

PPPL Quality Assurance Plan for US ITER Work

PPPL-US-ITER-PLAN-QAP, Rev. 2

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Prepared by:

Judith Malsbury, PPPL US ITER Quality Assurance

Concurrence by:

David Johnson, Head, ITER Fabrication

Approved by:

Adam Cohen, Deputy Director for Operations*

Frank Casella, Head, US ITER Quality and ESH

* The PPPL QA Plan, EQP-004, requires that project specific QA Plans have the concurrence of the Head, Quality Assurance (QA). Since the Head, QA is also the preparer of this QA Plan, this concurrence signature also signifies QA concurrence.

RECORD OF REVISIONS

Revision	Date	Resp. Ind.	Description of Change
0	04/09	Malsbury	Initial Release of a procedure relevant to PPPL procurements for US ITER, declared to be a QA Plan.
1	10/11	Malsbury	Revised to include all aspects of US ITER QA Requirements
2	09/2015	Malsbury	Updated to reflect changes in the US ITER QA Requirements and documents and to better clarify how PPPL satisfies these requirements

1.0 PURPOSE

This document supplements the Princeton Plasma Physics Laboratory (PPPL) Institutional Quality Assurance Plan (EQP-004, available at http://www.pppl.gov/eshis/PPPL_docs.shtml) with additional requirements for US ITER activities.

2.0 APPROACH

2.1 PPPL is a partner in the US ITER Domestic Agency. PPPL activities for the US ITER Domestic Agency (DA), such as Procurement Arrangements and Task Agreements, will be accomplished under the PPPL Institutional Quality Assurance Plan and the US ITER requirements identified in this Plan.

3.0 RELATED DOCUMENTS

The following are related documents (current versions unless otherwise specified):

- 3.1 Memorandum of Agreement No. MOA-UTB-2006226 between UT-Battelle, LLC, The U.S. Contributions to ITER Project Office, Princeton University and Savannah River Nuclear Solutions
- 3.2 US_D_22JCPY, *Quality Assurance Program, United States Contributions to ITER*, R06
- 3.3 US_D_22EEBU, *US ITER Quality and Safety Classification Procedure*
- 3.4 US_D_224URT, *QA Non-Conformance Report Form*
- 3.5 US_D_22GMTF, *Nonconformance Report Procedure*
- 3.6 US_D_22M5G7, *Design Change Procedure*
- 3.7 The PPPL Institutional Quality Assurance Plan (IQAP), EQP-004
- 3.8 Plans and procedures as indicated herein

4.0 GRADED APPROACH

4.1 Quality-assuring actions shall be applied commensurate with risks and in accordance with US_D_22EEBU, *US ITER Quality and Safety Classification Procedure*. This procedure requires that products or deliverables that will be incorporated into the ITER plant and/or technical equipment or technical software or prototypes that will support the ITER design, other than those on a specified exclusion list, be evaluated and formally graded regarding safety and quality risk. WBS Team Leaders or their designees are expected to consult with PPPL QA whenever classifications are being determined. Note that the classifications for lower level components may differ than that defined for an associated larger scope of work. Lowering an ITER Organization (IO) assigned classification requires a justification and acceptance by the IO TRO and/or IO QA RO.

5.0 CRITERION 1 - PROGRAM

- 5.1 Princeton Plasma Physics Laboratory is a partner to the US Domestic Agency (DA), herein referred to as US ITER, within Oak Ridge National Laboratory. As such, PPPL is required to satisfy the requirements of the US ITER Quality Assurance Program.
- 5.2 The PPPL US ITER program is managed by the Head of ITER Fabrication, who reports to the PPPL Deputy Director of Operations.
- 5.3 PPPL adheres to the Institutional PPPL Quality Assurance Plan except where additional quality requirements are imposed by either US ITER or IO.

6.0 CRITERION 2 – PERSONNEL TRAINING AND QUALIFICATION

- 6.1 PPPL will complete US ITER required training. PPPL will rely on the US ITER automated system for tracking training status. PPPL also has specific training requirements based on the type of work being performed, typically defined via internal training matrices or work specific documents. This training is tracked by PPPL.

7.0 CRITERION 3 – QUALITY IMPROVEMENT

- 7.1 Issues associated with items, services, and processes that do not conform to specified requirements shall be identified and controlled to prevent their unintended use. Once identified, they are processed per PPPL QA-005, *Control of Nonconformances*, with the addition that PPPL will attach the US ITER *QA Non-Conformance Report Form*, US_D_224URT, to the front of the PPPL or the supplier's NCR form, and obtain the required approvals per US_D_22GMTF, *Nonconformance Report Procedure*. Major NCRs require the IO's formal approval of the disposition before implementing the corrective action. All NCRs shall be distributed to US ITER for further distribution to IO.

8.0 CRITERION 4 – DOCUMENTS AND RECORDS

- 8.1 The development, revision, maintenance, and control of US ITER Project generated or received documents shall follow US_D_22AMMS, *Document Control Procedure*. This procedure covers documentation under configuration control as part of the US ITER technical baseline. It covers both US ITER and supplier generated, controlled documents.
- 8.2 The development, revision, maintenance, and control of CAD models and drawings that are deliverables under a Procurement Arrangement (PA) or other agreement with the ITER Organization shall follow US_D_227FU8, *Drawing Management Procedure*.
- 8.3 The review and approval process for documents is defined in US_D_223LSJ, *Document Reviews and Approvals Procedure*, and US_D_22J4DV, *Document Review and Approval Matrix*.
- 8.4 The numbering scheme to be used on US ITER Project documentation and drawings is defined in US_D_227FU8, *Drawing Management Procedure*.
- 8.5 The process for records is defined in US_D_22KRN7, *Creation and Management of US ITER Project Records Procedure*.

9.0 CRITERION 5 – WORK PROCESSES

- 9.1 Fabrication for US ITER, whether in-house or procured, shall follow US ITER procedure US_D_22KGWH, *Quality in Acquisitions*.

- 9.2 Where no specific US ITER requirements indicate otherwise, the normal PPPL work processes shall be followed.

10.0 CRITERION 6 – DESIGN

- 10.1 Analyses and calculations for an existing, modified, or proposed structure, system, or component (SCC) and required by US ITER, including computer calculations, shall be processed via US ITER US_D_227HSR, *Design Analyses and Calculations*.
- 10.2 Deviations from an IO specified or approved requirement, typically found in Procurement Arrangements, Task Agreements, System Requirements Documents, and other IO controlled documents shall be performed per US_D_22A94F, *Deviation Requests*.
- 10.3 Changes to the US ITER Project Baseline are controlled per US_D_22HH9B, *Baseline Change Control Plan*. These changes include technical scope, cost, schedule, and credit baselines.
- 10.4 Changes to the US ITER Project Technical Baseline shall be implemented per US_D_22M5G7 [3.6]. Three events could trigger a Design Change Request (DCR):
- a. A US ITER Project participant recommends a change to a document that is part of the US ITER project technical baseline.
 - b. The IO proposes a change through their PCR process that impacts a document that is part of the US ITER project baseline.
 - c. A supplier to the US ITER Project submits a Deviation Request (DR) or Nonconformance Report (NCR) that initiates a change that is part of the US ITER project baseline.
- 10.5 US ITER follows the ITER IO *Design Review Procedure*, ITER_D_2832CF, with the caveats listed in US_D_22ME42, *Design Readiness Review Procedure* for reviews required by the Project. Reviews required by PPPL, but not by ITER, shall be conducted in accordance with the PPPL procedure ENG-033, *Design Verification*.
- 10.6 Value engineering, when required for ITER, shall be performed according to US_D_22K35M, *Value Engineering Plan*, and US_D_22LWLS, *Value Engineering Implementation Guidance*.

11.0 CRITERION 7 – PROCUREMENT

- 11.1 US ITER requirements for the quality aspects of procurements are specified in US_D_22KGWH, *Quality in Acquisitions*.
- 11.2 Procurements are given a quality and safety classification per US_D_22EEBU, *Quality and Safety Classification*, using US_D_22EAKZ, *Quality and Safety Classification Checklist*. Exceptions to the rule are listed in the procedure. Specific actions for each classification are defined in this procedure.
- 11.3 The acquisition of items, services, designs, and research and development (R&D) activities shall follow PPPL procedure QA-003, with additional controls from US_D_22KGWH, *Quality in Acquisitions*, if required by PA or TA.
- 11.4 Specifications and Statements of Work shall be developed per PPPL procedure ENG-006, *Preparation, Review, and Approval of Specifications and Statements of Work*, which aligns with US_D_2225ZV, *Specification and Statement of Work Development and Approval*.

- 11.5 It is preferred, but not required, that Subcontractor and Supplier Quality Plans use US_D_23EG78, *Quality Plan - Template for Suppliers and Subcontractors*. Some Subcontractors and Suppliers may already have existing formats for their Quality Plans that are appropriate for their work and are consistent with the IO requirements for Quality Plans found in ITER_D_22MFMW, *Quality Plan*.
- 11.6 Production Readiness Reviews, where required, shall be conducted prior to authorizing production for any customer equipment that forms part of the US ITER in-kind contributions. The applicable procedure is US_D_22YBGC, *Manufacturing Readiness Review*.
- 11.7 Documented qualification of suppliers for Quality Level 1 and 2 (ITER_D_24VQES, *Quality Classification Determination*) items and services is required.
- 11.8 Acceptance of Quality Level 1 and 2 items and services shall follow the requirements of US_D_22ZWJ6, *Receipt Inspection Procedure*, and US_D_223LSJ, *Document Reviews and Approvals Procedure*, together with US_D_22J4DV, *Document Review and Approval Procedure Matrix*, for acceptance of other work products (e.g., technical documents).

12.0 CRITERION 8 – INSPECTION AND ACCEPTANCE TESTING

- 12.1 Site visits and receipt inspections shall be conducted in accordance with QA-003, *Procurement Quality Assurance*.
- 12.2 Test Readiness Reviews, where required, shall be conducted prior to authorizing testing for any customer equipment that forms part of the US ITER in-kind contributions. The applicable procedure is US_D_22YBGC, *Manufacturing Readiness Review*.
- 12.3 Acceptance testing of hardware that will be delivered to the ITER Plant will be performed per US_D_22PKL9, *Test and Acceptance Program Procedure*.

13.0 CRITERION 9 –MANAGEMENT ASSESSMENT

- 13.1 If management assessments are performed at the request of US ITER, then the applicable procedure is US_D_228CP6, *Conducting Quality Assessments*. Otherwise, the PPPL Management Assessment program, QA-025, *Management Assessments*, is applicable.

14.0 CRITERION 10 –INDEPENDENT ASSESSMENT

- 14.1 PPPL assessments will be performed per procedure QA-002, *PPPL Audit Program*.