

For the Procurement, Deployment and Maintenance of a Real Time Seismic Network with Earthquake Early Warning Compatibility

Tender No. 3/2015



**The Ministry of National Infrastructures,
Energy and Water Resources
The Earth and Marine Research
Administration
The Geological Survey of Israel**

Tender No. 3/2015

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Network with Earthquake Early Warning Compatibility

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Invitation to Bid

Part 1 - Instructions to Bidders

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1. OVERVIEW

1.1. **General**

- 1.1.1. The Geological Survey of Israel (GSI), which is under the Earth and Marine Research Administration, a division of the Ministry of National Infrastructures, Energy and Water, is promoting the replacement and upgrade of the current seismic network in Israel, which consists of approximately 85 seismic stations (including triggered strong motion accelerometers) and is operated and maintained by the division of seismology in the Geophysical Institute of Israel, by a state of the art real time seismic network with earthquake early warning compatibility, following decisions taken by the Government of the State of Israel.
- 1.1.2. The government decisions stipulated, inter alia, that the effective earthquake early warning shall be between 1 second and 30 seconds. In places that the distance from the earthquake is lower than 25km, no early warning shall be provided.
- 1.1.3. In order to implement the Government decisions, GSI assembled an international advisory committee, which recommended an implementation strategy for the deployment of the seismic network in the State of Israel.
- 1.1.4. In addition, GSI issued a Request for Information (RFI) process in 2013, which was supplemented by further clarifications in January 2015.
- 1.1.5. GSI hereby invites Bidders to participate in the Tender process according to the terms and conditions set forth herein, for the procurement and deployment of a real time seismic network with early warning compatibility.

1.2. **Project Description**

- 1.2.1. The Works with respect to which the Bidders are invited to submit their Bids are described in detail in **Appendix B** to the Contract (*Technical Specifications*).
- 1.2.2. For Bidders' convenience only, following is a general and brief description of the Works.
- 1.2.3. The Bidder whose Bid shall be declared the Successful Bid, shall be required to design, supply, install, deploy and maintain a turn-key

real-time seismic network, which is expected to consist of 115 seismic stations as follows:

- 1.2.3.1. 23 stations shall be equipped with both a broadband seismometer and a strong ground motion accelerometer, including 3 stations (of the 23) which shall also be equipped with seismogeodetic instrumentation;
- 1.2.3.2. 91 stations shall be equipped with strong ground motion accelerometers, including 5 stations (of the 91) which shall also be equipped with seismogeodetic instrumentation;
- 1.2.3.3. One 50m-deep borehole station at the Dead Sea pools, which shall be equipped with both a broadband seismometer and a strong ground motion accelerometer.

(The final numbers, types and locations of all seismic stations may change, and shall be provided by GSI to the Successful Bidder no later than the Effective Date, as defined in the Contract).

- 1.2.4. The System shall be highly reliable and worldwide proven as capable of handling successfully up to 200 stations (600 channels) network with a maximum data-return and minimal latencies.
- 1.2.5. The Works to be executed by the Successful Bidder shall include, inter alia:
 - 1.2.5.1. Site surveys and detailed design of the System and all of its components;
 - 1.2.5.2. Construction of 32 seismic vaults' structures;
 - 1.2.5.3. Manufacture and supply of Monitoring Instruments;
 - 1.2.5.4. Installation of Monitoring Instruments in seismic stations;
 - 1.2.5.5. Deployment of telemetry and communication network, including all equipment related thereto;
 - 1.2.5.6. Data hubs (main and backup) configuration and installation;
 - 1.2.5.7. Installation of an acquisition software;
 - 1.2.5.8. Installation of an earthquake early warning system (EEWS) software;
 - 1.2.5.9. Integration between all System components and full inspection of network operation;

- 1.2.6. The Works shall include full warranty and maintenance services to the system for 3 years, with possible extension of up to 2 additional years.

1.3. **Anticipated Time Schedule**

Without in any way limiting the right of GSI to change any schedule or date with regard to the Tender process, at its sole discretion and at any time (including in proximity to such dates), the anticipated schedule for the Tender process shall be as follows.

- 1.3.1. Tender publication – December 12, 2015.
- 1.3.2. Last date for Bidders' registration – no registration
- 1.3.3. Site visit – February 24, 2016.
- 1.3.4. Bidders' conference – February 23, 2016.
- 1.3.5. Last date for submission of Bidders' requests for clarifications – March 15, 2016.
- 1.3.6. Bids Submission Date – April 12, 2016.

1.4. **Tender Documents**

- 1.4.1. The Tender Documents shall consist of the following documents, including all appendices, attachments and Addenda thereto:

- 1.4.1.1. The Invitation to Bid, which includes:

- (i) Part 1 – Instructions to Bidders ("**ITB**");
- (ii) Part 2 – Evaluation Criteria;
- (iii) Part 3 – Bidding Forms and Schedules;

- 1.4.1.2. The Contract; and

- 1.4.1.3. Any other document published by GSI prior to the Bids Submission Date.

(together: the "**Tender Documents**")

- 1.4.2. Bidders are responsible for thoroughly and carefully examining the Tender Documents, including all appendices and addenda thereto, with utmost care, and for any and all conditions that may in any way affect their participation in the Tender process, including in the preparation and submission of the Bids, signing the Contract, and the execution of the Works in accordance with the provisions of the Tender Documents.

- 1.4.3. By submitting his Bid, the Bidder is deemed to have:

- (a) Carefully reviewed all Tender Documents;
- (b) Conducted all examinations and deliberations, by experienced experts on his behalf with regard to his participation in the Tender process and the Submission of its Bid; and
- (c) Acknowledged, given consent and waived any claim and/or right or any other remedy or relief with regard to the Tender process, tendering rules and the Tender Documents in this regard.

2. DEFINITIONS

All capitalized terms used in the Invitation to Bid shall have the meaning ascribed thereto herein:

"Addendum", "Addenda"	As defined in Sub-Clause 5.3 (<i>Addenda</i>).
"Bid", "Proposal"	A Bidder's complete proposal for the procurement and deployment of a real time seismic network with early warning compatibility, submitted in strict accordance with all instructions set forth in this ITB.
"Bidder"	A single Legal Entity participating in this Tender process.
"Bidding Forms"	The document(s) titled as such in the Invitation to Bid Part 3 (<i>Bidding Forms and Schedules</i>).
"Bids Submission Date"	As defined in Sub-Clause 7.11 (<i>Bids Submission Date</i>).
"Clause", "Sub-Clause"	Unless specifically provided otherwise - the applicable clause or Sub-Clause in this Invitation to Bid Part 1 (<i>Instructions to Bidders</i>).
"Contract"	The contract which will be signed between GSI and the Successful Bidder for the execution of the Works, subject to the terms and provisions set forth in Clauses 11 (<i>Tender Award</i>) and 12 (<i>Post Award Requirements</i>).
"Control"	As such term is defined in Clause 1 of the Securities Law 5728-1968.
"Financial Proposal"	The financial part of the Bidder's Bid, which shall include <u>Part C</u> of the Invitation to Bid Part 3 (<i>Bidding Forms and Schedules</i>), and all attachments thereto.
"Financial Statements"	Annual, consolidated financial statements duly signed by the Bidder and audited by an external CPA.
"GSI"	The Ministry of National Infrastructure, Energy and Water Resources - the Earth and Marine Research Administration, the Geological Survey of Israel.
"ITB"	This Invitation to Bid Part 1 (<i>Instructions to Bidders</i>).
"Legal Entity"	Any corporation or company recognized as such by law

	within its domicile.
"Monitoring Instruments"	Seismic monitoring instruments of all kinds, specifically including seismometers, accelerometers and data loggers.
"NIS"	New Israeli Shekel.
"Second Eligible Bidder"	The Bidder who was declares as such in accordance with Sub-Clause 10.3 (<i>Second Eligible Bidder</i>).
"Technical Proposal"	The technical part of the Bidder's Bid, which shall include <u>Part B</u> of the Invitation to Bid Part 3 (<i>Bidding Forms and Schedules</i>), and all attachments thereto.
"Tender Security"	As defined in Clause 4 (<i>Tender Security</i>).
"Schedule(s)"	The document(s) titled as such in the Invitation to Bid Part 3 (<i>Bidding Forms and Schedules</i>).
"Successful Bidder", "Successful Bid"	The Bidder or Bid declared as such in accordance with Clause 10 (<i>Successful Bidder</i>).
"System"	A turn-key real-time seismic network with earthquake early warning compatibility, which shall be designed, installed, deployed and maintained by the Successful Bidder in accordance with the Contract.
"Tender Documents"	As defined in Sub-Clause 1.4 (<i>Tender Documents</i>).
"Tender Mailbox"	yaela@gsi.gov.il
"Tender"	This Tender no. 3/2015 for the procurement, deployment and maintenance of a real time seismic network with earthquake early warning compatibility.
"Threshold Requirements"	All requirements set forth in Clause 3 (<i>Threshold Requirements</i>).
"Works"	As defined in the Contract.

3. THRESHOLD REQUIREMENTS

3.1. General

3.1.1. **Bidders must fully comply with all Threshold Requirements set forth in this Clause below.**

3.1.2. The Threshold Requirements may be stricter than those specified in the supplement of the Mandatory Tender Laws, 5752-1992 due to the exceptional technical and interface complexity and vast scope of Works.

3.1.3. The Bidder shall submit with its Bid external documents establishing its full and unconditional compliance with each Threshold Requirement, and without derogating from the generality of the above, all documents specifically referred to below, duly completed, filled, signed, authorized and verified (to the extent applicable).

3.1.4. GSI may, at its discretion, instruct any Bidder to submit further documentation and/or clarifications deemed by GSI as necessary for demonstration of compliance with the Threshold Requirements, and Bidders shall follow such instructions in strict accordance.

However, GSI shall **not** be obligated to exercise its authority under this Sub-Clause, and by submitting their Bids, Bidders are deemed to have carefully reviewed its contents, and to have confirmed that it includes all necessary documentation to demonstrate full compliance with the Threshold Requirements.

3.1.5. **Bidders not demonstrating full, exact and unconditional compliance with all Threshold Requirements will be disqualified in accordance with Sub-Clauses 8.11 (*Rejection of the Bids*) and 8.12 (*Disqualification of the Bids*).**

3.2. Threshold Definitions

For the purpose of this Clause 3 (*Threshold Requirements*) only, the following definitions shall apply, in addition to all definitions set forth in Clause 2 (*Definitions*).

A seismometer meeting **all** following criteria:

**"Broadband
Seismometer"**

1. Frequency band: 120s-50Hz
2. Self-noise < NLNM@40s-10Hz
3. Dynamic range > 135dB
4. Calibration coil
5. Up to 40V peak to peak output voltage
6. Provides full system response
7. (-20)°c - 50°c operative

"Real-Time Acquisition Software"	An acquisition and processing seismic software, operating in real-time, which is compatible to the implementation of external modules or algorithms, including earthquake early warning (EEW) modules or algorithms.
"Real Time Seismic Network"	A Seismic Network in which a ground motion is reported at the data-hub no later than 10 seconds after detection by the farthest Seismic Station.
"Seismic Network"	A network consisting of at least 4 Seismic Stations that are connected through telemetry to a central data-hub, in which data acquisition and processing is performed by seismic software.
"Seismic Station"	A station consisting of a seismic sensor, and a Data-logger which records and digitizes the ground motion measured by the sensor. An accelerometer meeting <u>all</u> following criteria: 1. Frequency band: DC – 150Hz 2. Self-noise < -90dB@0-100Hz 3. Dynamic range > 155dB 4. Sensor saturation of at least 2g 5. Calibration coil 6. Provides full system response 7. (-20)°c - 50°c operative
"Strong Ground Motion Accelerometer"	
"Turnkey Real Time Seismic Network"	A Real Time Seismic Network planned, developed, customized, supplied and installed by the Bidder as a "full turnkey solution", from the site preparation actions through supply and installation of the field sensors, the data-loggers and telemetry means, to the data-hub hardware, processing and analysis software.

A data-logger meeting all following criteria:

"Data-logger"

1. A minimum of 24-bit digitizer
2. Sample rates of at least 200sps
3. Locked to GPS timing with time accuracy $< 10\mu\text{s}$
4. Onsite recording of at least 3 months of continuous data at 200 samples per seconds, for 3-channels, and 6-channel stations
5. Recording of packets either in MiniSeed formats, or in a well-known format with durable software for acquisition and conversion to MiniSeed / SeedLink
6. Supports multiple connections from different IP addresses
7. Supports real-time telemetry with TCP/IP or UDP protocols
8. Supports simultaneous real-time telemetry and recording to local onsite storage.
9. Temperature range: $-20 - +50^{\circ}\text{C}$ operative.
10. Low power requirement ($< 5\text{W}$) for 12V DC for 6 channel stations, not including telemetry
11. Sensor control including configuration, calibration, and re-centering
12. Supports storage and telemetry of the following state of health channels: temperature, GPS status, and voltage

3.3. The Bidder

3.3.1. The Bidder shall be a **single** Legal Entity, duly incorporated in Israel or in a country that maintains diplomatic relations with Israel.

3.3.2. If the Bidder is incorporated in Israel:

3.3.2.1. The Bidder holds all relevant approvals pursuant to the Public Entities Transactions Law, including approvals of proper bookkeeping practices in accordance with the Income Tax Ordinance and the Value Added Tax Law, 5736-1975 and approvals of tax deduction at source.

3.3.2.2. The Bidder meets the requirements under article 2B to the Public Entities Transactions Law regarding lawful employment of foreign workers and payment of minimum wage.

3.4. Experience in the Installation of Seismic Networks

The Bidder has completed during the 10 years preceding the Bids Submission Date, the installation of at least 3 Turnkey Real Time Seismic Networks, including at least:

3.4.1. 2 Turnkey Real Time Seismic Networks with at least 10 Seismic Stations each, **and**

3.4.2. 1 Turnkey Real Time Seismic Network with at least 50 Seismic Stations.

3.5. **Experience in the Manufacture and Supply of Monitoring Instruments**

The Bidder has developed, manufactured and supplied to active seismic networks during the 7 years preceding the Bids Submission Date, all of the following.

3.5.1. Strong Ground Motion Accelerometers;

3.5.2. Broadband Seismometers; and

3.5.3. Data-loggers.

3.6. **Experience in the Supply of a Real-Time Acquisition Software**

The Bidder has supplied during the 5 years preceding the Bids Submission Date, a Real-Time Acquisition Software, to at least 2 different customers, who have used the Real-Time Acquisition Software in real-time operative mode.

3.7. **Experience in Civil Engineering**

3.7.1. The Bidder or a subcontractor of the Bidder:

3.7.1.1. is a "registered contractor" in accordance with the Registration of Contractors for Construction Engineering Works Law, 5729-1969 in classification 100-C-3 (3 'א 100) or higher.

3.7.1.2. is a "certified contractor" for performing governmental works, for the same fields and classifications stated above, as certified by the inter-ministerial committee.

3.7.1.3. has completed during the 5 years preceding the Bids Submission Date at least 3 civil engineering projects, that included all the following:

(a) the detailed design **and** construction of a permanent structure of 500 m² or more;

or

(b) the construction of at least 50 Seismic Stations' structures.

3.7.2. However, if the Bidder (or the subcontractor whose experience is relied upon, as the case may be) is not incorporated in Israel, the classifications mentioned in Sub-Clauses 3.7.1.1, 3.7.1.2 shall not be required at the Tender stage, provided that in the event of a Successful Bid, the Bidder shall be required, at a later stage and prior to the commencement of the Works, to obtain such classifications or an exemption in accordance with the provisions of the Registration of Contractors for Construction Engineering Works Law, 5729-1969.

3.8. **Financial Threshold Requirements**

The Bidder is required to have an annual turnover, according to its Financial Statements, of at least 80,000,000 NIS (eighty million New Israeli Shekels) (or the equivalent thereof) for **each** of fiscal years 2012, 2013 and 2014.

3.9. **Demonstration of Compliance with the Threshold Requirements**

3.9.1. The Bidder shall attach to its Bid external documents and authorizations (as applicable), demonstrating full, exact and unconditional compliance with **all** Threshold Requirements. The Bidder shall be responsible to verify that its compliance with each Threshold Requirement (including each and every component thereof) is adequately supported and demonstrated by sufficient external documents.

3.9.2. Without derogating from the generality of the above, the Bidder shall fill and complete the Bidding Forms, in strict accordance with the instructions set forth therein.

4. **TENDER SECURITY**

4.1. The Bidder must submit an autonomous security, in the form attached to the Bidding Forms, in strict accordance with the requirements set forth herein.

4.2. The Tender Security shall be in the amount of 875,000 NIS (eight hundred and seventy-five thousand New Israeli Shekels) issued by a licensed Israeli bank or by a licensed Israeli insurer. A Tender Security issued by a licensed Israeli insurer shall be signed by the licensed Israeli insurer itself and not by its agent.

4.3. The Tender Security shall be valid until **April 12, 2017**. GSI may require the Bidder to extend the validity of its Tender Security for an additional period of up to 6 months, and the Bidder shall comply with such requirement in strict accordance, at its own cost.

- 4.4. Bidders shall be permitted (but not required) to submit, no later than 14 days prior to the Bids Submission Date, a copy of the Tender Security intended to be submitted with their Bid (**“Tender Security Draft”**).

GSI shall then examine the Tender Security Draft, and may:

- 4.4.1. instruct the Bidder to edit, alter or adjust the Tender Security Draft and/or provide the Bidder with comments intended to ensure the compliance of the (final) Tender Security with the provisions of this Invitation to Bid; or
- 4.4.2. Confirm and approve the Tender Security Draft for submittal.
- 4.5. **Bids whose Tender Security is not in strict accordance with the requirements detailed in this Invitation to Bid may be disqualified.**
- 4.6. The Tender Security shall guarantee the Bidder's fulfillment of all the requirements of the Tender process and of the Bidder's representations and undertakings during the Tender process.
- 4.7. **GSI shall be entitled, at its sole and absolute discretion, to exercise the Tender Security or any part thereof, in case one of the following occurs: (i) during the bidding process the Bidder acted in a misleading manner or with lack of good faith; (ii) the Bidder provided misleading information or deliberate omission of important information; (iii) the Bidder withdrew its Bid after the Bids Submission Date; (iv) after being selected as the Successful Bidder, the Bidder did not follow the instructions of Clause 12 (*Post Award Requirements*) which constitute a pre-requisite for the engagement of GSI with the Successful Bidder.**
- 4.8. The Tender Security of the Successful Bidder shall be returned upon submission of the Performance Security as stated in Sub-Clause 12 (*Post Award Requirements*).
- 4.9. The Tender Securities of unsuccessful Bidders will be returned as promptly as possible after the receipt of a letter of award by the Successful Bidder and subject to the provisions of Second Eligible Bidder set forth in Sub-Clause 10.3 (*Second Eligible Bidder*).

5. TENDERING RULES

5.1. Participation Fee

- 5.1.1. Bidders wishing to submit their Bids must also pay a nonrefundable participation fee of 5,000 NIS, in consideration for the preparation of the Tender.
- 5.1.2. The aforementioned payment must be made prior to the Bids Submission Date, by April 12, 2016.

5.2. **Clarification of the Tender Documents**

- 5.2.1. In the event of any discrepancy, ambiguity, conflict or inadequacy in the Tender Documents, the Bidders are required to immediately notify GSI.
- 5.2.2. Requests for clarifications ("**RFC**") may be submitted in writing to the Tender Mailbox, no later than March 15, 2016.
- 5.2.3. Although GSI has no obligation to clarify or interpret the Tender Documents, GSI may issue an Addendum for the purpose responding to any RFC, in accordance with Sub-Clause 5.3 (*Addenda*).
- 5.2.4. When replying to a question or clarification, GSI will not necessarily use the exact wording of the submitted request for clarification, and will not disclose its source.
- 5.2.5. **Any response or non-response by GSI to any submitted RFC shall not be construed as approval or agreement unless explicitly stated so by GSI.**

5.3. **Addenda**

- 5.3.1. GSI reserves the right to revise, modify, amend, clarify, add, eliminate or otherwise change the provisions of the Tender Documents or any part thereof, including any instruction, requirement, specification, evaluation criteria or data contained therein, up to the Bids Submission Date. Such revisions, if any, shall be announced by written Addenda to the Tender Documents ("**Addendum**" or "**Addenda**").
- 5.3.2. GSI shall not be bound by, and Bidders shall not rely on, any oral interpretation or clarification to the Tender Documents. Bidders may only rely upon written Addenda published by GSI.
- 5.3.3. Bidders are required to acknowledge receipt of all Addenda, notices or announcements in writing no later than 2 business days following receipt thereof, via the Tender Mailbox.

5.4. **Bidders' Conference and Site Visit**

- 5.4.1. A Bidders' conference shall be held on February 23, 2016; a site visit shall be held on February 24, 2016. Details regarding the time, location and agenda shall be published.
- 5.4.2. Participation in **both** the Bidders' conference and the site visit is **mandatory**, and the Bidder shall verify that an authorized representative on its behalf participates and registers his participation. A representative cannot represent more than one Bidder.

- 5.4.3. Each Bidder is required to confirm its attendance and detail the number of representatives on its behalf, by notifying GSI no later than 7 days prior thereto via the Tender Mailbox.
- 5.4.4. During the Bidders' conference and the site visit, GSI may present and explain the Tender Documents and/or all any Addenda or clarifications thereto, and may address any questions.
- 5.4.5. Minutes of the Bidders' conference and site visit, including an outline of the questions raised by any of the Bidders, without identifying the source, and the responses given thereto, together with any responses prepared after the Bidders' conference, will be provided to all Bidders. Any modification to the Tender Documents as a result of the Bidders' conference or site visit shall be made solely through issuance of an addendum pursuant to Sub-Clause 5.3 (*Addenda*).
- 5.4.6. Bidders shall **not** rely on any oral representation during the Bidders' conference or site visit.

6. MANDATORY INDUSTRIAL COOPERATION

- 6.1. Each Bidder shall comply and fulfill the requirements of the Israeli Ministry of Economy, as per the Mandatory Tenders Regulations (Mandatory Industrial Cooperation) 5767–2007, represented by the Industrial Cooperation Authority's ("ICA") with regard to Industrial Cooperation procurement which is to be carried out in connection with the scope of the Contract.
- 6.2. The extent of Industrial Cooperation shall equal to 35% (for suppliers of non-excluded products and services from GPA member states, the extent of Industrial Cooperation is 20%) of the total value of the Successful Bid.
- 6.3. Accordingly, each Bidder shall furnish along with the submission of its Bid, an Industrial Cooperation fulfillment program, in accordance with the details provided in Invitation to Bid Part 3- Envelope 4, Attachments A, which will include local subcontracting in a value not less than 20% of the total value of the Successful Bid and any other Industrial Cooperation (such as purchase of products, goods, investments etc.) in a value of not less than 15% of the total value of the Successful Bid.
- 6.4. Additionally, each Bidder shall be required to submit an Industrial Cooperation undertaking, addressed to the ICA, in accordance with the details provided in Invitation to Bid Part 3- Envelope 4 (Foreign Contractor's Industrial Cooperation Undertaking).
- 6.5. The ICA is in charge, on behalf of the Government of Israel, with the assessment of the fulfillment program. Such assessment will be conducted following the submission of Bids, in coordination with GSI.

- 6.6. In the event that during the course of the ICA's examination of a Bidder's fulfillment program, it shall be found that the fulfillment program is not in compliance with the ICA's requirements and/or with applicable regulations, the Bidder will be obliged to make amendments to its fulfillment program.
- 6.7. In the event that the cooperation program of any Bidder is not in ICA's requirements and/or with the Regulations, such Bidder will be obliged to make amendments to its cooperation program. In the event that such Bidder does not amend its cooperation program in accordance with the ICA's requirements, GSI may, at its sole discretion, disqualify such Bidder's Proposal.
- 6.8. For additional information concerning the fulfillment of the Industrial Cooperation Undertaking, Bidders may address the ICA at:

Industrial Cooperation Authority, Ministry of Economy:

86 Menachem Begin Rd.
P.O. Box 36049
Tel Aviv 67138, Israel.
Tel.972-3-734 7515
Fax.972-3-734 7639

7. CONTENTS AND SUBMISSION OF THE BIDS

- 7.1. Each Bid shall comprise of 4 parts, each to be submitted in a separate sealed envelope.
- 7.1.1. **Envelope No. 1** (*Threshold Requirements*) shall consist of Part A of the Invitation to Bid Part 3 (*Bidding Forms and Schedules*).
- 7.1.2. **Envelope No. 2** (*Technical Proposal*) shall consist of Part B of the Invitation to Bid Part 3 (*Bidding Forms and Schedules*).
- 7.1.3. **Envelope No. 3** (*Financial Proposal*), shall consist of Part C of the Invitation to Bid Part 3 (*Bidding Forms and Schedules*).
- 7.1.4. **Envelope No. 4** (*Industrial Cooperation*), shall consist of Part D of the Invitation to Bid Part 3 (*Bidding Forms and Schedules*).
- 7.2. Each envelope shall include
- 7.2.1. 1 original and 4 identical copies (5 altogether) of all documents to be submitted therein;
- 7.2.2. If applicable, an additional copy of sensitive information as described in Sub-Clause 7.10 (*Identification of Sensitive Information*); and
- 7.2.3. A CD containing a copy of all such documents, in PDF format (*Bidding Forms and Schedules* shall be submitted in original PDF

format, and other documents may be submitted in scanned PDF format). The CD in each envelope **shall not** include copies of documents in other envelopes; and

In the event of a discrepancy between any original and other copies, the original shall prevail.

- 7.3. Each envelope shall be sealed and shall bear the following:
 - 7.3.1. The Bidder's name;
 - 7.3.2. The number of the Tender; and
 - 7.3.3. The envelope number (e.g. Envelope No. 1, Envelope No. 2 etc.).
- 7.4. All envelopes shall then be sealed in an outer envelope or container, clearly marked with "***Bid Submission for Tender 3/2015***".
- 7.5. Bidders shall complete and sign all parts of their Bids. Completion shall be in sufficient detail to demonstrate full compliance of the Bid with the Tender requirements. All Bidding Forms and Schedules must be completed as instructed in each form, and signed by the Bidder.
- 7.6. Bidders shall prepare their Bids in strict conformity with the requirements of the Tender Documents. Bidders shall answer all parts relevant to the Bids in an accurate and detailed manner, disclosing all information requested, as well as any additional information or data required to clarify, substantiate and, in general, support the Bid by the Bidder.
- 7.7. Bidders shall not modify or supplement the instructions of the Tender Documents. Unauthorized conditions, limitations, modifications, supplements, reservations, disclaimers or provisions attached to a Bid may subject the entire Bid to disqualification, at GSI's sole discretion. If such Bid has not been disqualified, for any reason whatsoever, GSI will ignore such unauthorized conditions, limitations, modifications, supplements, reservations, disclaimers or provisions.
- 7.8. **Language of the Bid**
 - 7.8.1. The Bids and the statements contained therein and all other documents constituting the Bid, are to be submitted in English, in typed form.
 - 7.8.2. Supporting documents and printed materials furnished by a Bidder may be in English or in Hebrew.
 - 7.8.3. Supporting documents and printed materials furnished by a Bidder in any language other than English or Hebrew must be accompanied by a translation to Hebrew or English, accompanied by a notarized statement of translation, in which case, for purposes of interpretation,

the translation to Hebrew or English (as the case may be), shall prevail.

7.9. Signing of the Bids

- 7.9.1. The Bids shall be duly signed by the person/persons duly empowered and authorized to sign on behalf of the Bidder and to bind such Bidder for all required matters in connection with the Bid and the execution of the Works. The name and position held by each person signing the authorization must be typed or printed below the signature.
- 7.9.2. Each form or Schedule and information submitted therein shall be duly signed by the relevant entity detailed in such form or Schedule.
- 7.9.3. When required, adjacent to each Legal Entity's signature within the Bid, there shall be a confirmation by an attorney that the signatory is authorized to commit such Legal Entity in relation to the document on which such signature appears.

7.10. Identification of Sensitive Information

- 7.10.1. By submitting their Bids, the Bidders acknowledge that according to law, should they be elected as a Successful Bidder, GSI may be required to disclose their Bid or any part thereof, as well as any related correspondence to any of the other Bidders. Therefore, each Bidder may (but is not required to) submit a sensitive information copy, with masked clauses considered by said Bidder to be commercial secrets, confidential information, trade secrets or other proprietary information which should be protected from disclosure. **General confidentiality statements will be disregarded.** Nevertheless, any such indication will not bind GSI or any entity on its behalf, and it is hereby emphasized that GSI, at its sole discretion, may disclose any document of the Successful Bid that in its opinion, does not constitute a commercial secret and which is required to be disclosed in order to meet said requirements of the law.
- 7.10.2. For the avoidance of doubt, it is hereby emphasized that **the Financial Proposal shall not be deemed to constitute information of a commercially sensitive or secret nature.**
- 7.10.3. In the scope of the review process, Bidders will not be entitled to review the parallel materials of other Bidders, which they themselves considered to be confidential as part of their sensitive information copy, unless otherwise determined by GSI, at its sole discretion. The aforesaid shall apply also in the event information considered and

marked by the Bidder as confidential was not approved as such by GSI.

7.11. Bids Submission Date

7.11.1. The Bids Submission Date is April 12, 2016.

7.11.2. The envelopes and boxes containing the Bids shall be delivered, **no later than 14:00 hours on the Bid Submission Date**, to the tender box located at GSI offices on **Malchey Israel 30, Jerusalem** (a valid ID is required to enter the premises), Tel +972-2-5314221.

7.11.3. Bids submitted after 14:00 on the Bids Submission Date will be left unopened and returned to the Bidders.

7.11.4. GSI may, at its sole discretion, extend the Bids Submission Date by issuing an Addendum at any time prior thereto.

7.11.5. The opening of the Bids shall be documented in a protocol.

7.12. Validity of the Bids

7.12.1. The Bids shall be valid for a period of 12 months as of the Bids Submission Date.

7.12.2. GSI may request Bidders, or any of them, to extend the validity of their Bids for a specified additional period, provided however that the consent of Bidders will be required for extensions exceeding 6 months.

7.12.3. Concurrently with the extension of the period of validity of the Bids, the Bidders shall also extend the validity of the Tender Security, by the same period of time. Bidders shall not be permitted to modify their Bids due to such extension of the validity period.

8. EXAMINATION AND EVALUATION OF THE BIDS

8.1. The evaluation of the Bids will be carried out by GSI in stages:

8.1.1. Examination of compliance with Threshold Requirements.

8.1.2. Evaluation of the Technical Proposal and determination of the Technical Proposal Score ("**TPS**").

8.1.3. Evaluation of the Financial Proposal and determination of the Financial Proposal Score ("**FPS**").

8.1.4. Determination of the Final Score ("**FS**").

8.2. The evaluation and scores shall be further detailed in Part 2 of the Invitation to Bid - Evaluation Criteria.

8.3. 1st Stage - Examination and Evaluation of the Threshold Requirements

8.3.1. During the first stage of the evaluation process, Bidders' Envelope No. 1 will be opened and its contents shall be reviewed in order to determine whether or not the Bidder meets and demonstrates full compliance with all Threshold Requirements.

8.3.2. Those Bids that fail to meet the Threshold Requirements will be disqualified. Envelopes No. 2, 3, 4 of such Bids will not be opened and will be returned to the Bidders.

8.4. 2nd Stage - Examination and Evaluation of the Technical Proposal

8.4.1. During the second stage, Envelope No. 2 will be opened and the Technical Proposal will be reviewed, evaluated and given a Technical Proposal Score (TPS), which shall account for 45% of the Final Score (FS).

8.4.2. The Technical Proposal will be evaluated in accordance with the following criteria (**further details regarding allocation of points are set forth in the Invitation to Bid Part 2 (Evaluation Criteria)**):

			Weight in TPS	Points
Main Components	Quality of Seismic Instrumentation	Accelerometers	9%	15
		Broadband Seismometers	9%	18
		Data loggers	10%	12
	Acquisition and Processing Software		14%	20
	Hardware - Data hub (Servers & Storage & Operator & Analyst Terminals)		7%	10
	Telemetry	Main 1s Route	8%	16
		Backup 3s Route	5%	16
General Turnkey Considerations	Network Reliability	Recommendations	10%	10
		Data-Return	4%	20
		Experience in Large Networks	4%	10
	Complementary Experience (Permitting, seismic vault design and construction)		6%	6
	Maintenance and Support		10%	10
Presentation of Turn-key solution			4%	10

8.4.3. Points awarded in each criterion shall be converted to TPS in accordance with their relative weights set forth above.

For example, a score of 15/15 points in the first criteria (accelerometers) shall convert to 9 TPS points, and a score of 10/15 shall convert to 6 TPS points.

8.4.4. During the examination of their Technical Proposals, the Bidders may be required by GSI to submit or present a presentation with regard to their proposed solution. Should GSI choose to exercise its authority under this Sub-Clause, subject to its own discretion, details regarding the presentation and its required form and format shall be provided to Bidders in advance.

8.4.5. **Bids whose Technical Proposal is awarded less than 70 TPS points shall be disqualified.**

8.5. **3rd Stage – Examination and Evaluation of the Financial Proposal**

8.5.1. During the third stage of the evaluation process, Envelope No. 3 (Financial Proposal) of those Bidders complying with all Threshold Requirements and meeting the minimum score requirements stated in Sub-Clause 8.4.5, will be opened.

8.5.2. The Financial Proposal of those Bidders will be evaluated on a scale of 0 to 100 FPS points.

8.5.3. The Bid whose Weighted Bid Price (as defined in the Invitation to Bid Part 2 (*Evaluation Criteria*)) is the lowest shall be scored with 100 FPS points, and all other Bids shall be scored as follows:

$$\text{FPS} = \text{Lowest Bid} / \text{Reviewed Bid} * 100$$

*For example, if the lowest Weighted Bid Price was 150 NIS, such Bid shall be scored with 100 FPS points, and a Bid of 180 NIS shall be scored $150/180*100=83.33$ FPS points.*

8.5.4. The score awarded for the Financial Proposal ("FPS") shall be weighted as 55% of the Final Score.

8.6. **Determination of the Final Score**

The Final Score (FS) awarded to each of the Bids will be determined in accordance with the following formula:

$$\text{FS} = 0.45*TPS+0.55*FPS$$

8.7. **Negotiation**

8.7.1. GSI reserves the right, at its sole discretion, to conduct negotiations with some or all of the Bidders, with respect to their Technical Proposal and Financial Proposal, or not to conduct such negotiations, all in accordance with applicable law.

- 8.7.2. At each negotiation stage, if any, GSI may provide or request additional information.
- 8.7.3. At the end of the negotiation stage, if conducted, Bidders with which negotiations were conducted shall be entitled to submit an updated Bid, which shall replace any prior Bid and shall be considered their final Bid.
- 8.8. GSI may, at any time, conduct an independent inquiry regarding any matter connected with the Bids, including the technical expertise, financial strength and experience of any of the Bidders.
- 8.9. GSI reserves the right to waive or correct minor or other irregularities or errors in any Bid.

8.10. Requests for Clarifications

- 8.10.1. GSI may request any Bidder to clarify, correct, modify, supplement or amend any item contained in its Bids and/or to delete, disregard, withdraw, or correct any part of the Bid and/or to submit any additional information necessary (including details, drawings specifications and descriptions), in the opinion of GSI, for the evaluation of its Bid.
- 8.10.2. Bidders shall comply with the requests of GSI and shall submit all clarification and additional information requested within the time period stipulated by the request.
- 8.10.3. The requests for clarifications will be in writing. Their receipt should be confirmed by writing to the Tender Mailbox within 2 business days of receipt.
- 8.10.4. Bidders' responses to the requests for clarifications will form an integral part of their Bids.
- 8.10.5. Bidders may be invited to meet GSI representatives and/or to supply clarifications and/or additional information to GSI. For that purpose, GSI representatives may meet any of the Bidders in either separate or joint meetings, and/or request clarification and/or additional information and documents from any of the Bidders and, in addition, GSI may ask any of the Bidders to modify, amend, correct, withdraw and/or delete any part of their Bids. See Sub-Clause 8.8.
- 8.10.6. GSI may exercise its right under this Sub-Clause any number of times during the course of the evaluation process of the Bids.

8.11. Rejection of the Bids

- 8.11.1. GSI reserves the right to reject any or all Bids.

8.11.2. GSI reserves the right to reject any Bid deemed by GSI not to conform (in whole or in part) to the requirements of the Tender Documents.

8.11.3. Provided the affected Bidder was given an opportunity to present arguments in support of its Bid, GSI may reject any Bid that does not reflect the actual ability of the Bidder to carry out and complete the Works, or if the Bid or any part thereof, inter alia, the unit rate/s quoted by the Bidder is/are not reasonable in the business judgment of GSI or if the Bidder will not be able to carry out and complete the Works or any part thereof at such rate/s, or any material breach of the provisions of this Invitation to Bid by such Bidder, including the submission of any false or incomplete information to GSI and any other event or circumstances which GSI shall consider, at its sole discretion, as justifying disqualification or rejection of any Bid.

8.12. Disqualification of the Bids

8.12.1. GSI will be entitled, in any of the following events, to disqualify any Bidder, or impose any condition or instruction on its participation in the Tender process (for the purposes of this Sub-Clause 8.12, "Bidder" shall include the Bidder, any entity under the Bidder's Control, and any entity which exercises Control over the Bidder):

8.12.1.1. The Bidder failed to meet or demonstrate **full** compliance with **all** Threshold Requirements.

8.12.1.2. The commencement of proceedings, in any court of competent jurisdiction, of bankruptcy, receivership, liquidation or reorganization proceedings against a Bidder, or if the Bidder has become insolvent, or if a permanent or an interim receiver or liquidator has appointed over a Bidder, unless such proceedings are discharged within a reasonable period of time, as determined by GSI on its sole discretion;

8.12.1.3. The commencement of any voluntary action for the liquidation of any Bidder, except for the purposes of merger or reconstruction on terms approved by GSI in writing;

8.12.1.4. If the Bidder (including directors or managers thereof) is a resident or national of a country which does not have diplomatic relations with Israel and/or of a country which does not have proper and reliable trade relations with Israel;

- 8.12.1.5. Employment or engagement of any entity as defined under Sub-Clause 13.4 (*Advisors to GSI, Conflict of Interest*) by the Bidder, directly or indirectly, for the purposes of the Tender process, without the prior written approval of GSI;
 - 8.12.1.6. In the event of unusual events which materially affect, to GSI's judgment, the Bidder's ability or financial ability to execute the Works in accordance with the Tender Documents;
 - 8.12.1.7. The submission of any false or misleading information to GSI, or the refrainment from submission of any information that may affect the selection of the Successful Bid; and
 - 8.12.1.8. Any material change which occurred following the Bids Submission Date concerning a Bidder (including directors or managers thereof), which, in GSI's opinion, may hinder its participation in the Bid and/or the Tender process.
- 8.12.2. The Bidder shall be required to notify GSI of the existence, during the Tender process, of any of the events described in this Sub-Clause, by written notice to the Tender Mailbox, within a reasonable period of time, under the circumstances. GSI may base its decision under this Sub-Clause on information provided by the Bidder, information the Bidder refrained from providing, or any other information available to it, and may request the Bidder to provide it with additional information, as GSI deems necessary.
- 8.12.3. GSI may, at its sole discretion, disqualify a Bidder that worked prior to this Tender with GSI or with any other Israeli governmental or municipal entity (including government-owned companies, municipalities and municipal companies) (together "**Public Entity**"), who:
- 8.12.3.1. Failed to comply with the required work standards, including with the work schedule;
 - 8.12.3.2. Received a negative opinion with respect to its ongoing operation or overall management of the applicable project; or
 - 8.12.3.3. Disposed of the work assigned to it, or any part thereof, which disposal constitutes, as determined by the applicable Public Entity, a breach of the applicable contract.

9. THE FINANCIAL PROPOSAL

- 9.1. Bidders shall submit their Price Proposal for the execution of the Works, in accordance with the instructions set forth in the Invitation to Bid Part 3 (*Bidding Forms and Schedules*).
- 9.2. All rates and prices within the Financial Proposal shall be quoted in NIS, and shall not include VAT.
- 9.3. The Financial Proposal shall include all costs and expenses required for the execution of the Works, including, inter alia, construction, labor, supervision, materials, erection, maintenance, insurance, profit, taxes, duties, and all other risks, liabilities and obligations set out or implied in the Tender Documents.
- 9.4. GSI may disqualify a Bid which contains a Financial Proposal which GSI finds to be incomplete, wrong or based on incorrect assumptions or erroneous understanding of the System, the Works or the Tender
- 9.5. The Financial Proposal shall be indexed as set out in the Contract.

10. SUCCESSFUL BIDDER

- 10.1. Upon the completion of the evaluation process, and subject to its rights in accordance with Sub-Clauses 8.11 (*Rejection of the Bids*) and 8.12 (*Disqualification of the Bids*), GSI shall select the Bidder whose Bid is awarded with the highest Final Score, as the Successful Bidder.
- 10.2. GSI, at its sole discretion, may decide not to select any of the Bids or may decide to cancel the entire Tender process at any time. Furthermore, GSI is not bound to accept the lowest priced Bid, the Bid with the highest Final Score or any Bid whatsoever.

10.3. Second Eligible Bidder

- 10.3.1. GSI reserves the right to consider the second overall ranking Bidder as a Second Eligible Bidder Second Eligible for a period of 6 months following the election of the winning Bid.
- 10.3.2. In case of a failure by the awarded Bidder to sign the Contract or to fulfill any of the Successful Bidder's obligations following award of the Tender, GSI reserves the right to invite the Second Eligible Bidder to sign the Contract. In such event, GSI will send a replacing notification of winning Bid to the Second Eligible Bidder, who will substitute the Bidder originally selected in this Bid.
- 10.3.3. Concurrently with the Letter of Award, GSI will notify in writing the Second Eligible Bidder, and will require such Second Eligible Bidder to extend the validity period of its Tender Security for an additional 6-month period. GSI may return the Tender Security to the Second

Eligible Bidder following the due execution of the Contract with the Successful Bidder.

10.3.4. Failure of Second Eligible Bidder to provide an extended Tender Security within 14 days following the receipt of GSI's demand may disqualify such Bidder, and GSI may refer to the next ranking Bidder.

10.3.5. Notwithstanding the aforementioned, GSI reserves the right, upon failure of the Successful Bidder, not to sign the Contract with the Second Eligible Bidder, and to procure the Works from any other contractor and/or supplier, or to conduct a new bidding procedure.

11. TENDER AWARD

11.1. **Actual award of the Works is subject to the receipt of a final budgetary approval from the Government of Israel, which is not guaranteed.**

11.2. In the event that GSI fails to receive such final budgetary approval within a reasonable time after selection of the Successful Bid, GSI may cancel the Tender process and Sub-Clause 13.3 (*Reservation of Rights*) shall apply.

11.3. Subject to receipt by GSI of a final budgetary approval from the Government of Israel, GSI shall issue a letter of award, acknowledging the Successful Bidder's Bid as the awarded Bid of the Tender.

12. POST AWARD REQUIREMENTS

12.1. The Successful Bidder shall be required, within thirty days of issuance of the Letter of Award, to provide GSI the following documents:

12.1.1. All Contract documents, including any addenda or annex thereto, duly executed and signed by the authorized signatories of the Bidder.

12.1.2. Performance Security in accordance with Sub-Clause 17.2 of the Contract.

12.1.3. Contractor's insurance in accordance with Clause 21 of the Contract.

12.2. The Contract

12.2.1. The Contract attached to this ITB, shall govern the contractual relations between GSI and the Successful Bidder.

12.2.2. By submitting its Bid, each Bidder acknowledges its irrevocable and unconditional consent to the Contract and undertakes to carry out and complete the Works in strict compliance with the Contract, in the event it is declared a Successful Bidder.

12.2.3. **The Contract will not enter into force until it is duly signed by GSI, and subject to all preconditions set forth in this Clause 12. The Letter of Award shall not, under any circumstances,**

constitute by itself a binding contract, and shall not be regarded or viewed as acceptance to the Bidder's Bid or any part thereof.

13. GENERAL RULES RELATING TO PARTICIPATION

13.1. Independent Research, Inquiries and Examination

13.1.1. Each Bidder is expected to evaluate as an expert, and to acquire at its own responsibility and cost, all information of any kind necessary for the submission of its Bid and the execution of the Works in accordance with the provisions of the Tender Documents, including:

- 13.1.1.1. the status of each station Site and its surroundings, including physical status, geological conditions, legal status and any other aspect of any station Site;
- 13.1.1.2. all legal requirements for the execution of the Works, including without limitation the requirements for any permits, consents and licenses.
- 13.1.1.3. technical and professional aspects of the System, and risks associated therewith;
- 13.1.1.4. design, construction, operation and maintenance aspects of the System and risks;
- 13.1.1.5. the requirements of all outline schemes and relevant Authorized Planning Committees;
- 13.1.1.6. the requirements of the relevant authorities, utility owners, and 3rd parties, including the applicable municipal authority; and
- 13.1.1.7. any other risk involved therein, and such other conditions that may be expected to affect the submission of the Bid, calculation and determination of the Bid price, signing of the Contract and the carrying out and completion of the Works in accordance with the provisions of the Tender Documents.

13.1.2. Bidders are invited to inspect the station Sites and their surroundings, as well as the technical and professional aspects of the System and to independently obtain all necessary information for the preparation and submission of the Bid, calculation and determination of the Bid price, execution of the Contract and carrying out and completion of the Works in accordance with the provisions of the Tender Documents.

13.2. Information Supplied to Bidders

13.2.1. **The information contained in the Tender Documents is provided for the purpose of enabling the Bidders to prepare their Bids, without derogating from the Bidders' full responsibility to conduct any and all studies, analyses and investigations as they deem necessary and to the extent required for fully establishing their Bids.**

13.2.2. Reliance by the Bidders or anyone on their behalf on any such information in their Bids, the execution of the Contract and the carrying out and completion of the Works, and the making of any deductions, interpretations or conclusions from information which is made available by GSI, or anyone on its behalf, is at the Bidders' sole responsibility and risk.

13.2.3. GSI or anyone on its behalf, shall not be responsible in any respect to any loss or damage whatsoever suffered by Bidders, their employees, officers, agents, or any other persons for whom Bidders may be contractually or legally responsible or accountable, by reason of any use of information contained in the Tender Documents or provided in connection therewith, or any action or forbearance in reliance thereon.

13.3. Reservation of Rights

13.3.1. All Bidders acknowledge that the Works description as specified in this Invitation to Bid is general and indicative only. The issuance of this Invitation to Bid is not intended to give rise to or create any representation, undertaking or warranty on behalf of GSI or anyone on their behalf with respect to the Works.

13.3.2. GSI shall not be responsible in any respect for any loss or damage whatsoever suffered by any Bidder, its employees, officers, agents, or any other persons for whom any entity or Bidder may be contractually or legally responsible or accountable, with regard to participation in this Tender process, including, but not limited, to circumstances whereby GSI cancelled the Tender for any reason and/or failed to obtain final budgetary approval from the Government of Israel, and shall not be required to compensate the Bidder, its employees, officers, agents, or any other persons for whom the Bidder may be contractually or legally responsible or accountable.

13.4. Advisors to GSI – Conflict of Interest

13.4.1. By submitting their Bids, the Bidders acknowledge that in the tender process and in carrying out and completion of the Works, they are

(and will be) strictly forbidden from any conflict of interest between any of their other activities and/or their other obligations and/or any of their employees, consultants or subcontractors and the obligations and rights with respect to the Works and the Contract to be awarded pursuant to this Tender. If a Bidder is in doubt as to whether a certain engagement or employment is in conflict of interest during the tender process or during the performance of the Works, it shall request GSI's prior written approval.

13.4.2. Without derogating from the aforementioned, Bidders acknowledge that they may not employ or engage, with respect to the Tender process and carrying out and completion of the Works, any employee, consultant or expert, who was or still is employed or engaged by GSI or by the Geophysical Institute of Israel with respect to the seismic network or in connection therewith, without GSI's prior written approval. Said approval shall be requested prior to submission of the Bid.

13.5. Confidentiality and Intellectual Property

13.5.1. The Tender Documents and any and all intellectual property right therein are exclusively owned by GSI, and are entrusted with the Bidders for the sole purpose of the participation in the Tender process.

13.5.2. By participating in this Tender, each Bidder is deemed to have agreed to keep in strict confidence, not to disclose and not to make any use of any information or data, in any form or media, partial or complete, provided to it by GSI or on its behalf or made known to it otherwise as a result of or in connection with this Tender, other than for the preparation of its Bid. It is hereby clarified that this Sub-Clause does not apply to documents and/or information published by GSI on its website.

13.5.3. By submitting a Bid, each Bidder is deemed to represent and warrant to GSI that (i) it is not bound by any contractual or statutory obligation which would preclude the Bidder from providing the data and information contained in its Bid or any portion thereof; and (ii) it has the right to make all disclosures that are made in its Bid; and (iii) the data and information contained in its Bid do not include confidential information, trade secrets or other proprietary information of the Bidder and/or to any third party (except as and to the extent that the Bidder may otherwise clearly indicate in writing) that GSI is prevented from using.

13.6. Governing Law

13.6.1. The Tender process shall be governed and construed in accordance with the provisions of all applicable laws, including the Mandatory Tenders Law 5752-1992, and the Mandatory Tender Regulations 5753-1993.

13.6.2. **Each Bidder is assumed to have obtained independent legal advice.** Bidders shall be subject to any changes in the law, should such changes be introduced during the Tender process.

13.6.3. The applicable courts in Jerusalem shall have the sole and exclusive jurisdiction over all matters and all disputes arising in connection with the Tender process.

13.7. Cost of Participation in the Tender Process Incurred by the Bidders

Any and all costs and expenses incurred by the Bidders or anyone on their behalf with respect to and/or in connection with their participation in the Tender process (including, without limitation, preparation and submission of the Bid, and including changes and requests for further clarifications), will be borne by such Bidders (or anyone on their behalf), regardless of the conduct or outcome of the Tender process, including as a result of the circumstances under Clause 11, and such Bidders (or anyone on their behalf) will not be reimbursed.

13.8. Severability

The invalidity or unenforceability of any part, provision or clause of the Tender Documents shall not affect the validity or enforceability of any other parts, provisions or clauses. Any invalid or unenforceable part, provision or clause shall be deemed severed from the Tender Documents, and the Tender Documents shall be construed and enforced as if the Tender Documents did not contain such invalid or unenforceable part, provision or clause.

14. DISCLAIMER

14.1. ***This ITB is not an agreement and its purpose is to provide Bidders with information in preparing their proposals. This ITB includes statements which reflect various assumptions and assessments arrived at by GSI in relation to the Works. Such statements do not purport to contain all information that each Bidder may require. The information contained in the Tender Documents, may not be complete, accurate or correct. Each Bidder should therefore conduct its own investigations and analysis and should check the information contained in the Tender Documents and obtain independent advice from appropriate sources.***

14.2. ***GSI, its employees and advisors make no representation or warranty and shall have no liability to any person, including any Bidder under any law***

for any loss, damages or expense which may arise from anything contained in the Tender Documents or arising in any way from participation in this Tender, including Site visits and any other activities undertaken by the Bidders in relation to this ITB.

- 14.3. *GSI may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this ITB.*

Invitation to Bid

Part 2 - Evaluation Criteria

General Instructions

1. The Bidder shall submit a detailed Technical Proposal, which shall include Part B (Schedules 1-10) in the Invitation to Bid Part 3 (*Bidding Forms and Schedules*)
2. As specified in Sub-Clause 8.3 of the Invitation to Bid Part 1 (*Instructions to Bidders*) and subject to the provisions thereof, the Technical Proposal shall be evaluated by GSI and given a Technical Proposal Score (TPS) in accordance with the evaluation table therein and the sub-weights herein..
3. In order to assist the Bidder in preparing its Bid, following is supplementary information regarding allocation of TPS points and sub-weights, where applicable.

TPS Evaluation Criteria

1. Main Components (weight in TPS – 62%)

1.1. **Quality of Seismic Instrumentation (weight in TPS – 26%)**

1.1.1. **Accelerometers (weight in TPS – 9%; up to 15 points in total)**

- (i) Frequency Band – up to 2 points, according to the respective category in the USGS ANSS report.
- (ii) Self-Noise – up to 2 points, according to the respective category in the USGS ANSS report.
- (iii) Dynamic Range – up to 2 points, according to the respective category in the USGS ANSS report.
- (iv) Distribution – up to 4 points according to the number of active instruments world-wide, as follows:
 - (1) Up to 100 – 1 point;
 - (2) 101-1000 – 2 points;
 - (3) 1001-10000 – 3 points;
 - (4) More than 10000 – 4 points.
- (v) Recommendations – up to 5 points, according to users' responses to questionnaires that shall be distributed by GSI.

1.1.2. **Broadband Seismometers (weight in TPS – 9%; up to 18 points in total)**

- (i) Frequency Band – up to 3 points, according to the respective category in the USGS ANSS report.
- (ii) Self-Noise – up to 3 points, according to the respective category in the USGS ANSS report.
- (iii) Dynamic Range – up to 3 points, according to the respective category in the USGS ANSS report.
- (iv) Distribution – up to 4 points according to the number of active instruments world-wide, as follows:

- (1) Up to 100 – 1 point;
- (2) 101-1000 – 2 points;
- (3) 1001-10000 – 3 points;
- (4) More than 10000 – 4 points.
- (v) Recommendations – up to 5 points, according to users' responses to questionnaires that shall be distributed by GSI.

1.1.3. Data Loggers (weight in TPS – 10%; up to 12 points in total)

- (i) Dynamic Range – up to 3 points, according to the respective category in the USGS ANSS report.
- (ii) Distribution – up to 4 points according to the number of active instruments world-wide, as follows:
 - (1) Up to 100 – 1 point;
 - (2) 101-1000 – 2 points;
 - (3) 1001-10000 – 3 points;
 - (4) More than 10000 – 4 points.
- (iii) Recommendations – up to 5 points, according to users' responses to questionnaires that shall be distributed by GSI.

1.2. Acquisition and Processing Software (weight in TPS – 14%; up to 20 points in total)

1.2.1. Open Software – up to 2 points, as follows:

- (i) Fully open (all modules and algorithms are accessible and can be changed by the local staff if needed; the configuration of additional plug-in is straightforward) – 2 points;
- (ii) Partly closed (core modules are fixed) – 1 points;
- (iii) Closed – No points.

1.2.2. Testing in Real-Time Networks – up to 2 points, as follows:

- (i) The software (including new versions thereof) was fully tested in real-time independent networks before release – 2 points;

- (ii) The software (including new versions thereof) was only tested in internal networks of the Bidder prior to release – 1 point;
- 1.2.3. Modification Log of Previous Versions – up to 2 points, as follows:
 - (i) Modification log or module enabling the user to independently revert to previous versions – 2 points;
 - (ii) Modification log or module enabling the user to independently revert to previous versions only by the Bidder's intervention – 1 point;
- 1.2.4. Support – up to 2 points, as follows (*points for this item may add up*):
 - (i) A company support – 1.5 points;
 - (ii) A community support – 0.5 points.
- 1.2.5. Convenience and Visualization of User Interface – up to 2 points.
- 1.2.6. Size of Proven Network Capacity – up to 3 points, to be awarded according to the number of 3-components stations the software has successfully handled in real-time, in an active network, as follows:
 - (i) Up to 50 stations – 1 point;
 - (ii) 51-100 stations – 2 points;
 - (iii) More than 100 station – 3 points.
- 1.2.7. EEW Interface – up to 2 points, as follows:
 - (i) The Software supports and was fully tested for Earthquake Early Warning compatibility and algorithms – 2 points;
 - (ii) The Software supports Earthquake Early Warning compatibility and algorithms but wasn't tested for this purpose – 1 point;
 - (iii) The software is open to an external module to be added at a later time – no points.
- 1.2.8. Recommendations – up to 5 points, according to users' responses to questionnaires that shall be distributed by GSI.
- 1.3. **Hardware in Data Hub (weight in TPS – 7%; up to 10 points in total).**

Points shall be awarded on the Bidder's proposed data hub solution, based on professional reviews by several local data-hub designers. Such reviews are expected to include, inter-alia, the different hardware components, the interfaces between them, and the way the Bidder's solution addresses the requirements of the Technical specifications. The most significant components to be reviewed are the servers running the system in the main and in the backup data-hubs.

1.4. Telemetry (weight in TPS – 13%)

1.4.1. Main 1s Route (weight in TPS – 8%; up to 16 points in total)

- (i) Professional Review – up to 5 points. Points shall be allocated based on the professional review of independent communication specialists, considering the following measures: survivability, stability, redundancy and backups, availability at sites, security, power consumption, and expected service costs.
- (ii) Delay Times – up to 3 points, as follows:
 - (1) 1 second – 1 point;
 - (2) 0.5 second or less – 3 points;
 - (3) Between 0.5-1 second – in a linear relation to the above (*for example – 0.75 second shall be scored with 2 points, etc.*).
- (iii) Power Consumption – up to 6 points, as follows:
 - (1) Less than 5W – 6 points;
 - (2) 5W-12W – 5 points;
 - (3) 12W-19W – 4 points;
 - (4) 19W-26W – 3 points;
 - (5) 26W-33W – 2 points;
 - (6) 33W-40W – 1 points;
 - (7) More than 40W – No points;

(iv) Survivability – up to 2 points, to be awarded based on the number of points-of-failure (communication junctions) from the station to the hub, as follows:

- (1) 3 points-of-failure (site, intermediate and data hub) – 2 points;
- (2) Any additional intermediate point-of-failure (communication junction) shall reduce the score by 0.2 points (*for example – 8 points-of failure shall be awarded with 1 point etc.*).
- (3) 13 points-of-failure or more – No points.

1.4.2. Backup 3s Route (weight in TPS – 5%; up to 16 points in total)

(i) Professional Review – up to 5 points. Points shall be allocated based on the professional review of independent communication specialists, considering the following measures: survivability, stability, redundancy and backups, availability at sites, security, power consumption, and expected service costs.

(ii) Delay Times – up to 3 points, as follows:

- (1) 3 seconds – 1 point;
- (2) 1 second or less – 3 points;
- (3) Between 1-3 seconds – in a linear relation to the above (*for example – 2.5 seconds shall be scored with 1.5 points, etc.*).

(iii) Power Consumption – up to 6 points, as follows:

- (1) Less than 5W – 6 points;
- (2) 5W-12W – 5 points;
- (3) 12W-19W – 4 points;
- (4) 19W-26W – 3 points;
- (5) 26W-33W – 2 points;
- (6) 33W-40W – 1 points;
- (7) More than 40W – No points;

(iv) Survivability – up to 2 points, to be awarded based on the number of points-of-failure (communication junctions) from the station to the hub, as follows:

(1) 3 points-of-failure (site, intermediate and data hub) – 2 points;

(2) Any additional intermediate point-of-failure (communication junction) shall reduce the score by 0.2 points (*for example – 8 points-of failure shall be awarded with 1 point etc.*).

(3) 13 points-of-failure or more – No points.

2. **General Turnkey Considerations (weight in TPS – 34%)**

2.1. **Network Reliability (weight in TPS – 18%)**

2.1.1. Recommendations (weight in TPS – 10%; up to 10 points in total). Scoring shall be according to previous customers' responses to questionnaires that shall be distributed by GSI.

2.1.2. Data Return (weight in TPS – 4%; up to 20 points in total). Points shall be awarded according to percentage of operating stations per year, as follows:

(i) Over 95% in daily and annually measures – 20 points;

(ii) Less than 75% in daily and annually measures – 0 points;

(iii) Between 75%-95% - in a linear relation to the above (*for example – 80% shall be scored with 5 points, etc.*).

2.1.3. Proven Experience with Large Network (weight in TPS – 4%; up to 10 points in total). Points shall be awarded according to the number of Seismic Stations in the largest Turnkey Real Time Seismic Networks presented by each Bidder to demonstrate compliance with ITB Sub-Clause 3.6.1.2 (Bidding Form B), as follows:

(i) The Bid with the highest number of Seismic Stations shall be scored with 10 points.

(ii) All other Bids shall be scored as follows:

$$score = \frac{NSi}{NSh} 10$$

where:

NSi – Number of Seismic Stations in the evaluated Bid

NSh – Number of Seismic Stations in the Bid with the highest number (of Seismic Stations)

2.2. Complementary Experience (weight in TPS – 6%; up to 6 points in total). Points shall be awarded according to the Bidder's former experience in the construction of seismic vaults, and in the licensing and permitting procedures associated therewith.

2.3. Maintenance and Support (weight in TPS – 10%; up to 10 points in total). Points shall be awarded according to customers' satisfaction, based on previous customers' responses to questionnaires that shall be distributed by GSI.

3. **Presentation of the Turn-Key Solution (weight in TPS – 4%; up to 10 points in total)**.

Points shall be awarded based on GSI's impression from the presentation held by the Bidder in accordance with Sub-Clause 8.3.4 of the ITB. Further details regarding the presentation and its requirements shall be provided to all Bidders at a later stage.

Invitation to Bid – Part 3

Bidding Forms and Schedules

Contents

Envelope 1	General Information and Threshold Requirements
Envelope 2	The Technical Proposal
Envelope 3	The Financial Proposal
Envelope 4	Industrial Cooperation Undertakings

Part A (Envelope 1)

General Information and Threshold Requirements

Part A Contents

Letter of Tender

Form of Tender Security

Bidding Form A – Bidder Information

Attachment A – Incorporation Documents

Attachment B – Affidavit According to Public Bodies Transactions Law

Attachment C – Confirmation of Bookkeeping

Attachment D – Declaration of Non-Payment of Commission

Bidding Form B – Experience in the Installation of Seismic Networks

Bidding Form C – Experience in the Manufacture and Supply of Monitoring Instruments

Part 1 – Strong Ground Motion Accelerometer

Part 2 – Broad Band Seismometer

Part 3 – Data Loggers

Bidding Form D – Experience in the Supply of a Real-Time Acquisition Software

Bidding Form E – Experience in Civil Engineering

Part 1 – Experience in Civil Engineering

Part 2 – Subcontractor Implementation and Undertaking

Bidding Form F – Financial Robustness

Bidding Form G – Certificate of Insurance

Letter of Tender

**to be completed and signed by the Bidder,*

Date: _____

To:

The Ministry of National Infrastructure, Energy and Water Resources
The Earth and Marine Research Administration
The Geological Survey of Israel

Sirs,

We, the undersigned, declare that:

1. We have carefully and thoroughly examined, by experts on our behalf, all Tender Documents, including the Contract, the Technical Specifications and all annex and/or appendix and/or supplement and/or addenda thereto.
2. We have examined, understood, and checked these documents, have ascertained that they contain no errors or other defects, and we have no reservations to them.
3. We accordingly offer to execute the Works, in conformity with this Tender which includes all these documents and the enclosed Proposal, for the sum stated in the Bid Form.
4. We agree to abide by this Tender for 1 year from this day and/or until any other extended date instructed by GSI which shall be no later than September 12, 2017, and it shall remain binding upon us and may be awarded at any time before that date.
5. If our Bid is awarded, we will provide the specific Performance Security in accordance with Sub-Clause 17.2 to the Contract and a contractor's insurance in accordance with Clause 21 to the Contract, commence the Works (as defined by the Contract) immediately after the Effective Date, and complete the Works in accordance with the above-named documents.
6. All representation, warranties, information and the data concerning the Bidder or anyone else contained in any written statement in any document delivered pursuant to the Tender or the Contract, shall be accurate on and as of the Effective Date (unless they relate to another date) and thereafter. We are fully aware that GSI shall enter into the Contract with the Successful Bidder on the basis of these representations, warranties, information and data.
7. We do not have any conflict of interest in accordance with Sub-Clause 13.4 of the ITB, and to the best of our knowledge, nor do any of our employees, consultants and subcontractors.

8. We are not involved, directly or indirectly, in the submission of more than one Bid in this Tender.
9. The Bidder's authorized representative for the purpose of the Tender is _____, and we hereby confirm that he/she is fully authorized to represent the Bidder, to act on behalf of the Bidder and to legally bind the Bidder.

Name _____: In the capacity of: _____

Signature: _____

Duly authorized to sign the Bid for and on behalf of: _____

Date: _____

LEGAL COUNSEL DECLARATION

I, the undersigned, in my capacity as legal counsel of _____ (the “**Company**”), hereby certify that and that Messrs. _____, executing this Letter of Tender on behalf of the Company, are authorized signatories of the Company, and may bind the Company for such purpose. I further confirm that the Bid has been issued upon the decision of the authorized bodies of the Company.

Name of legal counsel: _____

Date: _____

Signature: _____

Form of Tender Security

Date: _____, 2016

To:

The Ministry of National Resources, Energy and Water
The Earth and Marine Research Administration
The Geological Survey of Israel (GSI)
30 Malkhei Yisrael St., Jerusalem

Re: **Letter of Guarantee no.** _____ (**"Tender Security"**)

At the request of _____ (the "**Bidder**"), we hereby irrevocably and unconditionally guarantee to pay you any amount up to an aggregate amount of NIS 875,000 (in words: eight hundred and seventy-five thousand New Israeli Shekels) (the "**Guaranteed Amount**") to be paid in connection with the Bidder's bid in Tender No. 3/2015 (the "**Tender**").

Within ten days of the date on which your first written demand was received by us, we shall pay you any amount required in your demand up to the Guaranteed Amount, without you being required to substantiate your demand or to demand payment thereof from the Bidder prior thereto, and without set off or deduction and free of any fees or taxes, notwithstanding any claims or objections by the Bidder or ourselves or by any other party whatsoever.

Any demand received by us either by fax, telex, e-mail or any other electronic transmission shall not be honored.

The forfeiture of part of this guarantee shall not impair the validity of the part that has not been forfeited.

We hereby confirm that no change in the terms of the Tender documents shall derogate from any of our obligations in connection with this Tender Security.

This Tender Security is effective as of the date hereof and shall expire (irrespective of the return of this Tender Security to us) on April 12, 2017 (the "**Expiry Date**").

Any demand under this guarantee must reach us, in writing, at the offices of the branch signing below, whose address is: _____, not later than the Expiry Date. Any demand reaching us after the Expiry Date will not be honored.

The Guaranteed Amount shall be automatically reduced by any payment effected by us under this guarantee.

This guarantee is neither transferable nor assignable.

Yours faithfully,

Bidding Form A

Bidder Information

Name	
Country of Incorporation	
Address	
Bidder's Authorized Representative Information	
Name	
Position (title)	
Address	
Telephone number	
Fax number	
Email Address	
Form A Attachments:	Incorporation Documents of the Bidder (Attachment A)
	Affidavit According to Public Bodies Transactions Law, 5736-1976 (Attachment B)
	Confirmation of Bookkeeping (Attachment C)
	Declaration of Non-Payment of Commission (Attachment D)

Name _____: In the capacity of: _____

Signature: _____

Attachment A - Incorporation Documents

(To be attached by the Bidder)

The Bidder shall attach herein the following documents:

- a. Certificate of incorporation.
- b. Articles of association.
- c. Updated shareholders ledger.

Attachment B – Affidavit According to Public Bodies Transactions Law, 5736-1976

I, the undersigned, _____ I.D. No. _____ after having been warned that I must declare the truth and that I can expect to incur the penalties prescribed by law should I not do so, hereby make the following declaration:

1. I hold the position of a director/shareholder in __ [name of the Bidder] (hereafter: the “**Bidder**”) and I am authorized to make this affidavit in its name and on its behalf in accordance the Public Entities Transactions Law, 5736-1976, (hereinafter the “**Public Entities Transactions Law**”)
2. This Affidavit consists an integral part of the Bid for Tender No. 3/2015 issued by GSI - The Geological Survey of Israel.
3. By the date of this Affidavit, the Bidder and any related entities (as defined in Section 2B to the Public Entities Transactions Law), have not been convicted of more than two offenses under the Minimum Wage Law, 5747 – 1987 and/or under the Foreign Workers (Prohibition on Unlawful Employment and Guarantee of Fair Conditions) Law, 5751 – 1991.

- or -

☐ The Bidder or any related entities (as defined in Section 2B to the Public Entities Transactions Law), have been convicted of an offense under the Minimum Wage Law, 5747 – 1987 and/or under the Foreign Workers (Prohibition on Unlawful Employment and Guarantee of Fair Conditions) Law, 5751 – 1991, but on the Bids Submission Date at least one year has elapsed from the date of the last conviction.

**(the Bidder shall mark the applicable paragraph)*

4. My name and signature appear below and the contents of this affidavit are the truth.

Date

Signature

CERTIFICATION

I the undersigned, _____ Adv., hereby certify that on the _____ day of _____ Mr. _____ with whom I am personally acquainted/who identified himself by I.D. No. _____ attended before me and after I had warned him that he/she must tell the truth, and that he/she could expect to incur the penalties prescribed by law should he/she not do so, confirmed the truth of his aforementioned affidavit and signed it.

Date :

Signature

Attachment C – Confirmation of Bookkeeping
(To be attached by the Bidder)

Attachment D – Declaration of Non-Payment of Commission

1. In addition to duties and prohibitions applicable by law, including the Israeli Penal Code, 5737 - 1977, the undersigned Bidder hereby declares and undertakes as follows:
 - a. Not to offer, provide or receive, directly or indirectly, any benefit, money or anything of value aimed to influence directly or indirectly on the decision, act or omission of the Ministry of National Infrastructures, Energy and Water Resources, the Earth and Marine Research Administration and the Geological Survey of Israel (“GSI”), or an office holder of GSI or GSI’s employee or its representatives or any other Party, concerning the Tender or any agreement or order arising from it.
 - b. Not to solicit or collaborate, directly or indirectly, with an office holder of GSI or GSI’s employees, representatives or any other party, in order to receive confidential or secret information connected with the Tender or any agreement(s) arising from it.
 - c. Not to solicit or cooperate, directly or indirectly, with an office holder of GSI or GSI’s employees, representatives or any other party, in order to set prices in an artificial or non-competitive manner.
 - d. That it did not act contrary to subparts (a) through (c) above in the Tender or any agreement arising from it.
2. The undersigned acknowledged that in case of reasonable suspicion that the undersigned or any of its representatives acted contrary to clause 1 above, GSI reserves the right, according to its sole discretion, to disqualify the undersigned’s Bid or to cancel at any time its winning the Tender or to cancel at any time the agreement(s) the subject matter of the Tender.
3. The undersigned undertakes to bring the content of this declaration to the attention of its employees, consultants, subcontractors, representatives, agents and anyone acting on its behalf, whom are involved in any way in the Tender or in any agreement arising from it.

In witness thereof, the undersigned:

Legal Counsel Declaration

I, the undersigned, in my capacity as legal counsel of _____
(the “**Company**”), hereby authorize that Messrs. _____,
executing the above declaration on behalf of the Company, are authorized signatories of the Company, and may bind the Company for such purpose.

Name of Legal counsel: _____

Address of Legal Counsel: _____

Signature _____ Date: _____

Name of Bidder /Member⁺: _____

Bidding Form B

Experience in the Installation of Seismic Networks

*To be completed and signed by an authorized representative of the client or the network manager, with respect to **each** network presented by the Bidder for the purpose of demonstrating compliance with ITB Sub-Clause 3.6*

I the undersigned, _____, an authorized representative of _____ (name of client / network manager) hereby confirm that _____ (the "**Bidder**"), has successfully installed the following seismic network:

Network Specifics:	
Network name:	Location:
Date of installation:	
The seismic network consists of _____ Seismic Stations that are connected through telemetry to a central data-hub, in which data acquisition and processing is performed by a seismic software. (a " Seismic Stations " shall mean a station consisting of a seismic sensor and a data logger which records and digitizes the ground motion sensed by the sensor.)	
Ground motion in the network is reported at the data-hub within _____ seconds after detection by the farthest Seismic Station.	
The seismic network was planned, developed, customized, supplied and installed by the Bidder as a "full turnkey solution", from the site preparation actions through supply and installation of the field sensors, the data-loggers and telemetry means, to the data-hub hardware, processing and analysis software.	☐ Yes ☐ No
General Network Description:	
_____ _____	

Date

Signature and Stamp
(if applicable)

Name: _____ Position: _____

Tel. _____ Email: _____

The Bidder shall attach to this form the following:

- Contact details of the network manager.
- Recommendation letters (if any).
- Two annual seismic network reports showing the annual data-return of the network, signed by the network manager.

Bidding Form C

Experience in the Manufacture and Supply of Monitoring Instruments

1. This **Bidding Form C** holds 3 parts, each relating to a specific Monitoring Instrument:
 - (a) Part 1 – Strong Ground Motion Accelerometers
 - (b) Part 2 – Broad Band Seismometers
 - (c) Part 3 – Data Loggers
2. The Bidder shall fill and complete each part, in order to demonstrate the required experience with regard to the corresponding Monitoring Instrument, all as set forth in ITB Sub-Clause 3.7.
3. Each part shall then be signed by, or accompanied with confirmations of:
 - (a) the chief engineer of the Bidder, or by a representative of a certified laboratory on behalf of the Bidder, confirming the manufacture of the Monitoring Instrument by the Bidder and its specifics; and
 - (b) an authorized representative of an active seismic network manager, confirming the installation of the Monitoring Instrument in such network.
4. The Bidder shall enclose and submit, with respect to each Monitoring Instrument, a full technical data sheet, as well as any other documentation demonstrating the Monitoring Instrument's technical specifications.

Part 1 – Strong Ground Motion Accelerometer

I the undersigned, _____, hereby confirm that _____ (the "**Bidder**"), has developed, manufactured and supplied **accelerometers** meeting the following specifications, which are in use in active seismic networks:

A. General Information		
Instrument Type:	Brand Name and Number:	
Date of Initial Production:	Quantity Manufactured by January 1, 2016:	
Brief Description:		
B. Specifications		
Frequency Band:	Self Noise:	Dynamic Range:
Sensor Saturation:	Calibration ☐ Yes Coil: ☐ No	Peak to Peak Output Voltage:
Operation Temperature Range: _____°C to _____°C		Provides Full System response: ☐ Yes ☐ No
C. Details of Active Seismic Networks in which the instrument was installed		

Name: _____

Position: _____

Email: _____

Phone: _____

Signature and Stamp (if applicable): _____

Part 2 – Broad band Seismometer

I the undersigned, _____, hereby confirm that _____ (the "**Bidder**"), has developed, manufactured and supplied **seismometers** meeting the following specifications, which are in use in active seismic networks:

A. General Information		
Instrument Type:	Brand Name and Number:	
Date of Initial Production:	Quantity Manufactured by January 1, 2016:	
Brief Description:		
B. Specifications		
Frequency Band:	Self Noise:	Dynamic Range:
Calibration ☐ Yes Coil: ☐ No	Peak to Peak Output Voltage:	
Operation Temperature Range: _____ °c to _____ °c	Provides Full System response: ☐ Yes ☐ No	
C. Details of Active Seismic Networks in which the instrument was installed		

Name: _____ Position: _____

Email: _____ Phone: _____

Signature and Stamp (if applicable): _____

Part 3 – Data Loggers

I the undersigned, _____, hereby confirm that _____ (the "**Bidder**"), has developed, manufactured and supplied **Data Loggers** meeting the following specifications, which are in use in active seismic networks:

A. General Information		
Instrument Type:	Brand Name and Number:	
Date of Initial Production:	Quantity Manufactured by January 1, 2016:	
Brief Description:		
B. Specifications		
Digitizer Type:	Sample Rate:	GPS lock time accuracy:
Onsite recording for 3-channel stations: _____ days of continuous data at _____ samples per second.	Onsite recording _____ days of for 6-channel continuous data at _____ stations: samples per second.	
Packets' recording format:	Supports multiple connections from different IP addresses: ☐ Yes ☐ No	
Supports real-time telemetry with ☐ Yes TCP/IP or UDP ☐ No protocols:	Supports simultaneous real-time telemetry and recording to local onsite storage: ☐ Yes ☐ No	
Sensor control includes ☐ Yes configuration, ☐ No calibration and re- centering:	Supports storage and telemetry of the following state of health channels: ☐ Yes temperature, GPS status, voltage, ☐ No	
Operation Temperature Range: _____°C to _____°C	Power requirements for 12V DC for 6-channel stations (not including telemetry):	

C. Details of Active Seismic Networks in which the instrument was installed

Position: _____

Phone: _____

C. Details of Active Seismic Networks in which the instrument was installed

Bidding Form D

Experience in the Supply of a Real-Time Acquisition Software

*To be completed and signed by an authorized representative of **each** client to whom the software was supplied.*

I the undersigned, _____, an authorized representative of _____ (name of client) hereby confirm that _____ (the "**Bidder**"), has supplied a real-time acquisition and processing seismic software, the specifications of which are as follows:

A. General Software Information	
Name of Acquisition Software:	Version / Build:
Date of Supply by the Bidder:	
B. Software Specifics*	
The Software is used for: (check the applicable)	☐ Acquisition ☐ Processing ☐ Post-processing and research
The software is used in real-time operative mode: (check the applicable)	☐ Yes ☐ No
The software is compatible to the implementation of external modules or algorithms.	☐ Yes ☐ No
The software is compatible to the implementation of earthquake early warning modules or algorithms.	☐ Yes ☐ No

*** Please attach reference documentation, including a clear design demonstrating the software's compatibility to external modules.**

Name: _____

Position: _____

Email: _____

Phone: _____

Signature: _____

Bidding Form E

Civil Engineering

Part 1 – Experience in Civil Engineering

To be completed and signed by an authorized representative of the client, or by the project supervisor, with respect to **each** civil engineering project presented by the Bidder in order to demonstrate compliance with ITB Sub-Clause 3.8

I the undersigned, _____, an authorized representative of _____ hereby confirm that _____ (the "**Bidder**") has successfully completed the following civil engineering project:

Project Info	
Name of the Project:	Location:
Name of Client:	Date of Completion: _____
Brief Description:	
The civil engineering project included the following, which were executed by the Bidder: ☐ The detailed design and construction of a permanent structure of _____ square meters. ☐ The construction of _____ Seismic Stations structures. ("Seismic Stations" shall mean a station consisting of a seismic sensor and a data-logger which records and digitizes the ground motion sensed by the sensor.)	

Date

Signature and Stamp
(if applicable)

Name: _____ Position: _____

Tel. _____ Email: _____

Part 2 - Subcontractor Information and Undertaking

*To be completed only in the event of reliance on a subcontractor's experience
in accordance with ITB Sub-Clause 3.8*

Part 2A – Subcontractor Information

Name	
Country of Incorporation	
Address	
Telephone number	
Fax number	
Email Address	

Part 2B – Subcontractor Undertaking

The undersigned, authorized representative of _____ (the “**Subcontractor**”), hereby warrants, undertakes and confirms on behalf of the Subcontractor as follows:

- i) The Subcontractor has examined, by experts on its behalf, all Tender Documents, including all supplement, annex, appendix or Addenda thereto.
- ii) The Subcontractor understands, and has given its full and irrevocable consent, to the Bidder's reliance on its experience for the purpose of demonstrating compliance with the Threshold Requirements.
- iii) The Subcontractor undertakes that in the event the Bidder's Bid is selected as the Successful Bid in Tender 03/2015, the Subcontractor shall execute the civil engineering works in the Project, in strict accordance with all Tender Documents including the Contract, and shall be jointly and severally responsible, with the Bidder, for such works.
- iv) Without derogating from the generality of the above, the Subcontractor shall provide the required know-how, knowledge, technology, personnel, organizational and management skills, machinery, equipment and intellectual property required for the execution of the civil engineering works, pursuant to all Tender Documents.

Date

Signature and Stamp
(if applicable)

Name: _____ Position: _____

Tel. _____ Email: _____

Legal Counsel Declaration

I, the undersigned, in my capacity as legal counsel of _____
(the “**Company**”), hereby authorize that Messrs. _____,
executing the above declaration on behalf of the Company, are authorized signatories of the
Company, and may bind the Company for such purpose.

Signature _____

Date: _____

Bidding Form F

Financial Robustness

(Reference: Sub-Clause 3.9 of the ITB)

1. The Bidder shall submit its audited official financial statements for each of fiscal years 2012, 2013 and 2014.
2. The Bidder shall submit the following declaration, duly completed and signed by its Chief Financial Officer (or equivalent).

CFO Declaration

The undersigned, the chief financial officer of _____ (the "**Bidder**"), hereby represents and confirms as follows:

1. Since the completion of the Financial Statements of the Bidder for fiscal year 2014 and through the Bids Submission Date, no material adverse change has occurred in the assets and/or liabilities of the Bidder, which (alone or together with any other material adverse change(s)) might affect the Bidder's ability to meet its undertakings, and there are no doubts with respect to its continued functioning as a going concern.
2. As of the Bids Submission Date:
 - a) The Bidder is not insolvent, does pay its debts as they become due, and no liquidation, receiverships, or reorganization proceedings (whether temporary or not) have been commenced by or against the Bidder.
 - b) No trustee and/or receiver and/or manager and/or liquidator have been appointed for the Bidder and/or its businesses or assets, in whole or in part.
 - c) No judicial decision has been issued against the Bidder for the receivership of its businesses or assets, in whole or in part, and/or for its dissolution.

Chief financial officer's signature: _____ Date: _____

Name of chief financial officer: _____

Address: _____

Telephone: _____

LEGAL COUNSEL DECLARATION

I, the undersigned, in my capacity as legal counsel of _____ (the "**Bidder**"), hereby certify and confirm that this declaration was executed by _____, who is the Chief Financial Officer of the Bidder (or the equivalent thereof)

Name of legal counsel: _____ Date: _____

Signature: _____

Bidding Form G

Certificate of Insurance

1. The Bidder shall sign the following Insurance Certificates. Signature of the insurer(s) is **not** required during the Tender stage.
2. After award, and as a precondition for the execution of the Contract, the Successful Bidder shall be required to submit this form, duly completed and signed by its insurer.

Certificate of Insurance – Part 1

Contractor's Insurance for the Deployment Period

To:

The State of Israel –

The Ministry of National Infrastructures, Energy and Water Resources

The Geological Survey of Israel

Dear Sir/Madam,

Re: **Certificate of Insurance**

We hereby confirm that we have issued on behalf of our insured _____ (hereinafter: the "**Contractor**"), for the period of insurance from _____ to _____, in connection with the procurement, deployment and maintenance of a real time seismic network with early warning compatibility early warning compatibility in Israel, and in accordance to the Contract between the Contractor and the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Geological Survey of Israel, the insurance policies as detailed below:

1. Mechanical Heavy Equipment Insurance

All Risks coverage, including Property and Third Party Liability in respect of bodily injury & property.

2. All Risks Contractors Works Insurance (C.A.R)

All Risks Contractors Works Insurance in respect of executing all works required during the procurement, deployment and maintenance of a real-time seismic network with early warning compatibility early warning compatibility in Israel, including building and construction of seismic stations, performing drilling, disassembly, destruction removal of debris, groundworks, cast concrete, installation & placement of solar panels, satellite dishes and other communication devices, electricity and communication infrastructures and cables and electronic equipment in the

seismic stations and in [REDACTED], including all materials, systems and equipment for the whole duration of works.

The All Risks Contractors Works Insurance includes the following insurance coverages:

SECTION A - PROPERTY INSURANCE

The full value of all works including all materials, systems and equipment on a new value basis. The sum of insurance shall reflect the value of the tender works based on the contract value and includes all materials and equipment items within, inclusive of all additions and changes which may occur during the period of insurance on which the Contractor is obligated to report to its insurer and verify issuing of updates/additions accordingly.

For the avoidance of doubt, the coverage shall include also natural perils and earthquakes damages, burglary, theft and robbery risks.

The insurance coverage includes the following extensions:

1. Light construction equipment, light devices, work tools and auxiliary tools – based on their full value.
2. Disassembly, destruction, removal of debris, support, stabilization costs & expenses – limit of liability shall not be less than 25,000 US Dollars.
3. Loss or damage to property worked upon / adjacent property belonging to one of the Insured's individuals and is not a part of the Project insured under this Policy - insured on a first loss basis not subject to under-insurance – limit of liability shall not be less than 500,000 US Dollars.
4. Loss or damage to property/materials/items forming part of the project whilst in transit outside the project site (including loading and unloading actions) and/or whilst stored anywhere in Israel and its held territories - based on their full value.
5. Temporary and ancillary structures on the Site including stores, offices, fences and their likes, located at the project's site of work – based on their actual monetary value.

6. Expenses for repairs or replacement resulting from faulty design, faulty materials or faulty work exclusion shall be limited to the repair or replacement of the faulty items themselves and shall not apply to loss or damage to items properly performed, where such loss or damage results from an accident arising from faulty design, faulty materials or faulty work.
7. Expenses in respect of architects, engineers, consultants and other experts – shall not be less than 10,000 US Dollars.
8. Direct damage resulting from faulty design, faulty materials or faulty work shall not be less than 100,000 US Dollars, subject to maximum 10% deductible, payable by the Contractor.
9. Special expenses in respect of alterations and extensions demanded by the authorities after the occurrence of an insured provided - 10% of works value.
10. Running-in/testing period – 30 days for the equipment after assembly.
11. Coverage includes natural perils, earthquakes damages, burglary, theft and robbery risks.
12. As long as payments towards the insured shall be made by the State of Israel, the Ministry of National Infrastructures, Energy and Water Resources, the Geological Survey of Israel in respect of this project in accordance with the Contract - the insurance benefits deserve to the insured based on this section shall be mortgaged in favor of the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey of Israel and shall be paid to them directly, unless the comptroller of the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey of Israel directs the insurer in writing otherwise

SECTION B – THIRD PARTY LIABILITY INSURANCE

Insurance coverage in respect of the Contractor's legal liability, under the laws of the State of Israel in third party liability insurance for person and property in all areas of the State of Israel and its territorial waters.

The limits of liability shall not be less than 2,500,000 US Dollars per event and for the period of the insurance including a cross-liability clause.

Coverage under this section shall include:

1. Liability in respect of loss or damage due to vibration, shivering or by removal or wearing of support – the limits of liability shall not be less than 100,000 US Dollars.
2. Direct loss or damage to underground pipes, facilities and cables - the limits of liability shall not be less than NIS 1,000,000.
3. Indirect loss or damage to underground pipes, facilities and cables - the limits of liability shall not be less than NIS 500,000.
4. Subrogation claims of the National Insurance Institute.

SECTION C – EMPLOYERS' LIABILITY

1. Coverage in respect of all workers related to performing the works, including contractors, subcontractors and their employees.
2. The limit of liability for any one employee and event and for the period of insurance shall be no less than 5,000,000 US Dollars.

The insurance policies shall include the following extensions & conditions:

1. An extended maintenance period of 24 months after completion of all works.
2. The terms of coverage under the above policies shall not be inferior to the accepted coverage according to the terms of the "BIT version policy" for each policy in respect of which such a version exists and is generally accepted, subject to the extensions to the cover stipulated above.
3. Contractors and/or sub-contractors and/or the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey of Israel shall be added to the insured's name as additional insured.

4. Territorial Limits - anywhere within the territory of the State of Israel and its held territories.
5. In any case of a reduction or cancellation of the insurance by one of the parties, such reduction or cancellation shall not be valid unless we give prior notice of such, at least 60 days in advance, by registered letter to the Financial Comptroller of the Ministry of National Infrastructures, Energy and Water Resources - The Geological Survey of Israel.
6. We waive any right of subrogation, claim, and contribution or refund vis-a-vis the State of Israel – the Ministry of National Infrastructures, Energy and Water Resources, The Geological Survey of Israel, and their employees, provided that such waiver shall not Apply for the benefit of a person that has caused willful damage.
7. The Contractor alone is liable towards us for payment of the premiums in respect of the policies and for fulfillment of all the obligations imposed on the Insured under the terms and conditions of the policies.
8. The policy excess specified in each policy shall apply exclusively to the Contractor.
9. Any section in the insurance policies that obviates or reduces our liability in any way when other insurance exists shall not operate *vis-a-vis* the State of Israel and the insurance is being effected in terms of primary insurance, which confers the full rights under the insurance policies.

Subject to the original policies terms & conditions in as much as not altered specifically by the aforementioned.

Sincerely yours,

Date

Signature of insurer's authorized signatory + insurer's stamp

Certificate of Insurance - Part 2

Contractor's Insurance for the Deployment Period

To:

The State of Israel –

The Ministry of National Infrastructures, Energy and Water Resources

The Geological Survey of Israel

Dear Sir/Madam,

Re: Certificate of Insurance

Professional Liability Insurance –

Engineers/Constructors/Designers/Architects/Safety

Supervisors/ Superintendents

We hereby confirm that we have issued on behalf of our insured _____ and Professionals working on its behalf (hereinafter collectively: the "**Contractor**"), for the period of insurance from _____ to _____, in all matters pertaining to the design, construction, safety, superintendence and consulting services regarding the procurement, deployment and maintenance of a real-time seismic network with early warning compatibility in Israel, in accordance with the Contract between the Contractor and the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Geological Survey of Israel, a Professional Liability Insurance as detailed below.

1. The policy covers any damage due to a breach of professional duty on the part of the Engineers / Constructors / Designers / Architects / Safety Supervisors / Superintendents, their employees and all those working for them, and which has occurred as the result of an act, negligence, including a failure, error or omission, misrepresentation, negligent declaration made in good faith, in all matters pertaining to the design, construction, safety, superintendence and consulting services regarding the procurement, deployment and maintenance of a real-time seismic network with early warning compatibility in Israel, in accordance with the Contract between the Contractor and the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Geological Survey of Israel.

2. Limits of liability shall not be less than 1,000,000 US Dollars per event and in the aggregate per the period of the insurance (one year).
3. The coverage under the policy is extended to contain the following extensions:
 - Dishonesty of employees;
 - Libel and/or slander;
 - Loss of documents, including the loss of use and/or delay as a result of an Insurance event;
 - Cross-liability, but coverage shall not apply in respect of the Contractor's claims against the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey of Israel;
 - Extension of the period of discovery to at least six months.
4. The cover under the policy is extended to cover the State of Israel – the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey of Israel, in so far as they may be deemed to be liable for the acts and/or omissions of the Engineers / Constructors / Designers / Architects / Safety Supervisors / Superintendents and those working on their behalf. Accordingly, the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey shall be added to the insured's name as additional insured.

The above insurance policy shall include the following conditions:

1. The State of Israel – the Ministry of National Infrastructures, Energy and Water Resources, the Geological Survey of Israel, shall be added to the insured's name as additional insured, subject to the indemnity extension as detailed above.
2. In any case of a reduction or cancellation of the insurance by one of the parties, such reduction or cancellation shall not be valid unless prior notice of such has been given by us at least 60 days in advance by registered letter to the Financial Comptroller of the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey of Israel.

3. We waive any right of subrogation, claim, and contribution or refund vis-a-vis the State of Israel – the Ministry of National Infrastructures, Energy and Water Resources, the Geological Survey of Israel, and their employees, provided that such waiver shall not apply for the benefit of a person that has caused damages with malicious intent.
4. The Contractor alone is liable towards us for payment of the premium in respect of the policy and for fulfillment of all the obligations imposed on the Insured under the terms and conditions of the policy.
5. The policy excess specified in each policy shall apply exclusively to the Contractor.
6. Any section in the insurance policy that obviates or reduces our liability in any way when other insurance exists, shall not operate *vis-a-vis* the State of Israel, and the insurance is being effected in terms of primary insurance which confers the full rights under the insurance policy.

Subject to the original policy terms & conditions in as much as not altered specifically by the aforementioned.

Sincerely yours,

Date

Signature of insurer's authorized signatory + insurer's stamp

Certificate of Insurance - Part 3

Contractor's Insurance for the Maintenance Period

To:

The State of Israel –

The Ministry of National Infrastructures, Energy and Water Resources

The Geological Survey of Israel

Dear Sir/Madam,

Re: **Certificate of Insurance**

We hereby confirm that we have issued on behalf of our insured _____ (hereinafter: the "**Contractor**"), for the period of insurance from _____ to _____, in connection with the procurement, deployment and maintenance of a real-time seismic network with early warning compatibility in Israel, in accordance with the Contract between the Contractor and the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Geological Survey of Israel and in accordance with the Contract between the Contractor and the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Geological Survey of Israel, the insurance policies as detailed below.

Product Liability Insurance

1. Product liability insurance covering the liability of the Contractor and the manufacturers / suppliers of the electronic equipment, systems, computers, networks & the accompanying components in respect of damages arising from design, manufacture, supply, installation, assembly, placement, integration, configuration, testing, commissioning, QA, warranty, acceptance tests, repair, replacements, modifications, upgrades of software and seismic instruments, maintenance, helpdesk, support, reports, documentation, spare parts and training.
2. The limit of liability for any one event and in the aggregate for the period of insurance, in respect of bodily injury and property damage, shall be no less than USD 500,000.
3. A cross-liability clause shall be included in the policy.
4. A discovery period of at least 12 months shall apply.
5. The insurance is extended to indemnify the State of Israel – the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey of Israel, in the event they are held liable for acts and/or omissions of the Contractor and/or the manufacturer and/or

the supplier and those acting on their behalf or in respect of their liability arising out of loss or damage caused by the products which the Contractor and/or the manufacturer and/or the supplier is responsible for.

Employers' liability Insurance

1. The Contractor's legal liability towards his employees & anyone working on its behalf by Employers Liability Insurance in all the areas of the State of Israel and the occupied territories.
2. The limits of liability per employee per event and in the aggregate for the period of the insurance shall not be less than USD 5,000,000.
3. The insurance is extended to cover the Contractor's liability vis a vis contractors, sub-contractors and their employees in the event the Contractor shall be considered their employer.
4. The insurance is extended to indemnify the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources – the Geological Survey of Israel, in the event of it being claimed in relation to the occurrence of a work accident/any professional disease, that they bear any employers liability vis a vis the Contractor's employees, contractors, sub-contractors and their employees employed by The Contractor.

Third Party Liability Insurance

1. The Contractor's legal liability under the laws of the State of Israel in third party liability insurance for person and property in all areas of the State of Israel and the occupied territories.
2. The limit of liability shall not be less than USD 1,000,000 per event and for the period of the insurance (one year).
3. The insurance is extended to cover the Contractor's third party liability with regard to activities of contractors, sub-contractors and their employees.
4. A cross-liability clause is included in the policy.
5. The insurance is extended to indemnify the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources – the Geological Survey of Israel in so far as they shall be deemed to be liable for the acts and/or omissions of the Contractor and anyone working on his behalf.

General

In all the required insurance policies, the following conditions shall be included:

1. The State of Israel – the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey of Israel, shall be added to the insured's name as additional insured, subject to the indemnity extension as detailed above.
2. In any case of a reduction or cancellation of the insurance by one of the parties, such reduction or cancellation shall not be valid unless prior notice of such has been given by us at least 60 days in advance by registered letter to the Financial Comptroller of the Ministry of National Infrastructures, Energy and Water Resources - the Geological Survey of Israel.
3. We waive any right of subrogation, claim, and contribution or refund vis-a-vis the State of Israel – the Ministry of National Infrastructures, Energy and Water Resources, the Geological Survey of Israel, and their employees, provided that such waiver shall not apply for the benefit of a person that has caused damages with malicious intent.
4. The Contractor alone is liable to the Insurer for payment of the premiums in respect of the policies and for fulfillment of all the obligations imposed on the Insured under the terms and conditions of the policies.
5. The policy excess specified in each policy shall apply exclusively to the Contractor.
6. Any section in the insurance policies that obviates or reduces the Insurer's liability in any way when other insurance exists shall not operate vis-a-vis the State of Israel. The insurance is being effected in terms of primary insurance which confers the full rights under The insurance policies.
7. The terms of coverage under the above policies, shall not be inferior to the accepted coverage according to the terms of the "BIT version policy," for each policy in respect of which such a version exists and is generally accepted, subject to the extensions to the cover stipulated above.

Subject to the original policies terms & conditions in as much as not altered Specifically by the aforementioned.

Sincerely yours,

Date

Signature of insurer's authorized signatory + insurer's stamp

Part B (Envelope 2)

The Technical Proposal

Part B Contents

General Instructions

Schedule 1 Technical Specification Checklist

Schedule 2 Seismic Network Scheme

Part A – Deployment Diagram

Part B – Network Specifics

Schedule 3 Seismic Instrumentation

Seismic Instrumentation Data Sheet

Schedule 4 Telemetry

Schedule 5 Acquisition Software

Network Information Sheet (software)

Customers' Recommendation Sheet (software)

Schedule 6 Data Hub

Schedule 7 Site Design and Construction

Part A – Construction of Seismic Vaults

Part B – Installation of Seismic Equipment in Ready-To-Use Sites

Schedule 8 Seismogeodetic Instrumentation

Schedule 9 Early Warning Software

EEWS Software Information Sheet

Schedule 10 Customers' Recommendations

2.

General Instructions

1. The Bidder shall submit a detailed Technical Proposal, which shall include Schedules 1-10 below.
2. The Technical Proposal shall demonstrate in clear and adequate details the Bidder's proposed solution for the design, supply, installation, deployment and maintenance of the System, and shall address all requirements set forth in the Technical Specifications.
3. The Bidder shall respond to each Schedule in strict accordance with the instructions therein. If and to the extent applicable, the Bidder shall fill and complete all provided forms and tables, and shall attach all required documentation.
4. The Bidder may also attach any other documentation of a technical nature, the Bidder considers to substantiate or clarify its proposal, but may not submit documents of a PR / advertising nature.
5. GSI's review of all material submitted by the Bidder in response to these Schedules shall be for the sole purpose of Bids' evaluation, and shall not constitute, in any way or form, approval thereof.

Schedule 1 – Technical Specifications Checklist

The Bidder shall fill and complete the following table, and shall demonstrate how its suggested solution complies with all specifications detailed in Appendix B to the Contract (*Technical Specifications*).

Specification	Solution	Technical Details
Spec1		
Spec2		
...		

Schedule 2 – Seismic Network Scheme

Part A – Deployment Diagram

The Bidder shall submit a) a schematic design of the network topology, and b) a map of Israel on a scale of 1:500,000 (or lower), demonstrating its suggested network deployment.

The Bidder shall clearly present in the schematic design the following:

1. Different types (categories) of Stations;
2. Telemetry routes, receiver sites (if any) and communication junctions;
3. Main data-hub site;
4. Backup data recovery site

The Bidder shall clearly present on the map the following:

5. Name, location and type (category) of each Station;
6. Telemetry routes, receiver sites (if any) and communication junctions;
7. Main data-hub site;
8. Backup data recovery site

(Schedule 2 – Seismic Network Scheme)

Part B – Network Specifics

The Bidder shall fill and complete the following table with respect to all Stations in its suggested network.

Station Name	Seismic Instrumentation		Main Telemetry Instrumentation (including modems and antennas)				Backup Telemetry Instrumentation (including modems and antennas)				Number of Communication Junction Points from Station Site to Data-Hub (not including site and data-hub themselves)
	Type	Power Consumption	Type	Power Consumption	Latency Times	Required Bandwidth*	Type	Power Consumption	Latency Times	Required Bandwidth*	
STA1											
STA2											
...											

* The Bidder shall submit complete details of the calculations regarding required bandwidth, including compression, communication overhead, and extra “burst” required at large seismic events, when compression is not effective.

Schedule 3 – Seismic Instrumentation

2. The Bidder shall fill and complete the data sheet below with respect to **each** type of seismic instrument listed by the Bidder in Schedule 2 (each type of seismometer, each type of accelerometer, each type of data logger etc.).
3. The Bidder shall attach and submit the following documentation with respect to each instrument type:
 - a. Technical datasheets and specifications, signed by the chief engineer of the Bidder.
 - b. Full operation and maintenance manuals.
 - c. A list of up to 3 network managers using the instrument, including their position, network description, email and phone numbers.

Seismic Instrument Data Sheet

A. General Information		
Instrument Type:	Brand Name and Number:	
Manufacturer:	Date of Initial Production:	
Brief Description:		
B. Specifications		
Frequency	Self	Dynamic
Band:	Noise:	Range:
C. Deployment		
Number of identical or similar instruments used in active seismic networks worldwide*:	Number of instruments to be used in the suggested seismic network in Israel:	
D. Compatibility with 3rd Party Equipment		
Details of third party equipment the instrument can be used with as-is, with no need of generating special firmware**:		

* Please provide external documents demonstrating use in active networks.

** For sensors – compatibility with 3rd party data-loggers and vice-versa.

Chief Engineer Certification

I hereby confirm all details and specification of the seismic instrument above.

Name: _____ Position: _____

Tel. _____ Signature and stamp (if applicable): _____

Schedule 4 – Telemetry

The Bidder shall submit the following with respect to **each** telemetry mean specified in Schedule 2:

1. A complete technical data sheet demonstrating, inter alia, delay times and survivability, backed by professional literature or other external references.
2. A complete telemetry-topology of the seismic network based on the station distribution.

Schedule 5 – Acquisition Software

1. General Presentation and Demonstration

- 1.1. The Bidder shall submit a narrative presentation of the design and workflow of the software and of the real-time acquisition and archiving procedures, accompanied by screenshots and a short video file. The presentation shall address, inter alia, the following:
 - 1.1.1. Main modules and capabilities;
 - 1.1.2. User interface and visualization;
 - 1.1.3. Core modules, and whether and how could they be modified;
 - 1.1.4. Flexibility to modification by the user;
 - 1.1.5. Data and metadata transmission between different software modules;
 - 1.1.6. Modules' formats and size of data packets;
 - 1.1.7. Gap handling of the software in the real-time acquisition and in the archiving of data.
- 1.2. The Bidder shall submit examples, including (as applicable) screenshots and video files of the following:
 - 1.2.1. Configuration modules of the software, used for station and network definitions, and for seismic instrument configuration.
 - 1.2.2. State of health channels, including examples of web pages in which technicians can interact through the web with all the network stations, including the state of health channels.
 - 1.2.3. Seismic catalogue generated by automatic procedures within the software.
- 1.3. The Bidder shall describe its recommendations for workflow of multiple seismic analysts (such as in an aftershock sequence), and shall include screenshots supporting such recommendations, based on the capability of the software.
- 1.4. The Bidder shall submit a detailed start-up guide, or if possible more extensive user-manuals, of the software.
- 1.5. The Bidder shall submit the names and contact details of at least 3 previous customers using the software.

2. Testing and QA

- 2.1. The Bidder shall describe the QA procedures conducted prior to release of new versions.

- 2.2. The Bidder shall describe the testing procedures (if any) carried out in real-time seismic networks, and provide technical reports and references to such procedures, signed by the PI or network managers.
3. Use in Seismic Networks
- 3.1. The Bidder shall fill and complete the attached Network Information Sheet, with respect to up to 3 networks in which the software is in use including the largest network (in terms of number of stations) the software handles. Each such sheet shall be signed by the by an authorized representative of the network manager.
4. Plug-in capabilities
- The Bidder shall describe and demonstrate, with accompanying screenshots and video files, the procedure of designing and programming plug-in modules in general, and Early Earthquake Warning (EEW) plug-in modules in particular.
5. Rollback Procedure
- 5.1. The Bidder shall present procedure of returning to previous versions of software, and shall submit documentation (such as website and/or screenshots) showing modifications done between different versions of the software.
- 5.2. The Bidder shall present and demonstrate the procedure(s) required to access the modification log of the software.
- 5.3. The Bidder shall elaborate whether these modifications can be accessed and installed directly by the users, or whether they require external support?
6. Users' Support
- The Bidder shall submit documentation presenting at least 5 examples of user support, either online or through direct customer support.
7. Recommendations
- The Bidder shall fill and complete the following customers' recommendation sheet.

Network Information Sheet (Software)

(to be completed and signed by an authorized representative of the network manager)

A. Network Information	
Name of network:	Location:
Location:	Date of initial operation:
Number and types of seismic stations:	
B. Software Specifics	
Name of Acquisition Software:	Version / Build:
The Software is Used for: (check the applicable)	☐ Acquisition ☐ Processing ☐ Post-processing and research
Number of Channels Processed in Real Time:	Sampling Rate*:
Number of 3-components Seismic Stations handled by the software: (A " Seismic Station " shall mean a station consisting of a seismic sensor, and a Datalogger which records and digitizes the ground motion sensed by the sensor.)	
Data return performance and latency times*:	

* Please attach reference documentation

I hereby confirm the accuracy of all data and information in the above table.

Name: _____

Position: _____

Email: _____

Phone: _____

Signature: _____

Customers' Recommendations Sheet (software)

The Bidder shall complete the following table and fill the contact details of no more than 3 recommending customers.

GSI may or may not approach any or all of these customers with inquiries regarding the Bidder and/or the software. GSI may also, at its sole discretion, approach with similar inquiries other user of the software, whether specified by the Bidder or not.

1	Name of Customer:	Name of Representative:
	Phone:	Email:
	Brief description of the customer's use of the software:	

2	Name of Customer:	Name of Representative:
	Phone:	Email:
	Brief description of the customer's use of the software:	

3	Name of Customer:	Name of Representative:
	Phone:	Email:
	Brief description of the customer's use of the software:	

Schedule 6 – Data Hub

The Bidder shall demonstrate the compliance of its Bid with section 3.1.7 of the Technical Appendix, and shall submit the following, with respect to **each** data hub (main and backup):

1. A narrative description of the Bidder's proposed data hub solution, which shall include the following:
 - 1.1. General description of the data hub and explanation of the Bidder's solution;
 - 1.2. How the Bidder intends to approach the no point of failure, high availability and redundancy requirements;
 - 1.3. The relations between the two hubs.
2. A complete schematic design and detailed architecture of the data hub and all of its ensembles, including the following:
 - 2.1. Acquisition;
 - 2.2. Storage and archiving;
 - 2.3. Processing;
 - 2.4. Web-interface;
 - 2.5. Analysts and operators work stations;
 - 2.6. Interface with the telemetry hubs
 - 2.7. Data flow into the data-hub and into the acquisition software.
3. Datasheet and technical specifications of all hardware in the data-hub, from acquisition servers, through work stations nodes and storage solutions, to displays and backup tapes, etc.
4. Technical specification of all software required for the following:
 - 4.1. Monitoring the data center;
 - 4.2. Operating the virtual environment;
 - 4.3. Firewall;
 - 4.4. Any additional software required to achieve the set of requirements given in section 3.1.7 of the Technical Appendix.

Schedule 7 – Site Design and Construction

Part A – Construction of Seismic Vaults

1. The Bidder submit references and recommendations regarding its experience in the construction of seismic vaults and the permitting processes associated therewith, and shall attach thereto technical documentation demonstrating such experience.
2. The Bidder shall submit a schematic design for **each** of the following types of seismic vaults:
 - a. Vaults for field stations equipped with strong motion accelerometers;
 - b. Vaults for field stations equipped with broadband seismometers and strong motion accelerometers;
 - c. Vaults for 50m boreholes in the Dead Sea stations.
3. Each schematic design shall address the following:
 - a. Vault materials and geometry, including inner and outer dimensions;
 - b. Thermal tolerance;
 - c. Water proofing;
 - d. Electricity related aspects including grounding, lightning protection, and electro-magnetic protection.

Part B – Installation of Seismic Equipment in Ready-To-Use Sites

The Bidder shall submit a schematic design for the installation of seismic equipment in **each** of the following types ready-to-use sites (for the purpose of this Schedule "ready-to-use site" shall mean a site with an existing structure, in which the Seismic Station will be installed):

1. Sites to be equipped with strong motion accelerometers;
2. Sites to be equipped with broadband seismometers and strong motion accelerometers.

Each schematic design shall address the following:

1. Thermal tolerance;
2. Water proofing;
3. Electricity related aspects including grounding, lightning protection, and electro-magnetic protection.

Schedule 8 – Seismogeodetic Instrumentation

1. The Bidder shall fill and complete the table below with respect to all stations (8 in total) in which seismogeodetic equipment will be installed.
2. The Bidder shall attach and submit the following documentation (to the extent applicable) with respect to each type of seismogeodetic equipment:
 - a. Technical datasheets and specifications.
 - b. Full operation and maintenance manuals.

Station Name	Seismogeodetic Instrumentation	Seismogeodetic Firmware	Required bandpass at 20sps		Seismogeodetic Power Consumption
			Raw	Processed	
STA1					
...					
STA8					

Schedule 9 – Early Warning Software

The Bidder shall submit the following with respect to its suggested initial Earthquake Early Warning System (EEWS) software.

1. A narrative description of the EEWS software, accompanied by relevant diagrams, examples, screenshots and video files, addressing and explaining the following:
 - 1.1. Design and workflow;
 - 1.2. Main modules and capabilities;
 - 1.3. What are the core modules, and which core modules can be modified;
 - 1.4. Accessibility of other modules, including flexibility to be modified or re-programmed.
2. A start-up guide, and to the extent possible and practical – an extensive user manual of the EEWS software.
3. A scheme demonstrating the relations between the EEWS software and the real time acquisition software.
4. A demonstration version of the software on an electronic media. Alternatively – a video file containing an extensive presentation of the software including all matters referred to above.
5. The attached EEWS Software Information Sheet, duly completed and signed by the IT manager or the network manager of networks in which the EEWS software is used.

EEWS Software Information Sheet

(to be completed and signed by the network's manager or IT manager)

A. Network Information	
Name of network:	Location:
Location:	Date of initial operation:
Number and types of seismic stations:	
B. Software Specifics*	
Name of EEWS Software:	Version / Build:

* Please attach reference documentation

I hereby confirm the accuracy of all data and information in the above table.

Name: _____

Position: _____

Email: _____

Phone: _____

Signature: _____

Schedule 10 – Customers' Recommendations

The Bidder shall complete the following table and fill the contact details of no more than 3 recommending customers.

GSI may or may not approach any or all of these customers with inquiries regarding the Bidder, including its professionalism and level of service and support. GSI may also, at its sole discretion, approach with similar inquiries other customers of the Bidder (specifically including customers whose details were not submitted by the Bidder in its Bid).

1	Name of Customer:	Name of Representative:
	Phone:	Email:
	Brief description of the services provided by the Bidder to the customer:	

2	Name of Customer:	Name of Representative:
	Phone:	Email:
	Brief description of the services provided by the Bidder to the customer:	

3	Name of Customer:	Name of Representative:
	Phone:	Email:
	Brief description of the services provided by the Bidder to the customer:	

Part C (Envelope 3)

The Financial Proposal

Part C Contents

General Instructions

Part 1	The Bid Form
Part 2	Bid Price Summary
Part 3	Contract Price Breakdown
Part 4	Communication Costs
	1s Route Telemetry
	3s Route Telemetry

The Financial Proposal - General Instructions

1. The Financial Proposal consists of 4 parts:
 - a. Part 1 – The Bid Form, which includes the Bidder's declarations and undertakings with respect to its Bid prices.
 - b. Part 2 – Bid Price Summary, which includes the unit prices for major components of the Works, as well as optional components and their respective weights for the purpose of price evaluation.
 - c. Part 3 – Contract Breakdown, which includes a detailed price breakdown to be used by GSI at its discretion and subject to the terms set forth in the Contract.
 - d. Part 4 – Communication Costs for 1s round telemetry and 3s round telemetry.
2. The Bidder shall fill and complete all parts of the Financial Proposal in strict in accordance with the instructions set forth therein, and shall attach thereto all required documents.
3. In the event of a Successful Bid, all terms of payment shall be as specified in the Contract, including the Payment Milestones.
4. The prices of all parts of the Financial Proposal, including the items appear in the Bid Price Summary and the Contract Breakdown, shall reflect and include all costs to be incurred by the Bidder with regard to such item, directly or indirectly, including overhead and reasonable profit, and shall be the total, complete and only sums payable to the Bidder for such items, in accordance with the method of payment specified herein and on the Contract, in the event its Bid is declared the Successful Bid and awarded the Contract.
5. All prices, except communication prices, shall include 3 years of full warranty and maintenance services as set forth in the Contract.
6. All prices shall be stated in New Israeli Shekels and shall not include VAT.
7. The Bidder shall be deemed to have satisfied itself as to the correctness and sufficiency of all prices in the Financial Proposal.
8. **In the event of a Successful Bid, GSI shall only be bound by the lump sum Contract Price, as set forth in the Bid Form,** which shall be the total, complete and only sums payable to the Bidder for the execution of the Works, in accordance with the method of payment specified in the Contract, in the event its Bid is declared the Successful Bid and awarded the Contract. Unless otherwise stated in the Contract, the Contract Price shall cover all of the Contractor's obligations under the Contract and all things necessary for the proper execution of the Works.

- 9. All other prices or rates stated in the Financial Proposal shall not bind GSI, and GSI shall have the right (but not the obligation) to use them or refer to them for the purpose of evaluating change orders, in accordance with the Contract.**

The Financial Proposal – Part 1

The Bid Form

To The Ministry of National Infrastructure, Energy and Water Resources, The Geological Survey of Israel

We, _____

Of _____

Postal Address, Country of registration: _____

1. Hereby bid to perform the entire Works described in the Tender Documents, in consideration of the lump-sum Bid Price shown in the Financial Proposal – Part 2, which shall serve as the Contract Price in the event of a Successful Bid and shall be paid in accordance with the Payment Milestones, subject to the cost adjustments detailed in the Contract.
2. Without derogating from our undertaking above, we acknowledge and confirm that the evaluation of all Financial Proposals, for the purpose of determining the Bidders' Financial Score, shall be carried out by GSI only with respect to the Weighted Bid Price, as defined and specified in the Financial Proposal Part 2.
3. We further confirm and acknowledge that the Weighted Bid Price shall be used by GSI **only** for the purpose of Bids' evaluation, and shall not impose upon GSI to procure any optional items and/or components that are not included in the lump-sum Bid Price.

Our total lump-sum Bid Price for the execution of the Works is NIS _____, not including VAT.

Our total Weighted Bid Price for the purpose of Bids evaluation, is _____, not including VAT.

Note: The total Lump-Sum Bid Price and the total Weighted Bid Price are the figures stated in the Financial Proposal Part 2 (Bid Price Summary).

4. We confirm, acknowledge and undertake as follows:
 - a. The prices shall be exclusive of VAT.
 - b. The prices stated in this Bid Form shall prevail in the event of any discrepancies between these figures and those stated in the Financial Proposal Part 2 (Bid Price Summary).

- c. All submitted prices and currency portions shall be in non-negative values.
 - d. Unreasonable prices or price collusion may subject our entire Bid to rejection or disqualification.
 - e. GSI may (but is not obliged to) correct arithmetical errors in our Financial Proposal, at its sole discretion.
 - f. The Financial Proposal and each of the rates and unit prices proposed by the Bidder shall include all costs and expenses required for the execution of the Works, including, inter alia, design, construction, labor, supervision, materials, erection, maintenance, insurance, profit, taxes, duties, and all other risks, liabilities and obligations set out or implied in the Tender Documents.
 - g. All prices, except for communication prices, include 3 years of full warranty and maintenance services.
 - h. The Bid Price shall be indexed as set out in the Contract.
5. If our Bid is accepted, we agree to undertake to perform the entire Works strictly in accordance with the Tender Documents, in consideration of the lump-sum Contract Price in the table above.

Name _____: In the capacity of: _____

Signature: _____

Duly authorized to sign the Bid for and on behalf of: _____

Date: _____

LEGAL COUNSEL DECLARATION

I, the undersigned, in my capacity as legal counsel of _____ (the “**Company***”), hereby certify that Messrs. _____, executing the Bidding

Form on behalf of the Company, are authorized signatories of the Company, and may bind the Company for such purpose.

Name of legal counsel: _____

Date: _____

The Financial Proposal – Part 2

Bid Price Summary

1. The Bidder shall fill and complete the attached table.
2. The Bidder shall fill and complete its proposed prices for the main components of the Works in Part A (*Lump Sum Contract Price*), and for optional components in Part B (*Optional Items*).
3. Prices for all main components, except communication costs, shall include 3 years of warranty in accordance with the Contract.
4. In each row, the Bidder shall fill the unit price, and then the total price, which shall be equal to the unit price multiplied by the prescribed expected quantity. In the event the total price in any row is not equal to the unit price multiplied by the prescribed expected quantity, the unit price shall prevail, and GSI shall be entitled to correct the table accordingly.
5. The annual communication cost in Part A shall be equal to the sum of the 1s route annual communication cost and the 3s route annual communication cost in Part B. All communication costs shall be further detailed by the Bidder in Part 4 of this Financial Proposal, and Bidders' attention is drawn to the terms and provisions therein.
6. At the end of Part A, the Bidder shall fill and complete the total sum of all rows, **which shall serve as the lump sum Bid Price and the Contract Price in the event of a Successful Bid**
7. At the end of Part B, the Bidder shall then fill and complete its Weighted Bid Price, which shall be calculated in accordance with the formula set forth therein. **The Weighted Bid Price shall serve for the purpose of Bids evaluation only.**
8. GSI shall be entitled, subject to its sole judgment and discretion, to correct arithmetical errors.

Part A - Lump Sum Contract Price					
Cost Formula	Turn Key Project				
	Category	Description	Expected Quantity	Unit Price	Total Price
	Station Category	1. BB + SM Station	21		
		2. SM Station	86		
		3. Geodetic + SM Station	5		
		4. BB + SM + Geodetic Station	3		
	Construction Type	I. Construction SM	16		
		II. Construction BB+SM	15		
		III. Construction 50m borehole for BB+SM	1		
	Data-Hub		2		
	Annual Communication Costs		3		
Annual Costs of Maintenance and Support Services		3			
A	Total Lump Sum Contract Price				
Part B - Optional Items					
	Description		Price		
B	1 year of Expanded (beyond the 3 years) Maintenance and Support				
C	1 year of Expanded (beyond the 3 years) Warranty				
D	1s Route - Annual Communication Cost				
E	3s Route - Annual Communication Cost				
	Weighted Bid Price = A+0.75*B+0.75*C+2*D+2*E				

The Financial Proposal – Part 3

Contract Price Breakdown

1. The Bidder shall fill and complete the attached table, and shall detail therein the prices for the key components of the Works.
2. Prices for each item shall be inclusive of all associated all costs and expenses required for the execution of the Works, including, inter alia, design, construction, labor, supervision, materials, erection, maintenance, insurance, profit, taxes, duties, and all other risks, liabilities and obligations set out or implied in the Tender Documents, but excluding VAT.
3. Prices for each item shall be deemed to include 3 years of warranty in accordance with the Contract.
4. All prices specified in the attached table shall bind the Bidder for the purpose of changes in accordance with the Contract. **However, the attached table, including all prices therein, shall not bind GSI in any way, and shall serve only as a reference for evaluation of changes in accordance with the Contract.**

Key Components		
Category	items	Unit Price
Station Instrumentation and Components	Broadband Seismometer	
	Strong Motion Accelerometer	
	Data logger	
	Combined Data logger + Accelerometer	
	GPS Cable + Antenna	
	Telemetry 1 Modem + Antenna	
	Telemetry 2 Modem + Antenna	
	Solar Panels	
	Batteries	
	Charging Controller	
	BB+SM Station – Complete Cable Set	
	SM Station – Complete Cable Set	
	Geodetic + BB+SM Station – Complete Cable Set and adapter Set.	
	Geodetic + SM Station – Complete Cable and adapter Set	
	GNSS receiver and controller	
	High precision GNSS antenna	
	GNSS firmware	
Data Hub	GNSS Monumentation	
	Acquisition Server	
	Processing Server	
	Operator Work Station	
	Analyst Terminal	
	24’’ Display (or larger)	
	Seismic Acquisition and Processing Software	
	Telemetry Hub	
	GNSS software	
Additional Services	Permitting	
	Integration	
	Deployment of Stations	
	3 years of + Maintenance Services	
	3 years Covering Full Telemetry Costs	

The Financial Proposal – Part 4

Communication Costs

1. The Bidder shall fill and complete the attached tables, and shall detail therein the applicable prices to be paid to telemetry providers.
2. The Bidder shall attach to each table **external documentation issued by the telemetry providers** confirming the accuracy of the presented rates and costs.
3. The telemetry prices stated in the tables shall be used for the purpose of Bids evaluation, and the determination of the Weighted Bid Price and shall **not** form part of the Bid/Contract Price.
4. **In the event of a Successful Bid:**
 - (a) All telemetry costs associated with the System during the Deployment Period and the Maintenance Period shall be borne solely by the Contractor.
 - (b) Telemetry costs during the Optional Maintenance Period or the Optional Warranty Period, if exercised, shall be paid by GSI.

Communication Costs for 1s Route Telemetry

A	B	C	D	E	F=D*E
Station Category	Telemetry Mean Sub-Category	Required Bandwidth per station	Annual Price per station	Number of Stations	Total Price
Total annual cost of 1s Route telemetry					

Communication Costs for 3s Route Telemetry

A	B	C	D	E	F=D*E
Station Category	Telemetry Mean Sub-Category	Required Bandwidth per station	Annual Price per station	Number of Stations	Total Price
Total annual cost of 3s Route telemetry					

Part D (Envelope 4)

Foreign Contractor's Industrial Cooperation Undertaking

This Envelope shall be submitted sealed, and will be opened by the appropriate authority only upon completion of evaluation of Envelopes 1,2 and 3.

Bidders shall provide all necessary information in their Bid on the Foreign Contractor Industrial Cooperation Undertaking.

Attachment A is not to be submitted as part of the Proposal. Attachment A shall be submitted only by the Successful Bidder to the Industrial Cooperation Authority (ICA) in accordance with ITB Clause 6.

Foreign Contractor's Industrial Cooperation Undertaking

This form has to be filled out, duly signed and submitted by each Bidder together with the Bidder's Bid in response to the Invitation to Bid referred to below. Failure to comply with this requirement may disqualify the Bidder's Bid. The Bidder shall be referred to herein as the "Contractor".

Envelope 4 to Invitation to Bid no. 3/2015, issued by The Ministry of National Infrastructure, Energy and Water Resources, The Geological Survey of Israel dated _____, For the Procurement, Deployment and Maintenance of a Real Time Seismic Network with Earthquake Early Warning Compatibility

.

Foreign Supplier's Industrial Cooperation Undertaking As per the Mandatory Tenders Regulations (Mandatory Industrial Cooperation), 5767-2007 (hereinafter the "Regulations")

We, (name of Contractor) _____

_____ having offices at (full address) _____

commit to the State of Israel, that in the event of winning the above mentioned Part 1- Invitation to Bid (hereinafter referred to as the "**Tender**"), we shall put into practice Industrial Cooperation in Israel, in accordance with the outlined below:

1. We are aware of the fact that this Industrial Cooperation Undertaking is provided pursuant to the Regulations and that the terms used herein shall have the same meanings as ascribed to them in the Regulations.
2. The extent of Industrial Cooperation that shall be carried out by us, shall equal at least 35% (for suppliers of non-excluded products from GPA member states, the extent of industrial cooperation is 20%), of the value of the Contract or of the transaction, that will be concluded with us, in the event of winning this tender in whole or in part. With respect to the foregoing, the value of the Contract or transaction shall also include the following: (i) the exercise of any option related thereto; (ii) any follow-on procurement in excess of USD 500,000 that is made within a period of five years from the date of the original contract and (iii) any acquisition of spare parts, training activities, maintenance, technical assistance, guarantees etc. that will be procured from us, in connection with the main services and/or products acquired from us, within the framework of the Tender.
3. We are aware that our Industrial Cooperation Undertaking may be fulfilled by using any of the following means: local subcontracting, investments, Know-How transfer, R&D, acquisition of Israeli products, work or services, or by any other means if written approved in advance by the Industrial Cooperation Authority ("ICA"), but excluding those listed in clause 10 below.

4. (a) Within the framework of our Industrial Cooperation Undertaking we commit to carry out local subcontracting in a value not less than 20 % of the Contract/transaction value and additionally, carry out Industrial Cooperation in one or more of the other ways set forth in clause 3 above, in a value not less than 15 or 0 % (subject to the rule outlined in clause 2 above) of the contract/transaction value.
(b) We are aware that once we've committed to carry out local subcontracting in the value outlined above, at the end of work done, we'll have to provide the Buyer and the ICA with a signed by a CPA report, indicating the value and nature of local subcontracting actually materialized.
5. We are aware of that in accordance with the provisions of the Tender, we are required to provide in conjunction with our price proposal and this duly signed undertaking form, a detailed fulfillment program with respect to our Industrial Cooperation Undertaking, in the event that we win the Tender, as further described below in clause 11.
Failure to provide the fulfillment program as required will disqualify our bid.
6. We are aware that if we win the Tender, the ICA will be in charge on behalf of the Government of Israel with the appraisal, classification and monitoring of the hereby attached fulfillment program.
7. Our Industrial Cooperation Undertaking shall be carried out within 3 years as of the effective date of the Contract/transaction the subject of the Tender. The ICA may upon request, approve an extended period of time for the fulfillment of our Industrial Cooperation Undertaking, considering the nature of Industrial Cooperation to be implemented or the complexity of the contract/transaction. In any case, our undertaking for Industrial Cooperation remains in force until completed.
8. The records of ICA pertaining to the execution of our Industrial Cooperation Undertaking shall be *prima facie* evidence in any matter relevant to the fulfillment of this requirement in the Tender.
9. We are aware that in order to value the extent of Industrial Cooperation activities carried out by us pursuant to this Industrial Cooperation Undertaking the following rules shall apply:
 - (a) New or incremental procurement by the Contractor of Israeli products or services, compared to the Contractor's average extent of procurements carried out in the last 3 (three) years, or the award of orders for local subcontracting, both comprising a level of Israeli added value of at least 35%, shall result in Industrial Cooperation credits in a value of 100% of the business deal nominal price.
 - (b) In some instances, subject to the rules to be published and on a case by case basis, the ICA will be entitled to grant credits exceeding 100% of the business deal price, by virtue

of Industrial Cooperation activities of a unique nature, or activities implemented with preferred industry sectors and regions.

10. Furthermore we are aware that:

- (a) Any grant that was provided by the Government of Israel as part of a plan for an investment, acquisition or funding of a R&D project shall not be taken into account for the purpose of calculating our Industrial Cooperation Undertaking.
- (b) Expenditures such as: agent commissions, personnel expenses, office expenses and other expenses that were incurred for the purpose of promoting our sales in Israel, as well as Government Of Israel Furnished Equipment (hereinafter the "GOIFE"), shall not be recognized as Industrial Cooperation activities.
- (c) Purchase of shares of Israeli companies to which the Securities Law 5728-1968 applies, to the extent in which the purchaser is not deemed to be "a party with an interest" as defined in the said Law, will not be considered as Industrial Cooperation.
- (d) Any activity of ours with the Israeli industry that was carried out prior to being awarded with the Buyer's contract shall not be eligible for crediting purposes.
- (e) Any Industrial Cooperation activity to be carried out by us which is not part of our fulfillment program will be subject to ICA's prior approval.
- (f) Activities of the Supplier with Israeli industry due to which credits are to be requested, but at the same time are to incur offset/Industrial Cooperation obligations on the Israeli industry, will be subject to the ICA's earlier written approval on a case by case basis, otherwise, same activities shall not be eligible for crediting purposes.
- g) The ICA shall be entitled, in the event that the Supplier failed to fulfill its obligations as defined in this Industrial Cooperation Undertaking, after having given the Supplier the opportunity to voice its claims to the ICA, to determine, with the consent of the Accountant General of the Ministry of Finance and in consultation with the Minister that it believes is connected with the matter, to determine that the Supplier did not comply with its Industrial Cooperation Undertaking, and that the Supplier shall not be entitled to engage in supply contracts with a Government Entity for a period that shall not exceed 5 years.

11. Aimed at demonstrating our serious intentions regarding the fulfillment of our Industrial Cooperation Undertaking, we commit to take the following steps:

- (a) To furnish along with the submission of our bid or price proposal (the latest between the two), a fulfillment program for our Industrial Cooperation Undertaking, if we win the above mentioned Tender. We will use Attachment A to specify the program including as many details as possible of subjects for Industrial Cooperation with the Israeli industry,

implementation mile stones and time frame of completion, having regard to activities as outlined in clause 3 above.

(b) Part of that program will be the appointment and written notification of a competent person to act as our Industrial Cooperation Coordinator (ICC), who will be responsible on our behalf for the fulfillment of this Industrial Cooperation Undertaking, for managing the activities in this regard and serve as our contact with the ICA, with the Israeli industry and other business entities. The appointee's name and position in our organization and all other complementary information will be fully outlined in the program submitted.

In case the ICC is replaced at any time in the future, we are committed to notify the ICA within 72 hours from the time the replacement took place.

(c) To take all conventional measures, including the use of consultation services, conducting a professional survey in Israel, visiting business entities in Israel and vice versa, or any other means aimed at the examination of business feasibilities in Israel.

(d) Once every year (on January 31) and until our undertaking is fully satisfied, we shall furnish the ICA with written - in a format to be set by the ICA - reports, having regard to the fulfillment of our Industrial Cooperation Undertaking for Industrial Cooperation, which will include the following data:

Full identifying details of orders for Israeli products, work and services, local subcontracts, investments or any other Industrial Cooperation activities carried out during the reporting period, subject to the rules set forth in clause 9 above.

Any additional information that might be required by the ICA, regarding activities we've carried out aimed at the fulfillment of our undertaking.

Non-compliance with any of the requirements outlined in clause 11 will be deemed as a violation of our undertaking.

12. All communications on our behalf having regard to the fulfillment of this undertaking will be sent to the ICA at the following address:

Industrial Cooperation Authority
Ministry of Economy
86 Menachem Begin Rd.
P.O. Box 36049
Tel Aviv 67138, Israel.
Tel: (972) 3 7347514 Fax: (972) 3 7347639

and additionally, for U.S. and Canadian companies:

The U.S. Director - ICA
Government of Israel Economic Mission
800 Second Ave. 17th Floor,
New York, NY 10017, U.S.A.
Tel: (212) 499 5741, Fax: (212) 499 5745

Signature of an authorized officer on behalf of the submitter of the Contractor:

If the bid is submitted by an importer and/or a leasing services provider, this document should be signed by an authorized officer on behalf of the foreign manufacturer of the goods or services to be supplied pursuant to the Tender.

Name: _____ Title: _____
Phone No.: _____ Fax No: _____
Signature: _____ Date: _____
Email: _____ Web Site: _____

The following Attachment A is not to be submitted as part of the Proposal. Attachment A shall be submitted only by the Successful Bidder to the ICA in accordance with ITB Clause 6.

Attachment A - Detailed Fulfillment Program to the Industrial Cooperation Undertaking

Related to Invitation to Bid No. 3/2015 issued by The Ministry of National Infrastructures, Energy and Water Resources, The Earth and Marine Research Administration and The Geological Survey of Israel Dated _____

Pursuant to clause 11(a) of the above-mentioned document, we (full company name) _____, hereby submit our Fulfillment Program, that will serve as our initial draft, aimed at the satisfaction of our above-mentioned undertaking, as follows:

1. In accordance with clause 3 of our undertaking, our fulfilment activities will be in the fields of one or more of the following Industrial Cooperation Categories:

- | | |
|---|---|
| ☐ Local Subcontracting

☐ Investments

☐ Know-How transfer | ☐ R&D Orders

☐ Acquisition of Israeli Products, Work or Services

☐ Other |
|---|---|

2. Anticipated / Approximate dates of the following mile stones implementation:

- a. Conducting an Israeli industry survey:
- b. Projects and partners selection:
- c. Starting date of IC activities implementation:
- d. Full program accomplishment:

3. Following is our prospective Fulfillment Program.

Industrial Cooperation Category	Transaction Description	Estimated Timeframe		Names of Israeli Entities Involved	Transaction Value	Israeli entity's Contact Person info.
		Start Date	Due Date			

Total Fulfillment Value						

(Additional records, should be registered in the same table format).

4. Following is the info of our Industrial Cooperation Coordinator (ICC)

ICC. Name: _____ Title _____

Full Address: _____

Tel. no _____ Fax no _____

Mobile (Cell) _____ Email _____

Signature of an authorized officer on behalf of the Supplier

Name: _____ Title: _____

Signature _____ Date: _____

Note: For further clarifications or assistance in filling out this document, feel free to contact the corresponding ICA representative, to be found at: www.ica.gov.il

INDUSTRIAL COOPERATION AUTHORITY

Ref. No.: _____

Company Information

Company name: _____

Parent company: _____

Ultimate Parent: _____

Annual Sales (Company): _____

Annual Sales: (Parent Co.): _____

Number of Employees (Company): _____

Number of Employees (Parent Co.): _____

Main products: _____

Company's Internet Web Site: _____

Industrial Cooperation Coordinator (ICC):

Name: _____ Title: _____

Address: _____

Tel: _____ Fax: _____

E mail: _____

Israeli Agent/Rep.:

Co. name: _____ Contact person: _____

Address: _____

Tel: _____ Fax: _____

E mail: _____

Remarks: _____

(Additional records should be registered in the same table format).

Name: _____ Title: _____

Signature: _____ Date: _____

Note: For further clarifications or assistance in filling out this document, feel free to contact the corresponding ICA representative, to be found at: www.ica.gov.il

Volume 2
The Contract

CONTRACT

Agreed and stipulated in Jerusalem this ____ day of ____, 201__

**By and Between The Ministry of National Infrastructures, Energy and
Water Resources**

The Earth and Marine Research Administration

The Geological Survey of Israel

30 Malchey Israel St., Jerusalem

("GSI")

On one part

And

(the "Contractor")

On the other part

(GSI and the Contractor shall be referred to as the "**Parties**")

WHEREAS following two Government decisions of the State of Israel, GSI is promoting the deployment of a real time seismic network with earthquake early warning compatibility; and

WHEREAS the Government decisions stipulated, inter alia, that the effective earthquake early warning shall be between 1 second and 30 seconds. In places that the distance from the earthquake is lower than 25km, no early warning shall be provided.

WHEREAS GSI has published Tender No. 3/2015 for the procurement, deployment and maintenance of a real time seismic network with earthquake early warning compatibility (the "**Tender**"); and

WHEREAS the Contractor participated in the Tender process and submitted a Bid, which was declared by GSI Tender Committee a Successful Bid; and

WHEREAS based on the Contractor's Proposal in the Tender and the Contractor's representations, warranties and undertakings and in the Tender and in this Contract, GSI wishes to engage the Contractor for a turn-key project, which includes the design, procurement, deployment and maintenance of a real time seismic network with earthquake early warning compatibility, as set forth in in this Contract, including the Technical Specifications; and

WHEREAS the Contractor warrants that it has the knowledge, resources, manpower, technology, experience and financial ability to execute the Works in strict accordance with this Contract.

NOW, THEREFORE the Parties declare, agree and stipulate as follows

1. DEFINITIONS

All terms used in this Contract shall have the meaning ascribed thereto herein:

Authorized Contact(s)	A representative of GSI, designated thereby, who will be the exclusive point of contact with the Contractor with respect to technical support and maintenance services of the System.
Contract	This Contract, including all Schedules and Appendices thereto.
Contract Period	The period commencing upon the Effective Date and ending upon issuance of the Final Acceptance Certificate.

Contract Price	As defined in Clause 14.1.
Contractor's Equipment	All apparatus, machinery, vehicles and other things required for the execution of the Works.
Contractor's Personnel	All personnel whom the Contractor utilizes on Site, including employees of the Contractor and of each Subcontractor, and any other personnel assisting the Contractor in the execution of the Works.
Contractor's Representative	The person appointed as such in accordance with Clause 4.2.
Deployment Completion Certificate	A certificate given pursuant to Clause 12.3, approving that the System is fully deployed and operative and stating the date on which the System has been taken over by GSI.
Effective Date	The date on which GSI executed this Contract.
Failure	Any verifiable and reproducible error, fault, defect, deficiency or malfunction of the System or the System Components to substantially conform to the Technical Specifications for such System or the System Components (as applicable). However, "Failure" shall not include any such error, fault defect, deficiency or malfunction that is caused (i) due to modifications, alterations and repairs to the System not made by the Contractor, except as authorized in writing by the Contractor, (ii) due to deliberate misuse or improper actions (or omissions) of GSI; or (iii) vandalism or theft approved as such in accordance with Sub-Clause 15.2.4.
Failure Corrections	Either a replacement , modification, upgrade, addition to, or deletion from the System that substantially conforms such System and any and all System Components to the Technical Specifications, or a procedure or routine that, when observed in the regular operation of the System, eliminates any material adverse effect of a Failure.
Final Acceptance Certificate	The certificate given in accordance with Clause 21 acknowledging the completion of the Works

(including in the Maintenance Period).

Final Statement

As defined in Clause 14.5.

GSI

As defined in the preamble to this Contract, its legal successors, anyone on its behalf and any other entity duly appointed by the State of Israel for the matter of this Contract..

Intellectual Property

Any and all intellectual property rights in or to any materials or technology, including, without limitation, any and all (i) copyrights, trademarks, trade secrets, know-hoe, (ii) issued or subsequently issued patents, (iii) pending or subsequently filed patent applications, (iv) patent applications embodying any technology, (v) additions, continuations, continuations-in-part, divisions, reissues or extensions based on any technology, (vi) patent or industrial property rights obtained from any of said patent applications, (vii) trade secrets relating to any technology and (viii) copyrights in materials related to any technology in each case prepared, developed, owned or licensed by the Contractor or GSI, including, without limitation, any of the foregoing which are acquired by license or otherwise from any other party.

ITB

The Invitation to Bid Part 1 – Instructions to Bidders

Laws

The legislation, statutes, ordinances, codes and regulations as enacted by the State of Israel, judicial decisions and any by-laws, standards, codes, regulations and precedents enacted by the relevant authorities or municipalities, as modified, amended, replaced or created from time to time.

Maintenance and Warranty

As defined in Clause 15.3.1.

Period**Maintenance Release**

Updates, patches, bug fixes, Failure Corrections, modifications, changes or Work Around.

Maintenance Security

The Security submitted by the Contractor in accordance with Clause 17.2.

Maintenance Services

All services to be provided under Clause 15, including Failure Corrections referred to in Clause 15.5, the provision of routine maintenance activities referred to in Clauses 15.1, 15.3, the provisions of Maintenance Releases referred to in Clause 15.6, and taking all other actions and measures to ensure that the System (including all System Components) shall substantially conform to the requirements set forth in the Technical Specifications.

Master Schedule

The time and activities schedule submitted by the Contractor which has to comply with the Project Milestones and approved by GSI in accordance with Clause 10.2, as amended from time to time in accordance with the Contract.

Optional Maintenance Period

As defined in Clause 15.1.2.

Optional Warranty Period

As defined in Clause 15.1.2.

Performance Security

The Security submitted by the Contractor in accordance with Clause 17.2.

Permanent Resolution

A resolution of a software problem so that the System or any of the System Components substantially conforms with the specifications set forth in this Contract, and restores the service and operation of the affected System without any loss of functionality.

Problem Report

A notice given by one of the Parties with regard to a fault or malfunction of the System (in full or in part)

or any of its components or features.

Project

The design, procurement, deployment and maintenance of a real time seismic network with earthquake early warning compatibility , as detailed in this Contract.

Project Milestones

Each of the milestones listed in Appendix E (*Project Milestones*)

Revision

A subsequent release of the Software's release denoted by a change in the Software's release number to the right side of such release number decimal point. Revisions may include, but not be limited to, Failure Corrections. Revisions would not include new functionality, features or options.

Reliable Seismic Data Return

Shall mean seismically valid data recorded in the Stations, fully transmitted to the Data Hubs through telemetry, and deciphered and processed correctly in the Data Hubs, all pursuant to the requirements set forth in the Technical Specifications.

Schedule(s)

The document(s) attached to this Contract and named as such.

Security

An autonomous, irrevocable security issued in accordance with Clause 17.1 and 17.2 by a licensed Israeli bank or a licensed Israeli insurer.

Seismic Instruments

The Broadband Seismometer, Strong Ground-Motion Accelerometer and Data logger, all as defined in Appendix B (*Technical Specifications*).

Site or Sites

An area which surrounds the location of a Station and the Hub used or to be used by the Contractor for installation and deployment of the System (or any part thereof) and execution of the Works. "**Sites**" shall include two or more Sites.

Station or Stations

One of two types – (i) a Station located in existing structure which includes a seismic sensor, a data

	logger and telemetry equipment, or (ii) a Station located in open areas which includes a seismic vault constructed by the Contractor, a seismic sensor, a data logger, telemetry equipment and related equipment, which in both types of Stations records, digitizes and transmits the ground motion sensed by the seismic sensor, all as further detailed in the Technical Specifications. "Stations" shall include two or more Stations from both types.
Subcontractor	Anyone who is a subcontractor, supplier or manufacturer of the Contractor for any part of the Works, as defined in Clause 8.
System	A real-time nation-wide seismic monitoring system with earthquake early warning compatibility, which includes all Stations, Seismic Instruments, Data Hubs, telemetry means and equipment, which shall be designed, supplied, deployed, installed and maintained by the Contractor in accordance with the Technical Specifications and the Contract at locations set by GSI.
System Components	Things of all kinds to be provided and incorporated in the System and the Works by the Contractor, including without limitation all structures, materials, machinery, equipment, devices, monitoring instruments, Seismic Instruments, hardware, and all other components of the System.
System Documents	The plans, drawings, calculations, software, manuals, and other documents of a technical nature supplied by the Contractor in accordance with the Contract.
System Warranty	As defined in Clause 15.2.
Technical Specifications	Appendix B to this Contract.
Version	A subsequent release of the Software's release number to the left of the release number decimal point. Versions may include, but not be limited to, Failure Corrections, and major changes to existing functionality. Versions may include new

functionality, features or options.

Work Around

A temporary resolution to a software problem that restores the service and operation of the affected System or System Components, without any loss of functionality. A Work Around may consist of a patch, bypass or instructions on how to avoid the Failure. A Work Around shall be capable of being deployed, without interruption of service or operation of the System.

Works

The design, supply, installation, deployment and maintenance of the System, which are to be carried out in accordance with the Technical Specifications and the Contract.

2. GENERAL RULES

2.1. Interpretation

The following rules apply unless the context requires otherwise:

- 2.1.1. In any event that a word or phrase is defined, its other grammatical forms have a corresponding meaning.
- 2.1.2. In any event that a word or phrase is not defined, it shall have the same definition as given to it in the **ITB**.
- 2.1.3. Any reference to Clause or Appendix is to a clause of, or Appendix to, this Contract.
- 2.1.4. Any reference to conduct includes an omission, statement or undertaking, whether or not in writing.
- 2.1.5. Mentioning anything after includes, including, for example, or similar expressions, will not limit the applicable subject to the mentioned included examples.

2.2. Contract Documents

List of Appendices of the Contract:

- 2.2.1. Appendix A - The Contractor's Proposal in the Tender ***[to be attached to the Contract following award]***
- 2.2.2. Appendix B – The Technical Specifications
- 2.2.3. Appendix C - Stations' Data
- 2.2.4. Appendix D – Master Schedule ***[to be attached to the Contract following approval by GSI]***

- 2.2.5. Appendix E - The Project Milestones
 - 2.2.6. Appendix F - The Payment Milestones
 - 2.2.7. Appendix G - Performance Security *[to be attached to the Contract following approval by GSI]*
 - 2.2.8. Appendix H – Confirmation of Insurance *[to be attached to the Contract following approval by GSI]*
 - 2.2.9. Appendix I – Safety Requirements
 - 2.2.10. Appendix J – Acceptance Tests
 - 2.2.11. Appendix K – Support and Maintenance Services
- 2.3. The Appendixes constitute integral part of this Contract and shall have binding effect.
- 2.4. **Priority of Documents**

In any case of contradiction between Contract and the Technical Specifications in connection with the technical matters, the Technical Specifications shall prevail. In all other matters, the Contract shall prevail.

3. **CONTRACTOR'S REPRESENTATIONS AND WARRANTIES**

- 3.1. **The Contractor represents and warrants as follows:**
- 3.1.1. The Contractor is a company duly organized, validly existing and in good standing under the laws of its domicile.
 - 3.1.2. The Contractor has all requisite corporate powers to carry out its obligations under the Contract and its engagement under the Contract has been properly and duly authorized by its corporate authorities.
 - 3.1.3. The execution and the fulfillment of the provisions of the Contract in their entirety, on time and precisely, do not conflict with, violate, create legal impediments under or breach the terms of the governing documents of the Contractor or any agreements and laws binding upon the Contractor.
 - 3.1.4. The Contractor has fully familiarized itself with all aspects of the Works including the Technical Requirements and has all the knowledge, experience, qualifications and ability (specifically technical and financial qualifications and ability) to carry out the Works in accordance with the terms of the Contract and any Laws.

- 3.1.5. The Contractor has conducted a full review and examination of all aspects of the Intellectual Property in connection with the System to its satisfaction and accordingly accepts responsibility for the fact that the System and the execution of the Works or any part thereof shall not involve an infringement of any Intellectual Property or other right belonging to any third party.

3.2. Validity of Representations and Warranties

- 3.2.1. The Contractor undertakes that each of the representations and warranties including those given within the Contractor's Proposal in the Tender and the representations and warranties set forth in Clause 3.1 above, shall be true, correct and not misleading throughout the Contract Period and the execution of the Works.
- 3.2.2. The Contractor shall immediately notify GSI upon becoming aware that a representation, warranty or acknowledgement it has given during the Tender process or in the Contractor's Proposal in the Tender has become untrue or misleading.
- 3.2.3. The Contractor acknowledges that GSI has entered into this Contract in reliance on the Contractor's warranties and representations.

4. THE CONTRACTOR

4.1. General Provisions

- 4.1.1. The Contractor shall execute the Works in a highly professional and diligent manner, in strict accordance with the requirements, instructions and standards set forth in the Contract, including the Technical Specifications and in accordance with the applicable Laws, and international and local standards. In the absence of specific requirements, instructions and standards, the Works shall be executed in accordance with good international industry practice.
- 4.1.2. The Contractor shall execute the Works in strict accordance with GSI's instructions, including with instructions given by any engineer, supervisor, manager or other entity appointed by GSI to manage and/or supervise over the Works.
- 4.1.3. Without derogating from Clause 4.1.1 above, the Contractor shall execute the Works, in strict accordance with the "General Specifications for Construction Works" issued by the inter-ministerial committee for standardization (widely known in Israel as "the blue book").

- 4.1.4. The Contractor shall provide all Contractor's Equipment and Contractor's Personnel necessary to execute and complete the Works in accordance with the Contract.
- 4.1.5. Whenever required by GSI throughout the Contract Period, the Contractor shall submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of any part of the Works, and shall notify GSI of any changes to such arrangements or methods.
- 4.1.6. The Contractor shall implement a quality assurance program to demonstrate compliance with the requirements of the Contract, and shall complete the Works in accordance with such program.
- 4.1.7. At GSI's request, the Contractor shall attend meetings pertaining to the Works with any relevant authority.

4.2. Contractor's Representative

The Contractor shall appoint a representative and shall give such person all authority necessary to act on the Contractor's behalf under the Contract and to bind the Contractor for all matters related to the Contract.

4.3. Coordination

- 4.3.1. The Contractor shall be responsible for the coordination and proper execution of the Works, including but not limited to coordination of all Subcontractors and Site owners to the extent required.
- 4.3.2. The Contractor shall cooperate fully and in a professional manner with GSI, the State, government and municipal authorities, utility owners or any third party, to the extent required or as directed by GSI, in connection with the execution of the Works.

5. THE WORKS

5.1. General Description

- 5.1.1. The Works are described in detail in the Technical Specifications, and will include:
 - 5.1.1.1. Detailed design of the System and all of its components;
 - 5.1.1.2. Construction of 29 seismic vaults' structures;

- 5.1.1.3. Manufacture, supply and installation of Seismic Instruments;
- 5.1.1.4. Deployment of telemetry and communication network, including all equipment related thereto;
- 5.1.1.5. Installation of instruments and System components at the Data Hubs;
- 5.1.1.6. Installation of an acquisition software;
- 5.1.1.7. Installation of an earthquake early warning system (EEWS) software;
- 5.1.1.8. Integration between all System components;
- 5.1.1.9. Maintenance and warranty.**
- 5.1.2. All Works shall be executed in a highly professional and diligent manner, in strict accordance with the Technical Specifications and the Contract, and shall be completed in accordance with the Project Milestones.

5.2. Standard of Execution

- 5.2.1. The Contractor shall be solely responsible for the proper and timely completion of the Works or any part thereof, in accordance with the Project Milestones and the Master Schedule.
- 5.2.2. All Works shall be carried out by highly experienced professionals, holding all required licenses and certifications (if and to the extent applicable).
- 5.2.3. The Contractor shall be solely responsible for the international and domestic transport and freight of all System Components and other things required for the completion of the Works.
- 5.2.4. The Contractor shall be solely responsible for the due and proper installation and full deployment of the System, including all System Components, and shall use all means, methods, techniques, sequences and procedures for the execution of the Works in accordance with the Project Milestones and the Master Schedule.
- 5.2.5. The Contractor shall be responsible for the correctness of the position, levels, dimensions and alignment of all parts of the System and for the provision of all necessary instruments, appliances and labor in connection therewith.

- 5.2.6. If, at any time before issuance of Deployment Completion Certificate, any error shall appear during the progress of the Works, or any error appears or arises in the position, levels, dimensions or alignment of all parts of the System, the Contractor shall, at its own cost, rectify such error.

5.3. Permits and Consents

- 5.3.1. The Contractor shall, at its own cost, obtain, maintain and renew all permits, licenses or consents required by any applicable Laws in connection with the supply and deployment of the System (or any part thereof) and the execution of the Works and its other obligations under this Contract. Without derogating from the generality of above, the Contractor shall at its own cost, obtain, maintain and renew all permits, licenses or consents required for the required construction works, as detailed in the Technical Specifications, including building permits.
- 5.3.2. Without derogating from the Contractor's full responsibility for obtaining all permits, licenses or consents, GSI has filed a request in accordance with Section 266E of the Zoning and Planning Law to exempt the construction works detailed in the Technical Specifications from the requirement to obtain a building permit. ***There is no guarantee that this request will be approved prior to the commencement of the Works, if at all.***
- 5.3.3. If there is any discrepancy discovered between the statutory plans and the Contract documents, the Contractor will promptly advise GSI.
- 5.3.4. The Contractor shall indemnify and hold GSI and GSI personnel harmless against and from the consequences of any failure to obtain such permits, licenses or consents.
- 5.3.5. Without derogating from the above, the Contractor shall ensure that all components of the System (whether hardware, software or firmware) supplied and deployed are duly licensed in accordance with all relevant Laws and that they conform to applicable standards, throughout the Contract Period.
- 5.3.6. Without derogating from the obligations of the Contractor, GSI shall provide reasonable assistance to the Contractor in identifying and obtaining permits, licenses or consents, provided that GSI shall not be required to incur any costs or to assume any liability or responsibility as a result of providing such assistance.

6. Sites

6.1. General

- 6.1.1. The Contractor shall install and deploy the System (or any part thereof) in accordance with the locations of the Stations ascribed by GSI set forth in Appendix C (*Stations Data*).
- 6.1.2. Without derogating from Sub-Clause 6.1.1, in the event the Contractor believes, based on its experience, that a specific location of the Station ascribed by GSI might have a material adverse effect on the performance of the System, it shall inform GSI in writing, with professional reasoning.

6.2. Sites Conditions

- 6.2.1. The Contractor hereby confirms that it has reviewed and checked all Sites and their applicable surroundings, including the physical and subsurface conditions thereof, the statutory plans of the Sites, and is familiar with the terms of the Station Data and all the Laws relating to the construction of seismic vaults' structures and all aspects thereof.
- 6.2.2. Without derogating from Clause 6.1.1, the Contractor has satisfied itself as to any factors that may be deemed to affect the carrying out of its obligations under the Contract, including but not limited to:
 - 6.2.2.1. the form and nature of the Sites, including the sub-surface conditions;
 - 6.2.2.2. the hydrological and climatic conditions;
 - 6.2.2.3. the extent and nature of the Works and materials necessary for the execution and completion of the Works, and the remedying of any defects; and
 - 6.2.2.4. the means of access to the Sites and the accommodation it may require.
- 6.2.3. Without derogating from Clause 4.5.4, pursuant to such review and notifications and prior to the installation of the System, the Contractor shall be deemed to have confirmed that all the Sites, are suitable for the purpose and fulfillment of all its obligations and undertakings under the provisions of the Contract, including the Stations Data.

6.3. Use of Sites

- 6.3.1. GSI shall give the Contractor access to and right of use of any part or parts of the Sites in accordance with the Master Schedule, to the extent required for the execution of the Works.
- 6.3.2. The Contractor shall have no rights of ownership, leasehold rights or any other rights, including easement or other property rights or other rights under any applicable Laws with respect to the land of the Sites, other than the right to use the Sites for the purposes of executing the Works during the Contract Period and subject to its terms and conditions.
- 6.3.3. The Contractor shall use the Sites only for the purpose of performing the Contract. The right of use of the Sites may not be exclusive to the Contractor and the property owners or GSI may give such rights simultaneously to the Contractor and third parties.
- 6.3.4. During the Contract Period, including the construction period, the Contractor shall keep the Sites where Works are being executed free from all unnecessary obstruction, and shall store or dispose of any Contractor's Equipment or surplus materials.
- 6.3.5. During the Contract Period, including the construction period, the Contractor shall clear away and remove from the Sites any of its or its Subcontractors' wreckage, rubbish, waste or temporary works no longer required.

6.4. Antiquities

- 6.4.1. The Contractor shall, upon discovery of any fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Sites, promptly give notice to GSI, who shall issue instructions for dealing with it.
- 6.4.2. All such findings shall be placed under the care and authority of GSI. In no circumstances shall the Contractor have any rights to such findings.
- 6.4.3. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings.

6.5. Protection of the Environment

- 6.5.1. The Contractor shall comply with the statutory plans and any applicable Laws regarding the environment and protection of nature and take all reasonable steps to protect the environment (both on and off the Site).

- 6.5.2. The Contractor shall take all necessary steps to limit damage and nuisance to people, wildlife and property resulting from noise, radiation and other results of its operations.

7. STAFF AND LABOR

7.1. General

- 7.1.1. The Contractor shall make its own arrangements for the proper engagement of all staff and labor, local or otherwise.
- 7.1.2. The Contractor shall employ (or cause to be employed) only persons who are careful and appropriately qualified, skilled and experienced in their respective trades or occupations.
- 7.1.3. The Contractor shall strictly and fully comply with all labor Laws pertaining to the employment of its employees who are engaged in the Project, and shall be fully responsible for its employees' payment (including social benefits), housing, feeding and transport.
- 7.1.4. Unless specifically agreed by GSI, no member of the Contractor's personnel shall remain on Site overnight, other for the purpose of guarding the Site or the Works.
- 7.1.5. The Contractor shall at all times ensure that it has sufficient, suitable and qualified personnel in Israel in sufficient number to undertake the responsibilities, obligations and undertakings of the Contractor hereunder.

7.2. Contractor's Superintendence

The Contractor shall provide all necessary superintendence during the performance of the Contract. Such superintendence shall be given by a sufficient number of persons having adequate qualifications (if required) and knowledge of the operations to be carried out (including the methods and techniques required and methods of preventing accidents) for the satisfactory and safe execution of the Works.

8. SUBCONTRACTORS

- 8.1. The Contractor shall not be entitled to subcontract the execution of all of the Works. In addition, the Contractor shall not be entitled to subcontract the design and manufacture of the System as a whole.
- 8.2. The Contractor shall not be entitled to subcontract the execution of part of the Works, without the prior written consent of GSI, such consent shall not to be unreasonably held.

- 8.3. The Contractor shall give GSI not less than 14 days' notice of the intended appointment of any Subcontractor (with detailed particulars which shall include its relevant experience) and the intended commencement of such Subcontractor's work.
- 8.4. The Contractor shall be fully responsible for the acts, defaults and omissions of its Subcontractors and their agents, employees and staff, as if they were the acts, defaults or omissions of the Contractor.
- 8.5. The Contractor shall be responsible to pay all amounts due to its Subcontractors in respect of Works carried out or supplies, materials, equipment or services provided in connection with the Works.
- 8.6. The Contractor shall ensure that each Subcontractor complies with all applicable provisions of the Laws and this Contract, as applicable.
- 8.7. The Contractor shall take all actions necessary to grant and preserve all rights on behalf of GSI under any representations, warranties given by the Subcontractor or required from the Contractor in respect of equipment, materials or services provided in connection with the Works.
- 8.8. GSI shall be entitled to instruct the Contractor, with reasonable details, to remove, discharge or replace any Subcontractor, and the Contractor shall comply with such instruction with no delay.
- 8.9. If a Subcontractor has undertaken a continuing and assignable obligation to the Contractor for the work carried out, services provided or System Component supplied, by such Subcontractor, and if such obligation extends beyond the expiry of the Contract Period, the Contractor shall, upon the expiry of the Contract Period assign the benefit of such obligation pursuant to GSI's instructions for the unexpired duration thereof.

9. HEALTH AND SAFETY

- 9.1.1. The Contractor shall comply with all the conditions specified in Appendix I (*Safety Requirements*) and, carry out all Works in compliance with the Safety Requirements and in accordance with IS 18001 (2007), the Safety at Work Ordinance [New Version], 5730-1970 and its regulations, and in consideration of any other required standards or codes, throughout the Contract Period.

- 9.1.2. The Contractor shall, during the Contract Period, provide, as required in accordance with the Laws, at its own cost:
- 9.1.2.1. all protective measures as are necessary to prevent accidents, damage or injury to the public or to property in the vicinity of the Site; and
 - 9.1.2.2. any other protective means required by any relevant authority, for the safety and convenience of the public or others (including employees of the Contractor).
 - 9.1.2.3. Should the Contractor fail to take the protective measures in accordance with Appendix I (*Safety Requirements*), GSI may by notice to the Contractor require such measures to be provided and installed at the Contractor's cost and within such time as GSI may direct in its notice, without derogating from its rights under the Contract or under Laws, including the rights to suspend the Works or terminate the Contract.
 - 9.1.2.4. Should the Contractor, even after such notice, continue to fail to take the protective measures in accordance with this Clause 9.1.2, GSI may employ a third party to take such measures and pass all reasonable costs incurred in so doing onto the Contractor.
 - 9.1.2.5. Special precautions shall be taken by the Contractor to ensure the health and safety of its staff and labor in accordance with the Laws applicable thereto.
 - 9.1.2.6. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as GSI may reasonably require.
 - 9.1.2.7. The Contractor shall send to GSI details of any accident involving its or its Subcontractors' staff and labor as soon as possible after its occurrence.

10. CONTRACT TERM AND SCHEDULE

10.1. General

- 10.1.1. The Contractor shall commence the design and execution of the Works immediately after the Effective Date (unless otherwise instructed by GSI), and shall then proceed with the Works with

due expedition and without delay, until a Deployment Completion Certificate is issued.

- 10.1.2. The Contractor shall execute the Works in strict accordance with the Project Milestones set forth in Appendix E (*Project Milestones*) and complete the full installation and deployment of the System no later than the date set forth therein.
- 10.1.3. The Contractor acknowledges that time is of the essence.
- 10.1.4. The Contractor shall use best efforts to minimize any delay to the execution of the Works, including by expediting or changing the sequencing of the Works, as required. The Contractor shall not be entitled to any extension of time or to any payment of increased costs.

10.2. Master Schedule

- 10.2.1. Within 28 days of the Effective Date, the Contractor shall submit a proposed Master Schedule to GSI for approval.
- 10.2.2. The Master Schedule shall be based on the Project Milestones and shall demonstrate the activities and time, including workflow and sequencing of work, the Contractor carry out in order to meet each Project Milestone.
- 10.2.3. No material alteration to the workflow or sequencing of the work set out in the Master Schedule shall be made without the prior written consent of GSI.
- 10.2.4. If, at any time, the Contractor's actual progress falls behind the Master Schedule, or it becomes apparent that it will so fall behind, so that the timely achievement of any relevant Project Milestone is likely to be impacted, the Contractor shall notify GSI in writing of the steps being taken to expedite progress, so as to achieve any relevant Project Milestone affected by any such delay. GSI may further instruct the Contractor to revise the Master Schedule accordingly.

10.3. Liquidated Damages

- 10.3.1. Without derogating from any other rights or remedies to which GSI is entitled, if the Contractor fails to timely meet any of the Project Milestones, the Contractor will pay on demand, liquidated damages of 5,000 NIS for each day of delay.
- 10.3.2. In addition, in any event of a material breach of this Contract, the Contractor shall pay GSI a sum of 5,000 NIS for each day until such material breach has been cured or fixed in full, without derogating from any of GSI's other rights and remedies

under the Contract, specifically including the right to terminate the Contract and to exercise any Security provided by the Contractor.

- 10.3.3. However, the Contractor's aggregate liability for such liquidated damages under this Clause 10.3 shall not exceed an amount ("Cap") equal to 10% of the Contract Price linked in accordance with Clause 14.4.
- 10.3.4. GSI and the Contractor hereby acknowledge and agree that all the terms, conditions and amounts fixed pursuant to this Clause 10.3 for liquidated damages are reasonable in the circumstances given Contractor's failure to successfully meet the Project Milestones.
- 10.3.5. GSI may, without prejudice to any other method of recovery, deduct and set off the amount of such liquidated damages from any monies due, or to become due, to the Contractor. Alternatively, where GSI requires the Contractor to make any payment of liquidated damages, the Contractor shall pay the said liquidated damages within thirty (30) days of GSI's written demand.
- 10.3.6.

11. TESTING AND INSPECTION

11.1. General

- 11.1.1. The Contractor shall carry out the tests set forth in or called for under Appendix B (*Technical Specifications*) and Appendix J (*Acceptance Tests*).
- 11.1.2. Prior to the completion of any Project Milestone, and as a pre-condition for any payment associated therewith, the Contractor shall be required to demonstrate full and successful completion of all applicable tests.
- 11.1.3. The Contractor shall give 14 days' notice of the date after which the Contractor will be ready to carry out such tests. Such tests shall be carried out in the presence of representatives of the Parties at a date to be scheduled by GSI.
- 11.1.4. All test results shall be reported in writing and submitted promptly to GSI.
- 11.1.5. This Sub-Clause shall apply to all tests specified in the Contract, other than the Tests after Completion (if any):

11.1.6. The Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labor, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently.

11.1.7. GSI may vary the location or details of specified tests, or instruct the Contractor to carry out additional tests, and the Contractor shall not be entitled to any additional payment in connection thereto.

11.2. Retesting

If any element of the Works fails to pass any one of such tests or any re-test pursuant to this Clause 11, GSI may require such failed tests, and tests on any related work, to be repeated at the cost of the Contractor.

11.3. Rejection

11.3.1. Until Deployment Completion Certificate is issued in accordance with the Contract, any System Component or workmanship that is defective or otherwise not in conformity with the Technical Specifications and Contract may be rejected by GSI, whereupon GSI shall notify the Contractor promptly, stating its reasons. The Contractor shall then promptly make good the defect or non-conformity and ensures that the rejected item complies with the Technical Specifications and Contract.

11.3.2. If GSI requires such System Component or workmanship to be re-tested pursuant to Clause 11.2, the tests shall be repeated at the cost of the Contractor.

11.4. No Waiver

11.4.1. Any inspection, examination, or testing pursuant to the Contract shall not relieve the Contractor from any of its obligations under the Contract.

11.4.2. No breach by the Contractor shall be waived or deemed to have been waived by any such inspection, examination or testing.

11.4.3. Failure to carry out any such inspection, examination or testing shall not constitute a waiver of any of the other rights of GSI under this Contract or of the right to inspection or examination.

12. COMPLETION OF SYSTEM DEPLOYMENT

12.1. The System shall be accepted by GSI after the System has been fully deployed and fully operative and when all the relevant tests

for the System Deployment have been successfully completed in accordance with the Technical Specifications.

12.2. Contractor's Request for Acceptance

Subject to Clause 12.1, the Contractor may submit a request for the acceptance of the System. Such request shall be accompanied by the following: (1) a copy of all System Documents; (2) As-build plans of all Stations constructed by the Contractor; (3) Certificates of Warranty for the System by the Contractor and Certificates of Warranty for System components not manufactured by the Contractor.

12.3. Deployment Completion Certificate

Subject to a request of the Contractor in accordance with Clause 12.2, GSI will review the request and the accompanying documents and within 28 days shall: (i) issue a Deployment Completion Certificate approving that the System is fully deployed and operative and stating the date on which the System has been taken over by GSI; (ii) reject the request giving reasoning and specifying the work completed by the Contractor to enable a Deployment Completion Certificate to be issued. In such case, the Contractor shall act in accordance with Clause 12.2 above.

13. CHANGES AND CHANGE ORDERS

13.1. Changes prior to Deployment Completion Certificate

13.1.1. At any time before the issuance of the Deployment Completion Certificate, GSI may issue a change order for changes to the Works, including any addition or subtraction of any Station or System component ("**Change**" and "**Change Order**", respectively).

13.1.2. Prior to issuance of a Change Order, GSI may require the Contractor to submit the following with regard to the proposed Change:

13.1.2.1. a description of the proposed work to be performed;

13.1.2.2. the Contractor's proposal for any necessary modifications to the Master Schedule; and

13.1.2.3. the Contractor's proposal for any adjustment to the Contract Price or to any relevant Payment Milestones, if applicable.

13.1.3. Each Change Order shall include the following: (i) description of the Change; (ii) time Schedule of the execution of the Change, as applicable; (iii) changes to the Contract Price, to the extent applicable.

- 13.1.4. The Contractor shall not carry out any Change to the Works, unless and until GSI instructs or approves a Change.
- 13.1.5. GSI shall evaluate and determine the appropriate price for any Change. In determining the appropriate price for each Change, GSI may consider, subject to its best judgment and discretion, any reference or relevant information, including (but not limited to) the following:
 - 13.1.5.1. the price quoted for the component in Part 3 (*Contract Price Breakdown*) of the Contractor Financial Proposal (attached to this Contract as part of Appendix A (*Contractor's Proposal in the Tender*));
 - 13.1.5.2. DEKEL - Building Cost Data price list subject to 15% discount;
 - 13.1.5.3. a detailed price analysis submitted by the Contractor upon GSI's request.
- 13.1.6. GSI may choose any of the evaluation options set forth in Sub-Clause 13.1.5, at its discretion. In the event GSI decides to evaluate a Change by applying the prices quoted by the Contractor in its Proposal, as stated in Sub-Clause 13.1.5.1, the Contractor shall be bound by such prices and shall not be entitled to raise any reservations thereto.
- 13.1.7. However, if Change Orders have been issued for the addition of 15 Stations or subtraction of 15 Stations, each additional Change Order for the addition or subtraction of Stations, shall be evaluated in accordance with Clauses 13.1.5.2 and 13.1.5.3 only.

13.2. **Modifications following Deployment Completion Certificate**

- 13.2.1. After the issuance of the Deployment Completion Certificate, GSI may request, in writing, that the Contractor submit a proposal for modifications of the System or any of its components ("**Modification**" and "**Modification Order**", respectively).
- 13.2.2. Such request shall contain, in reasonable detail, the nature of the Modification requested, desired performance, functional and integration requirements and schedule expectations of GSI for the completion of such Modification.
- 13.2.3. The Contractor, within 30 days, shall submit to GSI a proposal, in reasonable detail, for such Modification, which shall include:

- 13.2.3.1. a description of the proposed work to be performed;
- 13.2.3.2. the proposed time schedule; and
- 13.2.3.3. a detailed price analysis, including third party price quotes, if applicable.
- 13.2.4. GSI will review the Contractor's proposal for such a Modification within 30 days and if accepted shall issue a modification order ("**Modification Order**").
- 13.2.5. Each Modification Order shall include the following: (i) description of the Modification; (ii) time Schedule of the execution of the Modification; (iii) pricing of the Modification.
- 13.2.6. The Contractor shall proceed with the execution of such Modification as soon as possible after being instructed to proceed by GSI and will diligently continue with the execution of such Modification through completion.
- 13.2.7. The Contractor shall provide a warranty in similar scope to the System Warranty as set forth in Clause __ on such Modification for a period of one (1) year after the acceptance of such Modification by GSI or until the expiration of the System Warranty Period, the latter.

14. CONTRACT PRICE AND PAYMENT

14.1. General

- 14.1.1. In consideration for the complete, timely and accurate performance of the Contractor's undertaking pursuant to the Contract, GSI shall pay the Contractor a lump sum fixed price of _____ NIS (in words: _____) (***Contractor's Bid Price - to be completed after award***) (the "**Contract Price**").
- 14.1.2. The Contract Price shall be paid in accordance with **Appendix F (Payment Milestones)** and pursuant to the provisions of this Clause 14.
- 14.1.3. The Contract Price shall represent full and final payment to the Contractor for its obligations and undertakings during the Deployment Period **and** the Warranty and Maintenance Period. Nevertheless, GSI shall retain the right to cease the Maintenance Period by a prior notice of six months in advance. In such event, the Contract Price shall be reduced by the relevant consideration as stated in the Financial Proposal – Part 2.

- 14.1.4. The Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price. The Contract Price shall cover all the Contractor's obligations under the Contract and all things necessary for the proper design, manufacture, supply, transportation, installation, integration, testing, execution, deployment, provision of warranty and maintenance services, training, and completion of the Works.
- 14.1.5. Unless otherwise specifically stated otherwise, the Contractor shall be responsible for all costs related to the execution of the Works. The Contract Price is inclusive of all risks and costs incurred in connection with the Works, including without limitation the risks and costs of (i) all permits, licenses, consents and approval relating to the Works; (ii) staff and labor; (iii) waste disposal; (iv) levies and customs, (v) protection of the environment; (vi) insurance; (vii) utilities; (viii) defects and latent defects; (ix) soil, water and climatic conditions; (x) quantity risks; (xi) currency linkage; and (xii) all additional risks and costs of any kind, including costs resulting from price increases, changes or delays.
- 14.1.6. The Contract Price shall be exclusive of Israeli value added tax, which shall be paid by GSI (if and to the extent applicable) separately, subject to receipt by GSI of the Contractor's tax invoice.
- 14.1.7. In the event GSI elects to exercise its option for the Optional Warranty Period and/or Optional Maintenance Period, the Contractor shall be paid a **yearly** fee as follows:
- 14.1.7.1. For the Optional Warranty Period - _____ NIS (in words: _____) ***(to be completed after award based on the Contractor's Price Proposal).***
- 14.1.7.2. For the Optional Maintenance Period - _____ NIS (in words: _____) ***(to be completed after award based on the Contractor's Price Proposal).***
- Payments in accordance with this Sub-Clause 14.1.7 shall be made at the end of each year of the Optional Warranty Period and/or the Optional Maintenance Period, and Sub-Clauses 14.2, 14.5 shall respectively apply.

14.2. Interim Payments

- 14.2.1. The Contractor shall submit to GSI an interim statement for each Payment Milestone, no later than the 10th of the subsequent month. Interim statements submitted following the 10th of the month shall be deemed to have been submitted on the 10th of the following month. Each interim statement shall detail the amount to which the Contractor considers itself to be entitled in accordance with the Payment Milestone, together with reasonable supporting documentation.
- 14.2.2. GSI will review each interim statement and the accompanying documents and may require the Contractor to amend the interim statement, pursuant to the Contract.
- 14.2.3. GSI shall pay those sums approved for payment for each interim statement by the 24th of the month following the month in which the interim statement was submitted (or deemed to have been submitted).
- 14.2.4. Payments shall be made by wire transfer into a bank account designated by the Contractor in writing to GSI.

14.3. **Retention**

- 14.3.1. GSI shall deduct 5% of each payment due to the Contractor in accordance with the Payment Milestone, prior to the issuance of the Deployment Completion Certificate as Retention ("**Retention**").
- 14.3.2. GSI shall be entitled to use the Retention amount, in whole or in part, in case of a breach of this Contract by the Contractor, without derogating from any of its rights under the Contract, including its right to exercise any of the Securities submitted by the Contractor.
- 14.3.3. The Retention amounts shall be returned to the Contractor within 45 days following the issuance of the Deployment Completion Certificate, provided that the Contractor has fully complied with all terms of the Contract.

14.4. **Price Adjustments**

- 14.4.1. Payments due to the Contractor during the Deployment Period shall **not** be adjusted.
- 14.4.2. Payments due to the Contractor during the Warranty and Maintenance Period, the Optional Maintenance Period (if applicable) and the Optional Warranty Period (if applicable) shall be linked to the Israeli Consumer Price Index ("**CPI**")

and shall be adjusted to reflect changes thereof, in accordance with the following formula:

$$P_a = P \times I_n / I_0$$

Where:

P_a = adjusted price

P = price before adjustments

I_n = known CPI value on the last day of period "n"

I_0 = known CPI value on the Effective Date

14.5. Final Payment

- 14.5.1. By the 10th of the month following the issue of the Final Acceptance Certificate, the Contractor shall submit to GSI a detailed Final Statement with supporting documents. The Final statement shall include: (i) all sums paid to the Contractor in each Payment Milestone; (ii) all sums paid pursuant to Change Orders /Modification Orders; and (iii) the outstanding balance the Contractor considers to be due to it under the Contract or otherwise.
- 14.5.2. When submitting the Final Statement, the Contractor shall submit a written discharge which confirms that the total of the Final Statement represents full and final settlement of all monies due to the Contractor under the Contract or otherwise.
- 14.5.3. GSI will review the Final Statement and the accompanying documents and may require the Contractor to amend the Final Statement, pursuant to the Contract.
- 14.5.4. GSI shall pay those sums approved for payment by the 24th of the month following the month in which the Final Statement was submitted (or deemed to have been submitted).

14.6. Set off

- 14.6.1. The Contractor shall not be entitled to set-off any amounts payable by GSI to the Contractor against any amounts payable by the Contractor to GSI.
- 14.6.2. GSI shall be entitled to set-off amounts due or payable by the Contractor to GSI, whether by virtue of this Contract, against amounts payable by GSI to the Contractor.

15. MAINTENANCE AND WARRANTY

15.1. General

- 15.1.1. The Maintenance and Warranty Period shall commence upon the issuance of the Deployment Completion Certificate and shall terminate 3 years thereafter.
- 15.1.2. In addition, GSI shall have the right, at its sole discretion to procure maintenance services and/or warranty from the Contractor for additional annual periods of up to 2 years (each, the "**Optional Maintenance Period**" and the "**Optional Warranty Period**", respectively). In the event that GSI exercises the Optional Maintenance Period or the Optional Warranty Period, as applicable, the provisions of this Clause shall prevail, *mutatis mutandis*, on the Optional Maintenance Period or the Optional Warranty Period, as applicable, and the Contract Term shall be extended accordingly. The maintenance payments to be paid to the Contractor for the Optional Maintenance Period are set forth in Clause 14.1.7.2

15.2. System Warranty

- 15.2.1. The Contractor warrants that the System and all System Components supplied to GSI fit for the purpose set forth by GSI and are in full compliance with the requirements established under this Contract. During the Maintenance and Warranty Period, and during the Optional Warranty Period (if applicable), the Contractor shall be responsible to provide all Failure Correction(s), at it's on cost. .
- 15.2.2. Such Warranty shall include (without limitation) any diagnostic work and any related costs necessary to isolate the Failure or its causes.
- 15.2.3. The Contractor shall bear all costs related to such Warranty including, without limitation, related transportation, insurance, customs clearance, corrective and replacements measures, etc.
- 15.2.4. In the event the Contractor considers the Failure to be directly attributable to vandalism or theft, the Contractor shall promptly give notice to GSI, with sufficient evidence. GSI may then:
 - 15.2.4.1. Accept the Contractor's claims and instruct the Contractor to provide Failure Corrections, in which case the instruction shall be deemed a Change Order or Modification Order in accordance with Sub-Clause 13, and shall be evaluated as such;
 - 15.2.4.2. Accept the Contractor's claims and exempt the Contractor from providing Failure Corrections;

- 15.2.4.3. Reject the Contractor's claims and instruct the Contractor to provide Failure Corrections at its own cost and expense.
- 15.2.5. If the Contractor fails to provide Failure Corrections as required, GSI may fix (but shall not be obligated to do so) a date (such date to be reasonably set in consideration of the nature of the Failure) on or by which to provide Failure Corrections, and give the Contractor reasonable notice of such date or carry out the Failure Corrections by itself or by others, in a reasonable manner and at the Contractor's risk and cost. The costs incurred by GSI in so providing Failure Corrections shall be recoverable from the Contractor by GSI.

15.3. **Scope of Support and Maintenance Services**

- 15.3.1. Without derogating from the Contractor's responsibility to repair any discovered Failure, during the Maintenance and Warranty Period, and during the Optional Maintenance Period, if applicable (both, for the purpose of this Clause 15.3 the "**Maintenance Period**"), the Contractor shall provide full maintenance and support services in accordance with the requirements set forth in this Clause and Appendix K.
- 15.3.2. Throughout the Maintenance Period, the Contractor shall constantly monitor the System performance, including all System Components.
- 15.3.3. The Contractor shall ensure that , at all times throughout the Maintenance Period the Reliable Seismic Data Return is at least 95%, and shall take all necessary measures to maintain this level of availability, including by providing Failure Corrections to the System or System Components. For the purpose of this Clause 15.3 and Appendix K. The only exclusion to such level of availability is preventive maintenance activities, which cease the performance of the System and which were approved in advance and writing by GSI.
- 15.3.4. In addition, at all times throughout the Maintenance Period, the Contractor shall provide GSI with Failure Corrections for Failures in the System (including the System Components) reported by GSI to the Contractor, within the time limits set forth in Appendix K.
- 15.3.5. Furthermore, at all times throughout the Maintenance Period, the Contractor shall make available to GSI any Revisions of the Software or Documentation at no extra charge, The Contractor

will make such Revisions available to GSI when the Contractor makes such Revisions generally available to its other customers.

- 15.3.6. In addition, the Contractor shall make available to GSI any Versions of the Software or Documentation at no extra charge. The Contractor will make such Versions available to GSI when the Contractor makes such Versions generally available to its other customers. GSI shall have the option to object to the insertion of new Versions, if such new Version derogate from the functionality, availability and "operational" of the System as set for in the Technical Specifications. Such objection shall not derogate from the responsibilities of the Contractor during the Maintenance Period.
- 15.3.7. In order to achieve the operational requirements of the System, the Contractor shall carry out Routine Maintenance Activities as set forth in **Appendix K**.
- 15.3.8. In addition, at all times throughout the Maintenance Period, the Contractor shall provide GSI with Maintenance Releases as set forth in Clause 15.6.
- 15.3.9. All costs and expenses associated with the Maintenance Services during the Maintenance and Warranty Period shall be borne exclusively by the Contractor, and shall be deemed to be included in the Contract Price, unless specifically provided otherwise.

15.4. Customer Support Services (Helpdesk)

- 15.4.1. Throughout the Maintenance Period, the Contractor shall provide GSI with customer support services (helpdesk), via phone, fax, email.
- 15.4.2. The customer support services shall be available 24 hours a day, 7 days a week. For this purpose, the Contractor undertakes to keep available a well-equipped, organized and staffed support department with capable, trained and experienced personnel that has adequate know how regarding the System and the System Components.
- 15.4.3. The customer support services shall offer GSI:
 - (i) Any Failure Correction, including any cessation in the operative capabilities of any of the Stations or the System or any of the

System Components or decrease in the availability requirements resulted therefrom.

- (ii) Response to technical questions concerning the System, the Data Hubs or any System Components;
- (iii) Registration of Failures and preparation of Reports of Failure Corrections.

15.4.4. GSI shall designate 3 Authorized Contacts who will be authorized to contact the Contractor regarding Failures and all other Maintenance Services.

15.5. **Failure Correction**

15.5.1. The Contractor will acknowledge the receipt of GSI's notice of Failure or technical question (a "**Failure Notice**"), by phone, fax and email within four (4) hours. The Contractor will first attempt to resolve the Failure over the phone or via email.

15.5.2. **On-Site Support.** If the Failure cannot be simply resolved via phone or email, through Level 1 or Level 2 Support and Maintenance Services as described in **Appendix K**, the Contractor will provide maintenance and support services at the Sites, including the Data-Hubs locations, on the sole expense of the Contractor.

15.5.3. **Bi-weekly Status Meetings.** Throughout the Maintenance Period, the Contractor and GSI shall have a bi-weekly meeting basis, on all outstanding known Failures. Meetings may be by teleconference.

15.5.4. *For Level 1 – Critical problems or Failures –* The Contractor will engage in commercially reasonable efforts to provide GSI with a Work Around, Failure Corrections, or both as soon as possible from the Failure Notice and immediate attention is required.

15.5.5. *For Level 2 – Moderate problems or Failures -* The Contractor will engage in commercially reasonable efforts to provide GSI with a Work Around, Failure Corrections, or both as soon as possible from the Failure Notice.

15.5.6. Failure of the Contractor to provide Failure Corrections at such times as set forth in Table 2 of Appendix K shall entitle GSI to liquidated damages at such amounts as set forth in such table.

15.6. **Maintenance Releases**

- 15.6.1. Maintenance Releases will be made available free of charge to GSI throughout the Maintenance Period, in the form of documents or kits.
- 15.6.2. The Contractor guarantees to maintain the System in such a way that all forms of Maintenance Releases shall always contain all previously released solutions to earlier Failure Corrections.
- 15.6.3. The Contractor shall supply procedures to ensure that integrity of data is maintained during Maintenance Releases and that while executing those procedures data shall not be lost.
- 15.6.4. Maintenance Release kits will contain the following:
 - (i) Maintenance Release document;
 - (ii) A list of applicable Products;
 - (iii) Documentation updates.
 - (iv) Hardware, software or firmware required for the update;
 - (v) Special tools if required;
- 15.6.4.1. Maintenance Release documents will contain the following information:
 - (i) Upgrade procedure (from all previous maintenance levels);
 - (ii) Improvements/solved problems;
 - (iii) Compatibility with prior releases and external environment;
 - (iv) Functionality changes compared to the prior releases;
 - (v) Problems that were reported but not solved and other problems known to the Contractor;
 - (vi) Software identification before and after the update including identification of the files associated with the update.
- 15.6.5. If, the Contractor introduces new software interfaces, or modifies or removes existing software interfaces relative to the immediately preceding version, update or release, the Contractor shall provide GSI with a written description of such changes at least sixty (60) calendar Days prior to the initial release of the Update in which they are incorporated. the

Contractor shall make reasonable efforts to provide documented porting tools that will facilitate the conversion of existing the Contractor System to the new or modified software interfaces.

- 15.6.6. The Contractor shall provide Updates to GSI within ten (10) calendar Days of the date on which any Update is provided to any GSI customer or internal user. the Contractor shall provide, with every Update, a written description of the changes included in that Update, including detail on the purpose for releasing the Update, and written installation instructions.

16. MAINTENANCE DOCUMENTATION AND TRAINING

- 16.1. The Contractor will provide GSI with schedules of visits to Stations and Data Hubs and will update GSI with specific dates of visit on a quarter basis.
- 16.2. The Contractor shall make available all information required for planned maintenance of the System. This information shall contain, as a minimum, the following:
 - 16.2.1. The complete planned maintenance program required for the System and any of its components.
 - 16.2.2. Full detailed information concerning all required planned maintenance procedures.
 - 16.2.3. All required tools for the planned maintenance of the System.
- 16.3. The Contractor shall notify GSI in advance of any field maintenance activity, including any Station visit, except for urgent activities a prior notice of which cannot be practically given.
- 16.4. GSI and anyone on its behalf may join the Contractor's staff in any maintenance activity both for the purpose of supervising over the Contractor's activities and for the purpose of training for future maintenance works.
- 16.5. The Contractor shall fully cooperate with GSI's personnel, and when required (to the extent practical) provide detailed explanations regarding maintenance works carried out.
- 16.6. Following every Station visit, the Contractor shall submit to GSI a detailed visit report. The report shall include: Detailed description of physical and seismic condition of the station and its surroundings before and after the visit, checklist of inspections and description

of actions taken by the inspector (upgrade, maintenance and repair work undertaken).

- 16.7. The Contractor shall document all maintenance work, including routine maintenance and malfunctions' repair and shall make available all such documentation to GSI.
- 16.8. The Contractor is responsible for creation and maintenance of all documentation concerning the System, which shall include, as a minimum, the technical service documentation and user manuals as explained below.
- 16.9. Service documentation shall be such that GSI or anyone on its behalf is enabled to service and maintain the System fully immediately upon the end of the Maintenance Period.
- 16.10. All documentation shall be supplied in Microsoft Word format. Documentation updates will be in the same format as the original documentation but shall contain a list of changes made in the documentation. User manuals will contain all information concerning the usage of the System in such a way which is understandable for the end user.
- 16.11. The service documentation shall include the following information:
 - 16.11.1. Technical Product data conformable to the format of the development specifications;
 - 16.11.2. Installation procedures, necessary installation data and installation verification procedures;
 - 16.11.3. Fault finding procedures;
 - 16.11.4. Maintenance procedures;
 - 16.11.5. Functional flowcharts;
 - 16.11.6. Simplified electronic drawings;
 - 16.11.7. Adjustment data and procedures for after repair;
 - 16.11.8. Installation and repair verification checks;
- 16.12. GSI has the right to reproduce or reprint all documentation supplied by the Contractor.
- 16.13. Nothing in this Clause 16 shall derogate from any of the Contractor's responsibilities and obligations under Clause 18.2.
- 16.14. The Contractor shall provide comprehensive training for GSI on the System, both instrumentations and software aspects.

16.15. The training shall include both theoretical training relating to the System and field training in some or all of the Stations.

16.16. The Contractor shall submit to GSI, within 60 days after the Effective Date, a comprehensive training program for the duration of the Maintenance Period, which shall demonstrate how local GSI staff shall be trained to achieve full and independent maintenance capabilities of the System by the lapse of the Maintenance Period. GSI shall review the plan and shall be entitled, at its discretion, to instruct the Contractor to amend or correct the plan, and the Contractor shall do so with no delay.

17. SECURITIES

17.1. Securities – General

17.1.1. This Sub-Clause shall apply with respect to all Securities submitted by the Contractor.

17.1.2. All Securities shall be issued by a licensed Israeli bank or a licensed Israeli insurer.

17.1.3. All Securities shall remain in full force and effect until returned to the Contractor by GSI in accordance with the Contract. The Contractor shall extend the Securities from time to time in accordance with the Contract or with GSI's instructions, and shall bear any and all costs associated therewith.

17.1.4. GSI may require the Contractor to renew the amount secured by any Security to its original amount, if it reduces as a result of partial or full forfeiture, and the Contractor shall submit to GSI a renewed or supplementary Security within 7 days of such request. The Contractor shall bear any and all costs related to such renewal.

17.2. Performance Security

17.2.1. For securing the fulfillment of its obligations under the Contract, the Contractor shall obtain at its own cost and provide to GSI no later than _____, an autonomous, simple demand, irrevocable bank guarantee in an amount of _____ (**5% of the Contract Price – to be completed after award**) (the "**Performance Security**").

17.2.2. The Performance Security shall be in the form attached hereto as Appendix G.

17.2.3. The Performance Security shall be in full force and effect until issuance of the Deployment Completion Certificate for the Works. GSI shall return the Performance Security to the

Contractor after the Deployment Completion Certificate has been given and the Contractor has submitted the Maintenance Security in accordance with Clause 17.3.

- 17.2.4. GSI shall be entitled to exercise the Performance Security, in whole or in part, in any event of breach of this Contract by the Contractor, and without derogating from any of GSI's rights or remedies under the Contract or under Laws.

17.3. Maintenance Security

- 17.3.1. For securing the fulfillment of its obligations under the Contract during the Maintenance and Warranty Period, the Contractor shall obtain at its own cost and provide to GSI within 15 days after receiving the Deployment Completion Certificate, an autonomous, simple demand, irrevocable bank guarantee in an amount of _____ (**____ % of the Contract Price – to be completed after award**) (the "**Warranty Security**").
- 17.3.2. The Maintenance Security shall be in the form attached hereto as Appendix G.
- 17.3.3. The Maintenance Security shall be in full force and effect until issuance of the Final Acceptance Certificate. However, the Contractor shall be entitled to decrease the Maintenance Security's amount as follows:
- 17.3.3.1. After the end of the 1st year of the Maintenance and Warranty Period – by one third;
- 17.3.3.2. After the end of the 2nd year of the Maintenance and Warranty Period – by one third;
- 17.3.4. GSI shall return the Maintenance Security to the Contractor within 45 days after issuance of the Final Acceptance Certificate, and subject to strict and timely fulfilment by the Contractor of its obligations under the Contract.
- 17.3.5. Notwithstanding Sub-Clause 17.3.4, in the event GSI exercises its option for the Optional Maintenance Period or the Optional Warranty Period, the Maintenance Security shall remain in full force and effect until 45 days after the lapse of such extended periods.
- 17.3.6. GSI shall be entitled to exercise the Maintenance Security, in whole or in part, in any event of breach of this Contract by the Contractor during the Maintenance and Warranty Period, the Optional Maintenance Period or the Optional Warranty Period

(as applicable), and without derogating from any of GSI's rights or remedies under the Contract or under Laws.

18. PROGRESS REPORTS

18.1.1. Monthly progress reports shall be prepared by the Contractor and submitted to GSI in a format instructed by GSI. Reports shall be submitted within fourteen (14) days of the last day of the period to which it relates. Reporting shall continue until the completion date stated in the Deployment Completion Certificate.

18.1.2. Each report shall include:

18.1.2.1. photographs, where applicable, and detailed descriptions of progress, including design, procurement, manufacture, delivery to Sites, installation, integration, testing and commissioning;

18.1.2.2. charts showing the status of System Documents, purchase orders, manufacture, installation and integration;

18.1.2.3. for the manufacture of each main System Component, the name of manufacturer (if not the Contractor), manufacture location, percentage progress, and the actual or expected dates of commencement of manufacture, Contractor's inspections, tests and delivery;

18.1.2.4. records of Contractor's Personnel and Contractor's Equipment on the Sites;

18.1.2.5. copies of quality assurance documents, test results and certificates of materials;

18.1.2.6. comparisons of actual and planned progress, with details of any aspects which may jeopardize the completion in accordance with the Project Milestones and the Master Schedule, and the measures being (or to be) adopted to overcome such aspects (inclusive but not limited to steps to be taken to recovery); and

18.1.2.7. any other information relating to the carrying out of the Works reasonably requested by GSI .

18.2. System Documents

18.2.1. The Contractor shall prepare the System Documents in sufficient detail to satisfy all technical requirements hereunder

and under all Laws so to enable the Contractor to design, install, integrate, test and provide Maintenance services and training pursuant to the Works and to provide GSI, suppliers, contractors and third parties with sufficient instruction to carry-out the Works, including the operation and maintenance requirements of the System.

18.2.2. GSI shall have the right to review and inspect the preparation of System Documents, wherever they are prepared.

18.2.3. Each of the System Documents requiring review and approval by GSI shall, when considered ready for use, be submitted to GSI for review. Such review shall be carried out expeditiously by GSI. If GSI notifies the Contractor that such System Document fails (to the extent stated) to comply with any requirements of the Contract, it shall be rectified, resubmitted to GSI by the Contractor and reviewed by GSI within a reasonable period, all at the Contractor's cost.

18.2.4. The System Documents shall be kept on the Sites.

18.2.5. Errors, omissions, ambiguities, inconsistencies, inadequacies and other defects in the System Documents shall be rectified by the Contractor, at its cost.

18.2.6. No approval, comment, review or failure to notify the Contractor of any defect by GSI as aforesaid shall relieve the Contractor of any of its obligations or responsibilities hereunder or constitute a waiver by GSI of any of its rights hereunder.

18.3. As-Built Documentation

18.3.1. The Contractor shall prepare, and keep up-to-date, a complete set of "as-built records" of the execution of all relevant aspects of the Works, showing the exact "as-built" locations, sizes and details of such aspects of the Works as executed, with cross references to relevant specifications and data sheets.

18.3.2. These records shall be kept on the Sites and shall be used exclusively for the purposes of the subsequent preparation of "as built" drawings. Copies of the "as-build" records shall be submitted to GSI prior and subject to the commencement of any relevant Acceptance Tests.

18.3.3. In addition, the Contractor shall prepare and submit to GSI "as-built drawings" of all relevant aspects of the Works, showing

such Works as executed. The drawings shall be prepared as such Works proceed, and shall be submitted to GSI for its inspection. The "as-build" records and "as-build" drawings shall be referred as the "**As-Build Documentations**". Prior to the issuance of any notice of Acceptance Test pursuant to Clause _____, the Contractor shall submit to GSI 2 copies in an electronic or digital format acceptable to GSI, 2 full-size original copies and 2 printed copies of the relevant "As-Built Drawings" for the Works along with any other relevant System Documents for the Works.

- 18.3.4. GSI shall not be obliged to issue a Deployment Completion Certificate or a Final Acceptance Certificate, as applicable until the As-Built Drawings have been submitted by the Contractor to GSI.

18.4. Use of System Documents

- 18.4.1. All System Documents and As- Build Documentation shall be considered "works for hire" and shall be the sole property of GSI, without restriction or limitation on their use.
- 18.4.2. The Contractor agrees, at GSI's request, to take all such actions and execute all such documents as may be, in GSI's opinion and sole discretion, necessary to give effect to the Contract and enable GSI to exercise, defend or enforce its rights under this Contract. The Contractor agrees it shall not do or fail to do any act which would or might prejudice GSI's rights under the Contract.
- 18.4.3. The Contractor may (at its cost) copy, use and communicate any System Document and As- Build Documentation only for the purposes of the Contract subject to Confidential Information contained herein (which restrictions will, in turn, be imposed by the Contractor (for the benefit of the Contractor and GSI) on its Subcontractors in connection with any such purposes). The Contractor shall have the non-exclusive right to use the System Documents for the purpose of performing the Works. Notwithstanding the above, such documents shall not, without GSI's consent, be used, copied or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.
- 18.4.4. In addition, before receipt of the Deployment Completion Certificate, the Contractor shall deliver to GSI written

confirmation signed by the Contractor and any third party who was involved in the Project on behalf of the Contractor and whose identity shall be recorded by GSI, whereby the Contractor and any such third party do not have any claim or “moral right” with respect to any element of the Works, or other rights of any sort, which will prevent any changes or amendments being made in any element of the Works. Such written confirmation does not apply to commercial off the shelf software.

19. OWNERSHIP OF THE SYSTEM

19.1. The System including all items, System Components and everything embedded therein shall become the property of GSI when it is delivered to the Site or when it is paid for by GSI hereunder if earlier than the time of delivery to the Site.

19.2. The Contractor shall ensure that the System including all items, System Components and everything embedded therein shall be free of all liens and encumbrances when ownership passes to GSI. The Contractor shall be responsible, at its own cost, for the removal of any such liens or encumbrances in order to give effect to such obligation of the Contractor.

19.3. Marking of the System and all System Components

19.3.1. Where, prior to delivery, the ownership in the System (and any part thereof) including all System Components passes to GSI, the Contractor or the Contractor’s Subcontractors shall set them aside and mark them as GSI’s property in a manner reasonably required by GSI.

19.3.2. All such System Components shall be in the care and possession of the Contractor solely for the purposes of the Contract and shall not be within the ownership or disposition of the Contractor. However, any System Component not deliverable not incorporated or not consumed in the execution and implementation of the Works shall, upon issuance of the Final Acceptance Certificate, become the property of the Contractor.

19.4. Contractor IP- Contractor's intellectual property right that have been previously developments or owned by Contractor a prior to or during the Contract Period shall remain at all times the sole and exclusive property of Service Provider Contractor IP, unless otherwise determined in writing by both parties.

20. INTELLECTUAL PROPERTY

- 20.1. GSI IP – The Tender Documents and any and all intellectual property right therein are exclusively owned by GSI, and are entrusted with the Bidders for the sole purpose of the participation in the Tender process. All data, right, title and interest, including all intellectual property rights pertaining thereto, processes and technologies in connection with this Contract, the Tender and the Works that shall be processed into the data of the Network or System, shall be owned by the Company.
- 20.2. "Intellectual Property Rights" means patent rights (including patent applications and disclosures), copyrights, trademarks, trade secrets, know-how and any other intellectual property rights recognized in any country or jurisdiction in the world [not sure if needed].
- 20.3. Contractor IP- Contractor's intellectual property right that have been previously developments or owned by Contractor a prior to or during the Contract Period shall remain at all times the sole and exclusive property of Service Provider Contractor IP, unless otherwise determined in writing by both parties.

20.4. Licenses of Intellectual Property

The Contractor grants GSI a non-exclusive, royalty free, perpetual, irrevocable license, with the right to sub-license, to copy, use, modify and communicate the Contractor IP for the purposes of:

- 20.4.1. performing its obligations or exercising its rights under this Contract;
- 20.4.2. managing, operating, maintaining, testing and other ancillary activities connected with the System or any part thereof and at any time, including by permitting any third party to use, manage, operate or maintain the Works;
- 20.4.3. enabling or facilitating the interoperation or linking of the Works to or with any other system or network.

20.5. Indemnification

- 20.5.1. The Contractor undertakes to indemnify GSI and any contractor acting on GSI's behalf from and against any claim or expense arising from an infringement of third party Intellectual Property rights based upon a claim that the use of the Works as authorized under this Contract constitutes such an infringement and shall be solely responsible for payment of royalties and compensation for such infringement for any use of patent rights, registered designs, trademarks, trade secrets, know how,

copyright or other Intellectual Property rights and shall be solely responsible for any and all related damages liabilities, losses, costs, expenses (including attorney's fees), demands, claims, actions, proceedings actions, proceedings (whether civil or criminal), orders, judgments, penalties, fines, damages and other remedies that apply with respect to GSI and/or any contractor acting on GSI's behalf and/or the State.

20.5.2. The Contractor shall indemnify GSI, any contractor acting on GSI's behalf and the State of Israel in respect of the foregoing within the period specified in the notice requiring such indemnification and provided that the expiry of such period is not less than twenty-five (25) days.

20.5.3. Without derogating from the aforesaid obligation of the Contractor to indemnify GSI, the Contractor may at its sole expense (i) obtain the right for GSI (and the State) to exercise their rights pursuant to this Contract or (ii) substitute other non-infringing products with equivalent functional capabilities or (iii) modify the Works so that it no longer infringes, whilst maintaining the requisite functional capabilities. This indemnity does not extend to any claim or expense based upon a claim or infringement or alleged infringement that results from (i) the alteration or modification (not by the Contractor or authorized by or on behalf of the Contractor) of any products, software, systems or sub-systems supplied by Contractor in connection with the Contract or (ii) the combination (not by Contractor or authorized by or on behalf of the Contractor) of any products, software, systems or sub-systems Contractor (including Subcontractors) supplied in connection with the Contract with any products, software, systems or sub-systems not supplied by the Contractor.

21. FINAL ACCEPTANCE CERTIFICATE

21.1. The Contractor's obligations under the Contract shall not be considered to be completed until the Final Acceptance Certificate has been issued by GSI to the Contractor, stating the date on which the Contractor completed such obligations to GSI's satisfaction.

21.2. The contractor shall be entitled to apply for a Final Acceptance Certificate not earlier than 45 days prior to the lapse of the later of (i) the Maintenance and Warranty Period, (ii) the Optional Warranty Period, or (iii) the Optional Maintenance Period.

- 21.3. GSI shall then review the Contractor's request, and within 45 days shall (i) issue a Final Acceptance Certificate stating the date on which the Contractor has completed its obligations under the Contract, subject to Clause 23.6.10, or (ii) reject the request giving reasoning and specifying the outstanding work to be executed by the Contractor, in which case the Contractor shall complete all such outstanding work without delay.

22. CONFIDENTIALITY

- 22.1. For the purpose of this Contract, "**Confidential Information**" means: (i) the ITB and this Contract (including all Appendixes), to include the Technical Specifications, any Stations Data, the Acceptance Tests and their results and any other business or technical information of GSI (ii) the specific terms and pricing set forth in this Contract; (iii) All documents and records provided by the Contractor in connection with the Works or the Project, including, the System Documents and As-Build Documentation and any other business or technical information of the Contractor.

Confidential Information does not include information that: (i) is or becomes generally known to the public through no fault of or breach of this Contract by the receiving Party; (ii) is rightfully known by the receiving Party at the time of disclosure without an obligation of confidentiality (as can be evidenced by written documents); or (iii) the receiving Party rightfully obtains from a third party without restriction on use or disclosure (as can be evidenced by written documents).

- 22.2. Each party will not use the other Party's Confidential Information, except as necessary for the performance of this Contract and will not disclose such Confidential Information to any third party, except to those of the Contractor's Personnel that need to know such Confidential Information for the purpose of performing this Contract, provided that each Contractor's Personnel is subject to a written agreement that includes binding use and disclosure restrictions that are at least as protective as those set forth herein. Each Party will use all reasonable efforts to maintain the confidentiality of all such Confidential Information in its possession or control, but in no event less than the efforts that such Party ordinarily uses with respect to its own proprietary information of similar nature and importance.

22.3. The foregoing obligations will not restrict either Party from disclosing Confidential Information of the other Party: (i) pursuant to the order or requirement of a court, administrative agency, or other governmental body, provided that the Party required to make such a disclosure gives reasonable notice to the other Party to contest such order or requirement; and (ii) on a confidential basis to its legal or financial advisors. The Contractor has the right to disclose that GSI is a customer of Supplier.

22.3.1. The Contractor shall not carry out or permit any other person to carry out any publicity or advertising or publish any article, photograph or other illustration of the Project or any part thereof without the prior written approval of GSI.

22.4. No Conflict of Interest

22.4.1. The Contractor, including any of its subsidiaries, members, sponsors, employees, consultants or subcontractors or any entity related to the Contractor or acting on its behalf shall not have any conflict of interest between any of their other activities or obligations, and the activities, obligations and rights under this Contract. In the event the Contractor is in doubt as to whether a certain engagement or employment is in conflict of interest with this Contract, the Contractor shall request GSI's prior written approval.

22.4.2. The Contractor shall not employ or engage, with respect to this Contract, any consultant or expert, who was or still is employed or engaged by GSI, without the prior written approval of GSI and the legal advisor of the Earth and Marine Research Administration.

23. TERMINATION

23.1. Termination by the Contractor

23.1.1. Subject to Clause 23.1.2, the Contractor may terminate the Contract in the event of failure by GSI to pay a sum which exceeds 10% of the Contract Price, and was certified for payment in a Payment Certificate, within 72 days of becoming due.

23.1.2. Prior to exercising its rights in accordance with Clause 23.1.1, the Contractor shall give a written notice to GSI specifying the fault and requiring GSI to remedy it within the period specified in the notice, which shall not be shorter than 90 days.

- 23.1.3. If GSI has not remedied the fault within the period specified in the notice, the Contractor may terminate the Contract forthwith by a further notice in writing to GSI.
- 23.1.4. The Contractor acknowledges that where it is unable to terminate the Contract in accordance with the provisions of this Clause 23.1, its sole remedies for any breach shall, subject to the other provisions of the Contract, be to claim for damages and enforcement of the Contract.

23.2. Termination by GSI

GSI shall be entitled to terminate this Contract in accordance with Clause 23.3 if:

- 23.2.1. A petition is filed in court for receivership, liquidation or reorganization proceedings against the Contractor, unless such proceedings are discharged within forty-five (45) days;
- 23.2.2. A resolution for a voluntary receivership, liquidation or reorganization of the Contractor is passed, except for the purposes of merger or reconstruction on terms approved in advance and in writing by GSI;
- 23.2.3. Any liquidator, trustee in bankruptcy, judicial custodian, compulsory manager, permanent or interim receiver, administrator or the like is appointed in respect of the Contractor or any material part of its assets or the directors of the Contractor request the appointment of a permanent or interim liquidator, trustee in bankruptcy, judicial custodian, compulsory manager, interim or permanent receiver, administrator or the like; a court makes an order for the liquidation of the Contractor;
- 23.2.4. The Contractor has become insolvent or commits an act of bankruptcy, is, or is deemed for the purposes of any law to be, unable to pay its debts as they fall due or to be insolvent, or admits inability to pay its debts as they fall due or suspends making payments on all or any class of its debts or announces an intention to do so, or a moratorium is declared in respect of any of its indebtedness;
- 23.2.5. Some or all of the shares, stocks, voting powers or other means of control in the Contractor are sold, given or otherwise transferred, directly or indirectly, to a legal entity whose domicile, citizenship, residence or other means of registration are in a country that does not maintain diplomatic relations with Israel.

- 23.2.6. The Contractor ceases to execute the Works or any material part thereof for a consecutive period of forty-eight (48) hours or fails to execute the Works in accordance with the Technical Specifications, requirements and other standards of this Contract;
- 23.2.7. The Contractor fails to meet any of the Project Milestones specified in Appendix E (*Project Milestones*) for a period of more than 45 days or fail to pass any Acceptance Test of the System (or any part thereof) within 45 days;
- 23.2.8. The System does not meet the functionality requirements specified in the Technical Specifications;
- 23.2.9. The Contractor subcontracts the performance of all or a material part of the Works or assigns this Contract, in each case, other than as permitted hereunder;
- 23.2.10. The Contractor fails to provide any of the Securities in accordance with Clause 17 by the dates specified herein, or any of the Securities is terminated, repudiated or ceases to be valid and enforceable for any reason;
- 23.2.11. The Contractor fails to obtain or maintain any of the insurances required to be obtained and maintained under this Contract;
- 23.2.12. The Contractor fails to obtain or maintain any of the licenses, permits and consents in accordance with Clause 5.3;
- 23.2.13. The Contractor fails to comply with a decision or instruction of GSI within its designated time period, and as a result of such failure GSI is, or will be, materially adversely affected;
- 23.2.14. The Contractor takes any action or fails to take any action which constitutes a breach of this Contract, and such breach has continued un-remedied for more than 7 days after receipt of a notice thereof from GSI;
- 23.2.15. Any representation or warranty made by the Contractor in the Contract or in any certificate, schedule, instrument or other document delivered by the Contractor pursuant to the Contract shall have been materially false or materially misleading when made;

23.3. Termination for Convenience

In addition, and without derogating from its right to terminate the Contract in accordance with Clause 24.2, GSI may terminate the Contract for any reason and at its sole discretion, subject to a 90 days' prior notice to the Contractor. In such event, the Contractor

shall not be entitled to claim any additional compensation or payment with regard to the termination or as a result thereof.

23.4. Termination Procedure

- 23.4.1. GSI shall, prior to exercising its rights referred to in Clause 23.2 above, send a written notice to the Contractor requiring the Contractor to remedy the event giving rise to the right within the period specified in the notice, if such event can be remedied.
- 23.4.2. If the Contractor has not remedied the event within the period specified in the notice, GSI may terminate the Contract forthwith by a further notice in writing to the Contractor.

23.5. Payment after Termination

- 23.5.1. After a termination under Clause 23.2 has taken effect, GSI shall not be liable to make any further payments to the Contractor until all fees and expenses incurred or which will be incurred by GSI in remedying of any defects and/or damages for delay and in completing the Works have been established by GSI. . GSI shall attempt to reasonably mitigate such costs.
- 23.5.2. GSI shall be entitled to recover from the Contractor the excess of fees and expenses over that part of the Contract Price not paid to the Contractor prior to termination.

23.6. Effects of Termination

Upon termination of this Contract, without prejudice to any rights or remedies that may have accrued to either Party prior to such termination, the following shall apply:

- 23.6.1. This Contract shall cease to have effect, subject to this Clause.
- 23.6.2. Without prejudice to its right to payment of the Contract Price for Works executed prior to termination, subject to the rights of set-off and liquidated damages entitled by GSI, the Contractor shall not be entitled to any payment on termination of this Contract;
- 23.6.3. The Contractor shall cease execution of all Works, except for such work as may be necessary for the purpose of making safe or protecting the Works, and any work required to leave the Works or Sites in a clean and safe condition;
- 23.6.4. The Contractor shall:

- 23.6.4.1. vacate, surrender and relinquish (and cause all Subcontractors to vacate, surrender and relinquish) the Works and the Site;
- 23.6.4.2. remove all Contractor's Equipment and Personnel from the Site;
- 23.6.4.3. deliver all System Documents and As-Built Documentation to GSI, as well as any plans, drawings, data, documents, work in process, instruments and agreements relating to the Works;
- 23.6.4.4. provide at GSI's request any training and explanation as required for the completion of the Works, the remedying of any defects and the operation and maintenance of the System.
- 23.6.5. If requested by GSI, the Contractor shall assign to GSI such of the subcontracts entered into by the Contractor with the Subcontractors as are so required by GSI, including the Contractor's interests, rights and obligations thereunder, at no additional cost. The Contractor shall remain liable for all duties, obligations and liabilities under such subcontracts that accrued prior to such assignment;
- 23.6.6. GSI may complete the Works itself and/or by any other party. In achieving such completion, GSI or such other party may use any of the plans, System Documents, As built Documentation, works, Contractor's Equipment, temporary works and any System Component as GSI or such other party may determine (and the Contractor hereby irrevocably undertakes to effect all acts, matters and things necessary to give effect to such use). Upon completion of the Works or at such earlier date as GSI thinks appropriate, GSI shall give notice that the Contractor's Equipment and temporary works will be released to the Contractor at or near the Site. The Contractor shall be responsible for all such costs of providing Contractor's Equipment and temporary works and for its costs of removing or arranging the removal of the same from such place without delay.
- 23.6.7. If requested by GSI, the Contractor shall fully cooperate in the transfer of the execution of the Works (in whole or in part) to any third party designated by GSI and provide GSI and such third party, with such information as may be necessary for the

safe and proper execution, operation and maintenance of the Works;

- 23.6.8. If requested by GSI, the Contractor shall transfer or assign (as the Engineer may instruct) to GSI, or any third party designated by GSI, all permits, licenses or approvals held by the Contractor in connection with the design and execution of the Works which are capable of being transferred or assigned.
- 23.6.9. Upon expiration or earlier termination of this Contract, each Party shall promptly return to the other Party, or certify the destruction of, the other Party's Confidential Information (as defined herein). The Parties agree to work in good faith to execute the foregoing in a timely and efficient manner.
- 23.6.10. The rights and obligations of the Parties contained in Clauses 1920, 22 of this Contract will survive the termination of this Contract.

23.7. Independent Contractor

- 23.7.1. The Contractor declares and confirms that this Contract is a contract for the provision of services and work, and that it is an independent contractor.
- 23.7.2. Nothing in this Contract shall be construed to create an employer-employee, partnership, joint venture, franchise or agency relationship between the Parties.
- 23.7.3. The Contractor, its employees, subcontractors or its shareholders will not be considered GSI's employees in any case and under any circumstances.
- 23.7.4. Neither Party will have the power to bind the other or incur obligations on the other Party behalf, without the other Party prior written consent.
- 23.7.5. The Contractor will be responsible for any payment for damage, indemnity or compensation or any other payment due by it under any Laws to the Contractor's Personnel. In addition, the Contractor undertakes to pay all taxes, levies and other mandatory payments imposed on it in connection with the provision of Works under this including, all taxes levies and other mandatory payments apply in connection with the engagement of the Contractor's Personnel.

23.8. Claims Procedure

Where the Contractor seeks an increase in or any payment in addition to the Contract Price or any extension of time, for any cause or circumstances, the following provisions shall apply:

- 23.8.1. The Contractor shall submit and substantiate a claim in accordance with this Clause 23.7.
- 23.8.2. Where the Contractor submits to GSI a composite submission embodying several claims, each such claim shall be treated as a separate claim for the purposes of this Clause 23.7.
- 23.8.3. The Claim must provide details of the event establishing the requested additional payment and/or extension of time, including the nature, cause and length or anticipated length of the event and the steps taken, or to be taken by the Contractor to mitigate and minimize its length, effect and any associated costs. Such details shall be evidenced by supporting documents. Where additional payment is requested, the Contractor shall submit with its claim a detailed cost analysis showing the costs incurred by the Contractor as a direct result of the event, and any other documents as instructed by GSI.
- 23.8.4. GSI may require the Contractor to provide such further evidence as it sees at its discretion necessary to confirm the details of the claim.
- 23.8.5. GSI will review each claim and try to negotiate an amicable settlement with the Contractor.
- 23.8.6. Unless an amicable settlement has been reached in accordance with Clause 23.8.5, GSI shall inform the Contractor whether or not it accepts the claim (in whole or in part), within 30 days of receiving the claim and all required information and documents.
- 23.8.7. In determining each claim, GSI may take into account the steps taken or available to be taken by the Contractor to mitigate or minimize the length and effect of any event.

24. INSURANCE

General

- 24.1. The Contractor shall obtain and maintain the appropriate insurance coverages indicated hereinafter, on his behalf and on behalf of the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Earth and Marine Research Administration – the Geological

Survey of Israel, whereas the coverage shall be no less comprehensive than that set forth below.

24.2. In all the required insurance policies, the following conditions shall be included:

24.2.1. The State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Earth and Marine Research Administration – the Geological Survey of Israel, shall be added to the insured's name as additional insureds, subject to the indemnity extension as detailed above.

24.2.2. In any case of a reduction or cancellation of the insurance by one of the parties, such reduction or cancellation shall not be valid unless prior notice of such has been given at least 60 days in advance by registered letter to the Financial Comptroller of GSI.

24.2.3. The Insurer waives any right of subrogation, claim, and contribution or refund vis-a-vis the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Earth and Marine Research Administration – the Geological Survey of Israel, and their employees, provided that such waiver shall not Apply for the benefit of a person that has caused willful damage.

24.2.4. The Contractor alone is liable to the Insurer for payment of the premiums in respect of the policies and for fulfillment of all the obligations imposed on the Insured under the terms and Conditions of the policies.

24.2.5. The policy excess specified in each policy shall apply exclusively to the Contractor.

24.2.6. Any section in the insurance policies that obviates or reduces the Insurer's liability in any way when other insurance exists shall not operate vis-a-vis the State of Israel and/or the Ministry of National Infrastructures, Energy and Water Resources and/or the Earth and Marine Research Administration and/or the Geological Survey of Israel, and that the insurance is being effected in terms of primary insurance which confers the full rights under the insurance policies.

24.2.7. The terms of coverage under the above policies, except for Professional Indemnity Insurance shall not be inferior to the accepted coverage according to the terms of the "BIT version policy," for each policy in respect of which such a version exists and is generally accepted, subject to the extensions to the cover stipulated above.

- 24.3. Copies of the insurance policies, duly certified by the Insurer, or a certificate signed by the Insurer as to the aforesaid policies having been put into effect, shall be furnished to GSI no later than the Effective Date.
- 24.4. The Contractor undertakes that throughout the period of the contractual engagement with the State of Israel and/or the Ministry of National Infrastructures, Energy and Water Resources and/or the Earth and Marine Research Administration and/or the Geological Survey of Israel State of Israel, and as long as its liability is valid, it will keep the insurance policies in full force and effect. The Contractor undertakes that the insurance policies will be renewed annually for as long as the Contract is in effect. The Contractor undertakes to produce copies of the renewed policies to GSI, duly certified and signed by the Insurer, or a certificate duly signed by the Insurer as to their renewal, by no later than two weeks prior to expiration of the period of insurance.
- 24.5. **For avoidance of doubt, it is hereby declared and agreed that the Insurances' coverage required, as well as the Limits of Liabilities and coverage terms & conditions are considered a minimal requirement imposed on the Contractor and in no way constitute a proof of the State of Israel and/or the Ministry of National Infrastructures, Energy and Water Resources and/or the Earth and Marine Research Administration and/or the Geological Survey of Israel and anyone working on their behalf to the extent of the Insurance risks nor their size. The Contractor must examine its exposure to Property, Casualty and Liability risks and accordingly determine the necessary Insurances' coverage including their extent and Limits of Liabilities.**
- 24.6. Nothing in all the contents of the insurance sections shall be construed as exempting the Contractor from the liability imposed on him by any law or under this contract, and the foregoing shall not be construed as a waiver by the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Earth and Marine Research Administration – the Geological Survey of Israel, of any right or remedy conferred on it by any law and under this contract.

Insurance requirements for the Deployment Period

24.7. Mechanical heavy equipment Insurance

All Risks coverage including Property and Third Party Liability in respect of Bodily Injury & property damage.

24.8. All Risks Contractors Works Insurance (C.A.R)

The Contractor shall obtain and maintain All Risks Contractors Works Insurance in respect of executing all works required during the Deployment Period, including building and construction of seismic stations, performing

drilling, disassembly, destruction removal of debris, groundworks, cast concrete, installation & placement of solar panels, satellite dishes and other communication devices, electricity and communication infrastructures and cables and electronic equipment in the seismic stations and in other places where works are carried out, including all materials, systems and equipment for the whole duration of works and shall include:

Section A - Property Insurance

24.8.1. The full value of all works including all materials, systems and equipment on a new value basis. The sum of insurance - shall reflect the value of the tender works based on the contract value and includes all materials and equipment items within inclusive of all additions and changes occur during the period of insurance on which the Contractor is obligated to report to his insurer and verify issuing of updates/additions accordingly. For the avoidance of doubt, the coverage shall include also natural perils and earthquakes damages, burglary, theft and robbery risks.

24.8.2. The insurance coverage shall include the following extensions:

24.8.2.1. Light construction equipment, light devices, work tools and auxiliary tools – based on their full value.

24.8.2.2. Disassembly, destruction, removal of debris, support, stabilization costs & expenses – limit of liability shall not be less than 25,000 US Dollars.

24.8.2.3. Loss or damage to property worked upon / adjacent property belonging to one of the Insured's individuals and is not a part of the Works insured under this Policy - insured on a first loss basis not subject to under-insurance – limit of liability shall not be less than 500,000 US Dollars.

24.8.2.4. Loss or damage to property/materials/items forming part of the project whilst in transit outside the project site (including loading and unloading actions) and/or whilst stored anywhere in Israel and its held territories - based on their full value.

24.8.2.5. Temporary and ancillary structures on the Site including stores, offices, fences and the like, located at the project's site of work – based on their actual monetary value.

24.8.2.6. Expenses for repairs or replacement resulting from faulty design, faulty materials or faulty work exclusion shall be limited to the repair or replacement of the faulty items

themselves and shall not apply to loss or damage to items properly performed, where such loss or damage results from an accident arising from faulty design, faulty materials or faulty work.

- 24.8.2.7. Expenses in respect of architects, engineers, consultants and other experts – shall not be less than 10,000 US Dollars.
- 24.8.2.8. Direct damage resulting from faulty design, faulty materials or faulty work shall not be less than 100,000 US Dollars, subject to maximum 10% deductible, payable by the Contractor.
- 24.8.2.9. Special expenses in respect of alterations and extensions demanded by the authorities after the occurrence of an insured provided - 10% of works value.
- 24.8.2.10. Running-in/testing period – 30 days for the equipment after assembly.
- 24.8.2.11. Coverage includes natural perils, earthquake damages, burglary, theft and robbery risks.
- 24.8.2.12. As long as Advance payments shall be made towards the insured by GSI in respect of this project - the insurance benefits deserve to the insured based on this section shall be mortgaged in favor of the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Earth and Marine Research Administration – the Geological Survey of Israel and shall be paid them directly, unless the comptroller of GSI directs the insurer in writing otherwise.

Section B – Third Party Liability Insurance

- 24.8.3. Insurance coverage in respect of the Contractor's legal liability, under the laws of the State of Israel in third party liability insurance for person and property in all areas of the State of Israel and its territorial waters. The limits of liability shall not be less than 2,500,000 US Dollars per event and for the period of the insurance including a cross-liability clause.
- 24.8.4. Coverage under this section shall include:
 - 24.8.4.1. Liability in respect of loss or damage due to vibration, shivering or by removal or wearing of support – the limits of liability shall not be less than 100,000 US Dollars.

24.8.4.2. Direct loss or damage to underground pipes, facilities and cables - the limits of liability shall not be less than NIS 1,000,000.

24.8.4.3. Indirect loss or damage to underground pipes, facilities and cables - the limits of liability shall not be less than NIS 500,000.

24.8.4.4. Subrogation claims of the national insurance institute

Section C - Employers Liability

24.8.5. Coverage in respect of all workers related to performing the works, including contractors, subcontractors and their employees.

24.8.6. The limit of liability for any one employee and event and for the period of insurance shall be no less than 5,000,000 US dollars.

24.8.7. The insurance Policy shall include:

24.8.7.1. An extended maintenance period of 24 months after completion of all works.

24.8.7.2. The terms of coverage under the above policies shall not be inferior to the accepted coverage according to the terms of the "BIT version policy" for each policy in respect of which such a version exists and is generally accepted, subject to the extensions to the cover stipulated above.

24.8.7.3. Contractors and/or sub-contractors and/or the State of Israel and/or the Ministry of National Infrastructures, Energy and Water Resources and/or the Earth and Marine Research Administration and/or the Geological Survey of Israel shall be added to the insured's name as additional insureds.

24.8.7.4. Territorial limits - anywhere within the territory of the State of Israel and its held territories.

24.9. Professional Liability Insurance – Engineers / Constructors / Designers / Architects / Safety Supervisors / Superintendents

24.9.1. The Contractor shall insure its professional liability in Professional Liability Insurance.

24.9.2. The policy shall cover any damage due to a breach of professional duty on the part of the Engineers / Constructors / Designers / Architects / Safety Supervisors / Superintendents, their employees and all those working for them and which has occurred as the result of an act, negligence, including a failure, error or omission, misrepresentation, negligent declaration made in good faith, in all

matters pertaining to the design, construction, safety, superintendence and consulting services regarding the Works and/or in accordance with the Tender and/or the Contract.

24.9.3. Limits of liability shall not be less than 1,000,000 US Dollars per event and in the aggregate per the period of the insurance (one year).

24.9.4. The cover under the policy shall be extended to contain the following extensions:

24.9.4.1. Dishonesty of employees

24.9.4.2. Libel and/or slander;

24.9.4.3. Loss of documents, including the loss of use and/or delay as a result of an Insurance event;

24.9.4.4. Cross-liability, but coverage shall not apply in respect of the Contractor's Claims against the State of Israel and/or the Ministry of National Infrastructures, Energy and Water Resources and/or the Earth and Marine Research Administration and/or the Geological Survey of Israel;

24.9.4.5. Extension of the period of discovery to at least six months;

24.9.5. The cover under the policy shall be extended to cover the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Earth and Marine Research Administration – the Geological Survey of Israel State of Israel, in so far as they may be deemed to be liable for the acts and/or omissions of the Engineers / Constructors / Designers / Architects / Safety Supervisors / Superintendents and those working on their behalf. Accordingly, the State of Israel - the Ministry of National Infrastructures, Energy and Water Resources, the Earth and Marine Research Administration – the Geological Survey of Israel shall be added to the insured's name as additional insureds.

The 2nd stage – after Completion of all works and delivery of buildings and System - Product Liability Insurance – in respect of the System and for the installation, placement, assembly, treatment and repair of System works, Professional Indemnity Insurance in respect of the System's Maintenance after their delivery, Employers Liability & Third Party

Liability in respect of systems maintenance.

Product Liability Insurance

1. The Contractor shall present to The Geological Survey of Israel a Confirmation by the insurers of the manufacturers/suppliers of the

electronic Equipment, systems, computers, networks & the accompanying components, concerning the existence of a product liability insurance policy covering damages arising from design, manufacture, supply, installation, assembly, placement, integration, configuration, testing, commissioning QA, warranty, acceptance tests, repair, replacements, modifications, upgrades of software and seismic instruments, maintenance, helpdesk, support, reports, documentation, spare parts and training,

2. The limit of liability for any one event and in the aggregate for the period of insurance, in respect of bodily injury and property damage, shall be no less than USD 500,000..
3. A cross-liability clause shall be included in the policy.
4. A discovery period of at least 12 months shall apply.
5. The insurance shall be extended to indemnify the State of Israel – The Ministry of National Infrastructures, Energy and Water Resources - The Geological Survey of Israel, in the event they are held liable for acts and/or omissions of The Contractor/the manufacturer/the supplier and those acting on their behalf or in respect of their liability arising out of loss or damage caused by the products which The Contractor/the manufacturer/the supplier is responsible for.

Employers liability Insurance

1. The Contractor shall insure his legal liability towards its employees & anyone working on his behalf by Employers Liability Insurance in all the areas of the State of Israel and the occupied territories.
2. The limits of liability per employee per event and in the aggregate for the period of the insurance shall not be less than USD 5,000,000.
3. The insurance shall be extended to cover The Contractor's liability vis a vis contractors, sub-contractors and their employees in the event the Contractor shall be considered their employer.
4. The insurance shall be extended to indemnify The State of Israel - The Ministry of National Infrastructures, Energy and Water Resources – The Geological Survey of Israel, in the event of it being claimed in relation to the occurrence of a work accident/any professional disease, that they bear any employers liability vis a vis The Contractor's employees, contractors, sub-contractors and their employees employed by The Contractor.

Third Party Liability Insurance

1. The Contractor shall insure his legal liability under the laws of the State of Israel in third party liability insurance for person and property in all areas of the State of Israel and the occupied territories.
2. The limit of liability shall not be less than USD 1,000,000 per event

and for the period of the insurance (one year).

3. The insurance shall be extended to cover the Contractor's third party liability in regards to activities of contractors, sub-contractors and their employees.
4. A cross-liability clause shall be included in the policy.
5. The insurance shall be extended to indemnify The State of Israel - The Ministry of National Infrastructures, Energy and Water Resources – The Geological Survey of Israel in so far as they shall be deemed to be liable for the acts and/or omissions of the Contractor and anyone working on his behalf.

25. MISCELLANEOUS

25.1. Assignment

- 25.1.1. The Contractor shall not assign this Contract or its rights and/or obligations hereunder, in whole or in part, without the prior written approval of GSI.
- 25.1.2. GSI may assign this Contract or its rights and/or obligations hereunder, in whole or in part, to any entity appointed by the government of Israel.

25.2. Governing Law and Jurisdiction

- 25.2.1. This Contract shall be governed by the laws of the State of Israel.
- 25.2.2. The courts of Jerusalem shall have the sole and exclusive jurisdiction over any matter arising from or in connection with this Contract.

25.3. Entire Agreement

This Contract (including its Appendixes and Schedules) constitutes the complete and exclusive understanding and agreement between the parties regarding its subject matter and supersedes all prior or contemporaneous agreements or understandings, written or oral, relating to its subject matter. Any waiver, modification or amendment of any provision of this Contract will be effective only if in writing and signed by duly authorized representatives of both Parties.

25.4. Severability

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

25.5. **Waiver.**

25.5.1. The failure by either Party to enforce any provision of this Contract will not constitute a waiver of future enforcement of that or any other provision of this Contract. In addition, no provision of the Contract shall be deemed to have been waived unless such waiver is expressly made in writing and signed by the Party making the waiver.

25.5.2. Any extension allowed by one Party to the other Party regarding performance of its duties and obligations under the Contract or to remedy any breach shall not be construed as a waiver by the Party giving such extension of any of its rights under the Contract or under any Laws.

Appendix A

The Contractor's Proposal in the Tender

*(to be attached to the Contract
following award)*

Appendix B

Technical Specifications

Appendix B

Technical Specifications

1. General

- 1.1. The Contractor shall execute the Works in strict accordance with the instructions and specifications set forth below, and subject to all terms and provisions of the Contract.
- 1.2. Where applicable, the Contractor shall execute the Works in accordance with relevant local and international standards, including New Manual of Seismological Observatory Practice of GFZ (after IASPEI). When no standards apply, the Contractor shall execute the Works in a timely and diligent manner, according to local and international good industry practice, and with the high level of precision and expertise expected from an experienced and expert contractor.
- 1.3. Without derogating from the generality of the above, the Contractor shall execute the Works, where applicable, in strict accordance with the "General Specifications for Construction Works" issued by the inter-ministerial committee for standardization (widely known in Israel as "the blue book").

2. Definitions and Abbreviations

- 2.1. All capitalized terms shall have the meaning ascribed thereto in the Contract.
- 2.2. In addition, for the purpose of the Appendix B (*Technical Specifications*), the following terms shall have the meaning ascribed thereto herein.
 - 2.2.1. **BB** – Broadband seismometer.
 - 2.2.2. **EEW** – Earthquake early warning
 - 2.2.3. **EEWS** – Earthquake early warning system
 - 2.2.4. **Full Turnkey** – a complete solution for the design, construction, deployment and installation of a Real-Time Seismic Network, from sites to hub, including telemetry and software solution.
 - 2.2.5. **GNSS** – Global Navigation Satellite System.
 - 2.2.6. **ISN** – Israeli seismic network

- 2.2.7. **Newly-Built Stations** – Seismic stations in which the station structure, including the seismic vault, shall be designed and constructed by the Contractor.
- 2.2.8. **Real-Time Seismic Network** – a Seismic Network in which ground motion is seen at the data-hub no later than 10 seconds from the moment it was felt by the sensor at the remote site.
- 2.2.9. **Seismic Network** – several seismic stations (at least 4) that are connected through telemetry to a central data-hub, in which data-acquisition and processing is done by seismic software.
- 2.2.10. **Seismic Station** – a seismic sensor and a datalogger recording and digitizing the ground motion measured by the sensor
- 2.2.11. **Sensors** – Strong ground motion accelerometer or broadband seismometer.
- 2.2.12. **SM** – Strong ground motion accelerometer.

3. Network Overview

- 3.1. The Contractor shall design, supply, install, deploy and maintain a turn-key real-time seismic network, which is expected to consist of 115 seismic stations as follows:
 - 3.1.1. 23 stations shall be equipped with both a broadband seismometer and a strong ground motion accelerometer, including 3 stations (of the 23) which shall also be equipped with seismogeodetic instrumentation;
 - 3.1.2. 91 stations shall be equipped with strong ground motion accelerometers, including 5 stations (of the 91) which shall also be equipped with seismogeodetic instrumentation;
 - 3.1.3. One 50m-deep borehole station at the Dead Sea pools, which shall be equipped with both a broadband seismometer and a strong ground motion accelerometer.
 - 3.1.4. The final numbers, types and locations of all seismic stations shall be provided by GSI to the Contractor no later than the Effective Date. In the event of an addition or subtraction of stations, Sub-Clause 13.1.7 of the Contract shall apply.

- 3.2. The System shall be highly reliable and worldwide proven as capable of handling successfully up to 200 stations (600 channels) network with a maximum data-return and minimal latencies.
- 3.3. The Works to be executed by the Contractor shall include, inter alia:
 - 3.3.1. Site surveys and detailed design of the System and all of its components;
 - 3.3.2. Construction of 35 seismic vaults' structures;
 - 3.3.3. Manufacture and supply of Monitoring Instruments;
 - 3.3.4. Installation of Monitoring Instruments in seismic stations;
 - 3.3.5. Deployment of telemetry and communication network, including all equipment related thereto;
 - 3.3.6. Data hubs (main and backup) configuration and installation;
 - 3.3.7. Installation of an acquisition software;
 - 3.3.8. Installation of an earthquake early warning system (EEWS) software;
 - 3.3.9. Integration between all System components and full inspection of network operation;
4. **Site Surveys and Detailed Design**
 - 4.1. The Contractor shall thoroughly inspect, by experts on its behalf, all station sites and all sites where Works are to be executed.
 - 4.2. The Contractor shall then submit for GSI's review and approval a detailed design of the System, in accordance with GSI's instructions.
 - 4.3. The design shall clearly address all technical requirements stated in the Tender Documents, point by point.
 - 4.4. The design shall be accompanied with references supporting the reliability of the suggested solutions, including for each of the main different components: sensors, data-loggers, telemetry, data-hub, processing software and EEWS modules. These references may include scientific reviewed papers, official reports and website links provided by non-interest acquisition networks or companies worldwide.
 - 4.5. All design works shall be carried out by professionals on behalf of the Contractor, all highly experience with the design of similar turn-key seismic networks.

- 4.6. The detailed design, including all supporting documents, shall be submitted in accordance with the Project Milestones.
- 4.7. GSI shall review the design, and shall be entitled to require the Contractor to correct, change or amend it, in which case the Contractor shall make all amendments as instructed and without delays.
5. **Design and Construction of Newly Built Stations:**
- 5.1. The Contractor shall design and construct 32 seismic vaults' structure, including all associated therewith. Locations and general types of structures shall be as stated in Appendix C (*Stations Data*).
- 5.2. All design and construction works shall be carried out by experienced staff on behalf of the Contractor, and subject to all terms of the Contract and this Appendix B (Technical Specifications), including inter alia all terms and requirements of the "General Specifications for Construction Works" issued by the inter-ministerial committee for standardization (widely known in Israel as "the blue book").
- 5.3. All seismic vaults shall be concrete-based, providing safety and stability of the structure for a minimum of 50 years.
- 5.4. All structures constructed by the Contractor shall be stable for the expected ground motion at site, according to the probability of 10%@50 years, for the short period range of 0.2s, and approved by a civil engineer (see within the Design provisions for earthquake resistance of structures, SI 413, Amendment No. 5, Map 8b).
- 5.5. All measures of the New Manual of Seismological Observatory Practice of GFZ (after IASPEI) (Chapter 7) shall be closely followed.
- 5.6. Dimensions of Newly Built Stations
- 5.6.1. SM stations (16 stations) – the minimum dimensions are 2m X 2m area and minimal height of 2m. The vault may be buried, partly buried or fully on the ground, depending on constraints of permit. On the roof the required antennas will be located together with the solar panels needed at site.
- 5.6.2. BB+SM stations (15 stations) - the minimum dimensions are 3m X 3m area and minimal height of 5m. The vault shall be buried, and the BB sensor might either be located in an isolated compartment

within the vault (see below for more details), or located in a posthole accessible from within the vault.

- 5.6.3. BB+SM special construction station (1 station) - DAM2 is a station located at the southern Dead Sea pools, within one of the artificial dykes of the Dead Sea Facility. It requires a special construction and installation at a 50m borehole, to reach below the artificial filling of the dyke, down to the original base-rock.
- 5.6.4. Notwithstanding the above, the Contractor may request GSI to consider different dimensions for the BB+SM Newly Built Stations, provided that: (a) both Sensors would be coupled well to the ground, sealed and constructed for effective water drainage; and (b) both Sensors will be positioned away from the electronic box and telemetry, to avoid any of their noise or interference.
- 5.6.5. Such request for change in dimension shall be submitted in writing no later than 30 days after the Effective Date, and shall include a description of the suggested change, the Contractor's reasoning for the suggested change, and supporting documents as required. GSI shall consider such request at its sole discretion, and may or may not approve it in whole or in part. GSI decision shall be final and binding.

5.7. Waterproofing

- 5.7.1. The seismic vault shall have a water drainage system. It shall be constructed from non-porous concrete based walls with several options: with or without metal sheets infrastructure. Concrete preparation shall include water-resistance chemicals in the concrete-mix, and vibration of concrete during construction to assure homogeneity.
- 5.7.2. Bottom of Vault shall always be made of concrete and have a water drainage ditch.
- 5.7.3. Connection between walls and floor, and any other cracks or openings shall be sealed with hot asphalt, or similar sealing material.

5.7.4. Cables shall be perfectly waterproofed as they connect different compartments within the vault, or as they come from the outside of the vault.

5.7.5. The upper rim of the site shall be at-least 30cm above ground level, so that water will not be drained from the surface to the vault from above.

6. **Manufacture and Supply of Monitoring Instruments and GNSS System**

6.1. The Contractor shall manufacture and supply Monitoring Instrument for installation in the System, in strict accordance with the following specifications.

6.2. **Sensors minimum requirements:**

	Frequency Band (Minimum)	Self-Noise	Dynamic Range
Broadband Seismometers	120s – 50Hz (preferably 100Hz upper limit)	< NLNM @ 40s – 10Hz	> 135dB
Strong Ground Motion Accelerometers	DC – 150Hz	< AHNM @ 0 – 100Hz	> 155dB

6.2.1. Sensor saturation of at least 2g for the strong motion accelerometer.

6.2.2. Calibration coil.

6.2.3. Up to 40V peak to peak output voltage.

6.2.4. Provide full system response in dataless Seed.

6.2.5. Temperature Requirement: -20 - +50°C operative.

6.3. **Data-Loggers Minimum Requirements:**

6.3.1. Digitizing the full dynamic range of the signals recorded by the sensors; a minimum of 24-bit digitizer is required.

6.3.2. Sample rates of at least 200sps.

6.3.3. Data-packets are a maximum of 1s long.

6.3.4. Timing quality is included in data packets in real-time.

6.3.5. Locked to GPS timing with time accuracy < 10μs.

- 6.3.6. Onsite recording of at least 3 months of continuous data at high sample rates (in case communication is lost during a critical seismic sequence), minimum of 16GB per 3-Channels stations @ 200sps, and 32GB per 6-Channels stations @ 200sps.
- 6.3.7. Recording of packets either in MiniSeed formats, or in a well-known format with durable software for acquisition and conversion to MiniSeed / SeedLink.
- 6.3.8. Support multiple connections from different IP addresses, so independent seismic processing hubs can each receive the data.
- 6.3.9. Supporting Real-time telemetry with TCP/IP or UDP protocols
- 6.3.10. Support simultaneous realtime telemetry and recording to local onsite storage.
- 6.3.11. Provide full system response in dataless Seed.
- 6.3.12. Temperature Requirement: -20 - +50°C operative.
- 6.3.13. Low power requirement (< 5W) for 12V DC for 6 channel stations, not including telemetry.
- 6.3.14. Full sensor control, including configuration, calibration, and re-centering.
- 6.3.15. Datalogger shall support storage and telemetry of operational data considered in the state of health section, including: temperature, GPS status, voltage and sensor boom position.
- 6.4. **GNSS System Minimum Requirements:**
 - 6.4.1. The GNSS system shall be optimized for GNSS reference station applications and include the following points:
 - 6.4.2. GNSS Receiver
 - (i) Supporting GPS satellite tracking: L1, L2, L5, including L2C
 - (ii) Supporting GLONASS satellite tracking: L1, L2, L3, including L2C
 - (iii) Supporting Galileo satellite tracking: E1, EE5
 - (iv) Logging rate of up to 50Hz.
 - (v) On-board memory above 8 GB
 - (vi) Output data includes raw and Rinex formats
 - (vii) Internal battery.

(viii) Connection to power and communication.

(ix) The ability to transfer the data to the hub.

6.4.3. GNSS Antenna

- (i) The antenna shall be external, i.e., the receiver and the antenna are connected by a cable.
- (ii) The monumentation of the GNSS antenna shall stand in high stability standard according to GNSS Station Monumentation provided by Unavco.
- (iii) Shall have sub-millimeter phase-center repeatability.
- (iv) Shall include a multipath reduction technology.
- (v) Low-elevation (<50) satellite tracking capability.
- (vi) Supporting GPS satellite tracking: L1, L2, L5, including L2C
- (vii) Supporting GLONASS satellite tracking: L1, L2, L3, including L2C
- (viii) Supporting Galileo satellite tracking: E1, E5
- (ix) The antenna shall be connected to the ground or to the foundations of a stable building.

6.4.4. Positioning performances

Static and fast static:

- (i) Horizontal - 3 mm + 0.5 ppm RMS
- (ii) Vertical - 5 mm + 0.5 ppm RMS

6.4.5. GNSS Firmware at the station

- (i) Convert the data to Rinex format and check the quality of the data*.
- (ii) Convert the data to seismic format (displacement field, Miniseed or Seedlink) and check the quality of the data*.
- (iii) Perform real-time acquisition and generate daily files.
- (iv) Perform fast GNSS differential kinematic positioning algorithm or provide an analogue plug-in program*.

*Can be either at the station or at the hub

7. **Installation of Monitoring Instruments in all Stations**

7.1. **Monitoring Instruments' Position**

- 7.1.1. Newly constructed stations – in seismic vaults, as detailed above.
- 7.1.2. SM stations in existing ready-for-installation facilities (75 stations) – within the facility an area of a minimum area of 1.5m X 1.5m, and a minimal height of 1.5m, shall be allocated for the station, besides the roof of the construction that might serve for antennas, or if relevant, also for seismogeodetic antennas.
- 7.1.3. BB + SM stations in existing ready-for-installation facilities (8 stations) – the facility for the station is provided by the GSI, and the dimensions are appropriate for BB+SM installation.

7.2. Temperature Tolerance

- 7.2.1. The Contractor shall ensure that temperature tolerance in all stations is as follows:
 - (i) For SM stations - $\pm 5^{\circ}\text{C}$ temperature tolerance.
 - (ii) For BB+SM stations - $\pm 1^{\circ}\text{C}$ temperature tolerance.
- 7.2.2. Without derogating from the generality of the above and from the Contractor's unconditional obligation to achieve the abovementioned temperature tolerance, the Contractor shall provide and/or install the following:
 - (i) For SM stations in existing ready-for-installation facilities – a minimum of 1 Layer of thermal cover, directly over the Sensor.
 - (ii) For SM stations requiring new vault construction – a minimum of 2 layers of thermal cover, the first directly over the Sensor, and the second in the interior of the vault.
 - (iii) For BB+SM stations in existing ready-for-installation facilities – a minimum of 2 layers of thermal cover, the first directly over each of the Sensors, and the second in the interior of the vault.
 - (iv) For BB stations requiring new vault construction - a minimum of 3 layers of thermal cover, the first directly over each of the Sensors, the second in the interior of the vault, and the third in the exterior of the vault.

- 7.2.3. All layers of thermal insulation shall be of 30cm minimal thickness, made of Styrofoam, foam rubber, Polyisocyanuratic foam, or other similar, non-hygroscopic insulation material.
- 7.2.4. In seismic vaults constructed by the Contractor, the upper thermal cover shall be placed in a minimum depth of 50cm below ground level. In addition, there shall be tight contact between vault's walls and thermal cover, such as with a "rope", closing the gaps between the two, to prevent heat transfer by convection through the gaps.

7.3. Lightning Protection

- 7.3.1. Lightning protection shall be installed for all type of stations, including those that are within existing ready-for-installation stations.
- 7.3.2. Lightning protection shall be taken care of for all cables entering the vault, and all electrical equipment within the vault, and the following shall be considered:
 - (i) Proper cabling that minimizes voltage induction during lightning;
 - (ii) Proper use of special electronic devices to protect all cables entering the seismic vault from voltage surges;
 - (iii) An adequate grounding system.
 - (iv) Enclosing of equipment in a "Faraday cage" either by making a metal-shielded seismic vault or a loose mesh of ground metal strips around the vault, for creating an equipotential electric field around the equipment, thus decreasing voltage drops on equipment and cables during lightning strikes.

7.4. Electro-magnetic Interference Protection (EMI)

- 7.4.1. Metal or still shall be placed in a minimum of 0.5m away from Sensors.
- 7.4.2. Equipment shall have EMI filters and Voltage surge protection.

7.5. Additional Considerations

- 7.5.1. For SM stations (whether equipped with a data logger and Sensor embedded together, or with a separated datalogger and sensor) a

small vault or box are required with proper insulation, sealing and concrete underlying pad for good coupling with the earth.

- 7.5.2. Vault and box shall be securely locked to prevent vandalism.
- 7.5.3. Vault shall be protected from animals, including metal or aluminum sleeves around the cables, for protection from rodents.
- 7.5.4. Cables shall be perfectly waterproofed as they connect different compartments within the vault, or as they come from the outside of the vault.
- 7.5.5. Electrical grounding - A ground impedance below 1 ohm is required.
- 7.5.6. Vault-cover - UV light-resistant plastic or water-resistant plywood.
- 7.5.7. In places that are expected to experience, in a large earthquake, ground acceleration of 0.5g or higher, sensors shall be fixed to the ground, so that they will continue to operate within and after the main shock.
- 7.5.8. For the SM+BB stations, with new or renewed construction, the seismic vault shall reduce the seismic noise by a minimum of 10dB, for all the required frequency range (as set forth in clause 6.2), in reference to the surface noise. For an SM station, with new or renewed construction, the reduction shall be of a minimum of 5dB, for all the required frequency range (as set forth in clause 6.2), in reference to the surface noise. The reference surface noise for the purpose of this sub-clause has been measured by the Division of Seismology at all sites before installation, and is defined by the 95% percentile of the power spectral density. analyzed by the Probability Density Function (McNamara and Boaz, 2005).

8. Telemetry Requirements:

- 8.1. No Single Point of Failure
- 8.2. The System shall include two alternative telemetry routes from each station (i.e., satellite, cellular, radio, etc.), one as the main and the other as the backup.
- 8.3. The Contractor shall be responsible for providing the full telemetry solution, including when applicable by installing and deploying third party

equipment, and by contacting and contracting local or international telecommunication providers.

- 8.4. The Contract Price shall be deemed to include the full installation and deployment of all telemetry means and routes.
- 8.5. Payment for actual usage of telemetry (bandwidth etc.) after the Deployment Completion Date shall be as stated in the Contract.
- 8.6. When possible (and within the other telemetry requirements), the Contractor is encouraged to use existing communication-infrastructure (landlines, cellular, wifi, etc.), and use other means (Satellite, Radio) only when all other means are not possible for a given site (GSI generally expects Satellite or Radio solutions to be relevant only for remote field stations, with no landlines, cellular or WiFi coverage).
- 8.7. In the field stations, with no existing telemetry infrastructure, the 3s route is required to be through satellite communication.
- 8.8. All telemetry means shall support TCP/IP or UDP protocols for communication.
- 8.9. Telemetry latency (from time of sending the packet to the time it is read in the hub): at least one of the alternative solution shall have a maximum of 1 second for 99% of the packets, while the second solution shall have a maximum of 3 seconds for 99% of the packets.
- 8.10. The two telemetry routes shall both be transmitted to the main data-hub.
- 8.11. Both Telemetry Routes shall also be synchronized in real-time to the backup data-hub.
- 8.12. The two data-hubs shall have a communication line with symmetric high upload and download speeds, allowing a real-time synchronization of both hubs.
- 8.13. The telemetry hubs shall be capable of dealing smoothly and efficiently with the telemetry redundancy: without reprocessing of identical data packets.
- 8.14. The two telemetry means shall be private and dedicated to the use of seismic data transfer from stations to the data-hub, so that they will not be overridden by the communication-provider at any time, especially at the time of crisis.

- 8.15. Bandwidth shall exceed 1) at least two times the average throughput of the data, 2) beyond the peak throughput of data, when there is no compression, and there is a 50% extra burst bandwidth. The throughput providing continuous data transmission for a total of 600 channels, with 200sps per channel.
- 8.16. The maximum number of satellite antennas available at the hub is two (2), and the telemetry solution shall suit such restrictions.
- 8.17. The Contractor shall state the number of possible intermediate stations for efficient performance of the system at peak load (large and long events, with extensive aftershock sequence), in which the bandwidth and antennas are significantly loaded with large data packets, and provide the power consumption of their telemetry solution.
- 8.18. The bandwidth calculation shall account also for the State of Health (SOH) channels suggested in the Contractor's solution.
- 8.19. There shall be minimal gaps or out-of-sequence data packets (daily data-return reports and time latencies per day could be useful to provide). The Contractor shall provide documents showing how gaps can be reduced for the proposed solutions.
- 8.20. The proposed GNSS system shall include all necessary cables, power supply, adaptors and telecommunication parts according to the technical specifications of the seismic network.
- 8.21. The proposed telecommunication and hub shall incorporate both the seismic and GNSS data, providing real-time processing without any additional delay.
- 9. Power Supply:**
- 9.1. The System design shall, to the extent possible, minimize the consumption of power, especially for remote stations, which have an independent power supply.
- 9.2. Not including the telemetry, on-site total power consumption shall not exceed 5W for a 6 channels station (broadband + strong ground motion).
- 9.3. The Contractor shall provide the power consumption of the total and of the different components per station.

- 9.4. The power-supply sources (Solar, AC to DC converters) and the backup power shall supply at least 1 week of independent power (typically batteries).
- 9.5. However, the Contractor shall note that many of the SM stations are located in areas with AC power supply.
- 9.6. The Contractor shall provide the power regulation-schemes for the proposed solutions.

10. State Of Health Monitoring

- 10.1. The System shall provide for continuous monitoring of the state of health of the stations, including Temperature, Voltage and Current monitoring, Time Quality, sensor's boom-position, and other measures in order to identify potential problems remotely and fix them in minimal time.
- 10.2. The Contractor shall present the measures, sample rates, and data formats of the monitored state of health channels, and provide an archiving and visualization solution for these channels.
- 10.3. The State of Health channels shall also be calculated in the total bandwidth required in the telemetry section.
- 10.4. A State of Health module of automatic notifications and alerts, shall be provided and tested no later than Project Milestone 3.

11. Data-Hub:

- 11.1. The data-hub shall provide the infrastructure for an optimal architecture for real-time data acquisition, together with efficient real-time data-processing procedures.
- 11.2. In addition, it shall provide sufficient storage capabilities, which are flexible and could be extended. It also shall provide a pleasant working environment supporting post-processing, further seismic analysis, and research. The data-hub is required to have:
 - 11.2.1. No single point of failure
 - 11.2.2. High Availability
 - 11.2.3. Redundancy
 - 11.2.4. Based upon virtual environment
 - 11.2.5. Separated out of band management network
 - 11.2.6. Dual Controller storage

- 11.2.7. Monitoring software of the Data Center
- 11.2.8. Firewall – content inspection, and encryption check for data arriving from sites, while keeping latency times of no more than 1s and 3s for the two telemetry means described in the telemetry requirements.
- 11.2.9. Power Dynamic Management
- 11.2.10. The Data-hub also hosts the appropriate communication hubs according to the telemetry options, given in the telemetry section.

11.3. Acquisition Requirements

The real-time data acquisition section of the hub shall answer for High Availability requirements, supporting virtual servers, and allowing full redundancy of the operating system. It shall fulfill the following requirements:

- 11.3.1. No single point of failure
- 11.3.2. High Availability
- 11.3.3. Redundant power supply
- 11.3.4. Redundant network interface
- 11.3.5. Based upon virtual environment
- 11.3.6. Internal storage capable of storing data of a minimum of 7 days of the complete data, streaming in from the sites.
- 11.3.7. RAM Memory capable of acquiring all the data flowing in from the stations, applying automatic processing in parallel on all stations and channels in streaming mode, and writing data into the internal storage without affecting the streaming speed.
- 11.3.8. Virtual environment management software
- 11.3.9. Virtual environment Licensing.

11.4. Storage Requirements

- 11.4.1. Redundant power supply
- 11.4.2. Redundant controllers
- 11.4.3. Redundant storage networking (2 from each controller)
- 11.4.4. Management interface separated
- 11.4.5. Initial 40TB storage array with growth-rate capability of 15TB per year.

11.4.6. IOPS shall be capable of handling the storage, writing and reading of the complete data acquired in the network, at 200 sps for all stations and channels.

11.4.7. Older data than the real-time kept in the buffer shall be archived continuously in daily data volumes, in the storage, with a capability of saving 5 years of continuous data of all network stations.

11.4.8. Backup tapes for long-term storage of all waveform and metadata within the storage for a minimum of 5 years.

11.5. Processing and Web-Interface Requirements

This section shall be separated from the acquisition section, so that it would not interfere in the acquisition and the automatic processes. This section of the data-hub is aimed for the developers and analysts to interact with, and for re-processing and manual processing of the data. It also serves as the web-interface of the network and shall support high load in the case of crisis. It shall meet the following specifications:

11.5.1. Supporting a peak entry of 100,000 external entries per day, in the case of crisis (e.g., large earthquake).

11.5.2. High Availability

11.5.3. Redundant power supply

11.5.4. Redundant network interface

11.5.5. Based upon virtual environment.

11.5.6. Virtual environment management software.

11.5.7. Virtual environment Licensing.

11.6. Analyst and Operator Work Stations

11.6.1. 5 nodes

11.6.2. Capable of uploading and streaming, from the acquisition servers, the complete past 24 hours of all channels.

11.6.3. Capable of parallel work of two analysts, at two different workstations, when reviewing the data following the automatic procedures.

11.6.4. Supporting manual picking, relocations, and magnitude calculations, made by the analysts.

11.6.5. Supporting software development, web interface development and testing of code on test databases.

11.6.6. Interacting with the complete data-hub hardware, with special administrator permissions for the interaction with the real-time acquisition servers.

11.6.7. A minimum of 2 24'' displays for each node.

11.7. Data Recovery

A backup Data Recovery Hub ("**DR**") is required, providing complete redundancy for the main data-hub, including the handling of the acquisition of the stations by telemetry. This backup hub will be constructed within the Contract Period, but not necessarily at the initial stages of the project. The DR shall fulfill the following requirements:

11.7.1. No Single Point of Failure

11.7.2. Be in a different physical location, determined by GSI

11.7.3. A complete redundant mirror of the main data-hub according to the real-time specifications, of 1s and 3s maximum lags.

11.7.4. Can take over immediately and automatically in case of complete failure of the main data-hub.

11.7.5. Full real-time synchronization of the data between the two data-hubs.

12. **Software:**

The Contractor shall provide and install a **real-time data acquisition, processing and analysis software** meeting all following requirements:

12.1. Capable of acquiring data and processing it in real-time for up to 200 stations (600 channels at 200sps each).

12.2. Has been tested extensively and successfully for quality assurance.

12.3. Well-known and used in real-time seismic networks worldwide, with networks including at least 50 stations, transmitting in real-time with station latencies of under 10s, and showing high data-return performance.

12.4. Extensive documentation, support system and online support forums.

12.5. A clear architecture of the relations between the real-time system and the database archive.

- 12.6. Plug-in capabilities, for adding open-source modules to the software, modifying some or all of the modules, and facilitating incorporation of an EEW module, research and new achievements (development) in the seismic community. The Contractor shall provide clear procedures of how to design and program plug-in modules that could be connected to the main core of the software.
- 12.7. Capability to configure different levels of security and permissions for different layers of the real-time system, specifically/in particularly the overlying EEWS.
- 12.8. Supporting parallel work of analysts in the case of aftershock sequences and post-event processing (e.g., shake-maps).
- 12.9. Supporting website interface of the data, enabling outside users to pull or request seismic data and metadata, and allowing the network technicians (secured by permissions) to interact through the web with all the network stations.
- 12.10. Creating an automatic seismic bulletin, and enabling manual editing of the bulletin by seismic-analysts.

The Contractor shall provide and install a **GNSS software** at the hub, meeting all following requirements:

- 12.11. Control the GNSS systems from remote, and monitor the stations' State of Health.
- 12.12. Convert the data to Rinex format and check the quality of the data*.
- 12.13. Convert the data to seismic format (displacement field, Miniseed or Seedlink) and check the quality of the data*.
- 12.14. Generate daily RINEX files and archive the files.
- 12.15. Perform daily post-processing of the data and analyzing and plotting the results
- 12.16. Perform fast GNSS differential kinematic positioning algorithm or provide an analogue plug-in program*.

*Can be either at the station or at the hub

13. EEWS Capabilities:

- 13.1. At the time of publication of the Tender, GSI is testing and examining various EEWS algorithms and modules, for future implementation in the

System and incorporation in the acquisition software supplied by the Contractor in accordance with Clause 12.

13.2. No later than the time set for Project Milestone 3, as set forth in Appendix E (*Project Milestones*), GSI shall provide the Contractor with details and specifics regarding the EEWS modules and algorithms to be incorporated into, and interfaced with the acquisition software.

13.3. The Contractor shall then be required to develop (if not already existing) an open-source interface between the acquisition software and such modules and algorithms, and to achieve full incorporation of all EEWS algorithms and modules as part of Project Milestone 5.

13.4. The interface shall have open-source architecture, fully compatible and capable to accommodate further developments and modifications by GSI.

13.5. The Contractor shall provide a time line showing the time latencies for recording, packaging, sending on site and receiving in data center, and processing time for alarming.

14. System Security (shall be checked against the document provided by the Ministry of Energy IT specialists)

(for the purpose of this section, the term "Contractor" shall be deemed to include the Contractor itself, its employees, consultants and subcontractors and anyone on their behalf).

14.1. The Contractor shall, from time to time and upon the request of GSI, disclose technical information relating to information security aspects.

14.2. The Contractor shall notify GSI immediately upon the occurrence of an information-security related event, of any kind and form.

14.3. The Contractor shall adopt and implement strict data encryption and protection procedures, in accordance with good industry practice, and (where applicable) manufacturers' instructions.

14.4. The Contractor shall ensure that all network components including software shall be up-to-date at all times during the execution of the Works (including the warranty and/or maintenance period), and shall update all such components / software to their most recent version.

14.5. User Control

- 14.5.1. An individual account shall be designated for each user. An account shall not be used by more than one user.
- 14.5.2. The identification process of all users will be performed by using two-step / two-factor identification.
- 14.6. The Contractor shall use data protection and verification mechanisms, to prevent disruption or alteration of all transmitted information. The Contractor shall ensure that all network components can be identified by a single-valued identifier, verifying the source of information.
- 14.7. Remote access:
 - 14.7.1. Remote access by the Contractor to the network shall be performed as required and necessary to comply with the Technical Requirements.
 - 14.7.2. The remote access will be performed by an intermediate system (Server Based Computing) and not directly to the network.
 - 14.7.3. A separate computer station will be assigned for remote access.
 - 14.7.4. All remote access events will be monitored, audited and recorded.
 - 14.7.5. Network communication infrastructure will support VPN encryption.
 - 14.7.6. Implementation of communication and content screening system is recommended.
- 14.8. The Contractor shall install security devices (e.g. FW) to ensure full separation between the network and other networks.
- 14.9. The Contractor shall inform GSI of all significant changes in the data technology, structure, layout, equipment and any another significant changes that may occur.
- 14.10. The Contractor shall perform data protection inspections from time to time, in accordance with good industry practice and GSI's instructions.
- 14.11. All data shall be secured from external manipulation. This includes: a) the data-hub having strict permitting rules for personnel and hardware, b) site-to-hub communication is secured from external penetration, c) data from stations is encrypted and checked by the firewall and content inspection before acquired and processing at the data-hub, and d) sensors

and data-loggers are monitored for any on-site physical manipulation or vandalism.

- 14.12. System security shall consist monitoring and alerts for attempts of external manipulation.

Appendix C

Stations' Data

Appendix D

Master Schedule

*(to be attached to the Contract
following approval by GSI)*

Appendix E

Project Milestones

Appendix E – Project Milestones

1. In the event of failure to comply with the following Project Milestone the Contractor shall pay GSI Liquidated Damages as applicable, in accordance with 14.7 of the Contract.
2. Delays in completing any given Milestone shall **not** be taken into account when calculating the time for completion for any subsequent Milestone, regardless of whether such delays resulted in payment of Liquidated Damages.
3. Reference to "days" means calendar days.

Milestone No.	Description	Time for Completion <i>(ED=Effective Date)</i>
1	Approval of detailed design by GSI.	ED + 30 days
2	Deployment and operation of the data-hub + 6 stations, at least 2 of them combined (with both seismometers and accelerometers), including construction (where required).	ED + 4 months
3	Deployment and operation of a total of 40 stations, at least 7 of them combined (with both seismometers and accelerometers), including construction (where required).	ED + 7 months
4	Deployment and operation of a total of 100 stations, at least 15 of them combined (with both seismometers and accelerometers), including construction (where required).	ED + 11 months
5	1. Obtaining a full operational real-time acquisition network, with EEWS infrastructure; 2. Completion of training of the GSI staff; 3. Handover of the State of Health (SOH) module required for the GSI staff to monitor stations and detect malfunctions. 4. Providing an operating interface between the real-time acquisition software and the EEWS open source module provided by GSI.	ED + 12 months

Appendix F

Payment Milestones

Appendix F – Payment Milestones

4. Pursuant to Clause 14 of the Contract, the Contractor shall be paid in accordance with the following Payment Milestones.
5. Terms and procedures of payment shall be as stated in the Contract.

Payment Milestone No.	Description	Payment <i>(in % of the Contract Price)</i>
1	Successful Completion of Project Milestone 2, including all acceptance tests.	25%
2	Successful Completion of Project Milestone 3, including all acceptance tests.	20%
3	Successful Completion of Project Milestone 4, including all acceptance tests.	35%
4	Issuance of the Deployment Completion Certificate. (After successful completion of Project Milestone 5 and all acceptance tests).	10%
5	End of the 1 st year of the Maintenance Period.	4%
6	End of the 2 nd year of the Maintenance Period.	3%
7	Issuance of the Final Acceptance Certificate.	3%

Appendix G

Form of Performance Security

, 2015

To:

The Ministry of National Resources, Energy and Water

The Earth and Marine Research Administration

The Geological Survey of Israel (GSI)

30 Malkhei Yisrael St., Jerusalem

Re: Letter of Guarantee no. _____ ("**Performance Security**")

At the request of _____ (the "**Contractor**"), we hereby irrevocably and unconditionally guarantee to pay you any amount up to an aggregate amount of _____ NIS (*5% of the Contract Price – to be completed after award*) (in words: _____ New Israeli Shekels) (the "**Guaranteed Amount**") to be paid in connection with the contract for the procurement, deployment and maintenance of a real-time seismic network.

The "**Index**" - shall mean the NIS Consumer Price Index.

The "**Basic Index**" - shall mean the Index published in respect of the month of _____ at a rate of _____ points. (*to be completed based on the Index known on the Bids Submission Date*)

The "**New Index**" - shall mean the Index last published before actual payment under this guarantee.

If at the time of payment of any amount under this guarantee, the New Index shall be higher than the Basic Index, the Guaranteed Amount shall be calculated as increased in a rate equal to the rate in which the New Index has increased in comparison with the Basic Index. If it transpires that the New Index is equal to the Basic Index or lower therefrom, the Guaranteed Amount shall remain unchanged.

Within ten days of the date on which your first written demand was received by us, we shall pay you any amount required in your demand up to the Guaranteed Amount, without you being required to substantiate your demand or to demand payment thereof from the Contractor prior thereto, and without set off or deduction and free of any fees or taxes, notwithstanding any claims or objections by the Contractor or ourselves or by any other party whatsoever.

The forfeiture of part of this guarantee shall not impair the validity of the part that has not been forfeited.

We hereby confirm that no change in the terms of the Contract shall derogate from any of our obligations in connection with this Performance Security.

This Performance Security is effective as of the date hereof and shall be in full force (irrespective of the return of this Performance Security to us) until the issuance of the Final Acceptance Certificate by GSI (the "**Security Period**"). Any demand reaching us after the Security Period will not be honored.

Any demand under this guarantee must reach us, in writing, at the offices of the branch signing below, whose address is: _____. Any demand received by us either by fax, telex, e-mail or any other electronic transmission shall not be honored.

The Guaranteed Amount shall be automatically reduced by any payment effected by us under this guarantee.

This guarantee is neither transferable nor assignable.

Yours faithfully,

Appendix H

Confirmation of Insurance

*(to be attached to the Contract after
award)*

Appendix I

Safety Requirements

מדריך בטיחות לקבלנים לפני כניסה למכון הגאולוגי

תוכן העניינים:

1. אחריותו של הקבלן

2. הדרכה

3. נהלי חירום

א. דליקה

ב. מילוט

ג. נוהלי חירום רפואי

4. מידע בטיחותי כללי

א. עישון

ב. עזרה ראשונה

ג. דיווח וחקירה של תאונות

ד. סימון וזיהוי סכנות

5. הגנה אישית

א. עיניים, פנים

ב. ראש

ג. הגנה על הרגליים

ד. הגנה על מערכת הנשימה

ה. הגנה על השמיעה

ו. ידיים

6. דרישות העבודה

א. גבולות הפרויקט

ב. סדר וניקיון

ג. דרכי גישה

ד. סילוק פסולת

ה. חשמל

ו. רעש והפרעה לפעילות עסקית

ז. היתרים ואישורים (1-עבודות חמות, 2) כניסה לצנרת (3) הפעלת מלגזה/ציוד הרמה

ח. גידור

ט. שילוט

י. נעילה / תיוג

יא. בטיחות חשמל

יב. ריתוך

7. כלים וציוד

א. כלים ידניים וחשמליים

ב. סולמות

ג. טיפול ואחסון חומרים

ד. שירותי משק

8. מניעת דליקות

א. מטפים לכיבוי אש

ב. אזעקות

ג. ברזי שרפה

ד. מחיצות אש

9. עבודה בגובה.

1. אחריותו של הקבלן

הקבלן מתחייב לקחת על עצמו את מלוא האחריות לעמידה בחוקים ובתקנות הדנים בבטיחות, באיכות הסביבה, בגהות ובמניעת דליקות. במסגרת זו כלולות גם תקנות הבטיחות וגהות בבנייה. הקבלן אחראי לצייד את עובדיו בנהליו הוא בנושאים של בטיחות וגהות ויוודא שמנהל העבודה מטעמו יהיה מודע לדרישות החוק והתקנות בנושא הבטיחות בעבודה.

אי עמידה בדרישות האמורות תביא להפסקת העבודה עד להבטחת בטיחותם של העובדים.

2. הדרכה

הקבלן אחראי על מילוי כל דרישות ותקנות ארגון הפיקוח על העבודה (מסירת מידע והדרכת עובדים) התשנ"ט 1999 כלפי כל עובדיו ועובדי קבלני משנה.

הקבלן אחראי גם להבאת תוכנו של מדריך זה לידיעת כל עובדיו ועובדי קבלני המשנה העובדים עבורו ולוודא קיום הוראותיו ויעביר רשימה שמית של כל עובדיו העובדים במכון הגאולוגי והחתומה על ידם לאישור.

3. נוהלי חירום (מספרי טלפון חירום)

במקרה חירום יש לחייג את מספר טלפון החירום ולמסור לאחראי האתר את שמך, שם המעביד שלך, מספר הטלפון בו הנך נמצא, המקום בו הנך נמצא ואת אופיו של מצב החירום.

א. דליקה

התקשר לטלפון החירום כדי למסור פרטים. יש לדווח על דליקה מוקדם ככל האפשר.

במידה והדבר ניתן (ובמידה וקיבלת הכשרה כיצד לעשות זאת) נסה לכבות את האש.

במידה וקיימת סכנת פגיעה מעשן או מאש פנה מיד את השטח.

ב. מצב חירום רפואי

חייג את מספר טלפון החירום ומסור לאחראי האתר את אופיו של מצב החירום, את המקום בו הנך נמצא, את שמך, שם המעביד שלך ואת מספר הטלפון בו הנך נמצא.

4. מידע בטיחותי כללי

א. עישון

העישון אסור בכל אזורי העבודה. העישון מותר רק באזורים המיועדים לכך.

ב. עזרה ראשונה

יש לדווח על כל פגיעה הקשורה בעבודה לממונה הבטיחות. הקבלן אחראי לדווח על כל אירוע תאונתי.

ג. סימון וזיהוי סכנות

הקבלן אחראי ליישום התקנים והתקנות הקשורים בסימון וזיהוי של חומרים מסוכנים שברשותו, בסימון אריזות ובקיום כל דרישות תקנות הבטיחות בעבודה (גיליון בטיחות, סיווג אריזה, תווי וסימון של אריזות התשנ"ח 1998). הקבלן אחראי גם ליישום כל דרישות ההדרכה הנגזרות מדרישות תקנות אלו.

5. הגנה אישית

יש להשתמש בציוד מגן-אישי בכל עת שקיימת דרישה חוקית ו/או קיים סיכון ו/או ישנה הנחיה של מנהל העבודה באתר. ע"פ הנדרש בתקנות הבטיחות בעבודה (ציוד מגן אישי) התשנ"ז 1997.

א. עיניים / פנים

במהלך בנייה, הריסה חיתוך, ריתוך, השחזה, ובכל עבודה אחרת בה קיימת אפשרות של פגיעה בעיניים (עקב שבבים, נתזים, שימוש בכלים חשמליים, בעבודות השחזה וכו'), יש להרכיב משקפי מגן/מסיכת ריתוך במידת הצורך גם מגני פנים.

ב. הגנה על הרגליים

בכול שטח החברה בכול העבודות חובה להיות עם נעלי בטיחות כול הזמן, נעילת סנדלים או נעלי בד או כול נעל אחרת אסורה לחלוטין

ג. הגנה על מערכת הנשימה

בכל מקרה בו יש צורך להשתמש במערכת מיגון סגורה או פתוחה לנשימה, על עובדי הקבלן לעבור תחילה בדיקות רפואיות אצל רופא. לפני השימוש בערכות

ד. הגנה על השמיעה

באזורים ובעבודות בהם ישנו "רעש מזיק" כהגדרתו בתקנות הבטיחות בעבודה (גיהות תעסוקתית ובריאות העובדים ברעש) התשמ"ד 1984, יקפיד הקבלן על קיום כל דרישות התקנות הנ"ל ואספקת ציוד מגן אישי מתאים מפני רעש לעובדיו.

ה. ידיים

יש להשתמש בכפפות מתאימות בעבודות בהן דרושה הגנה לידיים. יש להשתמש בכפפות מיוחדות (גומי, פי.וי.סי, וכו'). כאשר קיימת אפשרות חשיפה לחומרים כימיים בהתאם למצוין בגיליונות הבטיחות של החומר.

6. דרישות העבודה

א. גבולות הפרויקט

הקבלן יגביל את עבודתו ופעילויותיו לשטחים ולקומות המתוארים בהיקף הפרויקט. אסורה בהחלט כניסה של הקבלן ועובדיו לאזורים אחרים.

ב. סדר וניקיון
על הקבלן לשמור בכל עת על סדר וניקיון. אזורי העבודה יהיו נקיים ומסודרים.

ג. סילוק פסולת
על הקבלן לסלק מהמקום פסולת הנוצרת במהלך ביצוע העבודה ואשר אינה פסולת מסוכנת. פינוי פסולת של חומרים מסוכנים ייעשה אך ורק אל אתר של הקבלן ומשם באחריותו לפנותו על פי כל חוק.

ד. חשמל
יעמוד לרשות הקבלן, כפוף להסכם עמו, הספקת החשמל הדרושה לו לביצוע עבודתו. חיבורים זמניים למערכת החשמל של החברה, יאושרו מראש על ידי חשמלאי החברה וממונה הבטיחות. עם סיום העבודה, יסלק הקבלן את כל חומרי החשמל.

ה. רעש והפרעה לפעילויות עסקיות
רעש והפרעות לסביבה ופעילויות מסוימות, כמו קדיחה, עבודה בפטיש אוויר, הריסה, וכו'. תבוצענה, לפי הוראות המכון הגאולוגי. במקרים של יצירת רעש חריג העלול להפריע לסביבה יש לנהוג בהתאם לתקנות למניעת מפגעים (רעש בלתי סביר מצידוד בניה), התשל"ט 1979 ותקנות למניעת מפגעים (רעש בלתי סביר), התש"ן 1990 ו/או כל תקנה אחרת שתחליף תקנות אלה או תעדכן.

ו. היתרים ואישורים
סוגים רבים של עבודות מחייבים קבלה מראש של היתרים ואישורים. כדי למנוע עיכובים שלא לצורך בביצוע העבודות. מרבית ההיתרים חייבים להיות מוצגים באתר העבודה ועל הקבלן ועובדיו לציית בקפידה לתנאים הקבועים בהם. בין ההיתרים / אישורים הנדרשים כלולים אלו המפורטים להלן:

(1) עבודות חמות
עבודות הכרוכות בהשחזה, בריתוך, בחיתוך להבה, חיתוך בגז, הלחמה, בהלחמת להבה וכל עבודה עם להבה גלויה, עבודה חמה, עם ציוד היוצר ניצוצות. הקבלן אחראי להציב מטפים לכיבוי אש בגודל ומהסוג המתאימים (לפחות מטף אחד מסוג ABC בתכולה של 3 ק"ג) ולפעול על-פי כול כללי הבטיחות

(2) כניסה לצנרת
עבודות הכרוכות בהתחברות לצנרת קיימת, כמו מערכת ביוב, או שירותים יבוצעו רק לאחר אישורו של מנהל מחלקת תחזוקת המכון.

(3) הפעלת מלגזה / ציוד הרמה
הפעלת כלים מכניים כמו מלגזה, עגורנים וציוד הרמה יופעלו אך ורק ע"י בעלי מקצוע שברשותם רישיון הפעלה מתאים ובתוקף.

ח. גידור
1) הקבלן יגדר ויתחם פעילותו באופן שימנע כל נזק שהוא לרכוש / לעובדיו/ ללקוחותיו או לצד שלישי.

2) הקבלן יספק את כל החומרים הציוד כ"א וכל דבר אחר הנחוצים לביצוע גידור לבטח.

3) הגידור יותקן מסביב לשטחי העבודה, לפתחים ברצפה, ובכל מקום בו יש להזהיר אנשים בפני סכנת נפילה או נפילת חפצים מגובה.

4) הקבלן יסלק את הגידור כאשר אין יותר צורך בו.

ט. שילוט

הקבלן יספק את כל שלטי האזהרה וההכוונה כגון: "סכנה – כאן בונים", "סכנה אש", וכדומה. השלטים יהיו קריאים והם יוצבו לפני תחילת העבודה על גדרות, עמודים או על בסיס אחר ויוסרו מיד עם סיום העבודה.

י. נעילה / תיוג

הקבלן ישתמש באמצעי נעילה ותיוג מיועדים למנוע הפעלה בשוגג של ציוד (חשמלי, מכני, הידראולי), הפעלה בשוגג של ברזים בצנרת המכילה חומרים מסוכנים (קיטור, אוויר דחוס, וכו'), או הפעלה בשוגג של מעגלים חשמליים. נוהלי נעילה / תיוג חייבים להיות מתואמים עם מנהל התפעול של החברה. הקבלן יוודא כי עובדיו קיבלו הדרכה נאותה בנוהלי נעילה / תיוג.

יא. בטיחות חשמל

הקבלן אחראי להבטיח שכל הציוד החשמלי וכל ההתקנות החשמליות יעמדו בתקנים ויהיו ע"פי דרישות חוק החשמל.

חיבור למערכת החשמל יבוצע באישור – למניעת עומס יתר על מערכת החשמל בחברה.

- 1) כדי למנוע סכנת התחשמלות יהיו קופסאות חיבורים, קופסאות מיתוג, קופסאות נתיכים, וכו', סגורים תמיד כאשר אינם נמצאים תחת השגחה.
- 2) ליד חלקים חשמליים "חיים" ובאזורים מסוכנים יוצבו שלטי אזהרה.
- 3) כבלים חשמליים חמים או שחוקים יוחלפו מיד.
- 4) התקנות חשמל זמניות לא תוחזקנה יותר מאשר יום אחד. במקרה חירום משך השימוש בהתקנות חשמל זמניות יוארך בכפוף לאישור של מנהל/מפקח הפרויקט.
- 5) ציוד חשמלי המשמש במקומות בהם חומרים דליקים או נפיצים, יהיה מוגן התפוצצות.
- 6) יש להשתמש בכבל מאריך תקין ותקני (ללא פגמים) הכולל מגן לזרם-דלף. אין להשתמש בכבל מאריך בן שני גידים. אין להעביר תעלות רצפה, כבלי טלפון או חשמל לרוחב מעברים.
- 7) עבודות חשמל תבוצענה רק על ידי חשמלאי בעל הסמכה ורשיון מתאים ורלוונטי לעבודה אותה הוא מבצע.
- 8) במידה וקיימת אפשרות של ניתוק זרם החשמל למבנה, יש לבצע את העבודות על מעגלי המתח הגבוה בסופי השבוע.
- 9) במהלך עבודה על מעגל חשמלי או בדיקתו, ינותק המעגל מרשת החשמל וינעל או יתויג.
- 10) כל ההתקנות החשמליות תעמודנה בדרישות חוק החשמל. כולל שמירת מרחקים בין כבלי חשמל תקשורת וצנרת מים.

יב. ריתוך

- (1) כל עבודה הכרוכה באש גלויה או ריתוך מחייבת קבלה מראש של היתר ביצוע עבודות מסוכנות / חמות. היתר כאמור יינתן על ידי מנהל מחלקת תחזוקת המכון. אין להתחיל בעבודה אלא לאחר נקיטה בכל אמצעי הזהירות הנדרשים בהיתר האמור.
- (2) הן במכלי חמצן והן במכלים של גז דליק יש להשתמש בווסתים או בשסתומים להפחתת לחץ כדי להקטין את הלחץ ולשמור על לחץ שווה של הגז באבוקה. על הצנרת יותקן בולם להבה. אין להשתמש בשמנים או בחומרי סיכה כל שהם יחד עם חמצן.
- (3) עם עזיבת המקום אין להשאיר לחץ בצינורות. יש לסגור את כל ברזי ההספקה של חמצן וגז במכלים.
- (4) כל הצינורות והחיבורים יעמדו במפרטים של צינורות ריתוך מגומי.
- (5) כבלים של ריתוך קשת יוחזקו במצב תקין.
- (6) מכונות ריתוך ניידות תהיינה מוארקות.
- (7) כבלים של מכונות לריתוך קשת יוחזקו יבשים ונקיים משמנים ושומנים. הכבלים יהיו מסודרים כך שלא יפריעו למעבר בטוח של עובדים.
- (9) בכל הפעילויות הכרוכות בריתוך קשת יש לחבוש קסדות ריתוך. משקפי המגן אשר יחבשו העוזרים במהלך פעולות חיתוך יהיו בצבע מתאים עבור העבודה המבוצעת
- (10) ובהתאם לכמות החשיפה. בכל פעולות הריתוך בגז וחיתוך בחמצן יש לחבוש משקפי בטיחות עם עדשות בצבע מתאים. גוון העדשות לא יהיה פחות מגוון מס. 5.
- (11) בעבודות ריתוך יש להשתמש בכפפות ריתוך מאושרות, למעט בעבודות קלות מאוד. כמו כן יש להצטייד בסינר עור.
- (12) במהלך עבודות ריתוך וחיתוך יהיו במקום מטפים לכיבוי אש בגודל ומהסוג המתאימים (לפחות מסף ABC אחד של 3 ק"ג).
- (13) במהלך עבודות ריתוך או חיתוך יש להבטיח במקום אוורור נאות כדי למנוע שאיפה של אדים רעילים.

7. כלים וציוד

א. כלים ידניים וחשמליים

- (1) עובדי הקבלן לא ישתמשו בציוד וכלים של המכון הגאולוגי.
- (2) כלים חשמליים ייבדקו לפני השימוש בהם. אין להשתמש בכלים פגומים. על הקבלן מוטלת האחריות הבלעדית להבטיח שהכלים נמצאים במצב בטוח ונבדקים אחת לשנה ע"י חשמלאי מוסמך ושהשימוש בהם נעשה באורח בטיחותי.
- (3) ציוד וכלים חשמליים ניידים חייבים להיות עם בידוד כפול.
- (4) בכל הכלים החשמליים יש להשתמש במגנים מתאימים.
- (5) יאושרו לשימוש רק כלים ידניים המופעלים בחשמל במהירות נמוכה. כלים מסוג זה יופעלו רק על ידי עובדים אשר קבלו הכשרה יסודית על ידי הקבלן או מטעמו.

ב. סולמות

- (1) על כל הסולמות לעמוד בדרישות התקן של סולמות תעשייתיים.

2) יש לבדוק היטב את הסולמות לפני השימוש בהם. במקרים בהם נמצא פגם בסולם, יש לסמן אותו ולהוציאו מיד מהשירות.

ג. טיפול ואחסון חומרים

- 1) הציוד והחומרים של הקבלן יהיו באזור העבודה בלבד.
- 2) חומרים יאוחסנו בצורה מסודרת ומוגנת בפני פגיעות, רטיבות וכדומה.
- 3) מעברים ודרכי גישה ללוחות חשמל יישארו פנויים בכל עת.
- 4) אחסון של חומרים וציוד יהיה בצורה בטוחה בפני תזוזה בלתי צפויה, כמו נפילה, החלקה, גלגול, התזה או תנועות בלתי מבוקרות אחרות. בנוסף לכך, יש לאחסן חומרים בצורה אשר לא תהווה סכנה לאנשים באזור.

ד. שירותי משק

נציגות החברה הינה היחידה הרשאית לחבר ולנתק שירותים לכל המתקנים (למשל חשמל, גז, מזוג אוויר, מים וביוב).

- 1) כאשר תעלות או צינורות עוברים דרך מחיצות, קירות, תקרות או רצפות, יש למלא את החורים מיד עם הסרתם.
- 2) החלפת נתיך במעגלים, למעט בציוד בדיקה, תיעשה על ידי חשמלאי מוסמך בלבד.

8. מניעת דליקות

תקנות הבטיחות בעבודה (עבודות בניה), התשמ"ח - 1988

183. מניעת דליקה

- א) יינקטו אמצעים נאותים למניעת התלקחות של חומרים דליקים ואחרים.
- ב) מצויים במקום חומרים דליקים חומרים אחרים העלולים להתלקח או מתבצעות בו עבודות המחייבות הדלקת אש או קיום תהליך בעירה, יינקטו אמצעים נאותים למניעת התפשטות הבעירה כתוצאה מהתלקחות מקרית או השפעת רוח, ויימצאו במקום אמצעים נאותים ומספיקים לכיבוי הקבלן אחראי להכנת תוכנית למניעת דליקות אשר תופעל בכל שלבי העבודה ויספק את כל ציוד כיבוי האש בהתאם לתקנות הבטיחות והגהות בעבודה, בהתאם למדריך זה ובהתאם לדרישות המתאימות לסוג הפרויקט המבוצע.

א. מטפים לכיבוי אש

הקבלן אחראי להספקה, תחזוקה ובדיקה של המטפים במקום העבודה. יחד עם זאת, במצב חירום ניתן יהיה להשתמש גם בציוד כיבוי אש של החברה, אך בשום מקרה אסור לקבלן להסתמך על ציוד זה. על הקבלן לדווח מיד למנהל מחלקת תחזוקת המכון או לנציג החברה באתר על כל ציוד כיבוי של המכון אשר נעשה בו שימוש.

ברזי שריפה

אין להשתמש או לחסום או לנתק ברזי שרפה וגלגלונים כיבוי , אלא ברשות מראש מהמפקח באתר.

ג. מחיצות אש

בכל מקרה של פתיחת תקרות/קירות/אלמנט אטימה למעבר אש יש לסגור לאחר ביצוע העבודה בחומר איטום תקני למניעת מעבר עשן ואש. על הקבלן לוודא לפני תחילת עבודה קבלת מידע בדבר נקודות בהן עלול הוא במסגרת עבודתו לחצות אזורי אש מופרדים .

9. עבודה בגובה

(“תקנות הבטיחות בעבודה-עבודה בגובה” – התשס”ז 2007)

1. הקבלן מצהיר כי הוא ו/או עובדיו ו/או כל המועסקים מטעמו הוכשרו והם מוסמכים ומסוגלים לבצע את כל העבודות נשוא הסכם זה בתנאי העבודה הקיימים וכפי שיהיו בעת ביצועה, לרבות בעבודה בגובה כפי המפורט בתקנות הבטיחות בעבודה (עבודה בגובה), התשס”ז- 2007 ועפ”י כל דין.

2. הקבלן מתחייב לוודא בטרם ביצוע עבודה כלשהי, כי כל עובד שיבצע עבודה בגובה באתר ו/או בדרכי הגישה אליו, יעמוד בכל התנאים הנדרשים בתקנות כאמור בסעיף 5.20 לעיל ובכלל זה, העובד יהא בגיר, יעבור בטרם ביצוע העבודות הדרכה, יהא במצב שאינו מסכן אותו או את העובדים עמו כמפורט בתקנות הנ”ל וכן מתחייב הקבלן להעביר למזמין בטרם ביצוע העבודה תעודה ו/או אסמכתא הנדרשת עפ”י התקנות הנ”ל ועפ”י כל דין מטעם גורם מוסמך, ביחס לכל עובד ואשר לפיה, העובד הוכשר והוסמך לבצע העבודה בגובה.

3. מבלי לפגוע באמור לעיל, הקבלן מתחייב לוודא בטרם ביצוע העבודה כי כל מי שיועסק בעבודה בגובה כאמור, יעשה זאת באמצעות מכשירים ו/או אביזרים ו/או כלי עבודה וציוד מתאימים, תקינים ובטוחים ובכלל זה באמצעות שימוש בסולמות קבועים בעלי תו תקן ישראלי המתאימים לאופי העבודה המבוצעת וכן באמצעות פיגומים תקינים ו/או בימה הידראולית, בעלי אשור תקף של בודק מוסמך.

4. הקבלן יהא אחראי יחידי ובלעדי לכל דבר ועניין הקשור בעבודה בגובה לרבות לוודא קיומם של תנאי העבודה, הציוד המתאים והכשרת העובדים כאמור לעיל ומתחייב לפצות את המזמין בגין כל נזק העלול להיגרם לו.

נוהלי בטיחות ל"עבודה חמה"

הגדרה:

"עבודה חמה": ריתוך וחיתוך בלהבת גז, ריתוך חשמלי וחיתוך בעזרת דיסק.

1. אחריות:

לכל עבודה חמה ימונה אחראי מטעם הקבלן, אשר יסייר באתר העבודה, ויוודא קיום ההוראות המפורטות להלן. האחראי ימלא כתב הרשאה לביצוע עבודה חמה, המצורף.

2. כלים וציוד:

א. יש לוודא כי גילי הגז במצב תקין: בדיקת לחץ בתוקף (תאריך הבדיקה מוטבע על כתף הגליל ותקף ל- 5 שנים), ברז תקין, אין חלודה או פגמים בולטים.

ב. יש לוודא כי הצנרת הגמישה, הנמצאת בשימוש, תקינה וללא סדקים, והצינור מסומן בצורה ברורה: זיהוי היצורן, הלחץ השימושי, קוטר נומינלי, סימון הגז המיועד, ושתי ספרות אחרונות של שנת היצור. חלקים בצינור החשודים כפגומים, ניתן לבדוק ע"י טבילה באמבט מים באמצעות לחץ אויר או חנקן (הופעת בועות מצביעה על דליפה - צריך להחליף הצינור).

ג. יש לוודא כי המבערים תקינים ומתאימים לסוג העבודה וללחצי הגז שבשימוש.

ד. חיבורי צנרת יחזקו במצמד מתאים ויבדקו לגילוי דליפות (באמצעות מי סבון) לפני תחילת העבודה.

ה. במידה והגז הדליק שבשימוש הוא אצטילן, יש להתקין בולם להבה ייעודי על גליל האצטילן ובולם להבה ייעודי על גליל החמצן.

גליל אצטילן חייב לעמוד בניצב (עומד) לפחות 12 שעות לפני השימוש.

ו. גז חמצן: יש לוודא כי ווסת הלחץ ייעודי לחמצן (כתוב עליו "חמצן"), הצנרת, החיבורים, הברזים, הווסת, וידלכפפות העובד **נקיים משמן או חומר אורגני מתלקח, שעלול לגרום לפיצוץ במגע עם חמצן נקי.**

ז. גילי הגז שבשימוש יהיו קשורים בצורה בטוחה ויובלו בעגלה ייעודית כשהם קשורים.

ח. יש לוודא כי ציוד חשמלי וכבלי החשמל שבשימוש תקינים. מכשיר חשמלי מיטלטל המוחזק ביד יהיה בעל בידוד כפול, או שיוזן דרך מפסק מגן לזרם דלף.

3. בטיחות אש:

א. לכל עבודה חמה מחוץ לבית המלאכה ימונה צופה אש אשר:

- יצויד בשני מטפי אבקה 6 ק"ג כל אחד, וידע כיצד להפעילם.

- יציוד בטלפון נייד ויידע את מספר הטלפון של מנהל האתר להזעקה במקרה אש או תאונה.
 - צופה האש ימצא במקום כל זמן העבודה, וישאר במקום לפחות 30 דקות מסיומה, כדי לוודא כי לא פרצה אש במקום וברדיוס של 10 מ'.
 - ב. יש לוודא כי ברדיוס 10 מ' ממקום העבודה אין חומר דליק כלשהו (ניירת, בדים, צבעים, עשבים יבשים, כימיקלים דליקים וכו'). חומרים דליקים שלא ניתן לסלק (כגון: מחיצות או תיקרות מחומר דליק), יש לכסות היטב בחומר בלתי דליק כגון לוחות פח.
 - ג. יש לכסות את כל הפתחים במחיצות, בתקרות וברצפות החלל בו מבוצעת העבודה (פתחי צנרת, מערכות אוורור, פירים וכו') בצורה טובה, באמצעות חומר בלתי דליק.
 - ד. יש לוודא כי בצד השני של קירות החלל בו מבוצעת העבודה לא מאוחסנים חומרים דליקים בצמוד לקיר. במידה ויש, והמרחק קטן מ- 10 מ', יש לסלק מהמקום לפני תחילת העבודה.
4. ציוד מגן אישי:

על העובדים להיות ממוגנים בציוד מגן אישי הבא:

- א. משקפי מגן ייעודיים לריתוך, המקנים הגנה בפני גיצים ובפני קרינה בתחום אולטרה-סגול ואינפרא-אדום.
- ב. כפפות עמידות אש חזקות וארוכות (למשל מעור).
- ג. לבוש מלא, כולל חולצה עם שרוולים ארוכים, ללא כיסים וקיפולים, מכנסיים ארוכים או סרבל מלא. כנ"ל. יש לוודא כי בגדי הרתך עשויים מכותנה או מחומר עמיד בפני אש.
- ד. נעלי בטיחות.
- ה. קסדת מגן תקנית להגנה בפני היתקלות הראש בצנרת, קירות, ועצמים נופלים, כאשר יש סכנה כזו.

הערה:

לגבי עבודות בתוך חלל מוקף (מכלים, דודים, בורות וכו'), יש לקבל הנחיות מפורטות

הרשאה לביצוע "עבודה חמה"

תאריך: _____ שעה: _____

מקום מדויק: _____

העבודה לביצוע: _____

שם אחראי העבודה מטעם חברת: _____

שם צופה האש: _____

תוקף ההרשאה עד: תאריך _____ שעה _____

קראתי והבנתי את הוראות הבטיחות לביצוע עבודה חמה, ופעלתי על פיהם.

חתימה _____

צופה האש

אחראי העבודה מטעם חברת _____

הצהרת בטיחות של קבלן/עובד קבלן

אני החתום מטה, קבלן המועסק בשטחי המכון הגאולוגי, מצהיר בזה, כי הובאו לידיעתי הוראות ונוהלי הבטיחות הנהוגים במכון הגאולוגי וכי ברורים לי הסיכונים האפשריים בשטחי ומתקני המכון הגאולוגי.
הריני מתחייב להקפיד על קיום דרישות הבטיחות על פי כל חוק, סדרי העבודה והמשמעת הנהוגים בחברת בשטחי המכון הגאולוגי.

ידועים לי הצעדים המשמעותיים העלולים להינקט נגדי עקב הפרת הוראות ונוהלי בטיחות ובראשם נוהל זה.

ולראיה באתי על החתום:

שם ומשפחה: _____

מס' תעודת זהות: _____

מקצוע: _____

כתובת: _____

תאריך: _____

חתימה: _____

העובדים יאשרו בחתימת ידם על כך שקבלו תדריך בטיחות והבינו את הנדרש מהם.

מס'	שם העובד	מס' זהות/דרכון	חתימה
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

המקור: המכון הגאולוגי

העתק 1: לקבלן המעסיק

Appendix J

Acceptance Tests

Appendix J – Acceptance Tests

Pursuant to Sub-Clause 10.3 of the Contract, the Contractor shall be required to follow the Acceptance Tests as specifies herein:

1. Milestones 2-5

1.1. The Acceptance Tests for Project Milestones 2-5 shall require a set of tests including visual inspection of all Stations, Seismic inspection of all Stations and the Data Hubs, Telemetry Tests, training program, all as detailed herein:

1.1.1. Visual inspection of all stations, verifying that:

- 1.1.1.1. The Station area includes all the required components, such as: fence, vault, solar panels, backup rechargeable batteries, antenna for telemetry, GPS antenna for accurate determination of location and time;
- 1.1.1.2. The seismic equipment, including sensors, data logger, telemetry box, and solar-to-batteries power regulator are installed;
- 1.1.1.3. The seismic sensors are well attached to the ground;
- 1.1.1.4. The sensors are spatially separated from electronics and telemetry, by a minimum of 1m, to minimize electrical and communication disturbances due to the Station itself;
- 1.1.1.5. The cables are original cables manufactured for the provided instrumentation, they are correctly wired, and well-protected from damage of rodents by a non-metal sleeve;
- 1.1.1.6. The Site is well drained and thermally insulated;
- 1.1.1.7. Power is regulated according to specifications, and backup batteries are being charged properly.

1.1.2. Seismic inspection of each Site, verifying that:

- 1.1.2.1. There is a 3D satellite location of the stations, with highly accurate time stamps;
- 1.1.2.2. The waveforms in the Stations are recording ground motion correctly (knocking and shearing on ground);
- 1.1.2.3. The sensors are leveled correctly;
- 1.1.2.4. The sensors are aligned correctly with the true North and East axes;
- 1.1.2.5. Data is recorded at the Site, which can store records of 3 months and has a looping procedure, in which once the on-site

recorder is full, the oldest data is deleted as new data is recorded; in case telemetry data-gaps occur, the data could be retrieved within 3 months, by a direct download from the Site

1.1.3. Telemetry Test:

- 1.1.3.1. Measurement of transmission time of data-packets from Site to Data Hub; test will include looking into both means of telemetry,
- 1.1.3.2. 24 hours check of daily return at the Data Hub, counting the data return for each station including all its channels, and the total daily return of the network.

1.1.4. Seismic inspection at the Hub, verifying that:

- 1.1.4.1. All stations and channels are viewed in real-time at the Data Hub,
- 1.1.4.2. All the state of health channels are also viewed, showing 100% fully operated system (no voltage, thermal, pressure, or clock malfunctions),
- 1.1.4.3. 7 days of seismic catalogue are available and automatic locations (including detection and association) and magnitude are reasonably good (accuracy increasing between Milestones, as additional stations become operational); if possible and a regional or teleseismic events are present in the catalogue, they should be compared to the origin time and locations provided by other neighboring networks of Europe (the Greek, Italian and Turkish Network could serve for that),
- 1.1.4.4. Milestone 3-5: we require that the web interface of the seismic catalogue is clear to the outside user, and that there is a clear way of requesting or downloading seismic data.

1.1.5. Explosion / Simulation Test – similar to the above catalogue test, but with a known set of explosions (with main explosions and smaller ones following) which will be set to test the automatic local detection, association, location and magnitude algorithms of the real-time acquisition software.

1.1.6. Two Analysts Parallel Work-Flow - using the Explosion Test, the manual processing of events in real-time and in parallel to the automatic processes will be examined, verifying that there are no bus-errors due to wrong configuration of software, and that the parallel team operation during an aftershock sequence is working well.

1.1.7. Noise Test -verifying that the power spectral density of all stations stay within the seismometer and accelerometer noise model boundaries

(NLNM and NHHM for seismometers; ALNM and AHHM for accelerometers).

1.1.8. Shutdown Test- shutdown of Data Hub, and immediate data-recovery using the local backup of the Data Hub. Shutdown of several stations during simulation of an aftershock sequence.

2. **Milestone 5: Test on Completion** - In addition to the Acceptance Tests required for Milestone 5 in section 1, Milestone 5 shall require the following:

2.1. That the local training program agreed upon by all sides (Provider, GSI Staff, and project supervisors) was followed and well documented during the installation period.

2.2. That the state of health module required for monitoring the Stations' performance and detecting network malfunctions, is operating well, detects communication and power problems, and issues immediate notification to the control room.

3. **Maintenance Testing:** The Acceptance Tests for Project Milestone 5 shall require final testing of the System, as a whole, verifying that all System components are working and have been properly maintained throughout the Contract Period, that all available upgrades are properly installed and documented, and the GSI staff **is** trained to maintain the System. At that time all maintenance documentations will be transferred to the GSI.

Appendix K

System Support and Maintenance Services

APPENDIX K

System Support and Maintenance Services

1. General

- 1.1. The Contractor shall provide Maintenance Services in strict accordance with Clauses 15, 16 of the Contract and with the provisions set forth in the Appendix K.
- 1.2. All terms set forth herein shall have the meaning ascribed thereto in the Contract, and all maintenance works and activities detailed herein shall be carried out under and subject to the terms of the Contract.

2. Routine Maintenance

- 2.1. The Contractor shall carry out routine maintenance works, to the extent required to meet the System availability requirements.
- 2.2. The routine maintenance works shall include, as a minimum:
 - 2.2.1. Daily checks and calculations of the percentage of the operational Stations.
 - 2.2.2. Daily reports on network functionality including the cause or possible causes of malfunctioning.
 - 2.2.3. Daily creation of earthquake catalogue, including magnitude, location, depth, mechanism.
 - 2.2.4. Daily checks of software functioning and communication with all Stations.
- 2.3. Whenever a Station experiences a communication gaps, data shall be downloaded from its data logger.
- 2.4. In addition, the routine maintenance shall include (at least) two annual visits at each Station, before and after wintertime at intervals of not less than 5 months and not more than 7 months apart.
- 2.5. These visits will include physical inspection and maintenance of equipment, telemetry, power and Site (including all Station's components), which shall address, inter alia, the following:
 - 2.5.1. Leveling and mass-centering of the seismic instruments.
 - 2.5.2. All seismic instrumentations shall be physically checked for damage, breakage, corrosion, dust, or any other aspect that might cause operational problems.
 - 2.5.3. Firmware shall be updated and upgraded with the latest updates.
 - 2.5.4. Telemetry modems and antennas shall be examined and signal strength and bandwidth shall be measured to verify that: a) telemetry hardware is operating well, b) reception or coverage has not deteriorated, c) communication providers provide all aspects of communications according to their respective agreements.

- 2.5.5. Power inspection – all cables, batteries, charger controllers, and solar panels shall be checked for proper operation, connection and sealing. . Each component shall be examined electronically for its expected current and voltage. Grounding and lightning protection shall be checked and fixed, if needed.
- 2.5.6. Calibration test – poles and zeros shall be checked by a proper calibration procedure, to verify that they are within their error limit. If found otherwise, their values in the data-hub shall be corrected, so that the instrument response would be accounted for correctly.
- 2.5.7. Drainage – prior to winter, all Stations shall be prepared for winter, including by prevention of channeling of water into the Stations. After winter, all Stations shall be checked to verify that they were not flooded and to fix any internal and external damages due to water flow or water damages.
- 2.5.8. Cables shall be examined for any evolving damage from rodents, and a basic pesticide shall be placed.
- 2.5.9. Removal of dry bushes and branches from the surrounding of the site, to decrease the danger of fire.
- 2.5.10. Cleaning and dusting of the stations and all instrumentation within and outside, including the solar panels.
- 2.5.11. At stations that experienced gaps, in the past (since the last visit), data shall be downloading from the data logger.
- 2.5.12. Leveling, and mass re-centering of the seismic instruments shall be performed at the stations
- 2.5.13. At stations that experienced gaps, in the past (since the last visit), data shall be downloading from the data logger.
- 2.6. No later than 30 days after issuance of the Deployment Completion Certificate, and quarterly thereafter, the Contractor shall submit for GSI's approval a suggested yearly schedule of visits to all Stations.

3. **Service Level Activities**

- 3.1. The Contractor shall be responsible for support and Maintenance Services, as set forth below.
- 3.2. Level 1
 - 3.2.1. Level 1 activities require both (i) broad and in-depth System expertise, including thorough System engineering, knowledge of System interdependencies and relationships; and (ii) Failure determination, Failure troubleshooting, provision of timely and accurate System Failures support expertise.
 - 3.2.2. Level 2 support and Maintenance Services include, without limitation, the following Services:

- (1) Identification of Failures;
- (2) Gathering and attempting to analyze trace information;
- (3) Determination if the Failure was caused by System Components, configuration or integration;
- (4) Engineering support;
- (5) Provision of responses, Updates, Maintenance Releases and permanent solutions;
- (6) Provision of Work Arounds, if and to the extent applicable;
- (7) Provision of Failure Reports for each Failure notice containing a description of the Failure, any diagnostic information, permanent solution, or where a Work Around has been implemented, the expected date that a permanent solution will be released and a description of the Work Around ("**Failure Report**");
- (8) Development, test and release of prevention plans;
- (9) Adherence to the escalation procedures set forth in section 2 below.

3.3. Level 2

3.3.1. Level 2 support and Maintenance services include, without limitation, the following Services:

- (1) Receipt and logging of failure notices (whether given by GSI or otherwise), utilizing computerized tracking systems;
- (2) Service entitlement verification;
- (3) Provision of primary support for installation activities, including configuration problems, installation related problems, and post-installation reconfiguration;
- (4) Failures classification as hardware, software or configuration or integration Failures;
- (5) Troubleshooting using diagnostic utilities;
- (6) Attempted resolution of Failures;
- (7) Distribution of Maintenance Releases and Updates, if necessary;
- (8) Response to GSI's inquiries;
- (9) Adherence to Escalation Procedures set forth in section 2 below.

4. Escalation Procedures

- 4.1. The applicable escalation procedure for each Failure shall be determined according to the Failure Severity Levels set forth in **Table 1** below, and pursuant to GSI notices.
- 4.2. GSI shall determine the Failure Severity Level. The response times set forth in this section below shall commence on the earlier of: (i) GSI's notice on the Failure; or (2) detection of the Failure by the Contractor.

- 4.3. The Contractor shall then be required to review the Failure, analyze the causes, assign a technical support engineer and take all actions to provide GSI with Failure Corrections, including a Work Around and a Permanent Resolution – all within the time frame specified in **Table 2** below.
- 4.4. During the first 6 months following issuance of the Deployment Acceptance Certificate, all Failures shall be handled as a Severity Level 1 (Critical). Such Failures shall be reviewed for Failure corrections to reduce frequency.

Table 1. Failure Severity Levels.

The following definitions shall have the meaning ascribed to them in the Contract:

Severity Level	Description
Critical Severity Level 1	The entire System, or substantially the entire System (as a whole), fails or does not comply with the requirement for Reliable Seismic Data Return of 95%. - or - Reliable Seismic Data Return, within the 1sec communication constrain (fast route), decreases below 80% of the System -or— Failure of the System to receive Reliable Seismic Data Return in 1 second from more than 5 adjacent stations.
Severe Severity Level 2	A major System Component ceases to work properly (e.g. storage, backup), or substantial functions of the System are impacted. - or - Reliable Seismic Data Return, within the 1sec communication constrain (fast route), decreases below 90% of the System, but is equal or higher than 80%. -or- Failure of the System to receive Reliable Seismic Data Return in 1 second from more than 2 adjacent stations. --or— Failure of backup communication in 50% of the Stations

Medium Severity Level 3	Failure of the System or System Components only occurs under unusual circumstances and the impact to the System is tolerable. or Reliable Seismic Data Return, within the 1sec communication constrain (fast route), decreases below 95% of the System, but is equal or higher than 90%. or Failure of backup communication in 25% of the Stations
Low Severity Level 4	Minor non-critical issues with no impact on System availability. Failure of Reliable Seismic Data Return from a single Station.

Table 2. Response Times

Failure Severity Level	Response	Problem Definition and Action Plan, from time of first response	Status updates	Escalation to engineering support or other specialists	# Bus. Days for Closure:	Status Meetings	Penalties for failing to meet closure conditions
Critical Severity level 1	W/in 1 Hrs/	W/in 1 hrs.	Every 4 hrs.	Immediate	W/in 1 Days	Daily or upon request	16,000 NIS per day
Serious Severity Level 2	W/in 1 Hrs./	W/in 2 hrs.	Every 8 hrs.	Immediate	W/in 2 Days	Daily or upon request	12,000 NIS per day
Medium	W/in 4 Hrs./	W/in 1 day	Daily	As required	W/in 5 working days	Weekly or upon request	8,000 NIS per day

Severity Level 3							
Low Severity Level 4	W/in 1 Day	W/in 2 days.	Daily	As required	W/in 10 working days	Weekly or upon request	4,000 NIS per day

5. Contractor Hardware Logistic Responsibilities:

- 5.1. Inventory: The Contractor shall maintain an adequate inventory of each System Component to ensure same day shipment to GSI when needed.
- 5.2. Advance Replacement Units: In the event immediate response and shipment of replacement System Components are required in order for the Contractor to meet its contractual obligations to GSI according to the Contract, the Contractor shall ship advance replacement System Components units to GSI designated place.