

Statement of Work – 12 GeV Waveguide Assembly
115070-1002S

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1.0 SCOPE

1.1 Overview and Purpose

1.1.1 This is a multi-year phased requirement to purchase a total of 107 waveguides. The requirement will be met in three phases, with phases one and two occurring in Program Year One. Phase three will follow in Program Years Two through Six. This procurement does not involve options—all waveguides will be purchased, subject only to first article acceptance in Program Year One and availability of funding in Program Years Two through Six.

1.1.2 This Statement of Work (SOW) defines the requirements for the waveguide assembly. Each waveguide assembly will consist of two processes, the manufacturing of the waveguide and the electroplating of the waveguide.

1.1.3 Subcontractor shall provide all labor, materials, equipment, tools and facilities necessary to meet the specifications and accomplish the requirements of this subcontract.

1.2 Deliverables to JLAB

1.2.1 Waveguides in accordance with the specifications in this SOW.

1.2.1.1 Phase one will be the fabrication, testing and delivery of two prototype/first article waveguide assemblies.

1.2.1.2 Following JLABs acceptance of the prototype/first article waveguides delivered in phase one, two production batches of 15 waveguides (30 units) will be procured in phase two.

1.2.1.3 Phase three will consist of a total of 75 production waveguides purchased in five batches of 15.

1.2.2 Marking

All parts shall be inscribed with sequential traceable numbers. The Subcontractor shall provide records traceable to the Certifiable Material Test Reports (CMTR) to JLAB with each delivery. The system and details for these requirements shall be disclosed at the time of submitting the proposal

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1.2.3 All tooling purchased by JLAB for this assembly is the property of JLAB and shall be delivered to JLAB upon completion or termination of the project.

1.2.4 Subcontractor Documentation

1.2.4.1 Subcontractor shall furnish to JLAB with their proposal a general plan or outline of the manufacturing process used to produce the waveguide and associated parts.

1.2.4.2 Subcontractor shall provide a production schedule with their proposal.

1.2.4.3 Subcontractor shall provide documentation according to Section 2.2 of the Waveguide-Copper Plating Specification #115070-1001S.

1.2.4.4 Subcontractor shall provide documentation according to Section 5.0 of this SOW.

1.2.4.5 Subcontractor shall provide documentation of test results from measurements concerning electroplating thickness, vacuum leak checks and cold shocking with each delivery.

1.3 JLAB/Government Furnished Equipment/Material

None.

2.0 APPLICABLE DOCUMENTS

2.1 General

The following JLAB drawings and specifications, including the waveguide design and parts control listing, are hereby incorporated into this Statement of Work.

The Subcontractor's proposal must meet the overall dimensions, the VSWR and other noted requirements listed on Dwg #115120-1005 Rev A. The Subcontractor's proposal must incorporate the items shown in *Acceptable Drawings* of Section 2.4 of this SOW.

2.2 Conflicts

Any and all conflicts among the drawings are to be brought to the attention of JLAB for resolution prior to the commencement or continuation of work. Under no circumstances is the Subcontractor to take any initiative without this resolution. However, since the drawings represent an acceptable but not necessarily final design, the Subcontractor

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is invited to make his own design, particularly concerning fabrication of the bellows.

2.3 Dimensional Control Drawing Baseline Design

The following drawing represents an acceptable configuration for the waveguide assembly. Overall dimensions and noted requirements are mandatory.

2.3.1 Waveguide Assembly 115120-1005 Rev A.

2.4 Applicable Drawings

2.4.1 Waveguide Assembly 115120-1005 Rev A

2.4.2 Waveguide Stiffener 115120-1003

2.4.3 Heat Transfer Plate 115120-1004

2.4.4 Intercept Plate 115120-1002

2.4.5 Waveguide-Double Flange 115120-1006

2.4.6 Waveguide-FPC Flange 115120-1007 Rev A

2.5 Specifications

2.5.1 Vacuum Leak Test Internal Evacuation Small Items 11141S0029.

Exception to this specification is made in Section 3.0 Test Equipment. The Subcontractor shall use a Leak Detector with a Minimum Detectable Leak rate of 1×10^{-9} instead of 1×10^{-10} atm. cc/sec.

2.5.2 Welding Specification for U.H.V. Components 22633-S-001

2.5.3 Waveguide – Copper Plating 115070-1001S Rev A

2.5.4 Cleaning and Handling of U.H.V. Components 22632-S-001

2.5.4.1 Section 2.1 and Section 2.5.4 of the **Cleaning and Handling of U.H.V. Components** specification refer to cleaning parts with a trisodium phosphate based detergent, however, do **NOT** use any sodium or chlorine based cleaning agents to clean stainless steel as it is like to cause intergranular corrosion.

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2.5.4.2 Section 2.8 of the **Cleaning and Handling of U.H.V. Components** specification refers to wrapping parts and tube ends with food grade aluminum foil, however, do **NOT** use aluminum foil to wrap parts.

3.0 Inspection and Acceptance

3.1 Subcontractor Testing

3.1.1 The Subcontractor shall prepare, and submit to JLAB with their proposal, a detailed plan for ensuring each specification is met.

3.1.2 Visual inspection shall show that the waveguide assemblies are structurally sound and free of scale, cracks, splits, caps, inclusion porosity or any defect that could be considered a source of leaks or structural failure.

3.1.3 Cold Shocking

Any part that is welded or cold worked, shall be cold shocked at the weld with liquid nitrogen (LN₂). Welds compromised by cold shocking shall be ground out and re-welded where possible. If grinding and re-welding are not possible, the part shall be rejected

3.1.4 Electroplating

The Subcontractor shall provide written notification to JLAB 45 days prior to performing the electroplating process for the first article/prototypes for each production batch. This is an integral part of the functionality of the waveguide and may be subject to process inspection by JLAB.

3.1.5 Vacuum Leak Checks

Vacuum leak checks shall be performed in accordance with the specification noted in Section 2.5.1 of this statement of work.

3.1.6 Prototype/First Article Inspection and Testing

At least 45 calendar days before the beginning of prototype testing, the subcontractor shall notify the subcontracting officer, in writing, of the time and location of testing so that JLAB may witness the tests if desired.

3.2 JLAB Inspection and Acceptance

3.2.1 Upon receipt of the prototype/first articles, JLAB will perform thermal tests on both prototype/first article waveguides. Destructive tests will then be conducted on one of the units, referred to as the standard waveguide, to ensure electroplating specifications are met. Tests include voltage drop

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and profilometer measurements. Any cause for rejection of the tested prototype/first article is cause for rejection of all prototype/first articles.

- 3.2.2 JLAB will perform thermal tests on up to 100% of the units in the production batches and compare test results to the standard prototype/first article waveguide. Any cause for rejection of any of the tested units is cause for rejection of that unit. If 20% of any batch differs significantly from the standard prototype/first article waveguide there is cause for rejection of the entire batch. JLAB reserves the right to destructively test up to 20% of any batch. Any cause for rejection resulting from a destructive test is cause for rejection of the entire batch.

4.0 QUALITY ASSURANCE

4.1 Quality Assurance Requirements

- 4.1.1 The Subcontractor shall prepare a quality assurance program for JLAB's approval with their proposal. The Subcontractor shall conduct quality control procedures and tests, which will guarantee that the product to be furnished by the Subcontractor hereunder, is in full conformance with these specifications.

- 4.1.2 The consistent quality of the items defined by the specification is to be ensured by a continuing surveillance program that shall be carried on by the Subcontractor for the full term of the work associated with these specifications.

- 4.1.3 This program shall contain (when applicable) the mechanism for:
- a. Inspection of all materials received from the Subcontractor's suppliers and subcontractors and the recording of this information.
 - b. Obtaining and recording of all material certifications and analyses.
 - c. The calibration and identification of standards and instrumentation used; the intervals between calibrations are also to be defined.
 - d. Establishment of inspection points during the production process, which will measure critical parameters.
 - e. The recording of all inspection data in such a manner so that the history of an item can be readily traced.
 - f. The submittal to JLAB of all data related to the above.

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4.1.4 JLAB shall have unannounced access to the Subcontractor's plant, during regular business hours, for the purpose of conducting Quality Assurance Audits.

5.0 PREPARATION FOR DELIVERY

5.1 Shipping Requirements

The Subcontractor shall ship the specified equipment properly packaged, to ensure that damage is not incurred during shipment, in accordance with transportation industry standards, and in accordance with JLAB's requirements.

5.2 Packaging

Packaging shall be such as to properly support and contain the equipment and further protect against the elements. Subcontractor shall use nitrogen (N₂) to backfill a double, nylon bag containing the part. This will allow the part to stay dry and free of moisture. Sizing shall be such that handling is facilitated and weight limitations imposed by the transportation industry can readily be met.