement of Taxes paid by the Commission, as the case may be.

26. TERMINATION

The Commission may terminate the Contract in whole or in part, and at any time, upon thirty (30) days’ notice of
termination to the Contractor. In the event such termination is not caused by the Contractor’s negligence or fault, the Commission shall be liable to the Contractor for payment in respect of services already satisfactorily accomplished or Goods delivered and accepted and in conformity with the terms of the Contract, for necessary terminal expenses of the Contractor, and for the cost of such urgent work as is essential and as the Contractor is asked by the Commission to complete. The Contractor shall keep expenses at a minimum and shall not undertake any forward commitment from the date of receipt of the Commission’s notice of termination.

27. GOODS

In the event that the Contract requires the Contractor to supply Goods, the following clauses shall apply in addition to the above.

28. WARRANTY

(a) The Contractor warrants that the Goods, including packaging, conform to the specifications for the Goods ordered under the Contract and are fit for the purpose for which such Goods are ordinarily used and for purposes expressly made known to the Contractor by the Commission, and are new and free from defects in design, workmanship and materials.

(b) This warranty shall remain valid for twenty-four (24) months after the Goods or any part thereof have been delivered and accepted, whichever is later, unless the Contractor has granted a longer period. Should the Commission transfer the title of the Goods to a third party during the warranty period, the right to enjoy the warranty shall be transferable to the new title-holder.

(c) If, during the warranty period mentioned in Sub-clause (b) above, the Goods or any part thereof are found to be defective or not in conformity with the specifications under the Contract, the Contractor shall, upon notification, promptly and at its own expense correct all such defects and non-conformities. If these defects and non-conformities cannot be corrected, the Commission shall have the right, at the Contractor’s expense, to either demand replacement of the defective item, or receive appropriate reimbursement, or have the defective item repaired or otherwise procured from a third party.

29. INSPECTIONS AND TESTS

(a) The Commission shall have the right to inspect and/or to test the Goods to confirm their conformity to the technical specifications. The technical specifications shall specify what inspections and tests the Commission requires.

(b) The inspections and tests may be conducted on the premises of the Contractor or its subcontractor(s), at a point of delivery designated by the Commission and/or at the Goods’ final destination. The Contractor shall give all reasonable facilities and assistance—including drawings and production data—to the Commission at no charge to the Commission.

(c) Should any inspected or tested Goods fail to conform to the technical specifications, the Commission reserves the right to reject them and the Contractor shall either replace the rejected Goods or make all alterations necessary to meet specification requirements free of cost to the Commission.

(d) The Commission’s right to inspect, test and, where necessary, reject the Goods after the Goods’ arrival at the point of delivery designated by the Commission or at the Commission’s offices, shall in no way be limited or waived by reason of the Goods’ having previously been inspected, tested and passed by the Commission.

(e) Nothing in this Section on Inspections and Tests shall in any way release the Contractor from any warranty or other obligations under the Contract.

(f) All equipment/material supplied under the Contract may be subject to pre-shipment inspection by a third party to be specified by the Commission. The Contractor is not liable for cost of this inspection.

30. PACKING

The Contractor shall comply or ensure compliance with the following provisions concerning packing:

(a) The Goods shall be packed as is required to prevent their damage or deterioration during transit to their final destination. The packing shall be sufficient to withstand, without limitation, rough handling during transit.

(b) In the case of a cross-border shipment, the Goods shall have appropriate export packing. If necessary, all cases/crates must be wrapped inside with heavy-duty plastic lined paper, should be steel-strapped and must be able to withstand tough handling. Skids for truck handling are imperative if the gross weight is more than 30 kilograms.

(c) The consignment shall be marked and shipped as per address shown on the Purchase Order Form.

(d) Neither partial delivery nor transhipment shall be made unless specifically agreed by the Commission in writing.

(e) Each case/crate/package shall carry a consecutive number, dimensions, volume, and weight (i.e. Case No. X of Y cases, A x B x C cm, E m³, D Kg.) and shall be marked as follows:

EQUIPMENT FOR
THE PREPARATORY COMMISSION FOR THE
COMPREHENSIVE NUCLEAR-TEST-BAN
TREATY ORGANIZATION.

[point of delivery]

PURCHASE NO. _______________________
GROSS WEIGHT ______________________
NET WEIGHT ______________________

(f) Markings shall be done with weatherproof materials. All non-containerized Goods shall be shipped below deck.

(g) Each case/crate/carton shall carry (outside) a copy of the packing list describing the contents of the case/crate/carton. Outside Case No. 1 should be
attached with invoice covering the actual delivery. The accompanying papers must be made out in the English language.

(h) Prior to delivery, a fax (or a letter by courier service) shall be sent to the consignee, if any, advising of the following:

- purchase order/Contract number;
- waybill number or equivalent reference number of the shipment (if any);
- number of boxes/cartons/crates/etc.;
- estimated time of departure (ETD);
- point of departure and name of freight carrier;
- estimated time of arrival (ETA) to final destination.

(i) The following documents shall be enclosed with the shipment in case of shipping by air:

- airway bill;
- proforma or commercial invoice;
- packing list.

(j) The above documents are indispensable and must reach the consignee, if any, on time to permit customs clearance and in order to avoid demurrage charges.

31. DELIVERY AND TRANSPORTATION

(a) Delivery of the Goods shall be made by the Contractor in accordance with the terms specified in the Contract, and the Goods shall remain at the risk of the Contractor until delivery has been completed.

(b) Transport of the Goods to the port of discharge or such other point in the country of destination and/or forwarding to the consignee, if any, (door-to-door) specified in the Contract shall be arranged and paid for by the Contractor and the cost thereof shall be included in the Contract Price.

32. TAKE-OVER/HAND-OVER

Upon successful completion of delivery or of installation and a testing and evaluation period, as specified in the Contract, responsibility for the Goods will be handed over to the consignee or other designated entity.

33. EXPORT LICENCES

If an export licence or any other governmental authorization is required for the Goods, it shall be the obligation of the Contractor to obtain such licence or governmental authorization. In the event of failure to obtain such licence or authorization within reasonable time, the Commission may declare the Contract null and void.

34. SPARE PARTS

In accordance with the Contract, the Contractor may be required to provide any or all of the following materials and notifications pertaining to spare parts manufactured and/or distributed by the Contractor:

(a) Such spare parts as the Commission may choose to purchase from the Contractor, provided that the Contractor is not relieved of any warranty obligations under the Contract;

(b) In the event of termination of production of the spare after delivery of the Goods:

(i) advance notification to the Commission of the pending termination, in sufficient time to permit the Commission to place a final order;

(ii) following such termination, furnishing at no cost to the Commission, the blueprints, drawings and specifications of the spare parts, if and when requested.

35. UNITED NATIONS CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS

Questions concerning matters arising under the Contract, but not settled in it, shall be settled in conformity with the United Nations Convention on Contracts for the International Sale of Goods (Vienna, 1980), which shall be applicable to the Contract. The applicable language version of the Convention shall be the version in which the Contract is written.

1 April 2016
9. INSURANCES

(a) The Contractor shall provide and thereafter maintain appropriate insurance, or its equivalent, with respect to its employees to cover claims for personal injury or death in connection with the Contract.
(b) The Contractor shall provide and thereafter maintain insurance against all risk in respect of its property and any equipment used for the execution of the Contract.
(c) The Contractor shall also provide and thereafter maintain liability insurance in an adequate amount to cover third party claims for death, bodily injury, loss of and damage to property arising from any operations carried out by the Contractor in performing its obligations in connection with the Contract or from operation of any vehicles, boats, airplanes and other equipment owned or leased by the Contractor or its agents, employees or subcontractors.
(d) Except for insurance mentioned in paragraph (a), the insurance policies under this clause shall:
   (i) Name the Commission as additional beneficiary;
   (ii) Include a waiver of subrogation of the Contractor's rights to the insurance carrier against the Commission.
(e) The Contractor shall, upon request, provide the Commission with satisfactory evidence of the insurance required under the Contract.
(f) Any amounts not insured, not recovered from or not claimed by the insurer shall be borne by the Contractor.
(g) Information concerning reduction of coverage shall be furnished by the Contractor to the Commission with at least thirty (30) days prior written notice.
(h) The Contractor undertakes that provisions to the same effect as the provisions in sub-clauses (a) through (c) above will be inserted in all subcontracts made in performance of the Contract, except sub-contracts exclusively for furnishing Goods.

10. ENCUMBRANCES/LIENS

The Contractor shall not cause or permit any lien, attachment or other encumbrance by any person to be placed on file in any public office or on file with the Commission against any monies due or to become due for any Services or Goods provided under the Contract, or by reason of any other claim or demand against the Contractor.

11. OBSERVANCE OF THE LAW

(a) The Contractor shall comply with all laws, ordinances, rules and regulations, including but not limited to health, environmental and labour laws bearing upon the performance of its obligations under the terms of the Contract.
(b) In particular, the Contractor shall comply with the labour laws of the country in which the Services or Goods are to be furnished providing for benefits covering injury or death in the course of employment.

12. CONFIDENTIALITY

(a) All technical, financial or other documentation and data the Contractor compiled for or received from the Commission under the Contract shall be treated as confidential and shall be delivered only to the Commission’s authorized officials on completion of the Services or as requested by the Commission.
(b) Either Party acknowledges that all knowledge and information concerning the other Party that may be acquired in connection with the performance of its obligations under the Contract, including but not limited to, any information relating to its operations and procedures, are confidential and proprietary information of the other Party and it shall receive such confidential and proprietary information of the other Party in confidence and shall not disclose or permit disclosure of any such knowledge or information to any person and/or entity without the prior written consent of the other Party.
(c) The Contractor shall not, at any time, use such confidential information to its own advantage.
(d) The restrictions on confidentiality shall not apply to the information which:
   (i) presently is in the public domain;
   (ii) hereafter becomes part of the public domain without the other Party’s fault;
   (iii) was in the possession of the other Party at the time of the disclosure, as shown by written evidence;
   (iv) is disclosed to the other Party at any time hereafter by a third Party.
   (v) is required to be disclosed to governing bodies, or to governmental authorities to the extent required by law or to obtain needed authorization to perform the Contract or pursuant to reporting requirements imposed by those governing bodies or the government of the State of the Contractor.
(e) These obligations do not lapse upon satisfactory completion of the Services, delivery of the Goods or termination of the Contract by the Commission.

13. LANGUAGES, WEIGHTS AND MEASURES

Unless otherwise specified in the Contract, the English language shall be used by the Contractor in all written communications to the Commission with respect to the Services or Goods to be provided and all documents procured or prepared by the Contractor. The Contractor shall use metric units, except when otherwise specified in the Contract.

14. PUBLICITY

(a) The Contractor shall not advertise or otherwise make public the fact that it is providing or has provided Services and Goods for the Commission. Also, the Contractor shall not, in any manner whatsoever, use the name, emblem or official seal of the Commission or any abbreviation of the name of the Comprehensive Nuclear-Test-Ban Treaty Organization in connection with its business or otherwise.
(b) These obligations do not lapse upon satisfactory completion of the Services, delivery of the Goods or termination of the Contract.
15. OFFICIAL NOT TO BENEFIT/CONTINGENT FEES

(a) The Contractor warrants that:
   (i) No person or selling agency has been employed or retained by it to solicit or secure the Contract upon an agreement or understanding for a commission, percentage, brokerage, contingent fee or retainer, except regular employees or bona fide and officially established commercial or selling agencies maintained by the Contractor for the purpose of securing business;
   (ii) No official or servant or retired employee of the Commission who is not a regular employee of the Contractor, has been or shall be admitted by the Contractor to any direct or indirect benefit arising from the Contract or the award thereof.

(b) In case of breach by the Contractor of the warranties referred to in previous clauses, the Commission shall have the right to deduct from the Contract Price, or otherwise recover from the Contractor, the full amount of any such commission, percentage, brokerage, contingent fee or retainer so paid.

16. INTELLECTUAL PROPERTY AND OTHER PROPRIETARY RIGHTS

(a) Except to the extent the Contractor has granted a license to the Commission, the Commission, shall be entitled to all intellectual property, including but not limited to copyrights, patents and trademarks, with regard to products, documents or other materials which bear a direct relation to or are produced or collected under the Contract. The Contractor shall take all necessary steps, prepare and process all necessary documents and assist in securing such property rights and transferring them to the Commission and/or to the government where the Services or Goods are to be provided, in compliance with the requirements of the applicable law.

(b) The Contractor declares that it does not know of any intellectual property rights of third parties, which might be infringed in the execution of the Contract. Should, contrary to the Contractor’s expectation, claims be raised against the Commission charging it with infringement of intellectual property rights, the Contractor shall hold harmless the Commission and shall indemnify it to the full extent of any damages or awards arising from such claims. This obligation of the Contractor shall continue to be in full force and effect up to the expiration of such intellectual property rights.

(c) The Commission shall give the Contractor due notice in writing of any charges of infringement brought against the Commission and of the filing of any suit for infringement of intellectual property rights of third parties due to the execution of the Contract, and, without prejudice to the immunity enjoyed by the Commission as an international organization from every form of legal process, including enforcement and execution, the Commission shall give the Contractor the opportunity to defend the Commission against the said suit at its discretion and shall not, without the Contractor’s consent in writing, make any admission or consent to any claim of any third party, which might be prejudicial to the Contractor’s position.

17. DEFAULT BY THE CONTRACTOR

(a) In case the Contractor fails to fulfill its obligations and responsibilities under the Contract and provided the Contractor has not remedied such failure(s) within thirty (30) days of having been given written notification by the Commission of the nature of the failure(s), the Commission may, at its entire discretion and without prejudice to its right to withhold payment(s), hold the Contractor in default under the Contract.

(b) When the Contractor is thus in default, the Commission may, by giving written notice to the Contractor, terminate the Contract as a whole or such part or parts thereof in respect of which the Contractor is in default. Upon such notice, the Commission shall have the right to seek completion, at the Contractor’s expense, of that part or those parts of the Contract with respect to which the Contractor is in default.

(c) The Contractor shall, in this case, be solely responsible for any reasonable costs of completion of the Services and/or delivery of Goods, including such costs, which are incurred by the Commission over and above the originally agreed Contract Price.

18. WITHHOLDING OF PAYMENT

(a) The Commission may withhold any payment to the Contractor or, on account of subsequently discovered evidence, nullify the whole or part of any payment approval theretofore given, to such an extent as may be necessary to protect the Commission from loss under the Contract on account of:
   (i) The Contractor’s failure to carry out its obligations or to make adequate progress with the obligations, except for failure arising out of force majeure;
   (ii) The Contractor’s failure to remedy unsatisfactory performance, when such failure has been drawn to his attention by the Commission;
   (iii) The Contractor’s failure to submit on time the reports required.

(b) The withholding by the Commission of any interim payment shall not affect the Contractor’s obligation to continue performance of his obligations under the Contract.

(c) No interest shall accrue on payments eventually withheld by the Commission in application of the stipulations of this paragraph.

19. LIQUIDATED DAMAGES

Subject to Clause 20 below (force majeure), if the Contractor fails to deliver any or all of the Services and/or Goods within the latest time period(s) specified in the Contract, the Commission may, without prejudice to its other remedies under the Contract, deduct from the Contract Price as liquidated damages, a sum equivalent to 0.2 per cent of the portion of the Contract Price for the delayed Services and/or Goods for each working day of
delay until actual performance, up to a maximum of sixty (60) working days. The recovery by the Commission of proven damages shall not be excluded.

20. FORCE MAJEURE

(a) Force majeure as used herein shall mean acts of God, industrial disturbances, acts of the public enemy, civil disturbances, explosions and any other similar cause of equivalent force not caused by nor within the control of either party and which neither party is able to overcome.

(b) As soon as possible after the occurrence of any cause constituting force majeure, the Contractor shall give notice and full particulars in writing to the Commission of such force majeure if the Contractor is thereby rendered unable, wholly or in part, to perform its obligations and meet its responsibilities under the Contract.

(c) In this event, the following provisions shall apply:
   (i) The obligations and responsibilities of the Contractor under the Contract shall be suspended to the extent of its inability to perform them and for as long as such inability continues;
   (ii) The term of the Contract shall be extended for a period equal to the period of suspension taking, however, into account any special conditions which may cause the time for completion of the obligations to be different from the period of suspension;
   (iii) If the Contractor is rendered permanently unable, wholly or in part, by reason of force majeure to perform its obligations and meet its responsibilities under the Contract, the Commission shall have the right to terminate the Contract on the same terms and conditions as are provided for in the Termination Clause of the Contract, except that the period of notice may be seven (7) days instead of thirty (30) days;
   iv) For the purpose of the preceding sub-clause, the Commission may consider the Contractor permanently unable to perform in case of any period of suspension in excess of ninety (90) days. Any such period of ninety (90) days or less shall be deemed temporary inability to perform.

21. INSOLVENCY AND BANKRUPTCY

Should the Contractor be insolvent, adjudged bankrupt, or should the Contractor make a general assignment for the benefit of its creditors, or should a receiver be appointed on account of the Contractor’s insolvency, the Commission may, without prejudice to any other right or remedy it may have under the terms of the Contract, terminate the Contract forthwith by giving the Contractor written notice of such termination.

22. INDEMNIFICATION

The Contractor shall indemnify, hold and save harmless and defend at its own expense the Commission, its officers, agents, servants and employees from and against all suits, claims, demands and liability of any nature or kind, including cost and expenses arising out of acts or omissions of the Contractor or its employees or subcontractors in the performance of the Contract. This requirement shall extend, inter alia, to claims or liabilities in the nature of workers’ compensation and to claims or liabilities pertaining to intellectual property rights. The obligations under this clause do not lapse upon termination of the Contract.

23. AMICABLE SETTLEMENT

The parties shall use their best efforts to settle amicably through negotiation any dispute, controversy or claim arising out of, or relating to, the Contract or the breach, termination or invalidity thereof. If the parties cannot reach such amicable settlement through negotiations, the matter shall first be referred to conciliation, by a request by either party for conciliation procedures. The conciliation shall take place in accordance with the United Nations Commission on International Trade Law (UNCITRAL) Conciliation Rules then prevailing, or according to such other procedure as may be agreed between the parties, within a time period of ninety (90) days. There shall be one conciliator. The conciliation shall be in Vienna, Austria, and it shall be conducted in the English language.

24. ARBITRATION

(a) In the event of a failure to reach an amicable settlement in accordance with Clause 23 above (amicable settlement), any dispute arising out of the interpretation or application of the terms of the Contract or any breach thereof shall be settled in accordance with the arbitration rules established by UNCITRAL as at present in force. The number of arbitrators shall be one. The arbitration shall be in Vienna, Austria, and it shall be conducted in the English language.

(b) The arbitrator shall take into account the internationally recognized general principles of commercial transactions. The arbitrator shall have no authority to award punitive damages, nor to award interest in excess of five (5) per cent, and any such interest shall be simple interest only. The parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such dispute.

25. PRIVILEGES AND IMMUNITIES

Nothing in or relating to the Contract shall be deemed a waiver of any of the privileges and immunities of the Commission and its employees.

25(a). TAX EXEMPTION

In principle, the Commission is exempt from all Taxes. Since the arrangement under which such exemption is respected varies from country-to-country, the Contractor shall collaborate with the Commission to achieve Tax exemption at source or to pursue reimbursement of Taxes paid by the Commission, as the case may be.

26. TERMINATION

The Commission may terminate the Contract in whole or in part, and at any time, upon thirty (30) days’ notice of
termination to the Contractor. In the event such termination is not caused by the Contractor’s negligence or fault, the Commission shall be liable to the Contractor for payment in respect of Services already satisfactorily accomplished or Goods delivered and accepted and in conformity with the terms of the Contract, for necessary terminal expenses of the Contractor, and for the cost of such urgent work as is essential and as the Contractor is asked by the Commission to complete. The Contractor shall keep expenses at a minimum and shall not undertake any forward commitment from the date of receipt of the Commission’s notice of termination.

27. GOODS

In the event that the Contract requires the Contractor to supply Goods, the following clauses shall apply in addition to the above.

28. WARRANTY

(a) The Contractor warrants that the Goods, including packaging, conform to the specifications for the Goods ordered under the Contract and are fit for the purpose for which such Goods are ordinarily used and for purposes expressly made known to the Contractor by the Commission, and are new and free from defects in design, workmanship, and materials.

(b) This warranty shall remain valid for twenty-four (24) months after the Goods or any part thereof have been delivered and accepted, whichever is later, unless the Contractor has granted a longer period. Should the Commission transfer the title of the Goods to a third party during the warranty period, the right to enjoy the warranty shall be transferable to the new title-holder.

(c) If, during the warranty period mentioned in Sub-clause (b) above, the Goods or any part thereof are found to be defective or not in conformity with the specifications under the Contract, the Contractor shall, upon notification, promptly and at its own expense correct all such defects and non-conformities. If these defects and non-conformities cannot be corrected, the Commission shall have the right, at the Contractor's expense, to either demand replacement of the defective item or receive appropriate reimbursement, or have the defective item repaired or otherwise procured from a third party.

29. INSPECTIONS AND TESTS

(a) The Commission shall have the right to inspect and/or to test the Goods to confirm their conformity to the technical specifications. The technical specifications shall specify what inspections and tests the Commission requires.

(b) The inspections and tests may be conducted on the premises of the Contractor or its subcontractor(s), at a point of delivery designated by the Commission and/or at the Goods’ final destination. The Contractor shall give all reasonable facilities and assistance-including drawings and production data-to the Commission at no charge to the Commission.

(c) Should any inspected or tested Goods fail to conform to the technical specifications, the Commission reserves the right to reject them and the Contractor shall either replace the rejected Goods or make all alterations necessary to meet specification requirements free of cost to the Commission.

(d) The Commission’s right to inspect, test and, where necessary, reject the Goods after the Goods’ arrival at the point of delivery designated by the Commission or at the Commission’s offices, shall in no way be limited or waived by reason of the Goods’ having previously been inspected, tested and passed by the Commission.

(e) Nothing in this Section on Inspections and Tests shall in any way release the Contractor from any warranty or other obligations under the Contract.

(f) All equipment/material supplied under the Contract may be subject to pre-shipment inspection by a third party to be specified by the Commission. The Contractor is not liable for cost of this inspection.

30. PACKING

The Contractor shall comply or ensure compliance with the following provisions concerning packing:

(a) The Goods shall be packed as is required to prevent their damage or deterioration during transit to their final destination. The packing shall be sufficient to withstand, without limitation, rough handling during transit.

(b) In the case of a cross-border shipment, the Goods shall have appropriate export packing. If necessary, all cases/crates must be wrapped inside with heavy-duty plastic lined paper, should be steel-strapped and must be able to withstand tough handling. Skids for truck handling are imperative if the gross weight is more than 30 kilograms.

(c) The consignment shall be marked and shipped as per address shown on the Purchase Order Form.

(d) Neither partial delivery nor transshipment shall be made unless specifically agreed by the Commission in writing.

(e) Each case/crate/package shall carry a consecutive number, dimensions, volume, and weight (i.e. Case No. X of Y cases, A x B x C cm, E m3, D Kg.) and shall be marked as follows:

EQUIPMENT FOR THE PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION.

[purchase order]

PURCHASE NO._________________
GROSS WEIGHT ___________________
NET WEIGHT ___________________

(f) Markings shall be done with weatherproof materials. All non-containerized Goods shall be shipped below deck.

(g) Each case/crate/carton shall carry (outside) a copy of the packing list describing the contents of the case/crate/carton. Outside Case No. 1 should be
attached with invoice covering the actual delivery. The accompanying papers must be made out in the English language.

(h) Prior to delivery, a fax (or a letter by courier service) shall be sent to the consignee, if any, advising of the following:
   ♦ purchase order/Contract number;
   ♦ waybill number or equivalent reference number of the shipment (if any);
   ♦ number of boxes/cartons/crates/etc.;
   ♦ estimated time of departure (ETD);
   ♦ point of departure and name of freight carrier;
   ♦ estimated time of arrival (ETA) to final destination.

(i) The following documents shall be enclosed with the shipment in case of shipping by air:
   ♦ airway bill;
   ♦ proforma or commercial invoice;
   ♦ packing list.

(j) The above documents are indispensable and must reach the consignee, if any, on time to permit customs clearance and in order to avoid demurrage charges.

31. DELIVERY AND TRANSPORTATION

(a) Delivery of the Goods shall be made by the Contractor in accordance with the terms specified in the Contract, and the Goods shall remain at the risk of the Contractor until delivery has been completed.

(b) Transport of the Goods to the port of discharge or such other point in the country of destination and/or forwarding to the consignee, if any, (door-to-door) specified in the Contract shall be arranged and paid for by the Contractor and the cost thereof shall be included in the Contract Price.

32. TAKE-OVER/HAND-OVER

Upon successful completion of delivery or of installation and a testing and evaluation period, as specified in the Contract, responsibility for the Goods will be handed over to the consignee or other designated entity.

33. EXPORT LICENCES

If an export licence or any other governmental authorization is required for the Goods, it shall be the obligation of the Contractor to obtain such licence or governmental authorization. In the event of failure to obtain such licence or authorization within reasonable time, the Commission may declare the Contract null and void.

34. SPARE PARTS

In accordance with the Contract, the Contractor may be required to provide any or all of the following materials and notifications pertaining to spare parts manufactured and/or distributed by the Contractor:

(a) Such spare parts as the Commission may choose to purchase from the Contractor, provided that the Contractor is not relieved of any warranty obligations under the Contract;

(b) In the event of termination of production of the spare after delivery of the Goods:
   (i) advance notification to the Commission of the pending termination, in sufficient time to permit the Commission to place a final order;
   (ii) following such termination, furnishing at no cost to the Commission, the blueprints, drawings and specifications of the spare parts, if and when requested.

35. UNITED NATIONS CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS

Questions concerning matters arising under the Contract, but not settled in it, shall be settled in conformity with the United Nations Convention on Contracts for the International Sale of Goods (Vienna, 1980), which shall be applicable to the Contract. The applicable language version of the Convention shall be the version in which the Contract is written.

1 April 2016
ANNEX D

PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION

TERMS OF REFERENCE FOR

ESTABLISHMENT OF INFRASTRUCTURE, INSTALLATION AND INITIAL TESTING

FOR THE RADIONUCLIDE PARTICULATE STATION RN02 SALTA, ARGENTINA
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1. BACKGROUND INFORMATION

(a) The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (hereinafter referred to as the “Commission”) intends to establish the IMS Station RN02 at Salta, Argentina (hereinafter referred to as the “Station”). This Station has been designated as a facility of the radionuclide network of the Comprehensive Nuclear-Test-Ban Treaty and was identified for installation by the Commission as part of the 2018 program of work of the IMS (hereinafter referred to as the “Project”).

(b) The Station will be established at an area close to the Salta airport, Salta, Argentina (co-ordinates: S 24.8396, W 65.4719). Nuclear Regulatory Authority - in Spanish Autoridad Regulatoria Nuclear - (ARN) in collaboration with the Commission in April 2018, the Commission decided to install a manual station.

(c) The establishment of the Station will be achieved in several steps. The Commission will select other contractors who will be responsible i) for acting as a liaison between the Commission, its contractors and local institutions (“Liaison Contractor”) and ii) for the post-installation operation and maintenance of the Station. The VSAT for the communication links to the Commission shall be installed by another contractor (hereinafter referred to as the “GCI Contractor”).

(d) The Commission desires to engage a contractor (hereinafter referred to as the “Contractor”) to establish infrastructure for the Station, to supply and install the equipment (hereinafter referred to as the “Equipment”), and to test the Station, in accordance with these Terms of Reference.

2. SCOPE OF THE WORK

a) The Contractor shall establish an operational Station according to the essential criteria and requirements contained in CTBT/PC/II/1/Add.2, p.48, and in CTBT/PTS/INF58 Rev.8 or the version of the same in force at the time of signing of the Contract. The Contractor shall meet the recommended criteria specified in CTBT/PTS/INF58 Rev.8, (which could be provided by the Commission upon the Contractor’s request) unless otherwise agreed between the Commission and the Contractor.

b) The Work shall include the following tasks:

   (i) ensure that unobstructed access, use/ownership of the site for the purpose of the work to be carried out in compliance with these Terms of Reference and for the operation of the Station is secured, as described in Section 3.1 below, and that all necessary administrative procedures for securing such access, use/ownership are complied with prior to the signing of the Contract, unless otherwise agreed by the Commission in writing;
(ii) provide support and assistance to the Commission for the duration of the Project, especially during the inspection of the Station, as specified in Section 3.2 below;

(iii) establish housing and infrastructure, as described in Section 3.3 below;

(iv) supply the Equipment, as described in Section 3.4 below;

(v) install and test the Equipment, so that the Station is operational, as described in Section 3.5 below;

(vi) provide training, in accordance with Section 3.5.3 below;

(vii) supply spare parts and maintenance tools for the Equipment, as described in Section 3.6 below;

(viii) execute Tuning and Initial Testing of the Station, as described in Sections 3.7 and 3.8 below;

(ix) provide documentation, as described in Section 3.9 below.

3. WORK TASKS

3.1. GENERAL OBLIGATIONS

(a) Local laws, codes, regulations, etc.
The Contractor shall ensure that the Project is performed in compliance with any national, municipal or local regulations, laws, building codes, licensing or permitting requirements that relate to the Work Tasks to be performed in accordance with these Terms of Reference. This requirement shall include contracts with the local power supplier. The Contractor shall obtain licenses, permits or authorizations needed to carry out the Work under this Contract.

(b) Lease of the Site
The Contractor shall administer land lease and ensure its continued validity, if any.

(c) Site Survey
The Contractor shall ensure that the findings and recommendations included in the Site Survey Final Report prepared by ARN and the Commission are taken into account at every stage of this Work described in Section 2 above. A copy of the Site Survey Final Report can be provided to the Contractor upon request. Although the Site Survey Final Report is intended to be accurate and complete, the Commission does not take responsibility for any inaccuracies and omissions in the Site Survey Final Report.

(d) Monitoring Field Operations
The Contractor shall ensure that the Commission’s staff or its representatives are granted access to the site/Station at any time to monitor field operations and progress of work.

3.2. SUPPORT TO THE COMMISSION

(a) The Contractor shall assist and support the Commission at any time, during the Project, as requested by the Commission.

(b) The Contractor is expected to accompany the Commission’s Representatives, support and facilitate all works of the Commission related to inspection of the Station that will take place after completion of the Work, as notified by the Commission and described in Section 5 below. The Contractor shall assist and support the Commission’s Representatives if the Commission deems further visits to the Station necessary.

3.3. HOUSING AND INFRASTRUCTURE

The Contractor shall provide power connection and housing infrastructure, as specified in this Section. For all issues related to housing and infrastructure the Contractor shall follow the CTBTO Radionuclide Monitoring Stations Electrical Power Supply Guidelines (Attachment I). In particular the minimum requirements specified in these guidelines shall be met.

3.3.1. Power Management

3.3.1.1. The main power supply

The Contractor shall:

(a) Arrange the power access from the local electricity company EDESA. Power access will be available from street, which is close to the site (approximately 100 meters)

(b) Ensure that the main power system provides power, 15 kW minimum, for all Station Equipment. The power connection to the Station shall be according to the national standards.

(c) Ensure that the main power system is ready to connect the Equipment.

(d) Supply and install:

   (i) sufficient cable gauge for power supply of the Station;
   (ii) lay the cables from the power access point to the site in ducts;
   (iii) a common grounding point;
   (iv) a powermeter, preferably in the power distribution box

3.3.1.2. The auxiliary system

The Contractor shall:
(a) Supply and install an auxiliary power supply (diesel generator or similar) providing power for all Equipment for at least three days without refilling, if not already present at the site.

(b) Ensure that the auxiliary system:

(i) provides sufficient power for the start-up and running of all Equipment without oversizing the generator;

(ii) operates automatically (switch on and off) and is controlled by the Uninterruptable Power Supply (UPS), if possible;

(iii) is switched on after a configurable time (typically within 5 minutes) after an outage of the mains;

(iv) will run for a configurable time (typically 10 minutes) when it is switched on;

3.3.1.3. The UPS

(a) Supply and install an Uninterruptable Power Supply (UPS). The UPS shall provide stabilized voltage and frequency to all components of the Station, except for the climate control and air sampler. The station lighting shall be reduced to security lighting only.

(b) Ensure that the UPS:

(i) is a True Online UPS;

(ii) is voltage- and frequency stabilizing;

(iii) will grant at least 20 min power supply for all components without sampler and climate control;

(iv) is capable of switching on and off an Auxiliary System, if applicable;

(v) is capable of switching on and off several components of the Station in a specified time sequence according to Attachment II;

(vi) will transmit the power status to the computer system:

   UPS power on/off
   UPS power availability

(vii) Socomec NRT2-U7000K Socomec NRT2-7000K, extra battery NRT-B7000 or equivalent is permitted.

3.3.1.4. Power conditioner

A power conditioner or voltage stabilizer (for technical specifications see chapter 4 of Attachment I) shall be installed at the entry point of the mains (recommended location) to the RN station (for more details see Attachment I). Ortea Vega 10-15 or equivalent is permitted.

3.3.2. Equipment Housing

The Contractor shall:

(a) Provide a detailed plan for housing of the Equipment, including all measures meant for the construction, location, size of major system components and protection measures, as described in the paragraphs below ("Equipment
Housing Plan”). This plan shall include also details on civil work needed to establish the complete station (such as clearing the New Site, levelling, running conduit, providing pads for structure and paths, etc.), including all measures meant for the construction, location, size of major system components and protection measures, as described in paragraphs below. The plan shall be submitted to the Commission for its approval prior to its construction.

(b) Construct the housing for the Equipment in accordance with the housing plan approved by the Commission.

c) Ensure that the openings of the housing are wide enough to allow the entry of all the Equipment.

(d) Ensure that the housing is ready for the installation of the Equipment.

e) Ensure that the following requirements for the Equipment housing are complied with:
   
   (i) the suggested minimum area for the Equipment is 25 m². The suggested minimum distance from the Equipment to any other pieces of Equipment or walls is 80 cm (Attachment III)
   
   (ii) the storage space is sufficient for filters, spare parts and tools;

   (iii) the space for filter handling is sufficient and adequate for handling filters without cross-contamination;

   (iv) cable ducts to sensors outside the Equipment housing are laid (i.e. meteorological sensors, VSAT cable)

   (v) the building materials and the Equipment housing are of such quality that they withstand the local environmental conditions, with a view to lifetime and maintenance costs. The Equipment housing shall be constructed as a solid building, e.g. concrete or bricks building;

   (vi) some form of protection against inadvertent or malicious intrusion and/or vandalism are installed, windows shall be protected with window grills;

   (vii) the inside of the housing is protected from any adverse environmental influences like sand, water, sea salt, insects, etc.;

   
   (f) Supply a cabinet for the storage of the filter in decay mode with an open/closed sensor.

   (g) Supply and install adequate illumination in order to have adequate lighting of the Equipment and working areas. Sockets for electrical cables and network connections shall be installed in each wall. Some of the sockets shall be connected to the UPS and shall be labelled accordingly.

   
   (h) Supply and install lightning protection.

   (i) Supply and install fire protection in the room where the Equipment is installed, ensuring that:

   (i) at least one CO₂ fire extinguisher with a filling of at least 6 kg is available at all times;

   (ii) a fire alarm system is installed;

   
   (j) Supply and install a redundant climate control system (3-phase, commercial grade) to guarantee:

   (i) maximum temperature variation: 3°C in 24 hours (temperatures below 25°C are recommended)
(ii) relative humidity between 30% and 70%,
(iii) the dewpoint difference >10°C
(iv) switching on automatically upon resumption of main power following a power outage,

(k) Supply and install sensors to measure the indoor temperature and humidity. Vaisala HMW89D or equivalent is permitted.

(l) Provide furniture to be decided in co-operation with the Commission. Suggestions are given in Attachment III

(m) Ensure that the Equipment housing is accessed via telephone (either with GSM or if GSM is not available with fixed network) and via computer.

(n) Provide the infrastructure for the installation of the VSAT antenna and ensure that it consists of:
(i) construction of a base for the antenna. Specifications for the antenna base can be found in Attachment IV. The platform base shall be the construction of a pad where a pedestal or pole will be installed. The pole or pedestal shall be provided by the GCI Contractor to the Contractor during carrying out of the infrastructure work under this contract;
(ii) conduit for the cable between the VSAT antenna and indoor unit;
(iii) suitable grounding for VSAT Antenna and VSAT Equipment;

If more details are necessary, they can be given by contacting the Commission.

(o) Supply and install a security fence, which is at least 2-m high surrounding the building, air sampler and the VSAT. In the pointing direction of the antenna the fence must be far enough not to obstruct the line of sight of the satellite.

3.4. PROCUREMENT AND SUPPLY OF EQUIPMENT

3.4.1. General requirements

The Contractor shall:

(a) Supply the Equipment needed for the establishment of the site/Station, as specified in this Section.

(b) Supply the Equipment from a reputable manufacturer and it shall be of the highest quality and state-of-the-art.

(c) Ensure that the electrical power requirements for the Equipment are adjusted to the local power supply at the Station (Voltage, Frequency).

(d) Ensure that the Equipment is delivered, insured and properly stored at the site/Station.

(e) Ensure that the Equipment is compliant with the requirements as specified in these Terms of Reference and with the technical specifications as listed in the Proposal.
3.4.2. Air sampling system

The Contractor shall:

(a) Supply and install an air sampling system with an air flow (with the filter in place on the sampler) above 500 m$^3$/h at STP and with an air-flow measurement accuracy equal or better than ±5%. The air sampler shall be installed on a concrete base.

(b) Ensure that the air-flow measurement is in m$^3$/h at STP (273.15 K, 1013.25 hPa).

(c) Ensure that the inlet geometry and the inlet tube (if used, it shall be smooth and made of antistatic material) minimize the particle loss, so that the global collection efficiency is greater than 60 % for particles of 10 µm diameter.

(d) Ensure that the filter in the air sampler is protected against direct weather influences.

(e) Supply and install a tamper protection sensor in the air sampler lid and, if applicable, in the area where the controls panel is located.

(f) In line with the standardisation efforts for the IMS manual RN station network only a Snow White air sampler is permitted. As motor controller a Vacon 100 shall be provided in order to minimize the start-up power.

3.4.3. Detector system

The Contractor shall:

(a) Supply and install a HPGe ultra low background detector with a relative efficiency equal to or larger than 50%, (optionally 40% as long as the MDA requirement for Ba-140 is met) according to the Institute of Electrical and Electronics Engineers Incorporated (IEEE) standard (ANSI/IEEE 325-1996). The peak-to-Compton ratio should be large enough to permit good peak identification: i.e. for Coaxial detectors, the ratio should be larger than 60. Energy range shall cover 40 – 2800 keV. If the filter sample is placed on top of the crystal, the crystal should have a diameter of at least 6 cm. The detector system shall also provide an output of the crystal temperature for automatic reading.

(b) Provide technical drawings showing all relevant dimensions and material composition of the detector system such as crystal dimensions, dead layer dimensions, endcap material and distance from crystal, etc., and a x-ray picture of the crystal shall be provided

(c) Supply and install a liquid nitrogen cooler Cryo Cycle II detector cooling system (including a in line with the standardisation efforts for the Argentinian RN station network and as part of spare part management.

(d) Provide a scale to monitor the liquid nitrogen level, which is compatible to the Cryo Cycle II. The readout from the scale shall be integrated into the station software. A&D scale and indicator (AD-4405) or equivalent are permitted.

(b) Supply and install a shielding equipped with a sensor that indicates whether the shielding is in the open or closed position. The shielding design shall ensure that no direct radiation from outside the shielding can reach the detector without
encountering lead material. The shielding shall be of low background lead, 8-15 cm thick and have an appropriate combination of the following layers:

(i) a tin liner of at least 0.5 mm thickness
(ii) a copper liner of at least 1.5 mm thickness

(c) The inner cavity shall have a diameter of 15 cm, at minimum, and the Germanium crystal shall be placed in the middle of the cavity. Between upper and bottom end of the crystal and the inner walls of the shielding a distance of about 10 cm shall be kept;

(d) Supply and install digital signal processing electronics, including a high-voltage power supply (and detector warm-up bias shut-down) and an MCA with at least 8192 channels.

(e) supply a sample holder and ensure it is of low-background material and its geometry is appropriate for the detector sample geometry;

(f) The Commission will provide the appropriate calibration and QC source

(g) Perform the efficiency calibration for the sample detector geometry to be used and send the raw calibration spectra to the International Data Centre (IDC). The Contractor shall perform a check of the relative efficiency using a $^{60}$Co source as defined in IEEE standard - ANSI/IEEE 325-1996.

(h) Ensure that the whole acquisition system has a better resolution than 2.5 keV at FWHM at the energy of 1332 keV.

(i) Provide an Spectral Acquisition and Data Analysis Software (latest version of GENIE 2000)

(j) Provide two 50 liter dewars for liquid nitrogen

3.4.4. Miscellaneous Equipment

The Contractor shall:

(a) Supply a filter press. The press shall guarantee that the diameter of the filter to be measured is not more than 5 cm wide and not more than 1 cm high.

(b) Supply a cutting tool to split a pressed filter into two equal portions.

(c) Supply an electronic scale with an accuracy of 0.1g to be used to weigh the filter (or portions of filter) before it is sent to the Commission or a Radionuclide Laboratory.

(d) Supply the required communication equipment. Netgear FS116 hub/Switch (or 16 ports equivalent), MOXA IMC-21A-S-SC-T (fiber optic wires), MOXA NPort IA-5250, Converter MDR-10-5 AC/DC Mean Well, Converter MDR-60-24 AC/DC Mean Well, MOXA NPort IA-5250, MOXA M3810, MOXA M2810, MOXA M1810, MOXA M6200 Pt100 Analog, MOXA IMC-21A-S-SC-T (fiber optic wires) or equivalent are permitted.

3.4.5. Filter management system

The Contractor shall:
(a) Supply and install a filter management system able to monitor the filter through every step: collection, decay and acquisition in line with the Station Operation Software provided (see an example of the date flow in Attachment V).

(b) Ensure that the following requirement are complied with:

(i) Each filter is identified with an ID number before air sampling starts. This ID shall be read every time the filter is moved from one step to another. The ID shall be transmitted to the computer system automatically, together with a record of where the reading was taken. The ID number shall be a bar code, in such a case a bar-code reader is necessary inside the air-sampler, in the decay cabinet and near the detector.

(ii) The bar-code reading is done every 10 minutes while the filter is in the air-sampler and in decay mode, while it shall be done only before and after the measurement in the detector. Only one bar code printer is necessary at the Station.

(iii) The bar-code readers are interfaced to the computer system. The operator needs to be able to check the position of the filters and to recognize immediately if the filter has been incorrectly placed. If a filter is placed in the wrong sequence, the operator needs to be warned so that action can be taken. The filter positions, and any warning caused by incorrect placement, shall be sent to the operator of the Station. The IDC shall receive data on the filter positions, and a message in case of incorrect placement.

(iv) The format for the bar code is the one specified in the ‘IDC Documentation Formats and Protocols for Messages (IDC-ENG-SPC-103- Rev. 7.3 )’, Attachment VI and follow the Interleave 2/5 standard;

(v) The bar code has the following characteristics:
- reading distance 50 - 200 mm
- inbuild decoder (capable of reading the Interleave 2/5)
- full documented programming code
- RS232 or Ethernet interface
- scanning rate min 1 scan/s

(vi) The bar code printer has the following characteristics:
- thermo transfer technology
- label width 4 - 5 cm (to be fit on the compressed filter)
- RS232 or Ethernet interface
- full documented programming code

(c) Leuze BCL8SM102, rod mounting system BTU D12M.5-100, mounting system - BTU D12M-D12-B090, mounting system- BTU 300M-D12, connection cable - KB 008-3000 A is the current standard but equivalent may be permitted.

3.4.6. Meteorological Equipment

The Contractor shall:

(a) Supply and install meteorological Equipment.
(b) Ensure that the following requirement are complied with:

(i) the meteorological Equipment, and possibly their installation, meet WMO recommendations,
(ii) is chosen considering the local environmental conditions,
(iii) the meteorological equipment measures:
- temperature,
- wind direction,
- wind speed,
- barometric pressure,
- precipitation and
- humidity.

(c) Vaisala weather station WXT536 or equivalent is permitted.

3.4.7. Computer System
The Contractor shall:

(a) Supply and install the computer system and the associated software.

(b) Ensure that the following requirements for the hardware are complied with:

(i) the computer system shall be a ruggedized system (industrial computer),
(ii) the computer system used allows for on-site viewing of all data and analysis of spectral data in the format specified in ‘IDC Documentation Formats and Protocols for Messages (IDC-ENG-SPC-103- Rev. 7.3)’, Attachment VI.
(iii) the computer system allows remote connection via FTP, Telnet, remote desktop or similar technology.
(iv) the computer access is protected (i.e. by passwords)
(v) the computer is set to comply the Attachment II requirements regarding station management in case of power failure. PTS advices following settings:
- the computer turns off itself automatically when the UPS lost its autonomy (below a configurable battery level)
- the computer restarts automatically (and with a configurable delay) upon resumption of the main power following the power outage together with all station software
(vi) the hardware includes as a minimum:
   1. CPU INTEL Core i7-6700 quad core 3.4GHz or equivalent
   2. 16 GB RAM
   3. 1 TB harddisk
   4. Dual HDD
   5. CD/DVD-ROM drive
   6. 2x LAN 10/100/1000
   7. COM 2x RS232
   8. four availables usb slot
   9. Windows 7 32bit, English version
   10. The computer model PrioSys MB950AF or equivalent is permitted
11. 17 inches monitor
12. Connection from the computer system to VSAT terminal shall be a category 5 UTP cable with RJ 45 connector (IEEE 802.3 specification)
13. A standard color laser printer

3.4.8. Station Operation Software

The Contractor shall install the Station Operation Software version 4.9.x.x provided by the Commission and ensure that the Commission instructions are followed.

3.4.9. Spectral Data Acquisition Software,

The Contractor shall provide and install the GENIE 2000 Spectral_Acquisition and Data Analysis Software and ensure that the following requirements are complied with:
(a) the acquisition and data analysis software produces all data required for Station Software to produce data in the format specified in ‘IDC Documentation Formats and Protocols for Messages (IDC-ENG-SPC-103- Rev. 7.3)’, Attachment VI.
(b) auto-sequences for ramping the High Voltage in case of a command for switching on and off the detector system is present.
(c) interface for performing commands (like “Switch Off Detector” or “Switch On Detector”) is clearly specified.
(d) there is an Auto-Sequences for storing data every two hours.

3.4.10. Digital Data authentication
The Contractor shall:
(e) install the authentication token and software provided by the Commission
(f) ensure that all data sent from the station are authenticated.

3.5. INSTALLATION AND INTEGRATION OF EQUIPMENT

3.5.1. Installation of Equipment
The Contractor shall:
(a) Install and test the Equipment (including the equipment housing).
(b) Ensure that trained technical personnel are present on-site during the installation.

3.5.2. System Integration
The Contractor shall:
(a) Provide a system integration plan including detailed schemes showing the Equipment layout and integration of the Equipment (description of the data
connections and power supply of the Equipment elements, amongst others. See Attachment V as an example). The plan shall be submitted to the Commission for its approval prior to the integration of the system.

(b) ensure the integration of the system consisting of the Equipment (including equipment housing) and the local infrastructure taking into account the physical characteristics of the Station, the location and dimension of the housing and the transmission and processing of data.

(c) ensure that the minimum distance of air sampler’s air inlet from a possible obstruction is 5 times the difference between the inlet height and obstruction height of vegetation canopy or of any obstacle. Single obstacles, like a tree will not be considered for this request,

(d) a fire alarm system is set up in a way that prompt and effective actions can be taken, i.e. connected to the fire brigade station, station operators, next-door neighbours, local authorities etc;

(e) Ensure that the following requirement for the integration are complied with:

(i) the filter management system is installed as specified in Section 3.4.5 above;

(ii) the signal output of all sensors and modules is connectable to the computer and/or a data logger; For standardization purpose of the IMS RN network only the Symetude station and Snow White data loggers are permitted (see Attachment VII).

(iii) Ethernet 10baseT connections to get data from all system components are used, if possible. If it is not possible to have only one connection system, the data of the non-Ethernet components should be connected in an Ethernet 10baseT data logger and sent to the computer system.

3.5.3. Training
The Contractor shall provide training, instruction and advice to the Station Operator on how to operate and maintain the Station, including preventive and regular maintenance. The Contractor shall present the proposed training programme with the proposal.

3.6. CONSUMABLES AND SPARE PARTS

3.6.1. Filters and other consumables
The Contractor shall:

(a) Supply, at the time of equipment delivery, consumables for one-year operation of the Station excluding the filters and sample containers, which will be provided by the Commission.

3.6.2. Spare Parts, Safety Equipment and Maintenance Tools
The Contractor shall:
(a) Procure, supply and store at the site/Station an initial depot of spare parts, safety equipment and maintenance tools estimated to be necessary for the upkeep and maintenance of the Equipment referred to in Section 3.3 for a period of 2 (two) years.

(b) Provide a list of the spare parts, safety equipment and maintenance tools, referred to in Section 3.6.2(a) above, specifying type, quantity, and cost.

3.7. TRANSMISSION OF DATA TO IDC AND TUNING

3.7.1. Beginning of transmission of data

(a) The Contractor shall notify the Commission:

(i) when the Station is ready to start the transmission of data to the Commission

(ii) which data (including optional data) are going to be transmitted

(iii) the information, as required by the IDC procedures (see Attachment VIII);

(b) The transmission shall start only after the Commission notifies the Contractor that the Station is connected. When the Station is connected and data is transmitted, tuning starts.

(c) The Contractor shall ensure that, if the approved connection to the Global Communication Infrastructure of the Commission has not yet been installed, data is temporarily transmitted to the Commission in another way and such alternative has to be approved by the Commission.

3.7.2. Tuning

(a) The Contractor shall ensure that:

(i) the following spectra are transmitted (they should be acquired before Tuning starts):
   - Detector background spectrum acquired for 7 days,
   - Blank filter spectrum acquired for 3 days,
   - Efficiency calibration spectrum;

(ii) problems that show up during Tuning are fixed;

(iii) Tuning continues until all data are transmitted in the required format, the minimum requirements referred to in CTBT/PC/II/1/Add.2, p.48 are likely to be met, at least six (6) satisfactory spectra have been received by the Commission and the Commission’s procedures for the insertion of the Station into the IDC pipeline have been completed.

(b) The Commission will notify the Contractor when the Tuning is over and the Station is ready to start the Initial Testing.

3.8. INITIAL TESTING
(a) The Contractor shall:

(i) Initiate the Initial Testing only after notification by the Commission that Tuning has been successfully completed.

(ii) Ensure that the Initial Testing will allow the Commission to verify if the Station is working properly and according to the minimum requirements referred to in CTBT/PC/II/1/Add.2, p.48, for 30 days, without interruption, unless the interruptions are expressly accepted by the Commission

(iii) Ensure that appropriate remedial actions will be taken during Initial Testing if, in the view of the Commission, the results are unsatisfactory. The Commission will immediately notify the Contractor if results are unsatisfactory.

(b) The Commission, on the basis of its evaluation of the data received from the Station, will notify the Contractor when the Initial Testing is completed.

(c) The Commission could ask to extend the Initial Testing period if necessary for a total extended duration of maximum six (6) months. In the proposal the extended Initial Testing period shall be quoted as an option.

3.9. DOCUMENTATION

The Contractor shall:

(a) Ensure that all documentation sent to the Commission, as specified in Section 3.9 and Section 4, is in the English language.

(b) Ensure that all documentation sent to the Commission is also available at the Station, together with all manuals for the Equipment including manuals for their operation and maintenance. All this documentation shall be kept in a safe and clean place.

(c) In particular, provide maintenance procedures and a proposal for a maintenance plan for all Equipment. A template for maintenance procedures will be provided by the Commission.

(d) Produce the station specific documentation according to Attachment IX:

(i) the Contractor should generate the following drawings:

- Station Block Diagram
- Station Electrical Diagram
- Station Network Diagram
- Station Data Flow
- Set of Station documented photos

using VISIO from Microsoft.

(iii) the Contractor should provide three text reports complying with the requirements specified in the Attachment IX

- General Station Information Report
4. REPORTING

The Contractor shall submit to the Commission an Equipment Housing Plan, Progress Report, an Installation Report and a Final Report.

4.1. EQUIPMENT HOUSING PLAN

(a) The Installation Contractor shall submit an Equipment Housing Plan as referred to in Section 3.3.2.

4.2. PROGRESS REPORT

(a) The Contractor shall submit a Progress Report with sufficient information for the Commission to determine that the Work Tasks, as referred to in Section 3.1 and Section 3.3 above, have been carried out and that the site is ready for installation of Equipment.

(b) This Report shall contain:

(i) full description of the work specified in Sections 3.1 and 3.3;

(ii) a statement on the ownership/lease of the land, including a copy of any permits or lease arrangements and its length, and copies of any license, permit or authorisation that were obtained by the Contractor to carry out the Work in accordance with these Terms of Reference;

(iii) a final detailed plan of the infrastructure and a narrative of the Work described in Section 3.3

(iv) Architectural Drawings, with drawings and plans of all structures with a scale at least 1:100. These drawings shall include the position and the size of the main components, and the characteristics of structural elements (i.e. foundations).

(v) Electrical Drawings with layout drawings showing locations and connections of all electrical Equipment installed by the Contractor, including generators, transformers, motors, controls, grounding points, and back-up electrical storage facilities. Details shall include main routings for cabling, including burial depths and locations when applicable, and a description of all cabling.

(vi) photographs, with descriptive captions, of the Equipment housing and of the Contractor Equipment
4.3. INSTALLATION REPORT

(a) The Contractor shall submit an Installation Report with sufficient information for the Commission to determine that the procurement, installation and tuning of the Station have been carried out by the Contractor, as referred to in Sections 3.4, 3.5, 3.6 and 3.7 above.

(b) This Report shall contain:

(i) full description of the work specified in Sections 3.4 - 3.7;

(ii) technical documentation for the Equipment including:
1. Names of manufacturers, model numbers and technical details for each piece of the Equipment.
2. A test certificate of the relative efficiency of the detector and an x-ray picture showing the position of the crystal within the end-cap.
3. Calibration certificate for the flow-rate meter issued by an accredited institution.
4. Certificates of the meteorological Equipment, location of sensors, maps and calibration procedures.
5. System integration documentation including detailed schemes showing the Equipment layout and integration of the Equipment (description of the data connections and power supply of Equipment elements, amongst others. An example is shown in Attachment V.)

(iii) the set of inspection protocols, acceptance tests, and their results used by the Contractor for all major and important Equipment; if not already sent to the Commission.

(iv) a complete list of consumables, spare parts and maintenance tools, including prices and suppliers;

(v) results of tuning referred to in Section 3.7.2 above;

(vi) a list of all manuals for the Equipment and for their operation and maintenance available at the Station. The Commission will decide, based on this list, if a copy of a manual shall be sent to the Commission

(vii) photographs, with descriptive captions, of all major elements of Equipment and Equipment housing during installation and after.

(viii) a compilation of the documentation checklist. The form for the documentation checklist can be found in Attachment X. The checklist shall be compiled according to this form.

4.4. FINAL/REVISED FINAL REPORT

(a) The Contractor shall submit a Final Report with sufficient information for the Commission to determine that the Work referred to in these Terms of Reference has been completed.

(b) This Report shall contain:
(i) a full description of the Work performed in accordance with Section 3 above, except for issues covered by the Progress Report and the Installation Report;
(ii) results and evaluation of Initial Testing, as described in Section 3.8 and following the guidelines in CTBT/PTS/INF.234;
(iii) Drawings at Completion of Work, supplying a final, complete, and accurate description of all technical work undertaken at the site;
(iv) Specific Documentation as described in Section 3.9 above;
(v) measured coordinates of the location of the air sampler;
(vi) a list of institutions, suppliers and sub-contractors that took part in the Project and their role throughout each phase of the Project;
(vii) a complete list of all the documentation available at the Station, including that pertaining to the Equipment;
(viii) an itemised inventory of installed Equipment, stating the value and year of acquisition for each item;
(ix) any other information relevant to the Project.

(c) If the Commission, after the review of the Final Report or at the time of the Inspection, referred to in Section 5, comes to the conclusion that any part of the Work has not been performed in accordance with the Terms of Reference or the Contractor’s Proposal and/or the Commission requires further information or a remedial action on the part of the Contractor in respect of any part of the Work, the Commission will instruct the Contractor to submit such additional information and/or to carry out a remedial action. Within 6 (six) weeks of the receipt of the Commission’s instruction, the Contractor shall undertake any remedial action requested and provide a Revised Final Report that describes the remedial action taken and contains the additional information requested to satisfy the instruction of the Commission.

5. INSPECTION

(a) An inspection by representatives of the Commission and/or institutions appointed by the Commission to confirm that the Work Tasks have been carried out in compliance with the Contract shall take place within 8 (eight) weeks of the receipt of the Final Report by the Commission, referred to in Section 4.4 above (hereinafter referred to as the “Inspection”).

(b) The exact dates and duration of the Inspection shall be agreed between the Commission and the Contractor.

(c) The Commission reserves the right to invite representatives of other organizations to the Inspection in an advisory role.

(d) During the Inspection the documentation described in Section 3.9 shall be available at the Station in order to ease the Inspection procedures.

(e) During the Inspection, the Commission will focus on different aspects of station operation.
(i) **Tour of the site.** This will include a visit to the Station facilities, associated buildings used for housing or storing of the Equipment, and laboratory areas used for sample handling, processing or analysis.

(ii) **Contractor briefing and demonstration of the Equipment and procedures.** The Contractor shall demonstrate the functioning of the Equipment, highlighting any relevant technical issue; moreover, the Contractor shall present and explain the procedures related to the Station and make a detailed demonstration of daily operation, according to the Station Specific Operational Manual referred to in Section 3.9.

(iii) **Technical checks, inspection and measurements.** The Commission will perform, with the assistance of the Contractor, several tests and measurements to verify the quality of the Equipment and the correctness of the data provided in the documentation, including:

1. a portable calibrated flow rate meter will be used on-site to measure the flow rate between 500 and 1000 m$^3$/h as close to the built-in meter as possible. IDC data will also be checked to see if the operational flow rate is in accordance with this measurement;
2. the relative efficiency, the peak-to-Compton ratio or the calibration range will be tested;
3. the filter management will be tested and the system will undergo intentional filter manipulations or interruptions to test its performance;
4. meteorological Equipment sensor functionality will be tested;
5. the mail server software, transmission without GCI or the capability of back-up devices will be tested;
6. transmission (to/from IDC) of authenticated data will be tested;
7. UPS will be tested with repeated disconnection from the power and testing of undisturbed power supply for several hours by the back-up system will be carried out;
8. the itemised inventory of installed Equipment, provided with the Installation Report as specified in Section 4.3 (b).

(iv) **Final discussion.** this will summarize the findings of the visit and focus on issues where adjustments and/or clarifications are required.

(f) If the Inspection reveals that the Work is not in compliance with the Contract, the Commission will instruct the Contractor, during the Inspection or within 3 (three) weeks after the inspection, to take the necessary action to remedy the defects within 6 (six) weeks of the instruction by the Commission.

### 6. ACCEPTANCE OF PLANS AND REPORTS

(a) Plans:
(i) The Commission will notify the contractor about the acceptance of the plans referred to in Section 3.3.2(a) and in Section 3.5.2(a) within two weeks after receipt.

(b) Reports:
   (i) In cases referred to in Sections 4.4(c) and 5(f) above, the Contractor shall, after completion of the Tasks referred to in these Sections, submit to the Commission a Revised Final Report within 6 (six) weeks of the date of the completion.

   (ii) The Commission will notify the Contractor about the acceptance of the Final Report/Revised Final Report. The acceptance of the Final/Revised Final Report is subject to completion of the Works in accordance with the Contract and to the satisfaction of the Commission.

7. INDICATIVE TIME FRAME

a) The indicative time frame is as follows: it is expected to complete Infrastructure, Installation, Tuning and Initial Testing, and the submission of the Final/Revised Final Report within 35 weeks from the signing of the Contract by both Parties (Date of Signing of the Contract – “DSC”). In any case, the Contractor shall complete all the Work Tasks not later than 49 weeks after the signing of the Contract by both Parties.

b) The following Table summarises the phases of work described above:

<table>
<thead>
<tr>
<th>REPORTING</th>
<th>WORK TASKS</th>
<th>TIME SINCE DSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progress Report</td>
<td>Section 3.1 ‘General Obligation’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Section 3.3 ‘Housing and Infrastructure’</td>
<td></td>
</tr>
<tr>
<td>Installation Report</td>
<td>Section 3.4 ‘Procurement of Equipment’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Section 3.5 ‘Integration and Installation of Equipment’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Section 3.6 ‘Consumables and Spare Parts’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Section 3.7 ‘Transmission of data to IDC and Tuning’</td>
<td></td>
</tr>
<tr>
<td>Final Report</td>
<td>Section 3.8 Initial Testing</td>
<td>35 weeks completion of infrastructure, installation, tuning and Initial Testing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ 8 weeks Inspection</td>
</tr>
<tr>
<td>Revised Final Report (if any)</td>
<td>Contractor Remedial/Final action, if any</td>
<td>+ 6 weeks</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------</td>
<td>-----------</td>
</tr>
</tbody>
</table>

8. **LIST OF ATTACHMENT**

ATTACHMENT I – CTBTO Radionuclide Monitoring Stations Electrical Power Supply Guidelines  
ATTACHMENT II Station Management for Particulate and Noble Gas Stations in case of power failure  
ATTACHMENT III – Suggested Layout of the housing  
ATTACHMENT IV – GCI requirement  
ATTACHMENT V – System Integration Documentation  
ATTACHMENT VI – Formats and Protocols for messages  
ATTACHMENT VII – Data logger description  
ATTACHMENT VIII – IMS Radionuclide Station Information Form V1.2  
ATTACHMENT IX – Station Specific Documentation (SSD)  
ATTACHMENT X – Documentation Checklist
ATTACHMENT I - CTBTO Radionuclide Monitoring Stations Electrical Power Supply Guidelines

This document will be provided on request
ATTACHMENT II - Station Management for Particulate and Noble Gas Stations in case of power failure

For noble gas stations the same schema applies with the possible exclusion of the air sampler considerations.

**Main power supply**

**MAIN POWER FAILURE**

**UPS takes control**
- Air sampler and air conditioning are off because they are not powered by the UPS;
- Data loggers are connected to the UPS and/or are battery powered

**AUXILIARY POWER SUPPLY NOT EXISTING**

- All new data are saved and immediately sent before the UPS has lost its autonomy
- The system shuts down properly

**Main power supply resumes**
- The computer system restarts properly
- The air sampler and the air conditioning are automatically switched on

**AUXILIARY POWER SUPPLY EXISTING**

**Auxiliary power supply is switched on**

**Auxiliary power supply at full power**

**The air sampler and the air conditioning are automatically switched on**

**Main power supply resumes**

**The auxiliary power supply is switched off after configurable time of operation**

**AUXILIARY POWER SUPPLY FAILURE**

---

Data logger(s) should be preferably battery powered with an autonomy of 2-4 weeks.
ATTACHMENT III - Suggested Layout of the housing

(i) General
The housing should be such that the distance to the nearest obstructions (trees, buildings, etc.) should be 5-10 times their height (see picture).

(ii) Minimum dimension 4m x 3.75m minimum, height 2.5 m. (Please note that the requirements in this TOR are a minimum of 25 m²)

(iii) Doors should be double doors to facilitate the equipment entrance, the minimum opening shall be 1 m. One window is recommended.

(iv) The room has to be kept as clean as possible. Therefore, a separate entrance is suggested in order to keep out dust, animals (e.g. insects), sand, etc. This entrance could also be used for wet jackets/shoes.

(v) Conduits and sockets for electrical cables and network connections shall be installed in several points.

(vi) A climate control system is necessary to maintain appropriate internal temperature and humidity (temperature between 18°C and 25°C, maximum temperature variation 3°C in 24 hours and relative humidity < 70%).
ATTACHMENT IV – GCI requirement

VSAT Civil Works for Installation of 2.4m Antenna Pedestal Mount

Example for RN19 – IS13 – AS18

1. INTRODUCTION

This document describes the Civil Works that will be required for positioning the satellite antenna. PTS/CTBTO through the GCI contractor, HOT Telecommunications Ltd., will provide the parts to be installed. This civil work is the preparation work for the VSAT installation. It must be completed before the VSAT installation takes place.

2. WORK DESCRIPTION

The work should consist of:
(a) Build a concrete pad for antenna of 2.4m and install the antenna mount (pedestal).
(b) Installation of a conduit for the cable between the VSAT antenna and indoor unit.
(c) Provision of a suitable grounding facility at the point of installation of the VSAT Antenna and VSAT Equipment

Note that the VSAT installation is not part of the civil work. It consists of installing the VSAT antenna on the pedestal installed, the cabling and connecting the VSAT Equipment and grounding.

3. SPECIFICATIONS

3.1 Antenna Pad and Mount

(a) Location
The location of the antenna mount and the indoor unit is as per the GCI site survey.

(b) Work and Equipment Specifications
The 2.4m antenna ground mounting will be a Pedestal Mount. The area required for the antenna should be flat and solid to ensure that the antenna can be securely mounted. A concrete base of nominally 2m x 2m x 0.6m is required. The pedestal will then be secured to the concrete base using appropriate bolts.

(c) Antenna Description
The dimension and weight of the antenna that will be utilized is given in the following table and shown in the attached drawing figure 2. Note that the dimensions in the attached drawing are in inches.

<table>
<thead>
<tr>
<th>Antenna size</th>
<th>Dimensions (m)</th>
<th>Weight w/o de-</th>
<th>Weight with de-</th>
</tr>
</thead>
</table>
(d) Concrete Pad Construction Details

The attached drawing, figure 1, illustrates how to construct the concrete. Note that the dimensions in the attached drawing are in inches.

The minimum foundation requirements are as follows:
1. The soil bearing capacity should be 2000 pounds per square foot at a minimum and the bottom of the foundation should be 6 inches below the local frost line.
2. Concrete should be poured against undisturbed soil.
3. All concrete should have a minimum compressive strength of 3000 pounds per square inch at 28 days.
4. Allow concrete 24 hour set time before installation of antenna.
5. The minimum size and construction should be per Figure 1.
6. There should be 12 - #5 x 60 inches long reinforcing bars positioned as shown in Figure 1.

(e) Installation

Install a 3/4" hex nut and washer (item #3,4) on the anchor rod (item #6), then insert the anchor rod into one of the holes in the plywood template (item #7) and install another 3/4" hex nut and washer. Repeat this procedure for the remaining anchor rods. This will keep all of the anchor rods straight and in the proper orientation when the concrete is poured. Next, install two 3/4" hex nuts and the washer plate (item #2) on the other end of each anchor rod as shown in Figure 1.

Once the site location is determined, dig up the area where the foundation will be installed. Be careful not to dig too deep because the soil in the bottom and sides of the foundation should be undisturbed. Position the 12 #5 x 60" long reinforcing bars 10" apart as shown in Figure 1. Six of the reinforcing bars should face one direction and the other six are perpendicular to them. Position the anchor rods so that the washer plates are positioned under the reinforcing bars. Pour concrete and allow drying for 24 hours.

(ii) Once the concrete is dry, remove the plywood template and screw the hex nuts as far down on the anchor rods as possible.

Install the mast pipe (item #1) on to the anchor rods. Adjust the lower hex nuts until the mast pipe is level in the vertical position. Reinstall the flatwashers and lockwashers and hex nuts. With the mast pipe tightened down, fill the space between the concrete slab and the mast pipe base with grout.

---

### PARTS LIST FOR 2.4M PEDESTAL MOUNT

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4 m</td>
<td>3H x 2D x 2.4W</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### ITEM

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0490-296</td>
<td>2.4M PEDESTAL MAST PIPE</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>0156-921</td>
<td>WASHER PLATE</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>8106-002</td>
<td>3/4-10 HEX NUT</td>
<td>32</td>
</tr>
<tr>
<td>4</td>
<td>8201-045</td>
<td>3/4’ FLAT WASHER</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>8102-045</td>
<td>3/4’ LOCK WASHER</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>8500-010</td>
<td>3/4-10 x 18 GR5 ANCHOR ROD</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>0274-014</td>
<td>TEMPLATE, PLYWOOD</td>
<td>1</td>
</tr>
</tbody>
</table>

### 3.2 Cable Routing

In order to protect the Inter-Facilities Link (IFL) cable between the antenna and the indoor unit, the cable may be routed either through underground cable conduit (ducting), overhead supported by a cautionary wire or surface mounted. If the cable can only be surface mounted, a suitable cable protector must be used or personnel/vehicle access must be restricted.

If civil works for the base mount is required, underground cable ducting is recommended to be laid at the same time. The minimum inside diameter of the ducting should be 30 mm. The minimum bend radius is 4 – 6 inches (10 – 15 cm) depending on type of cable.

The cable path is as per the GCI site survey.

### 3.3 Grounding & Lightning Protection

The VSAT antenna is not provided with lightning protection, but the antenna assembly will be grounded. A suitable grounding point (earth point) should be provided at the site. The civil work shall provide a good antenna earth within 11m of the proposed antenna site. The resistance from the antenna mount to the ground rod should be less than two (2) ohms. Usually, a good building earth (for example, an earthen structural steel member, metallic cold water pipe or copper spike drive into the ground) is sufficient.

---

**FIGURE 1**

2.4m ANTENNA MOUNT BASE
ATTACHMENT V - “Formats and Protocols for Messages”

1. IDC Documentation “Formats and Protocols for Messages” (IDC-ENG-SPC-103- Rev. 7.3)
ATTACHMENT VI – System Integration Documentation

A example for system integration documentation is shown.

1. Diagram showing the data connections of the Equipment elements

RADIONUCLIDE STATION SIGNAL

Station Housing

Air Sampler Location

- Sensor open/closed
- Filter Bar Code Reader
- Filter Bar Code Reader
- Open/Closed Sensor
- serial line
- analog line

- Climate Control
- Meteorological Station
- Device Server

- HP Ge
- Lead Shield
- Temperature Sensor
- Cooler (LN2 or Electrical)

- Digital Signal Processing
- Ethernet Hub 10BaseT
- Ethernet
- Analog line

- Communication Link to IDC
- GPS Clock
- Data Logger

- Multiport Terminal Server
- Bar Code Label Printer
- Air Sampler Location

- Environmental Data Logger
- Station Computer
- Air Sampler Data

- UPS
- UPS
- Air Sampler Data

- Decay Cabinet
- Filter Bar Code Reader

- Communication Link to IDC
- Station Computer
- Data Logger

- Ethernet
- Serial Line
2. Description of the power supply of the Equipment elements

**Power Requirements for Typical Equipment of Radionuclide Monitoring Stations**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Model</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Sampler Unit:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model Snow White (Senya)</td>
<td>9kW</td>
<td></td>
</tr>
<tr>
<td>Model ASS 500 (PTI)</td>
<td>4kW</td>
<td></td>
</tr>
<tr>
<td><strong>Detector System:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Cooling Unit</td>
<td>Cryolectric II (Canberra)</td>
<td>500 W</td>
</tr>
<tr>
<td>Electricool (Ortec)</td>
<td>560 W</td>
<td></td>
</tr>
<tr>
<td>Digital Signal Processing Unit</td>
<td>Model DSA-2000 (Canberra)</td>
<td>60W</td>
</tr>
<tr>
<td>Model Dspec (Ortec)</td>
<td>110W</td>
<td></td>
</tr>
<tr>
<td><strong>Station Computer System:</strong></td>
<td>Standard Computer, Monitor, Bar Code Reader,…</td>
<td>~1kW</td>
</tr>
<tr>
<td><strong>Communication:</strong></td>
<td>GCI VSAT Equipment</td>
<td>&lt; 3.2 kW</td>
</tr>
<tr>
<td><strong>General Infrastructure:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate Control</td>
<td>&lt; 4 kW</td>
<td></td>
</tr>
<tr>
<td>Illumination</td>
<td>&lt; 1 kW</td>
<td></td>
</tr>
<tr>
<td>Meteorological Equipment</td>
<td>&lt; 1 kW</td>
<td></td>
</tr>
<tr>
<td><strong>Noble Gas Systems:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spalax (CEA-DASE )</td>
<td>12 kW</td>
<td></td>
</tr>
<tr>
<td>SAUNA (FOA)</td>
<td>3.5 kW</td>
<td></td>
</tr>
<tr>
<td>ARSA (PNNL)</td>
<td>6 kW</td>
<td></td>
</tr>
<tr>
<td>ARIX (Radium Institut)</td>
<td>6 kW</td>
<td></td>
</tr>
</tbody>
</table>
Example of data flow at an RN station
a) Station data logger (SOHDAS)
Below the rack mountable version is presented, but also a wall mountable version of the SOHDAS exists.

The SOHDAS Rack Mountable version (RMDAS) is a complete integrated Data Acquisition System designed for the stations of the International Monitoring System (IMS) Network. It allows acquiring analogic values, connecting PT100 and PT500 sensors, to install some Probes, to acquire and provide states with dry contacts and to Monitor and Control some parameters of Electric Cooler power supply.

1) DESCRIPTION
The SOHDAS Rack Mountable version (RMDAS) has been designed around the ioLogik Active Ethernet
Rear side panel view

The rear side panel include the following items:
• 1 Male socket IEC power supply inlet with switch, filter and protect fuse
• 1 Ethernet RJ45 female socket of the main communication.
• 1 BNC female connector for PT100 or PT500 sensor named J1.
• 3 cable glands M12 x 1,5 fitted as standard for cable entry (J2, J7 & J10) and with option to mount specific sockets and connectors included in the RMDAS kit.
• 1 female socket M12 with 8 inputs pins named J6 configured to plug Probes.
• 5 female socket M12 with 4 inputs pins (J3, J4, J5, J8, J9) configured with Digital Inputs Acquisition
• 1 female CEE socket power supply output to connect the Electric Cooling device.
• 1 male CEE socket power supply Input

Internal Compartment

The internal compartment of RMDAS include the following items:
• IoLogik Active Ethernet Modular I/O System
• 24VDC Power Supply
• Main block terminal BN1
• Electric cooling monitoring system
2) CHARACTERISTICS

POWER
Power Supply: 110VAC to 240VAC / 50-60Hz, single phase
Fuse Protection: 1 x 2.5A T
Operating temperature 5 to 40 °C (41 to 104 °F)

ELECTRIC COOLER
Power Supply: 110VAC to 240VAC / 50-60Hz, single phase

LAN
Module: ioLogik E4200
Ethernet: 1 x 10/100 Mbps, RJ45
Protection: 1,5KV magnetic isolation
Protocols: Modbus/TCP, TCP/IP, UDP, DHCP, Bootp, SNMP (MIB for I/O and Network), HTTP, SNTP

DIGITAL INPUT
Module: M-1801
Nb: 8 channels
Type: Source
On-state Voltage: 24VDC nominal, 11 to 28,8 VDC
Off-state Voltage: 0 to 5VDC
Isolation: I/O to logic (optocoupler isolation)
Wiring: Screw terminal (with M12 connector or direct connection)

DIGITAL OUTPUT
Module: M-2801
Nb: 8 channels
Type: Source
Output Voltage: 24VDC nominal, min.11 to max. 28,8 VDC
On-state Current: Min. 1mA per channel
Output Current: Max. 0,5A per channel
Wiring: Screw terminal (with M12 connector or direct connection)

ANALOG INPUT
Module: M-3810
Nb: 8 channels
Resolution: 12 bits.
Input Range: 0 to 10 VDC
Input Impedance: 500K ohms
Wiring: Screw terminal (with M12 connector or direct connection)

INPUT TEMPERATURE
Module: M-6200
Nb: 2 analog inputs
Sensor Type: Channel 0 (J1 / BNC Connector). PT500
Channel 1 (Screw terminal). PT100, PT500, PT1000
Resolution: 0,1°C/10 milli-ohms.
Input Impedance: 500K ohms

b) Snow White data loggers:

This solution will be composed with:
- 1 Polycarbonate and glass fiber Enclosure dim: 400mmx300mmx132mm IP67
- 1x Nport IA-5250 -T serial to Ethernet converter (-40°C to +75°C operating).
- 1x Fiber optic converter IMC-21A-M-SC-T (-40°C to +75°C operating).
- 5VDC – 10W power supply for Leuze BCL8 barcode reader
- 24VDC – 60W power supply for other equipment
- Input Circuit breaker 16A C
- Input / Output M12 connectors (Male/female) For BCL and RS485 datalogger communication
- Input / Output RJ45 connector for communication with station
- Regulated heater resistor 15W

Manufacturer: Symetude
Input Voltage: 100 to 230VAC 50/60 Hz

The enclosure will be provided with plain transparent cover door.
The enclosure dimensions are specifically adapted for a best integration in SnowWhite air sampler.
IMS RADIONUCLIDE STATION

SETUP INFORMATION

To be able to set up a radionuclide station at the PTS several information are required. Please fill this form and send it to ims.radionuclides@ctbto.org.

Notes:
1. Dimensions are to be given in mm, apart of the detector dead layers, which should be in μm.
2. Densities should be given in g/cm³.
3. The numbers in brackets refer to the drawings at the end of this form.
4. If a material is not in the list, provide as much information as possible.

<table>
<thead>
<tr>
<th>Station information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station code</td>
</tr>
<tr>
<td>Station type</td>
</tr>
<tr>
<td>☐ Noblegas</td>
</tr>
<tr>
<td>System type</td>
</tr>
<tr>
<td>☐ Automatic</td>
</tr>
<tr>
<td>☐ RASA</td>
</tr>
<tr>
<td>☐ ARAME</td>
</tr>
<tr>
<td>Latitude</td>
</tr>
<tr>
<td>Longitude</td>
</tr>
<tr>
<td>Elevation (m)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Point of Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Telephone number</td>
</tr>
<tr>
<td>Address</td>
</tr>
<tr>
<td>Email address</td>
</tr>
<tr>
<td>Other information</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Message system configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sender email address</td>
</tr>
<tr>
<td>(the one that will appear on the FROM line)</td>
</tr>
<tr>
<td>Alternate email address</td>
</tr>
<tr>
<td>(for resending of data in cases where it is not possible to use the original address)</td>
</tr>
<tr>
<td>Receipt acknowledgement required?</td>
</tr>
<tr>
<td>(if yes, provide email address)</td>
</tr>
<tr>
<td>Addresses for message forwarding:</td>
</tr>
<tr>
<td>Station operator</td>
</tr>
<tr>
<td>NDC</td>
</tr>
<tr>
<td>IMS/RM</td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMS Reporting System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email address reports should be sent to</td>
</tr>
<tr>
<td>Email address(es) that should receive a copy</td>
</tr>
</tbody>
</table>
**Detector information**

<table>
<thead>
<tr>
<th>Detector system</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Detector code</td>
<td></td>
</tr>
<tr>
<td>Number of channels</td>
<td>8192</td>
</tr>
<tr>
<td>Detector type</td>
<td>P-type</td>
</tr>
<tr>
<td>Detector manufacturer</td>
<td></td>
</tr>
<tr>
<td>Detector energy range (min – max, keV)</td>
<td></td>
</tr>
<tr>
<td>Rated resolution (at 1332 keV)</td>
<td></td>
</tr>
<tr>
<td>Rated relative efficiency</td>
<td></td>
</tr>
<tr>
<td>Cooling method</td>
<td>LN2</td>
</tr>
</tbody>
</table>

**Detector calibration**

| Energy calibration reference lines (keV) |  |
| Resolution calibration reference lines (keV) |  |
| Efficiency calibration reference lines (keV) |  |
| Date of first calibration |  |

**Detector dimensions**

| Crystal Material | HPGe |  |
| Crystal Diameter (1) | Crystal length (2) | Top edge radius of curvature (3) |
| Hole Diameter (4) | Hole depth (5) | Hole radius of curvature (6) |
| Dead layer top (in μm) (7) | Dead layer outside (in μm) (8) | Dead layer inside/bottom (in μm) (9) |

**Crystal Holder**

| Material | Thickness (10) |  |
| End cap |  |

| Material |  |
| Outer Diameter (11) | Thickness (13) |  |

**End Cap Window**

| Window Material |  |
| Thickness (14) | Distance to crystal (15) |
| Diameter (16) |  |

**Cold Finger**

(for LN2-cooled detectors)

| Material |  |
| Cryostat |  |
| Type | normal - | low - | ultra-low - Background |

* Default values (keV): 46.52, 59.54, 88.03, 122.06, 165.85, 391.69, 661.62, 898.04, 1173.24, 1332.50, 1836.06, and 2505.74
### Sample information

<table>
<thead>
<tr>
<th>Type</th>
<th>Compressed Filter</th>
<th>ARAME</th>
<th>RASA</th>
<th>Other:</th>
</tr>
</thead>
</table>

### Filter

<table>
<thead>
<tr>
<th>Material</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>Length (21)</th>
<th>Width (20)</th>
</tr>
</thead>
</table>

**Active zone for Manual/RASA**

<table>
<thead>
<tr>
<th>Length (22)</th>
<th>Width (23)</th>
</tr>
</thead>
</table>

**Active zone for ARAME / Compressed filter for Manual**

<table>
<thead>
<tr>
<th>Diameter (18)</th>
<th>Height (19)</th>
</tr>
</thead>
</table>

**Sample container for Manual/ARAME**

<table>
<thead>
<tr>
<th>Top (25)</th>
<th>Side (26)</th>
<th>Bottom (27)</th>
</tr>
</thead>
</table>

### Sample holder for Manual/ARAME

<table>
<thead>
<tr>
<th>Material</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Side thickness (28)</th>
<th>Height (29)</th>
<th>Bottom thickness (30)</th>
</tr>
</thead>
</table>

**Sample holder for RASA**

<table>
<thead>
<tr>
<th>Material</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Diameter (31)</th>
<th>Thickness (32)</th>
</tr>
</thead>
</table>

### Shielding information

<table>
<thead>
<tr>
<th>Model</th>
<th>Inner Diameter (33)</th>
<th>Inner Height (34)</th>
</tr>
</thead>
</table>

**First layer**

<table>
<thead>
<tr>
<th>Thickness (35)</th>
<th>Material</th>
</tr>
</thead>
</table>

**Second layer**

<table>
<thead>
<tr>
<th>Thickness (36)</th>
<th>Material</th>
</tr>
</thead>
</table>

**Third layer**

<table>
<thead>
<tr>
<th>Thickness (37)</th>
<th>Material</th>
</tr>
</thead>
</table>

**Fourth layer**

<table>
<thead>
<tr>
<th>Thickness (38)</th>
<th>Material</th>
</tr>
</thead>
</table>

**RASA front**

<table>
<thead>
<tr>
<th>Thickness (39)</th>
<th>Material</th>
</tr>
</thead>
</table>

### Assembling dimensions

<table>
<thead>
<tr>
<th>Distance between end cap window and shielding (40)</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Distance between sample (container) and detector end cap (41)</th>
<th></th>
</tr>
</thead>
</table>

### Comments

<table>
<thead>
<tr>
<th>Comments</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Filled by</th>
<th>Date</th>
</tr>
</thead>
</table>
| Material name   | Density | Formula  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Germanium</td>
<td>3.323</td>
<td>Ge</td>
</tr>
<tr>
<td>Copper</td>
<td>8.933</td>
<td>Cu</td>
</tr>
<tr>
<td>Aluminum</td>
<td>2.7</td>
<td>Al</td>
</tr>
<tr>
<td>Tin</td>
<td>7.287</td>
<td>Sn</td>
</tr>
<tr>
<td>Lead</td>
<td>11.342</td>
<td>Pb</td>
</tr>
<tr>
<td>Magnesium</td>
<td>1.74</td>
<td>Mg</td>
</tr>
<tr>
<td>Cadmium</td>
<td>8.69</td>
<td>Cd</td>
</tr>
<tr>
<td>Gold</td>
<td>19.282</td>
<td>Au</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>7.5</td>
<td>Fe68.2-Mn1.55-Cr17.7-Ni1.2-Mo1.22-C0.0005</td>
</tr>
<tr>
<td>Camfil glass fibre CS5.0</td>
<td>0.14</td>
<td>O60.07-Si21.84-B6.06-Na5.7-Al2.43-Ca1.64-K1.12-Zn0.67-Ba0.48</td>
</tr>
<tr>
<td>PVC</td>
<td>0.7</td>
<td>C2H3Cl</td>
</tr>
<tr>
<td>Boron</td>
<td>2.37</td>
<td>B</td>
</tr>
<tr>
<td>Camfil glass fibre CS5.0</td>
<td>0.14</td>
<td>O60.07-Si21.84-B6.06-Na5.7-Al2.43-Ca1.64-K1.12-Zn0.67-Ba0.48</td>
</tr>
</tbody>
</table>
**Detector: Coaxial**

![Coaxial Detector Diagram]

**Detector: Planar**

![Planar Detector Diagram]
Sample: Manual Stations

Uncompressed Filter

Compressed Filter
Shielding: Manual and ARAME Stations
ATTACHMENT IX - Station Specific Documentation (SSD)

SSD INFORMATION PACKAGE REQUIREMENTS:

RN Station Drawings

1. **Station Location**, set of two maps:
   a. Location of station sites in relation to nearby roads, cities and airports
   b. Station sites layout over a satellite image, including elevation of the area

2. **Station Block Diagram (SBD)**: The SBD will present the station by blocks at the equipment category level\(^1\) and the relationships between them. The blocks are connected with lines representing flow of energy or information. Labels and colours are used to identify the different types of flow. Boxes represent equipment and subsystems, as classified under “Creating SSD Station Drawings & Photos Set” (see below). The distribution of subsystems and equipment on the page shall be such to show a left-to-right flow of data. The main data path shall be shown on the same horizontal line. The SBD will also indicate the communication topology to the IDC.

3. **Electrical Power Diagram (EPD)**: The EPD is a simplified graphical representation of the power supply to the elements of the station. The EPD will display the following elements; mains power, generators, solar panels, batteries, charge controllers, uninterruptible power supplies, transfer switches, circuit breakers, grounding, surge protectors, power outlets. IEC 60617 graphical symbols are used for the diagram. The most common symbols are available in a Microsoft VISIO shape library saved with the template files available from the PTS. The EPD should include also the following information:
   - Equipment power rating: phases, voltages and frequency, capacity/load
   - Grounding
   - Circuit breaker current ratings
   - Cable types, lengths and diameters

   For RN stations also show the main switchboard and air conditioner phase and neutral connections.

4. **Data Flow Diagram (DFD)**:
   Data Flow Diagram is a graphical representation of the data flow through the station. It shows where the data comes from and goes to and where the data will be stored. The

---

\(^1\) Equipment category as recorded in DOTS
DFD will include data generation system and data acquisition system specifying when necessary software functional block diagram and end-users. The DFD will specify protocols used (data format). The DFD will identify the end users (to IDC, to NDC etc).

The RN Particulate and Noble Gas System DFD identify data generation at the different equipment items and describe the data flow including type of connection: Ethernet, analogue or serial. The acquisition computer is represented as a block enclosing the different software modules.

5. **Network Diagram**
   The network diagram includes: IP addresses, gateways and netmasks of all IP devices. It represents the station local network. If possible it should be combined with Communication Diagram.
SSD PHOTO REQUIREMENTS

1. **Station/ Central Recording Facility external:** where ever possible a general overviews from the outside of the Station Facility where the GCI Antenna can be identified, the CRF building hosting the inside equipment, the passive security measures, the outdoor power system and backup power system, intra-site communications antenna (if applicable).

2. **Central Recording Facility:** Provide photographs containing the following information:
   a) views inside the building identifying the main equipment, such as; station computer, operator computer, UPS, air conditioning system,
   b) if a rack exists, then include a front view of the rack that allows the components to be clearly identified
   c) if relevant (when there is something special that cannot be described in text) a view of the intrusion switch in the context of its location

3. For manual stations
   a. Air sampler
   b. Detector
   c. Cooling system
   d. Filter press
   e. Air flow meter
   f. Data logger

**Notes:**
- More than one photo per location may be needed to comply with the requirements
- Photograph the equipment in the context of its location, not as an isolated piece of equipment
- When it is not possible to photograph a piece of equipment within the context of its location on the site, provide a simple sketch included to indicate its location.
- For documenting the photos follows the guidelines under “Working Instructions – Creating SSD Station Drawings & Photos Set”.
WORKING INSTRUCTIONS – CREATING SSD STATION DRAWINGS & PHOTOS SET

Purpose
These work instructions describe the specific settings and instructions to generate the IMS station drawing set based requirements defined under the documents SSD Drawings Requirements and SSD Photo Requirements.

Applicability
Applied to IMS Stations.
Provides the instructions to generate the IMS Station drawings set.

Reference Documents
SSD Drawings Requirements and Photo Requirements
Work Instructions creating station location maps using QGIS

Skill Level
MS Visio at user level
QGIS at user level

Work Instruction
The set of drawings will be done with MS Visio following the SSD Drawings and Photograph Requirements.

A. Settings
The format settings for the Visio sheet are preconfigured in the Visio Sheet Template. This includes the page configuration as well as the modified shapes, which are preselected in two Visio stencils: Visio shapes and Electric Diagram Shapes.

B. Station Location and Satellite View:[To be completed by the PTS]

C. Documented photos
1. The number of photos describing the station is flexible. The number will differ depending on the complexity of the station and the station’s characteristics. Following the SSD Photo Requirements and Work Instruction for taking photos.
2. The quantity of photos included in each page is to be decided by the common sense of the drawings’ author.
3. The title of each photo page will indicate the precise location of its content; CRF, Equipment Facility, Site or Repeater.
4. The specific location of the object will be indicated with a free text label placed at the bottom of the photo, set with Calibri font, Size 18. The label will also indicate if the photo is representative for the rests of the sites.
5. To label station equipment use the categorization as represented at Station Block Diagram when needed. To indicate each item a Visio Shape is provided in the Visio Shapes Stencil with the name “Photo Item Description”. This shape has also an arrow to indicate which item on the photo is being labelled. After adding the shape to the drawing, it must be ungrouped so the arrow can be used independently from the label. For this click Group>Ungroup on the arrange menu, located in the menu ribbon.

6. No element or equipment on the photo can be left unlabelled.

7. Labels should be placed outside the margins of the photo whenever possible, and be aligned to each other. To maintain a visual balance, select a group of labels and click on Position>Space Shapes>Distribute Horizontally/Vertically depending on each case, so the labels have the same spacing. Note that the first and last label on the line will keep their positions and the ones in between will move.

8. Instructions on how to take the photos:
   a. Hold the camera firmly to ensure the sharpness of the image. If the photo is blurry or shaken take it again.
   b. Photos must be shot with appropriate lighting. If there isn’t enough ambiance light consider shooting with flash.
   c. The subject of the photo must fill the margins of the picture.
   d. Consider if the surrounding context of the object is also worthy of being included in the picture and zoom out/step back accordingly.
   e. If taking a photo of an object from a distance consider using a zoom or taking the picture from up close.
   f. If taking a photo of an object that is not at eye level be sure to shoot from the best possible spot to ensure a proper visibility of the subject.
   g. If taking a photo of a room be sure to step back and/or zoom out in order to capture the distribution and space of the room.
   h. If taking a photo of a room consider using a panoramic shooting mode as long as it satisfies all the other additional requirements.
   i. Photos must be in colour.
   j. Examples:
Station Block Diagram (SBD) for RN

1. The SBD will represent the RN particulate equipment using blocks of solid lines and the color code as presented in Anex I and II.
2. The equipment components inside the lead shielding will be grouped with a green dashed line labelled “Lead Shielding”. This symbol is available in the Visio Shape Stencil as Lead Shielding.

3. The equipment components that cannot be grouped in a subsystem can be left independently in the drawing to preserve the drawings’ legibility.

4. The power subsystem shall be placed on the left side of the page. The GCI on the right side.

**Electrical Power Diagram**

1. Represent the equipment, cable and power information according to the IEC 60617 Drawing Standard using a single line to represent cables. The most common symbols are already selected in a dedicated Visio stencil (Electrical Diagram Shapes) saved with the template files.

2. Cables should be represented as a single line and following the same standard convention as the symbols. When the line has to represent more than one cable this has to be indicated by striking with as many diagonal lines as cables. Voltage, frequency and phase are to be represented as follows:

3. Number of phases-Type of neutral –AC or DC Symbol –Frequency when applicable-Voltage

   Example for Standard European Single Phase: 1PEN – 50Hz 230v

   Example for standard European Three Phase: 3PEN – 50HZ 380v

4. For array stations, when needed, accommodate the information using one or more pages for the sites and one for the central recording facility.

**Communication Diagram**

1. For station with a radio communication infrastructure,

   Represent the antennas by a tower symbol. The location of the icons will be representative of geographical distribution of the sites whenever possible and in those cases add a text note indicating so.

   Connections the towers by a black dash line, representing data communication, with arrow endings to indicate the direction of the transmission.

   Include a table with rows representing station sites and the line of sight distance to the CRF in kilometers, height of the antenna in meters are the columns. Specify at the table Frequency and Network ID. The table fields with no information available will be left empty.

   For example:

<table>
<thead>
<tr>
<th>Site Code</th>
<th>Line of site distance to CRF [km]</th>
<th>Height in [m]</th>
<th>Frequency</th>
<th>Network ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXXH1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.....</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. For stations with no defined intra-site communication system, for example the *radionuclide particulate system*, or a 3-c seismic station where the sensor is collocated at the CRF, this drawing will **not be created**.

**Network Diagram.**

1. The cable line connections will be represented with a solid black line.
2. The radio communication will be represented with a dashed black line.
3. Whenever possible and clear for the user, the IP Address will be specified at the equipment level.
4. For arrays where sites can be represented under the same configuration, they will be grouped with a text label indicating the sites where this configuration applies. A black dashed line (available in the Visio Shapes Stencil as “Physical Division”) separates sites from CRF.
5. When needed, for arrays, the diagram will contain a table where the rows will specify; Element IP Addresses, Mask and Network ID and the columns the different site codes. For example:

<table>
<thead>
<tr>
<th>Elements</th>
<th>IXXH1</th>
<th>IXXH2</th>
<th>IXXH3</th>
<th>IXXH4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wlan Radio IP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digitizer IP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mask</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. For RN particulate and Noble Gas systems, the network devices conforming the local network will be inside a black dashed line rectangular block labeled local network. The GCI equipment will be inside a black dashed line rectangular block labeled GCI. All network devices will be associated with the connected equipment.

**Data Flow Diagrams (DFD)**

1. DFD will be constructed using the four basic symbols from the Gane and Sarson’s\(^2\) notation to represent process, data stores, entities and data flow:

   - **process** --- it represents the transformation of data as they flow through the system: data flow into a process, are changed, and then flow out to another process or a data store. The entity --- it represents the initial source and final destination of data in a DFD
   - **data store** --- a temporary or permanent holding area for data
   - **data flow** --- the connection between processes and data stores along which individual entities or collection of entities flow.


2. When necessary, a vertical dashed line will split the drawing in two areas; the element site and the Central Recording Facility. The two areas will be labelled, as; sites and central recording facility.

3. The equipment will be named as for the Station Block Diagram.

The symbols are available in the Visio Shapes Stencil
### Annex I: COMMON EQUIPMENT DOTS CATEGORIES /SUBSYSTEM TABLE FOR IMS STATIONs

<table>
<thead>
<tr>
<th>Security</th>
<th>Grounding</th>
<th>Power</th>
<th>Intra-site communications</th>
<th>CRF/data acquisition and authentication</th>
<th>Software</th>
<th>Central/Timing</th>
<th>Climate Control</th>
<th>GCI/ISN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamper Switch</td>
<td>Surge Protection</td>
<td>Mains</td>
<td>Radio Antenna</td>
<td>Computer</td>
<td>Data acquisition software</td>
<td>Central Timing</td>
<td>Climate Control</td>
<td>GCI UPS</td>
</tr>
<tr>
<td>Alarm Centre</td>
<td>Grounding</td>
<td>Charge Controller</td>
<td>Communication Controller</td>
<td>Hub/Switch</td>
<td>Operating system</td>
<td>GPS Antenna</td>
<td>Climate Control</td>
<td>GCI Router</td>
</tr>
<tr>
<td>Firewall</td>
<td>Diesel</td>
<td>Hub/Switch</td>
<td>Central Timing</td>
<td>SO/SoH software</td>
<td>GPS Repeater</td>
<td>Climate Control</td>
<td>GCI UPS</td>
<td></td>
</tr>
<tr>
<td>Fences</td>
<td>Gas</td>
<td>Router</td>
<td>Authentication Device</td>
<td>Data authentication and PKI</td>
<td>Climate Control</td>
<td>GCI UPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel cells</td>
<td>VSAT Antenna</td>
<td>Hub/switch</td>
<td>Climate Control</td>
<td>GCI UPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>Telemetry Cable</td>
<td>Climate Control</td>
<td>GCI UPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hybrid</td>
<td>Radio Modem</td>
<td>Climate Control</td>
<td>GCI UPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propane</td>
<td>Satellite Communication Device</td>
<td>Climate Control</td>
<td>GCI UPS</td>
<td></td>
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<tr>
<td>Solar Panel</td>
<td>Media Converter</td>
<td>Climate Control</td>
<td>GCI UPS</td>
<td></td>
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<tr>
<td>Thermo Electric</td>
<td>Transfer Switch</td>
<td>Climate Control</td>
<td>GCI UPS</td>
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<td>System Type</td>
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<tr>
<td>AC/DC Converter</td>
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<tr>
<td>AC/AC Converter</td>
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<td>DC/AC Converter</td>
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<tr>
<td>DC/DC Converter</td>
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<tr>
<td>DC/DC Regulator</td>
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<td>Distribution Box</td>
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</tr>
<tr>
<td>Battery Charger</td>
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<td></td>
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<td>Inverter</td>
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<td>Power Controller</td>
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<td>Voltage Regulator</td>
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<td>Battery</td>
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<td>UPS</td>
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</tbody>
</table>
Annex II: EXTRA EQUIPMENT DOTS CATHEGORIES /SUBSYSTEM TABLE FOR RN TECHNOLOGIES

<table>
<thead>
<tr>
<th>Air Sampler</th>
<th>Nuclear Detector</th>
<th>Filter Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Sampler Pump</td>
<td>Detector</td>
<td>Filter Press</td>
</tr>
<tr>
<td>Air Flow Meter</td>
<td>Preamplifier</td>
<td>Bar code Reader</td>
</tr>
<tr>
<td>Air Flow Electronics</td>
<td>Detector Shield</td>
<td>Robot Arm</td>
</tr>
<tr>
<td>Ethernet Serial Server</td>
<td>MCA</td>
<td>Pinch Roller</td>
</tr>
<tr>
<td>Media Converter</td>
<td>Proximity sensor</td>
<td>Barcode Printer</td>
</tr>
</tbody>
</table>
STATION GENERAL DESCRIPTION

STATION LOCATION

Describe location of sites. Brief description of world location, country and region, nearest town/city, proximity to other IMS stations, general terrain, road access

STATION DESCRIPTION

General description of the station.

LOCAL CONDITIONS

Describe local weather and climate conditions for the station.

Hazards

Hazards; times when station is inaccessible, e.g. winter months for polar stations. If available, description of wind conditions and other significant sources of noise at site(s)

Access

Describe the access to the station

Access dates

Dates when the access to the Station is possible.

LAND OWNERSHIP

Brief description of land ownership, use issues, leases. Do not provide contact details of land owner

Leases

Status of any lease or land contract

Land use right

Land use right describing if there is a military use for the area or an airport
GENERAL RN EQUIPMENT INFORMATION

AIR SAMPLER

Describe particularities of the equipment, its/their location or any specific condition of its functionality (flow rate) that it is present at the station.

1.1 METEOROLOGICAL EQUIPMENT

Describe the meteorological equipment configuration (mandatory and non-mandatory components) and indicate its location.

2 DETECTOR SYSTEM

Describe particularities of the detector system or any specific condition of its functionality that it is present at the station.

STATION COMMUNICATION

2.1 EXTERNAL COMMUNICATION

Provide overview of data transmission to IDC. Describe in terms of Basic Topology, Independent Sub-Network, Partitioned Sub-Network, as given by Operations Manual para 4.6.2

3 POWER AND GROUNDING

Describe the power at the station and the backup sources & UPS, if possible comment of the overall consumption of the station. Describe the grounding system and lightning protection.

4 DATA ACQUISITION AND AUTHENTICATION

Describe the station acquisition system.

4.1 SOFTWARE APPLICATIONS

Indication of the running System, acquisition software applications and modules.

5 STATION OPERATOR DATA MONITORING SYSTEM

Description of the system which provide the SO the capability to monitor the station.

5.1 STATE OF HEALTH MONITORING

Indication of any SOH monitoring system at the station.
SECURITY OF A RADIONUCLIDE STATION

1 STATION SECURITY

Describe security at the station; description of the fences, locked point, location and custodian of the keys, requirements for entrance, passwords, alarm system and fire protection

1.1 INTRUSION SECURITY

Describe the station anti tampering systems

1.2 DATA AUTHENTICATION

Describe the station data authentication system
ATTACHMENT X – Documentation Checklist

Instructions:
The grey fields will be filled by the PTS. The □ in the white fields shall be checked by the Checklist Compiler (CC) who shall also specify where to find the information in the ‘References’ column.

The References column shall indicate the Report (or Appendix to Report) where to find the information and the page number. It may also contain comments.

The Compliance column, to be compiled by the PTS, indicates if the documentation provided by the CC is compliant with the PTS requirements.

Note that the contractor is supposed to be the Checklist Compiler.

Keywords:
CC: Documentation provided by the Checklist Compiler

PTS reports:
IT: Documentation included in the Initial Testing report
T&E: Documentation included in the Testing and Evaluation report
CV: Documentation included in the Certification Visit report
Other: Documentation other Reports, to be specified in References

- Documentation to be sent to the PTS
- Documentation also to be kept at the station

DOCUMENTATION CHECKLIST

<table>
<thead>
<tr>
<th>Certification Procedure</th>
<th>CC</th>
<th>PTS reports</th>
<th>References (e.g. Installation Report, page 16) and/or comments</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IT</td>
<td>T&amp;E</td>
<td>CV</td>
</tr>
<tr>
<td>1. Site and infrastructure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site survey</td>
<td></td>
<td></td>
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<tr>
<td>• Site Survey Report received</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Evaluation of Site Survey Report</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Acceptance of the site</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordinates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Exact coordinates</td>
<td></td>
<td></td>
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<tr>
<td>• PrepCom or other competent body decision</td>
<td></td>
<td></td>
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<tr>
<td>Accessibility by the operator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Accessibility to the station</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Schedules and timetables of transportation means</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Maps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land ownership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Site ownership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Possible restrictions on land usage</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Minimum space</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• Dimension of the area</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Page 62 of 69
<table>
<thead>
<tr>
<th>Building materials and radioactive sources</th>
<th>Building material types, to verify if they are suited to local conditions</th>
<th>☐</th>
<th>☐</th>
<th>☐</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Building materials radioactive content</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Transmitted data shall show no interference from any radioactive source stored at the station</td>
<td>☐</td>
<td>☐</td>
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</tr>
<tr>
<td>Air temperature and humidity control</td>
<td>Climate control system characteristics. It should guarantee a maximum temperature variation of 3°C in 24 hours and a relative humidity &lt; 80%</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Locations and types of temperature sensors</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Historical meteorological data (climatic extremes)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Housing temperature compatible with operational temperature range</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Air humidity &lt; 80 %</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Clean room</td>
<td>‘Clean areas’ at the station</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td></td>
<td>Proposed procedures for station personnel</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Power supply</td>
<td>Plans of the electrical circuitry of the station</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Scheme of connection with equipment</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Statistics on the failure frequency of the main power supply</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Technical characteristics (model, manufacture, presence of stabilizer, autonomy) of the UPS and auxiliary system, if required</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Manufacturer documentation</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>SOH data of main power, UPS or auxiliary show a correct performance of the system</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Site security</td>
<td>Measures adopted against inadvertent malicious access</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td></td>
<td>List of authorized personnel</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Any reports of theft or vandalism that have occurred at the facility</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td></td>
<td>Risk evaluation of natural hazard occurrence</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</table>
## 2. Air sampling and filter

<table>
<thead>
<tr>
<th>Filter</th>
<th>☐</th>
<th>☐</th>
<th>☐</th>
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</thead>
<tbody>
<tr>
<td>☐ Filter characteristics (type, manufacturer)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☐ Station procedures to include retention of blank filters from every batch used</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>• Filter composition and characteristics regarding compaction and complete dissolution</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>• Filter radioactivity content</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>☐ Filter technical specifications and certificates that prove that the particulate collection efficiency for the filter is &gt;80% for 0.2 μm particles and &gt;60% for 10 μm particles</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

1 Only if filters different from filters suggested by PTS are used

<table>
<thead>
<tr>
<th>Filter clogging</th>
<th>☐</th>
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<th>☐</th>
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</thead>
<tbody>
<tr>
<td>☐ Specifications and design of large particle cut-off in sampler, if present</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Air sampler</th>
<th>☐</th>
<th>☐</th>
<th>☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Model, manufacturer and air pump technical specifications and certificate</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>• Airflow rate (with the filter in place) at STP (273.15 K, 101,325 Pa), specifying if the flow measurement is in m³/h at STP</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>• Principle of operation of the flowmeter</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>• Flowmeter accuracy and certificate, giving full details on the accredited institution providing the calibration certificate</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>• Design of the inlet tube geometry</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Item</td>
<td>Description</td>
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</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certification that global collection efficiency is &gt; 60% for particles of 10 µm diameter</td>
<td>☑</td>
<td></td>
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<tr>
<td>• Operational flow rate averaged over 24 hours is as required</td>
<td>☐</td>
<td></td>
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</tr>
<tr>
<td>• Airflow rate consistency in data transmitted to IDC</td>
<td>☐</td>
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</table>

3. HPGe detector

<table>
<thead>
<tr>
<th>HPGe detector</th>
<th>Model and manufacturer</th>
<th>☑</th>
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</thead>
<tbody>
<tr>
<td>• Relative efficiency of the HPGe detector, according to IEEE standard (ANSI/IEEE 325-1996), the peak/Compton ratio and the energy range, including certificates</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>• Crystal dimensions</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Filter sample geometry</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Detector sample geometry and material of the sample holder</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>• Ratios of FWTM to FWHM close to 1.83 in data transmitted to IDC</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>• High peak/Compton ratio in data transmitted to IDC</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>• Resolution &lt; 2.5 keV at 1332 keV</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>• Resolution &lt; 1.4 keV at 477 keV (recommended)</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

Detector cooling system

| Detector cooling system | Detector cooling system used and its characteristics. For electrically cooled detectors, it shall be specified if there are no moving parts in the cold head. For liquid nitrogen cooling systems, a schedule and procedure for replenishing the liquid nitrogen within the cryostat dewar shall be provided | ☐                                                                                               |

Detector shielding

| Detector shielding | Characteristics of the shielding (material or combination of layers and thickness). The shielding shall have an open/close sensor | ☐                                                                                               |

Detector electronics

<table>
<thead>
<tr>
<th>Detector electronics</th>
<th>Model and manufacturer of signal processing electronics</th>
<th>☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Number of channels of the MCA</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>
### Calibration source

- Characteristics of the calibration source (energy range, nuclide mixture, geometry and total activity), including the source certificate, which should be issued by an accredited laboratory or by a supplier of calibration standards, software documentation and calibration procedures

- Calibration range in data transmitted to IDC: 88-1836 keV

- Calibration range in data transmitted to IDC: 46-1836 keV (recommended)

### 4. Spectral acquisition, data format and storage

#### Spectral acquisition software

- Supplier’s specifications

  - Data transmitted to IDC shall show full pulse height spectra and related parameters

#### Spectral parameters

- Spectrum range and number of channels used for transmission to the IDC: 70-2000 keV using at least 4096 channels

- Spectrum range and number of channels used for transmission to the IDC: 40-2750 keV using at least 8192 channels (recommended)

### 5. SOH

#### State of health and ancillary Data

- Location of sensors (maps)

- Specifications, certificates and calibration of sensors

  - Data transmitted to the IDC for the following SOH:
    - Airflow monitor
    - Main power supply
    - Auxiliary power supply
    - UPS
    - Indoor room temperature
    - Detector temperature
    - Detector leakage current
    - Detector bias voltage
    - Lead shielding opening status (closed/open)
    - Indoor relative humidity
    - Bin voltage
    - Count rate
<p>| Nitrogen level, if applicable | ☐ | ☐ | ☐ | ☐ |
| Electro-cooling status (on/off) | ☐ | ☐ | ☐ | ☐ |
| Filter position monitored during: | ☐ | ☐ | ☐ | ☐ |
| Collection | ☐ | ☐ | ☐ | ☐ |
| Decay | ☐ | ☐ | ☐ | ☐ |
| Acquisition | ☐ | ☐ | ☐ | ☐ |
| • Data transmitted to IDC from sensors and instrumentation registered every 10 minutes and when some status change occurs | ☐ | ☐ | ☐ | ☐ |
| Meteorological data | ☐ | ☐ | ☐ | ☐ |
| ☰ Locations of sensors (maps) | ☐ | ☐ | ☐ | ☐ |
| ☰ Specifications, certificates and calibrations of sensors | ☐ | ☐ | ☐ | ☐ |
| • Documented compliance of instruments with WMO specification | ☐ | ☐ | ☐ | ☐ |
| ☰ Documentation on how data recorded from sensors not at the station are collected | ☐ | ☐ | ☐ | ☐ |
| • Data transmitted to IDC from met sensor measuring: | ☐ | ☐ | ☐ | ☐ |
| External temperature | ☐ | ☐ | ☐ | ☐ |
| External humidity | ☐ | ☐ | ☐ | ☐ |
| Barometric pressure | ☐ | ☐ | ☐ | ☐ |
| Wind speed | ☐ | ☐ | ☐ | ☐ |
| Wind direction | ☐ | ☐ | ☐ | ☐ |
| Precipitation (recommended) | ☐ | ☐ | ☐ | ☐ |
| • Data transmitted to IDC from met sensors and registered every 10 minutes | ☐ | ☐ | ☐ | ☐ |
| 6. Data transmission and communication | ☐ | ☐ | ☐ | ☐ |
| Data format | ☐ | ☐ | ☐ | ☐ |
| • If the required IMS format changes, how difficult is it to implement the new format? | ☐ | ☐ | ☐ | ☐ |
| • Data transmitted to IDC converted to the required format (IMSx.x) | ☐ | ☐ | ☐ | ☐ |
| • Time stamps in UTC time in data transmitted to IDC | ☐ | ☐ | ☐ | ☐ |
| • IDC receives on a daily basis according to the schedule fixed for this station | ☐ | ☐ | ☐ | ☐ |
| Data transfer protocol (TCP/IP) | ☐ | ☐ | ☐ | ☐ |
| • Review documentation on operating system | ☐ | ☐ | ☐ | ☐ |</p>
<table>
<thead>
<tr>
<th>Station operation software</th>
<th>• Review documentation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data security</td>
<td>• Data are transmitted to IDC before shutdown of the station</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Data are transmitted to IDC even in case of GCI failure with other communication systems (recommended)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data availability</td>
<td>• Data availability &gt;95%</td>
<td></td>
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<tr>
<td></td>
<td>• &lt;7 days consecutively and ≤15 days a year</td>
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<tr>
<td></td>
<td>• Collection time 24 h</td>
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<tr>
<td></td>
<td>• Decay time ≤ 24 h</td>
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<tr>
<td></td>
<td>• Measurement time ≥ 20 h</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Transmission of spectra within 72 hours of start of sampling period</td>
<td></td>
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</tr>
</tbody>
</table>

### 7. Routine operation and maintenance

| Routine operation | • Documented procedures |  |  |
|                  | • Manual in English and local language (from one of UN official languages) |  |  |
|                  | • 15-30 minute count from a known standard sent to IDC |  |  |
| Scheduled maintenance | • Documented procedures |  |  |
|                      | • Plan and schedule for regular maintenance |  |  |
| Logistics           | • Plan of procurement for consumables |  |  |
|                      | • List of consumables estimated necessary for one year, price and expected delivery time |  |  |
| Spare parts         | • Plan of procurement for spare parts |  |  |
|                      | • List of spare parts estimated necessary for two years, price and expected time schedule for replacement |  |  |
|                      | • Location of spare parts, person in charge and expected delivery time |  |  |
| Troubleshooting     | • Documented procedures and protocols |  |  |
| Unscheduled maintenance | • Guidelines for repair plan guide |  |  |
| Operation and maintenance report | • Documentation of operation and maintenance report |  |  |
| SO training | ☑️ Training documented (certificates, attendance) on preventive and regular maintenance, repairs of equipment and infrastructure, health and safety measures | ☐ | ☐ |

8. Data authentication

| Authentication | ☑️ Specifications on data authentication hardware | ☐ | ☐ |
| • Measures adopted to protect the sampling area, the equipment, the filter samples and the data | ☐ | ☐ |
| • Data received at IDC are signed | ☐ | ☐ |

9. Station Testing and Evaluation

| MDC of measurement system | • ≤10 µBq m⁻³ for \(^{140}\text{Ba}\) with a blank filter | ☐ | ☐ |
| Operational MDC | • ≤30 µBq m⁻³ for \(^{140}\text{Ba}\) under operational conditions | ☐ | ☐ |
| Overall performance | • Evaluation of overall performance (minimum requirements, quality of data and operation, etc.) | ☐ | ☐ |