



# ENG-060 - SOW - STATEMENT OF WORK

## Common Capping Flange SOW

*NSTXU\_1-1-3-3\_SOW\_105*

Work Planning #:

Effective Date:

**12/13/2019**

Prepared By:

**Carmela Ciummo Freeman**

|             |   |                           |
|-------------|---|---------------------------|
| Reviewed By | Carmela Ciummo Freeman, Preparer        | 12/13/2019<br>09:09:16 AM |
| Reviewed By | Ian Kunsch, Cognizant Individual        | 12/13/2019<br>08:58:55 AM |
| Reviewed By | Andres Castaneda, Quality Assurance     | 12/13/2019<br>10:52:53 AM |
| Reviewed By | Steve Raftopoulos, Responsible Engineer | 12/13/2019<br>11:11:16 AM |
| Reviewed By | Gary Swider, Project Manager            | 12/13/2019<br>09:34:47 AM |
| Approved By | Leslie Hill, Project Manager            | 12/13/2019<br>11:24:44 AM |



**JOB ORDER STATEMENT OF WORK  
FOR  
PF1A/PF1B COMMON AND CAPPING FLANGES**

CAT: ☒A1 ☐ A2 ☐ A3

**Revision: 0**

**Document No.:**

**Date:** December 09, 2019

|              |                                      |
|--------------|--------------------------------------|
| Prepared By: | C. Ciummo, Author                    |
| Reviewed by: | I. Kunsch, Cognizant Individual      |
| Reviewed by: | A. Castaneda, Quality Assurance      |
| Reviewed by: | S. Raftopoulos, Responsible Engineer |
| Reviewed by: | G. Swider, Associate Project Manager |
| Approved by: | L. Hill, Project Manager             |

**PRINCETON PLASMA PHYSICS LABORATORY  
P.O. BOX 451  
PRINCETON, N.J. 08543  
609-243-2000**



## RECORD OF CHANGES

| Rev # | Date     | Description of Changes |
|-------|----------|------------------------|
| 0     | 12/09/19 | Initial Release        |
|       |          |                        |
|       |          |                        |
|       |          |                        |
|       |          |                        |
|       |          |                        |
|       |          |                        |

## **1. SCOPE OF WORK**

1.1. The Subcontractor shall provide all materials, labor, supervision, equipment and expertise required to complete the following Work.

1.1.1. Provide documentation per Document Deliverables list

1.1.2. Manufacture parts per Components Deliverables list.

## **2. ATTACHMENTS**

2.1. Attachment A, Document Deliverables

2.2. Attachment B, Component Deliverables

## **3. REFERENCES**

3.1. NSTXU\_1\_SOW\_100 - Statement of Work for Fabrication and Machining Shop Services

3.2. E-DC-11138 UPPER AND LOWER COIL PF-1A AND PF-1B PARTS

## **4. GENERAL REQUIREMENTS**

Subcontractor agrees to perform the Work required by this Statement of Work (SOW), maintaining full compliance with the referenced Basic Ordering Agreement (BOA) SOW and any other documents included or referenced therein or elsewhere in this SOW. In the event that requirements in this SOW conflict with those of the BOA SOW, this SOW shall prevail.

## **5. SPECIAL REQUIREMENTS**

### **5.1. Project Plan and Schedule**

Subcontractor shall provide a schedule with key milestones (delivery of raw material, machining, inspection, coating, final inspection, etc.) which support the delivery schedule in the Deliverables tables. This plan/schedule shall be submitted within 2 weeks of award acceptance.

### **5.2. Weekly Updates**

The Subcontractor shall submit weekly updates on the status of fabrication. These updates shall include, at a minimum: a summary of work in progress, a schedule update, and identification and explanation of any potential or actual delays. Photos may be included as applicable. A mutually agreed upon day shall be scheduled for this regular update.

### **5.3. Hold Points**

PPPL defines two types of events which require the Subcontractor to halt manufacturing operations pending PPPL approval to continue. The two events are referred to as Hold Points and Witness Points, and are defined as follows:

- Hold Point – A point during the process whereby the Subcontractor shall halt activities and submit documentation, items, or materials to PPPL as defined within the contract documents. PPPL will review the submittals and provide approval to continue.
- Witness Point – A type of Hold Point which requires PPPL personnel to be physically present at the Subcontractor's premises to witness key activities as defined within the contract documents. The Subcontractor shall provide PPPL with notice five working days in advance of Witness Points.

The following Hold/Witness points apply to this contract:

5.3.1 Approval of MIT Plan (Hold Point, refer to § 5.5.3 item 9.6)

5.3.2 Approval of CMTR's prior to use (Hold Point, refer to §§ 5.4 & 5.5.3 item 9.20)

5.3.3 Approval of Non-Conformance disposition (Hold Point – as applicable, refer to § 5.5.3 item 9.16)

5.3.4 Release for Shipment and Approval of Process History (Hold Point, refer to § 5.5.3 item 9.19 and 9.20)

#### 5.4. Inspection

Dimensional Inspection shall be performed on each part to verify conformance to requirements as stated in the applicable drawings. A CMM measurement system shall be employed for measuring part dimensions, surfaces and features. Dimensional measurements shall be performed in a temperature-controlled environment, maintained at a temperature of 20°C (+/-2°C).

#### 5.5. Certified Material Test Reports (CMTRs)

The Subcontractor shall provide CMTRs, showing actual relevant chemical, mechanical, and electrical properties for all raw material intended for use in the execution of this contract. The CMTRs shall be submitted prior to the use of material.

#### 5.6. Quality Assurance Requirements

The following subsections of Section 9.0 of NSTXU\_1\_SOW\_100 shall apply.

| §    | Description   | Applies |
|------|---|---------|
| 9.1  | Inspection/Surveillance/Audit by PPPL                               | ✓       |
| 9.2  | Subcontractor's Responsibility for Conformance                      | ✓       |
| 9.3  | Changes to PPPL Approved Documents                                  | ✓       |
| 9.4  | Subcontractor Quality Assurance Program                             | ✓       |
| 9.5  | Submittal of Quality Assurance Plan for this procurement            |         |
| 9.6  | Submittal of Manufacturing/Inspection/Test (MIT) Plan               | ✓       |
| 9.7  | Process and Sequence  | ✓       |
| 9.8  | Document Traceability and Records                                   | ✓       |
| 9.9  | Inspection and Test Control   | ✓       |
| 9.10 | Submittal of Acceptance Test Procedures (ATPs) for PPPL Approval    |         |
| 9.11 | Performance and Documentation of Inspection & Tests                 | ✓       |
| 9.12 | Equipment/Material Identification and Status                        | ✓       |
| 9.13 | First Article Inspection Qualification                              |         |
| 9.14 | Document Review, Approval and Control                               | ✓       |
| 9.15 | Acceptability of Purchased Items and Services (Procurement Control) | ✓       |
| 9.16 | Non-conformance & Corrective Actions and Notifications              | ✓       |
| 9.17 | Measuring Equipment/Calibration                                     | ✓       |
| 9.18 | Welding and Brazing   |         |
| 9.19 | Submittal of Completed Release for Shipment Form                    | ✓       |
| 9.20 | Submittal of Completed Process History (Documentation Package)      | ✓       |
| 9.21 | Age/Shelf Life Storage Control and Records                          |         |
| 9.22 | PPPL Receiving/Inspection   | ✓       |
| 9.23 | High Strength Fasteners   |         |

The following sections are expanded and/or modified as follows:

#### 9.9 Inspection and Test Control

Inspection/test records shall include, at a minimum:

- PO/Contract number
- Part number and serial number (if applicable) of the item under inspection/test
- Reference identification for each reported attribute/feature traceable to the corresponding requirement definition
- Nominal values
- Tolerances
- Measured values



- Verification of compliance with all drawing notes
- Measurement device(s) and calibration due date(s)
- Inspector/Test Operator's name, signature, and date of inspection/test

#### 9.16 Non-conformance & Corrective Actions and Notification

Any identified non-conformance shall be communicated to PPPL within 2 working days of detection. A Non-Conformance Report (NCR) shall be submitted to PPPL within 5 working days of detection.

#### 9.17 Measuring Equipment/Calibration

The Subcontractor shall, along with the MIT, submit to PPPL calibration records of all Measurement & Test Equipment designated to be used in the completion of the work defined herein.

**ATTACHMENT A. DOCUMENT DELIVERABLES**

*Table A. List of Subcontractor Document Deliverables*

| # | Document Deliverables Required  | Required By                    | Format | Location   | Rcv'd |
|---|---|--------------------------------|--------|------------|-------|
| 1 | MIT plan (§ 5.6 item 9.6)   | 2 weeks AJOA, N                | E      | Ops Center |       |
| 2 | Calibration Records (§ 5.6 item 9.17)                                     | With MIT Plan                  | E      | Ops Center |       |
| 3 | Project Plan and Schedule (§ 5.1)   | 2 weeks AJOA                   | E      | Ops Center |       |
| 4 | CMTRs (§ 5.5)   | PS, N                          | E      | Ops Center |       |
| 5 | Non-Conformance Reports (§ 5.6 item 9.16)                                 | 5 working days of detection, N | E      | Ops Center |       |
| 6 | Process History (§ 5.6 item 9.20)   | BD                             | E      | Ops Center |       |
| 7 | Product Quality Certification and Shipping Release Form (§ 5.6 item 9.19) | BD, N                          | E      | Ops Center |       |
|   |   |                                |        |            |       |
|   |   |                                |        |            |       |

**Legend**

*AJOA = After Job Order Award*

*BD = Before Delivery*

*C = Project Completion*

*CMTR = Certified Material Test Report*

*D = During Manufacturing/As Required*

*MIT = Manufacturing / Inspection / Test*

*N = Notice to Proceed Requirement*

*P,E = Paper or Electronic*

*PS = Prior to Start of Manufacturing*

**ATTACHMENT B. COMPONENT DELIVERABLES**

*Table B. List of Subcontractor Component Deliverables to PPPL*

| #  | Quantity | Physical Deliverables Required                            | Required By   | Received |
|----|----------|---|---------------|----------|
| 1  | 1        | E-DC-11138-1 COMMON FLANGE, UPPER PF-1A AND PF-1B         | 12 weeks AJOA |          |
| 2  | 1        | E-DC-11138-2 COMMON FLANGE SEGMENT, UPPER PF-1A AND PF-1B | 12 weeks AJOA |          |
| 3  | 1        | E-DC-11138-3 CAPPING FLANGE, UPPER PF-1A                  | 12 weeks AJOA |          |
| 4  | 1        | E-DC-11138-4 CAPPING FLANGE, UPPER PF-1B                  | 12 weeks AJOA |          |
| 5  | 1        | E-DC-11138-5 COMMON FLANGE, LOWER PF-1A AND PF-1B         | 12 weeks AJOA |          |
| 6  | 1        | E-DC-11138-6 COMMON FLANGE SEGMENT, LOWER PF-1A AND PF-1B | 12 weeks AJOA |          |
| 7  | 1        | E-DC-11138-7 CAPPING FLANGE, LOWER PF-1A                  | 12 weeks AJOA |          |
| 8  | 1        | E-DC-11138-8 CAPPING FLANGE, LOWER PF-1B                  | 12 weeks AJOA |          |
| 9  | 2        | E-DC-11138-9 DOWEL PIN, 3/8 DIA X 1 LG                    | 12 weeks AJOA |          |
| 10 | 10       | E-DC-11138-10 CARRLANE TOOLING BALLS CL-2-SCB-S I         | 12 weeks AJOA |          |

Cognizant Engineer: \_\_\_\_\_  
*(Sign-off and provide to the Operations Center when job is completed and deliverables are dispositioned and placed/filed in Operations Center (or other Project, Department or Division designated file center).*