

| PROCEDURE: NCSX-PROC-002 Revision 3                        |  |   | Page: 1 of 11 |
|--|--|---|---------------|
| <b>Title</b><br><br><b>NCSX Configuration Control</b>      | <b>Initiated by:</b><br><br>NCSX Systems Engineering Support Manager | <b>Effective Date:</b><br><br><b>May 11, 2006</b>               |               |
| <b>Concurred by:</b><br><br>NCSX Quality Assurance Manager | <b>Approved by:</b><br><br>NCSX Engineering Manager                  | <b>Supersedes:</b><br><br>Revision 2<br>Dated December 14, 2005 |               |

### Record of Revisions

| Revision | Date       | Description of Changes  |
|----------|------------|---|
| 0        | 2/23/2003  | Initial Issue   |
| 1        | 4/21/2005  | Added record of revisions table. Changed to a simplified flow chart format. |
| 2        | 12/14/2005 | Updated ECP Forms (Attachment 1) and corrected some text.                   |
| 3        | 5/11/2006  | Added new Section clarify when an ECP, ECN, RFD, or NCR are needed.         |

### Applicability

This procedure covers changes to the following controlled documents that define the functional or technical requirements, the design configuration of NCSX, or cost and schedule baselines associated with the technical baseline:

- Approved NCSX specifications, including the General Requirements Document (GRD) and System Requirements Documents (SRDs);
- Approved NCSX drawings and models;
- Approved Interface Control Documents (ICDs); and
- NCSX cost and schedule baselines.

**Notes:** (1) *Approved technical installation and assembly procedures shall be under document control vs. formal configuration control.*

(2) *Statements of Work (SOWs) do not normally convey technical information, but may do so in isolated instance s(e.g., for specific and focused R&D efforts that will not become part of the NCSX device) where it is determined that a technical specification is not needed. SOWs will be under revision control, but not configuration control.*

### Introduction

This procedure describes how the changes to the NCSX Project baselines (technical, cost, and schedule) are processed and controlled. A change request can be initiated by anyone associated with the Project.

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

Once under configuration control, the “configuration” of the NCSX MIE Project may only be changed via the Engineering Change Proposal (ECP) process described in this procedure. An ECP may be a “stand-alone” ECP that addresses discrete and significant changes in which a change of thinking or understanding causes the project to change something that is already under formal configuration change control; or an “omnibus” ECP that addresses small and multiple changes, may reflect one or more changes that are of a more evolutionary nature in which the design (and the associated cost and schedule impacts) that have advanced to a level of detail, moving beyond but not necessarily changing that which is already under formal change control, or adjustments due to actual cost and schedule performance against established baselines. **Once an ECP is approved, the normal time frame between ECP approval and revision of the impacted documentation shall not exceed 30 days. However, this does not relieve the Project from proper notification of impacted WBS elements and impacted Suppliers – contract amendments/addenda shall be issued in a timely manner with an indication on when the impacted documentation will be updated.**

There are two types of ECPs:

- A “standard” ECP that requires a full review and approval cycle via the NCSX Change Control Board (CCB). .
- An “expedited” ECP that may be approved with only an abbreviated review. Expedited ECPs are reserved for special instances where:
  - If a pending critical procurement needs to reflect the proposed change;
  - If field activities may be delayed by the normal ECP process involving full reviews and the CCB; or
  - If the proposed change is primarily editorial or minor in nature (e.g., clarifications on drawings for dimensions, tolerances, etc.). *Note: Systems Engineering Support Manager may make the determination that an ECP is NOT required.*
- If either the Project or the Supplier notes an immediate need to revise the contract documentation on a turn around period shorter than the normal ECP processing process. These changes are usually minor in nature (e.g., correction of omissions, dimensional clarifications, clarification of the Statement of Work, specification, and/or models and drawings) and generally are anticipated to have only minor or negligible technical, cost, and schedule impact if the appropriate changes can be made quickly so as to minimize or eliminate rework or delay. If deemed prudent by the NCSX Systems Engineering Support Manager, the decision can be made to delay revising the impacted documentation beyond the normal 30 day time period.

If an expedited ECP is deemed appropriate, the NCSX Engineering Manager, after consultation with the NCSX Project Manager, will be the approving authority after an abbreviated review cycle defined by the Engineering Manager. Nonetheless, following approval of an expedited ECP, the full CCB will review the ECP “after-the-fact” to ensure that major errors and/or omissions were not made. If the full CCB determines major errors and/or omissions that require a modification to the approved “expedited” ECP, a follow-up modification of the ECP will be made in accordance with the NCSX procedures and this ECP shall be a “standard” ECP.

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

*Note: An ECP will likely NOT be required if the change is of a minor editorial nature. The Systems Engineering Support Manager will determine if an ECP is needed on a case-by-case basis.*

### **When are ECPS, ECNs, RFDs, and NCRs Needed?**

The following Table and Flow Chart is intended to summarize in one place when Engineering Change Proposals (ECPs), Engineering Change Notices (ECNs), Requests for Deviation (RFDs), and Non-Conformance Reports (NCRs) are needed and when they are NOT needed:

Controlled Document

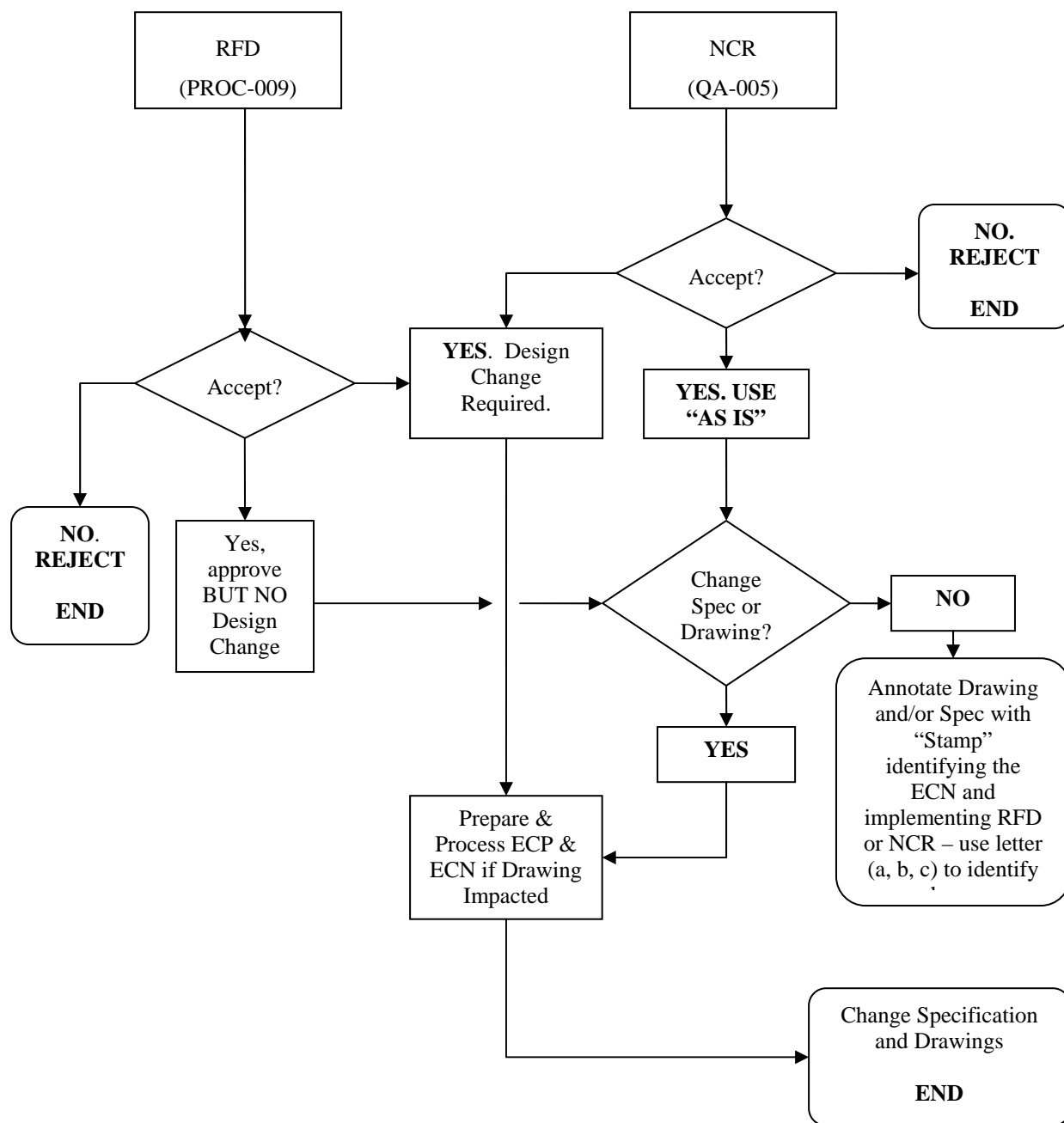
**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

| Type of Document | When Needed  | When NOT Needed  |
|------------------|--|--|
| ECP              | When there is a design change that impacts a Specification (Technical Baseline Requirements) or the Cost or Schedule baselines. Drawing changes (technical baseline) will also impact a Specification since the Specification also contains a table that lists the latest drawing revisions.   | Minor editorial changes will not normally require the processing of an ECP. The Systems Engineering Manager will determine whether an ECP is required on a case-by-case basis.   |
| ECN              | Once a drawing is released for fabrication (Rev 0), an ECN is <b>ALWAYS</b> needed to authorize a change (i.e., revision) to that drawing. If a drawing is changed by an ECN, an ECP will be needed to revise the Specification at a convenient time. See ENG-010 and PROC-006 and PROC-007.   | An ECN is needed <b>NOT</b> needed to utilize the “stamp” process outlined in PROC-007 in which an implementing RFD or NCR is determined by the RLM to be relatively minor or that the necessary resources and funding is not available; in this instance, a “stamp” will be added to the existing drawing and the drawing revision will only be advanced by adding a letter (e.g., a, b, etc.) to the existing revision. However when the released for fabrication drawing is next formally revised (e.g., number revision), an ECN will <b>ALWAYS</b> be required. |
| RFD              | When either the supplier or PPPL identify a deviation from the established design before the component is fabricated (as indicated in either a Specification or Drawing), a RFD may be submitted to request a deviation either only for this specific component or for all remaining components. In dispositioning a RFD, the determination needs to be made as to whether or not the impacted drawing(s) or Specification need to be revised; if they do, then an ECN and ECP will be required. If the determination is made to not revise either the drawing or Specification, the Systems Engineering Manager will determine if a “stamp” can be placed on the impacted drawing and a note added to the Specification. (See PROC-009) | A RFD should <b>NEVER</b> be used to document an after the fact deviation from the requirements – the NCR will be the vehicle to document the change.  |
| NCR              | NCRs are used to identify items, services, or activities that fail to conform to specified requirements. The purpose of the NCR is provide a controlled method to prevent the inadvertent installation or continued use of the non-conforming items, services, or activities. As part of the NCR process outline in QA-005, the Project must identify, evaluate, and disposition the specific non-conformance(s), including if deemed necessary, provisions to segregate the item or to stop the specific nonconforming activity or condition causing the nonconformance.  | A NCR should <b>NEVER</b> be used to document a deviation <b>BEFORE</b> it occurs – a RFD shall be used in that case. However, a NCR for a specific issue or nonconformance can lead to a follow-on RFD if it is decided that the specific non-conformance will be accepted for follow on components.  |

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

The following flow chart is intended to visually provides and overview of the processing of ECPs, ECNs, RFDs, and NCRs:



Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

**Referenced Documents**

|               |  |
|---------------|--|
| NCTX-PLAN-CMP | NCSX Configuration Management Plan   |
| PPPL- ENG-006 | PPPL Procedure on the Review and Approval of Specifications and Statements of Work |
| PPPL-ENG-010  | Control of Drawings, Software, and Firmware  |
| PPPL-QA-005   | PPPL Non-Conformance Reports   |
| NCSX-PROC-006 | Supplier Site Postings   |
| NCSX-PROC-007 | <a href="#">NCSX Electronic Model and Drawing/INTRALINK Processes</a>              |
| NCSX-PROC-008 | NCSX Fast Response Process   |
| NCSX-PROC-009 | NCSX Request for Deviation Process   |

**A. Procedure for Processing Engineering Change Proposals (ECPs)**

**Note:** NCSX documents do not all come under configuration control at the same time. Rather, as appropriate for the stage of design, the documents and drawings and models will come under configuration control (i.e., are signed and approved) in a phased manner, with the higher-level specifications and drawings coming under configuration control prior to lower-level specification and detailed drawings and models.

**Initiator (either Project or Supplier)** identifies a need to update the technical baseline documentation to the Cognizant Engineer and PTR and PPPL Procurement Representative if Supplier initiated.

**Cognizant Engineer/PTR** evaluates proposed change and develops a proposed resolution and method of documenting proposed change in consultation with the Design Integration Manager, Systems Engineering Support Manager, and RLM, including whether this change might warrant special processing to ensure timely notification to a Supplier. The documentation of the proposed change may take the form of Request for Deviation (RFD) or ECP:

- If a RFD, directs the initiator to prepare and process a RFD per PROC-009;
- If a NCAR, directs the initiator to process a NCR per QA-005; or
- If a ECP, directs the initiator to prepare a ECP per Attachment 1 of this procedure (or to submit basis of change to the Systems Engineering Support Manager for inclusion in an ECP).

**NOTE:** *The Cognizant Engineer/PTR may decide to prepare the proposed documentation in lieu of the initiator.*

A1

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

A1

**Initiator or Cognizant Engineer/PTR** submits the ECP (with any continuation sheets deemed necessary to better explain the rationale for the change) and recommendation whether this ECP requires special handling to ensure timely notification to a Supplier to the Systems Engineering Support Manager for further processing.

**Systems Engineering Support Manager** reviews proposed change, and:

- If required, iterates until the additional amplifying information needed to complete the ECP package. If the ECP form is not already completed, completes the ECP form per Attachment 1 of this procedure;
- Determines whether this ECP should be processed as a “standard” or “expedited” ECP and whether this ECP warrants a special handling to ensure timely notification to a Supplier;
- The change level/class of this ECP (determined by the approving official);
- Completes the ECP Cover Page to include:
  - Initiator of the ECP and date ECP prepared;
  - ECP number in accordance with the following format ECP-XXX, where XXX is a sequential number starting with 001;
  - Descriptive Title of the ECP;
  - Required Reviewers;
  - Action items needed to close out the ECP; and
  - Any amplifying information that might assist in the review and disposition of the ECP
- Posts the draft ECP on the Configuration Management Web page and notifies all reviewers if and if this will be a standard, or expedited ECP.

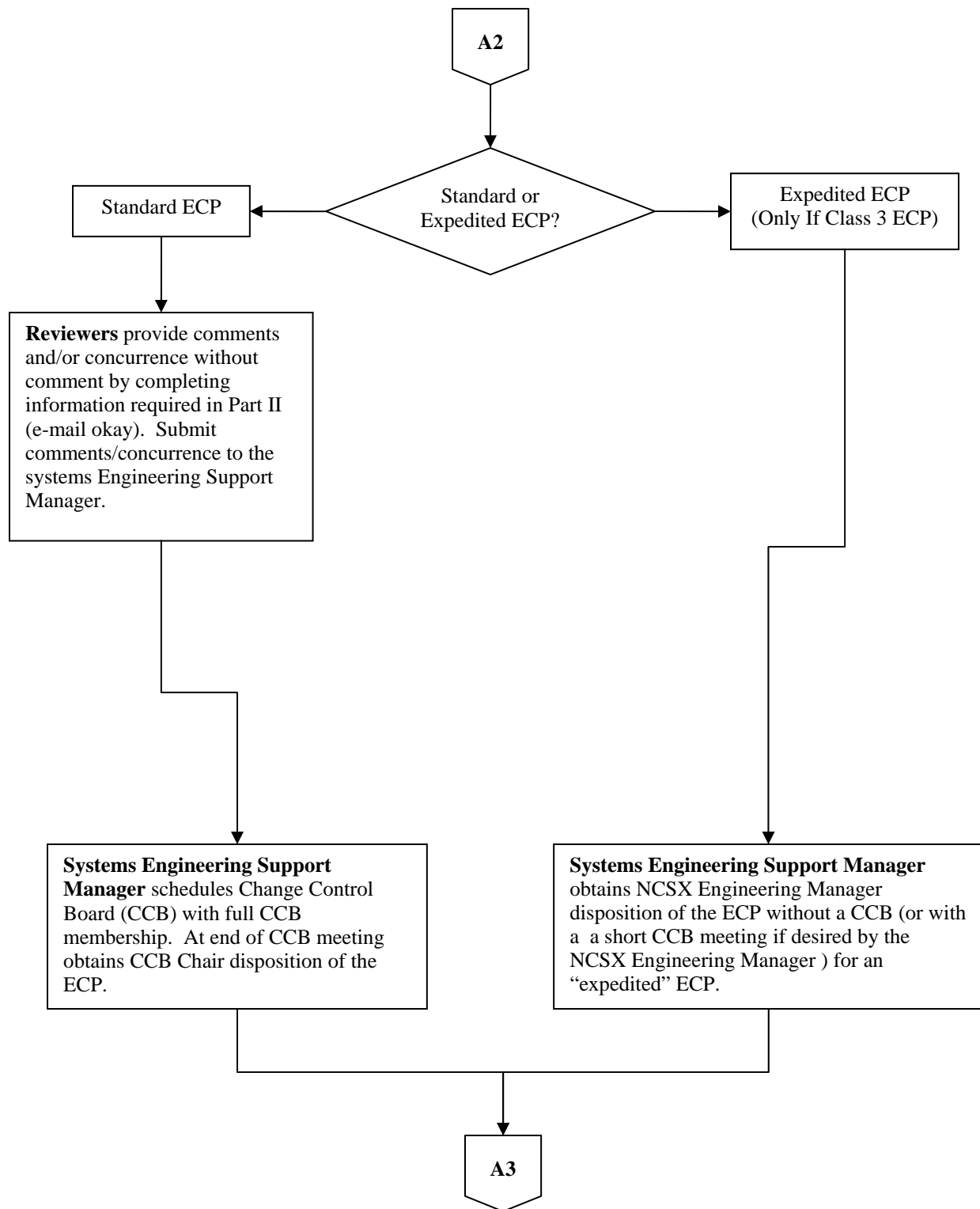
**NOTES:** (1) An “expedited” ECP process may only be used for change level/class 3 (Project approval) ECPs. If an “expedited” ECP, the NCSX Engineering Manager (or his designee) is the approving official. If not an “expedited” ECP, the NCSX Project Manager (or his designee – usually only the NCSX Engineering Manager) signs for the Project.

(2) “Expedited” ECPs will normally only be considered for those items with potential impact on existing supplier contract or critical field activities.

A2

Controlled Document

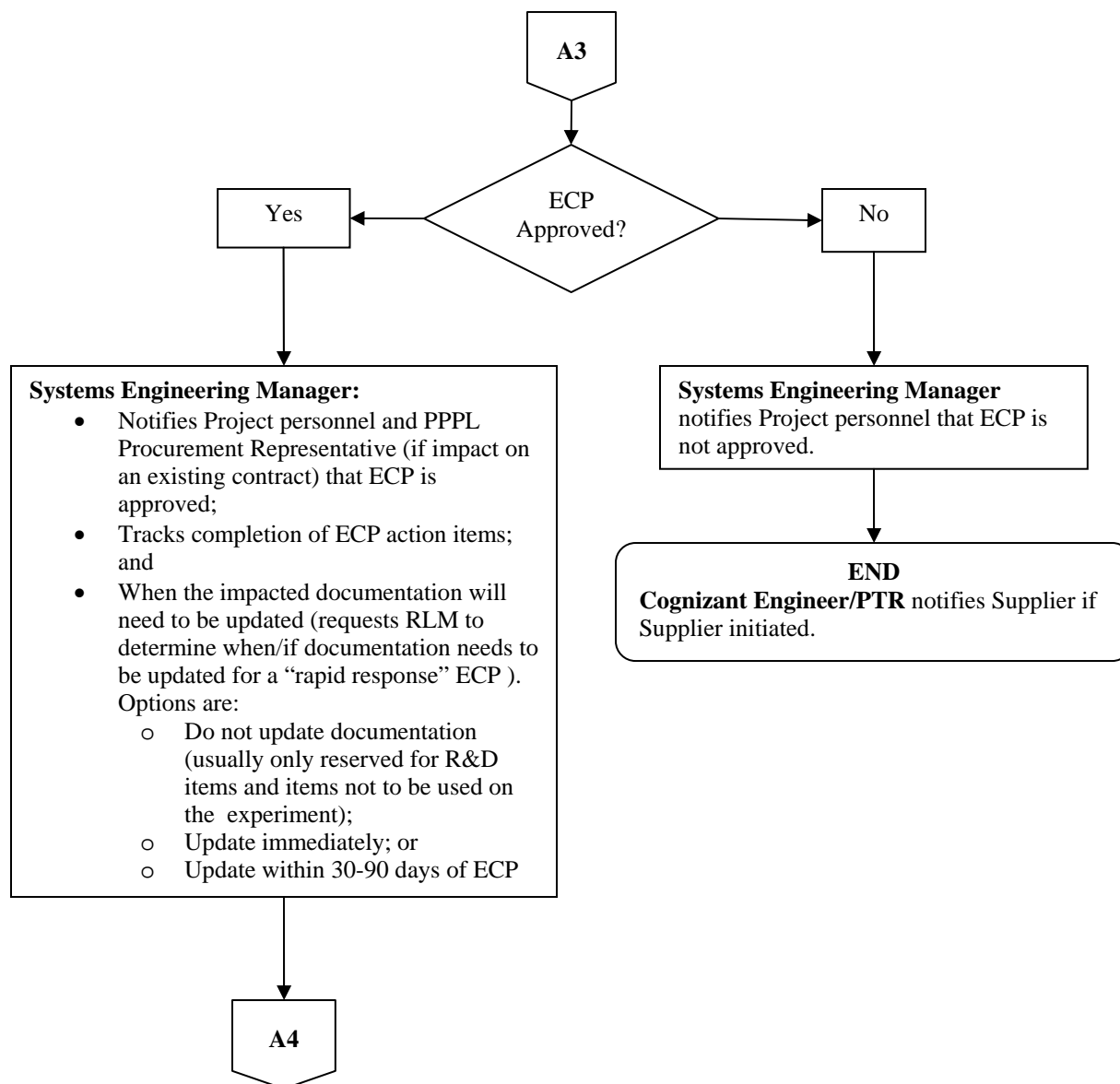
**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.



Controlled Document

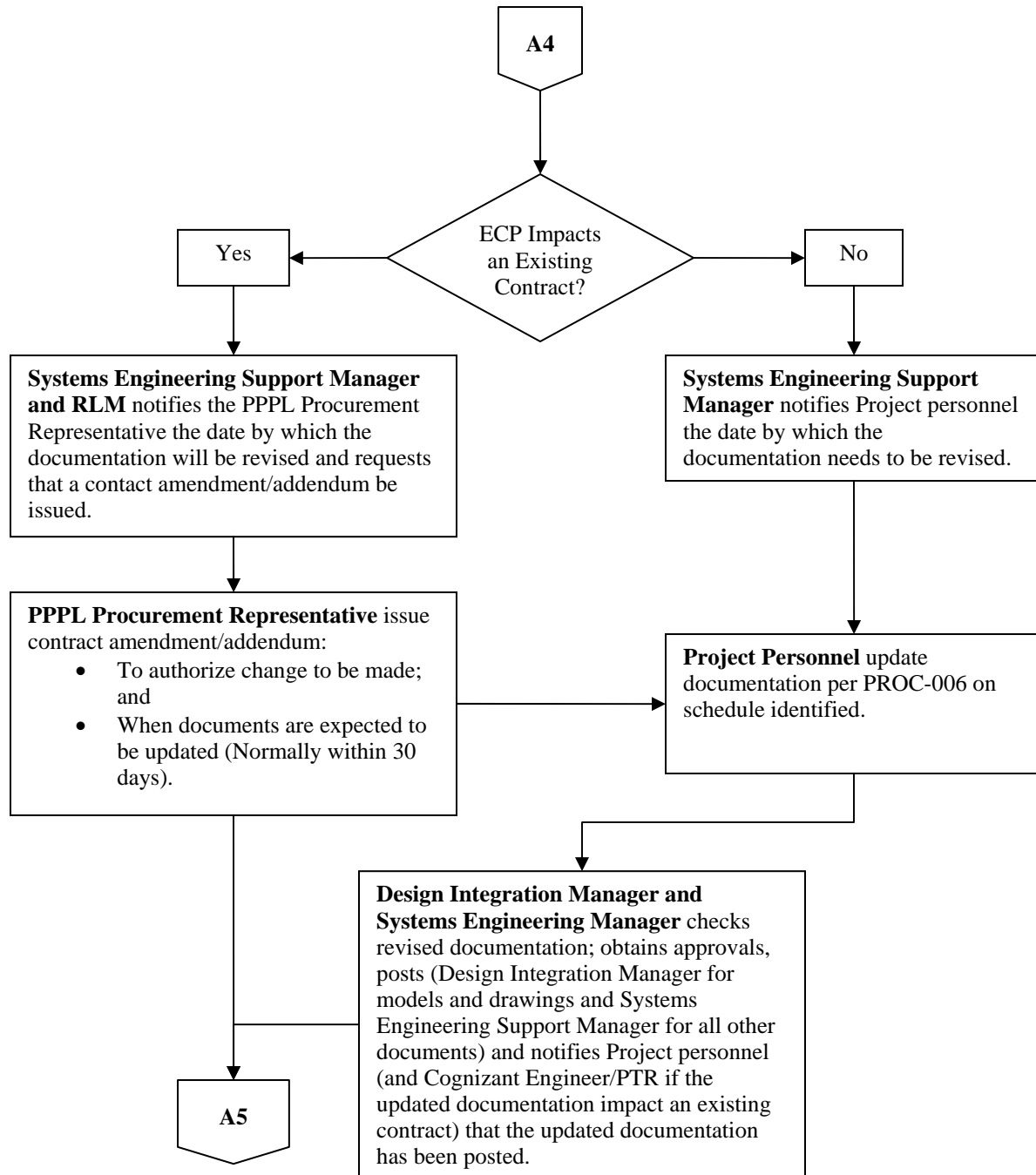
**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.





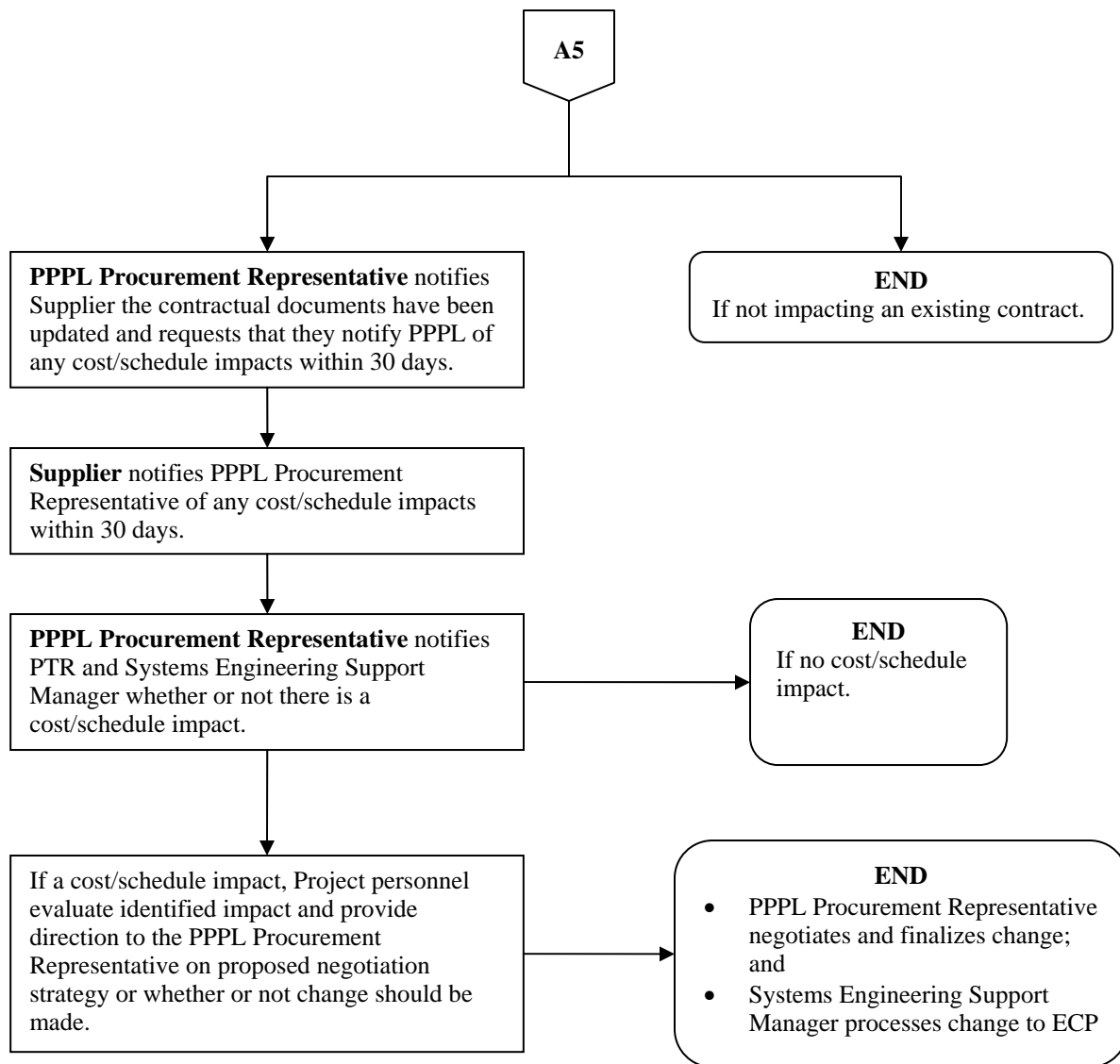
Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.



Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.



## Attachments

**1 - ECP Forms (Cover Page and Part I)**

**2 – Reviewer Comment Form (Part II)**

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

|   |                               |  |           |
|---|-------------------------------|--|-----------|
| <b>NATIONAL COMPACT STELLARATOR PROJECT</b><br><b>Engineering Change Proposal (ECP)</b>   |                               |  |           |
| <b>COVER PAGE</b><br><b>(TO BE COMPLETED BY SYSTEMS ENGINEERING SUPPORT MANAGER)</b>  |                               |  |           |
| Originator:   |                               | Date:  |           |
| ECP No:   |                               | ECP Title:   |           |
| <u><b>Required Reviewers</b></u>  |                               |  |           |
| Required Reviewers for this ECP:  |                               |  |           |
| <u><b>ECP Approval Level</b></u><br>Expedited ECP? <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Change Level: 3 Project<br>Approving Official: 3 Reg ECP - Project Manager |                               |  |           |
| <u><b>Actions</b></u>   |                               |  |           |
| <b>APPROVALS</b><br><b>(TO BE COMPLETED BY APPROVING OFFICIALS)</b>   |                               |  |           |
| Change Level  | Approving Official            | Approval?  | Signature |
| 3   | NCSX Project Manager          | <input type="checkbox"/> Yes <input type="checkbox"/> No |           |
| 3a<br>(Expedited ECP)   | NCSX Engineering Manager      | <input type="checkbox"/> Yes <input type="checkbox"/> No |           |
| 2   | NCSX Federal Project Director | <input type="checkbox"/> Yes <input type="checkbox"/> No |           |
| 1   | Associate Director OFES       | <input type="checkbox"/> Yes <input type="checkbox"/> No |           |
| 0   | Deputy Secretary of Energy    | <input type="checkbox"/> Yes <input type="checkbox"/> No |           |

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

# NATIONAL COMPACT STELLARATOR PROJECT

## Engineering Change Proposal (ECP)

### *PART I* *(TO BE COMPLETED BY ORIGINATOR)* **ECP-**

Originator:

Date:

#### Overview of Change

Type of ECP:      ☐ EXPEDITED      ☐ STANDARD

Type of Change:      ☐ TECHNICAL      ☐ COST      ☐ SCHEDULE      ☐ EDITORIAL

(Check all that Apply)

Reason for Change:

Impacted WBS Elements:

Impacts of Change (Briefly Describe):

Does this Change Impact Material Already Procured or Parts/Assemblies Already Assembled/Manufactured using this Material: ☐ Yes ☐ No

If “Yes”, what is the recommended disposition of this material/part/assembly?

Assessment of Other Options:

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

**NATIONAL COMPACT STELLARATOR PROJECT**  
**Engineering Change Proposal (ECP)****PART I**  
**(TO BE COMPLETED BY ORIGINATOR)****Originator:****Date:****Detailed Description of the Change:**

(Use Continuation Sheets and/or Attach Information/Sketches, As Needed)

**List Attachments, Impacted Documents, etc.****Description of Change:**

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX  
Engineering Web prior to use to assure that this document is current.

**NATIONAL COMPACT STELLARATOR PROJECT**  
**Engineering Change Proposal (ECP)***PART I CONTINUATION SHEET*  
*(TO BE COMPLETED BY ORIGINATOR)***Originator:****Date:**

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX  
Engineering Web prior to use to assure that this document is current.

### **Reviewer Comment Guidelines**

Reviewers will complete a reviewer comment sheet (either using the Part II form included in this procedure or in any other acceptable format such as e-mail, word, etc.). The reviewer comment sheet shall contain at a minimum the following information:

- ECP Number and Title;
- Reviewer Name;
- Indications on whether or not corrections needed and the specific modifications/corrections needed (e.g., additional reviewers, correction to impact statements, modifications to the ECP to include other impacted documents, etc.);
- Whether or not the reviewer concurs in the ECP without comment or concurrence if recommended modifications/corrections are made.

This information should be submitted to the Systems Engineering Support Manager who will tally all the comments and attempt to reach a resolution with the ECP initiator.

A sample Part II of the ECP form is follows in this attachment if the reviewer opts to utilize it.

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.



**NATIONAL COMPACT STELLARATOR PROJECT**  
**Engineering Change Proposal (ECP)****PART II****(TO BE COMPLETED BY REVIEWERS)**

ECP No:

ECP Title:

Reviewer:

Corrections Needed? ☐ Yes ☐ No

- If yes, identify corrections needed:

Concur? ☐ Yes ☐ No

- Provide reasons for concurrence/rejection:

Other Recommendations? ☐ Yes ☐ No

- Identify Recommendations

**NOTE:** Forward completed Part II to Systems Engineering Support Manager via e-mail indicating that your review is completed.

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX Engineering Web prior to use to assure that this document is current.

**NATIONAL COMPACT STELLARATOR PROJECT**  
**Engineering Change Proposal (ECP)*****PART II CONTINUATION SHEET***  
***(TO BE COMPLETED BY REVIEWER)*****Originator:****Date:**

***NOTE: Part II – Review Form will be multiple pages from each reviewer.***

Controlled Document

**THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED.** Check the NCSX  
Engineering Web prior to use to assure that this document is current.