

<b>PURCHASING SPECIFICATION</b>	<b>Doc. No.</b> PS-391-001-70	<b>LUSI SUB-SYSTEM</b> XCS
<b>LUSI X-Ray Correlation Spectroscopy Instrument Diffractometer System</b>		
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## 1. Scope:

This document defines the requirements and responsibilities for Offerors for a procurement contract for a sample Diffractometer system planned as part of the SLAC LCLS-LUSI X-ray Correlation Spectroscopy (XCS) instrument.

Responsibilities for the successful Offeror include engineering, design, fabrication, assembly, test, and installation of the diffractometer system.

A thorough understanding of the contents and meaning of SLAC supplied applicable documents, (ref; section 2) is assumed in the content of this document.

The technical requirements for the sample goniometer system are defined in SLAC supplied documents that represent the complete request for proposal package.

## 2. SLAC Supplied Applicable Documents:

**SP-391-001-30:** “XCS Diffractometer System Engineering Specification Document”

All SLAC documents, SLAC specifications, industry specifications and codes referenced in SP-391-001-30 “XCS Diffractometer System engineering specification” shall be considered applicable to this document and included as content in request for quotation packages.

## 3. Deliverables:

### 3.1. Vendor Supplied Hardware:

The vendor shall provide a complete, assembled, functional, diffractometer system meeting the technical and dimensional requirements as defined in SLAC document SP-391-001-30.

The delivered diffractometer system shall include, but not necessarily be restricted to, all translation and rotation elements, motors, encoders, wiring and strain relieve.

The vendor shall provide all personnel, materials, equipment, facilities and services required to complete engineering, design, documentation, fabrication, assembly and acceptance testing of the sample goniometer system.

### 3.2. Vendor Supplied Documentation:

All vendor supplied documentation shall be provided in English.

#### 3.2.1. Test and Inspection Data:

The vendor shall provide hard copies of all assembly inspection and acceptance test data.

Assembly inspection data shall include details of all assembly level quality control checks and information pertaining to the resolution of all non-conforming parts or assemblies.

Acceptance test data shall include inspection hardware calibration and traceability information and all test measurement value data

### **3.2.2. Component Part Documentation:**

Detailed documentation shall be provided of part features at a level of detail sufficient to fully describe the translation and rotation elements interfaces as described in sp-3914-001-30.

“Sufficient detail” is defined as information adequate for the fabrication of components capable of interface mounting to vendor supplied elements. Such detail includes, but is not restricted to, hole pattern dimensions, hole size, hole type, feature position tolerances, and surface flatness.

### **3.2.3. User - Service – Maintenance Manuals:**

The vendor shall provide two hardcopy user-service–maintenance manuals for the Diffractometer System.

Each manual shall be identical and include, but not necessarily be limited to;

- A. Explicit reconfiguration work instructions (sample translation)
- B. Explicit reconfiguration checklist(s)
- C. Service instructions - procedures
- D. Suggested service intervals
- E. Suggested spare parts lists
- F. 3rd party (sub-contracted) component operation-maintenance-guarantee documentation.
- G. Hardware torque specifications
- H. Wiring diagrams
- I. Wire identification lists
- J. Translation / rotation element interface detail documentation.
- K. All applicable material safety data sheets (MSDS).

#### **3.2.3.1. Service Procedures – Intervals:**

Vendor provided service instruction documentation shall include, as applicable, but not necessarily be limited to;

- i. Vendor or subcontractor part or model number
- ii. Component quantities and installation location(s)
- iii. Itemized service task description (eg: “lubricate”, “calibrate”)
- iv. Explicit work instruction / task procedure
- v. Nominal adjustment or calibration values
- vi. Lubrication type and / or quantity.

### **3.2.3.2. Parts Lists:**

Part lists shall include both vendor and 3rd party (sub-contracted) designed and/or fabricated components and consist of general component description, component part numbers, total quantities used and itemized installation locations.

### **3.3. SLAC Supplied Hardware:**

SLAC shall provide the cabling trunk between the control racks and the Diffractometer DIN connection blocks.

## **4. Overall Materials and Workmanship:**

### **4.1. Materials:**

All parts and materials for the Diffractometer system shall be new and compatible with the performance requirements of this specification.

No system, sub-system or part shall be reconditioned or remanufactured.

### **4.2. Workmanship:**

The quality of all materials and workmanship supplied by the vendor shall be equal to that used in the best quality precision motion devices. Nothing in this specification or accompanying documentation shall be construed as a release of the vendor from exercising such craftsmanship, supervision, testing and quality assurance-control as would lead to the expectation of yielding a high quality product.

## **5. Vendor Quality Assurance Program:**

The vendor shall provide evidence of an in place quality assurance program.

SLAC reserves the right of approval of the vendor's quality assurance plan to mitigate risk and provide objective evidence of the vendor's manufacturing processes ability to produce components and assemblies that meet the established technical requirements.

Vendor quality assurance may be verified by an on-site survey of the vendor's facilities and processes by a SLAC designated quality assurance representative, through evaluation of the vendor's quality assurance procedures or through evidence of acceptability of the vendor's quality and inspection system to previous customers.

## **6. Progress Updates – Status Reviews:**

Periodic progress updates and status reviews shall be conducted between SLAC direct and vendor personnel.

### **6.1. Progress updates:**

The vendor project manager, or designee, shall provide a written (E-mail, fax or hard copy) progress update to the SLAC project manager on a monthly basis for the duration of the contract.

Status reports shall identify “critical path” components or tasks, any projected schedule variances and address any items of concern regarding technical issues with potential to impact schedule.

## **6.2. Status Reviews:**

The SLAC project manager shall designate the members of each status review panel. A minimum of 3 weeks notice shall be provided to all proposed attendees of the date and location of each status review. Vendor personnel may conduct each review from a location of their choosing. SLAC personnel shall elect to attend each review in person or via teleconference at the discretion of SLAC project management. The vendor shall provide teleconference capability should circumstances require.

### **6.2.1. System Preliminary Status Review:**

This review shall be conducted prior to, or before, 30 percent project complete.

A minimum list of topics to be addressed at the system preliminary review are:

- a) Environmental and safety hazard identification assessment.
- b) Detail design and documentation of floor insert required for the airpad motion of the granite base of the diffractometer system.
- c) Preliminary design of translation / rotation element interface(s).
- d) Detailed component fabrication status.
- e) Preliminary motor / encoder requirements and specifications (supply loads, data input - output, etc...)

### **6.2.2. System Final Status Review:**

This review shall be conducted at, or before, 70 percent project complete.

A minimum list of topics to be addressed at the system preliminary review are:

- a) Environmental and safety hazard mitigations.
- b) Final design and documentation of floor insert required for the airpad motion of the granite base of the diffractometer system.
- c) Final design and documentation of translation / rotation element interfaces.
- d) Final wiring diagrams.
- e) Final motor / encoder requirements and specifications
- f) Offeror based testing plan detailing location, methods and proposed metrology hardware.
- g) Preliminary SLAC sight installation procedures and requirements.

## **7. Inspection, Testing and Acceptance:**

SLAC reserves the right to inspect any and all materials and parts used in the fabrication of the Diffractometer System. SLAC also reserves the right to onsite inspection of vendor facilities, procedures and tests engaged pursuant to the completion of the Diffractometer System.

### **7.1. Vendor Based Test and Acceptance:**

The vendor shall conduct SLAC witnessed acceptance testing of the fully assembled Diffractometer System. The location of vendor based testing shall be at the discretion of the vendor subject to SLAC approval.

SLAC shall provide written approval of test results, preliminary acceptance of the Diffractometer System (subject to SLAC site acceptance requirements, ref: section 7.2) and permission to ship hardware, within seven days of the completion of vendor based testing.

All Diffractometer System hardware shall be available during acceptance testing. The Diffractometer shall be capable of testing in any configuration.

The vendor shall provide written notification, to the SLAC project manager, of the acceptance test schedule a minimum of 8 weeks prior to the commencement of the tests.

Any modifications to, or deviation from, previously accepted test location, procedures, schedule, or instrumentation shall be provided to the SLAC project manager a minimum of 4 weeks prior to the start of acceptance tests (ref section 9).

SLAC supplied hardware employed in vendor based acceptance testing shall be provided FOB vendors receiving dock.

Test instrumentation shall have documented pedigree and calibration history.

### **7.2. Final Destination Acceptance:**

SLAC personnel shall perform a visual inspection of shipping containers upon receipt at SLAC facilities. Any visual packing container damage shall be cause for non-acceptance of damaged containers and hardware within.

SLAC personnel shall not unpack shipping containers unless in the presence of vendor representative(s).

All hardware shall receive visual inspection after unpacking and be officially accepted by SLAC upon confirmation of hardware okay.

## 8. Packing and Shipping:

As insurance against complete loss or damage in transit, the Diffractometer system shall be disassembled and packaged in a minimum of three separate containers prior to shipping.

It is the responsibility of the vendor to construct, or have constructed, shipping containers adequate to prevent against damage in transit. It is the responsibility of the vendor to mark said shipping containers with the required signage (lift points, “this side up”, etc.) adequate to prevent damage or loss in transit.

## 9. On-Site installation:

### 9.1. Vendor Responsibilities:

It shall be the responsibility of the vendor, during installation at the final SLAC destination to:

- A. Uncrate the Diffractometer System and verify condition of hardware.
- B. Reassemble Diffractometer at SLAC.
- C. Reconnect all cabling internal to translation and rotation elements.
- D. Verify component calibration, adjustment and alignment.
- E. Verify user–service manual work instruction and wiring diagram accuracy.

### 9.2. SLAC Responsibilities:

SLAC direct employees or SLAC contracted personnel shall:

- i. Install required port servers and power supplies.
- ii. Provide cabling from the control racks to the Diffractometer DIN blocks.
- iii. Complete interconnect of vendor provided power, data and control cabling to terminal location per vendor supplied wiring diagrams.

## 10. Minimum Offeror Submittal Content Requirements:

The successful Offeror shall provide to SLAC, as part of the response to request for quotation:

- a) Explicit acceptance of technical requirements for sphere of confusion as established in engineering specification document SP-391-001-30. Or proposed alternative requirements.
- b) Explicit acceptance of technical requirements for motion accuracy, repeatability, resolution and stability as established in engineering specification document SP-391-001-30. Or explicitly proposed alternative requirements where acceptance is not forthcoming.
- c) Explicit acceptance of motion control requirement (motor and encoder) as established in engineering specification requirement document SP-391-001-30. Or explicitly proposed alternative requirements where acceptance is not forthcoming.
- d) Preliminary acceptance of component dimensions as shown in source control documents. Or proposed revisions or alternative designs.
- e) Any exceptions to other technical requirements as established in engineering specification document SP-391-001-30 or alternative proposals.
- f) Evidence of in place quality assurance program.



- g) Past performance submittal (ref section 11.2)
- h) Preliminary Offeror based testing plan.
- i) Proposed guarantee
- j) Proposed baseline contract schedule including status review and acceptance test intervals.
- k) Cost

Acceptance of all technical and dimensional specifications and requirements is not a prerequisite for a successful offer.

Technical specifications and requirements, as established in engineering specification document SP-391-001-30, not specifically denied in Offeror's proposal shall be considered accepted.

Where the technical or dimensional requirements are not accepted by the Offeror, the Offeror is strongly encouraged to supply alternative specifications, requirements or solutions.

## **11. Offeror Evaluation:**

### **11.1. Technical Criteria:**

All offeror's proposals shall be evaluated to the following technical criteria in descending order of importance:

- A. Proposed basic performance specification for "sphere of confusion", as defined in ref SP-391-001-30 .
- B. Proposed Diffractometer System elements motion accuracy, repeatability, resolution and stability (ref SP-391-001-30).
- C. Proposed translation and rotation elements dimensions.
- D. Quality assurance declarations
- E. Schedule submittals
- F. Guarantee submittals

### **11.2. Past Performance Criteria:**

Included in each Offeror proposal package shall be a submittal establishing past performance.

Past performance submittals should include a list of three previous contracts that have been awarded to the Offeror of approximately the same, or more difficult/stringent, technical complexity and motion requirements.

Submittals shall include:

- a) contract title
- b) contract number
- c) data of award
- d) client's name, address and affiliation

- e) approximate contract value

### **11.3. Evaluation Panel Membership:**

SLAC reserves the right to appoint, remove or replace the members of any and all evaluation panels established in regard to the LUSI XCS Diffractometer system procurement.