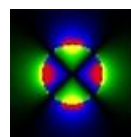


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## Magnet Division Specification

Specification Number: SMD-MAG-1001

Revision: A



Superconducting  
Magnet Division

## Procedure for Preparation and Processing of ECR/ECN

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## Revision History

- Rev A:

1 Scope:

- 1.1 This procedure establishes specific instructions for the SMD, in the processing of Engineering Change Requests /Notices (ECR /ECN). It shall apply to all ECRs/ECNs originated in the SMD that affect in house programs as well as contracts. This procedure will encompass ECR/ECNs generated in response to supplier Engineering Change Proposals (ECPs) and ECRs/ECNs affecting RFPs or RFQs.

2 Applicable Documents:

SBMS Subject Area: [Engineering Design, Section 3.3 Review and Approval of Changes to Drawings/Specifications](#)

SMD-QF-010 Form, "Engineering Change Request /Notice"

SMD-QF-011 Form, "Engineering Change Request /Notice Continuation Sheet"

SMD-QF-012 Form, "Engineering Change Request /Notice Continuation Sheet (Drawings Affected)"

SMD-QF-014 Form "Manufacturing Change Order"

3 Definitions:

- 3.1 PICS Parts & Inventory Control System - SMD MRP software suite.

3.2 Class I Change (any of the below):

- Cost changes of more than 10K.
- Any change impacting cost, schedule and /or technical (i.e. product performance, durability, interchangeability, systems interface, health, security, or safety) performance of a subcontractor /supplier.
- Any change affecting parts or assemblies for which fabrication has been started.
- Any change affecting fit /form /function of a deliverable
- Any change increasing the ESSH&Q Risk Level Designator

3.3 Class II Change:

- All changes not classified as Type I as specified above.

4 Requirements:

- 4.1 All ECRs generated within SMD shall be processed in accordance with the procedural steps of section 6 herein. This includes ECRs which affect suppliers and RFPs or RFQs. ECRs which affect RFPs or RFQs that have been issued and are in source selection shall either be held in abeyance until contract award or processed as an ECR not affecting a supplier. If the ECR is held in abeyance until contract award, it shall then be processed in accordance with the requirements of this procedure as an ECR affecting a supplier. If the ECR is processed as an ECR not affecting a supplier, it shall be issued as an amendment to the RFP or RFQ upon approval as an ECN.

5 Responsibility:

This procedure identifies the functional groups and individuals that contribute to the processing of ECRs/ECNs and establishes their responsibilities as follows:

Cognizant Engineer (CE)/Cognizant Scientist (CS): Shall be responsible for the technical content of the ECR/ECN and shall assure that all technical aspects of the change agree with the detailed requirements of the project or any document which describes performance requirements of the system.

Design Group: Shall be responsible for providing support and assistance to the CE/CS in completing the ECR package when requested; incorporating approved ECNs; checking ECRs and the incorporation of ECNs in accordance with the requirements of this procedure; maintaining and filing ECR originals; making and distributing copies as disclosed on the ECR/ECN form; maintaining the PICS database with regards to ECR/ECN. For ECR/ECN affecting procedures, the design group shall enlist the assistance of the division secretary for the tasks of incorporating ECNs.

Division Secretary: Shall be responsible for the incorporation of ECNs affecting procedures.

Approvers: Each of the approval authorities shall be responsible for reviewing the ECR for completeness; form, fit, function; impact on tooling, schedules, material, and costs; technical adequacy; interface impact; change affectivity; impact on Class I criteria.

Procurement Representative: Shall be responsible for submitting all ECRs to the supplier and shall be the point of contact for all supplier generated comments and ECPs.

Quality Assurance: Shall be responsible for verifying that the proposed change, when implemented, can be properly inspected if required; and that all contractual conditions are met. In addition, Quality Assurance shall be responsible for auditing and verifying the activities of this procedure.

Manufacturing Documentation Coordinator (MDC): Shall be responsible for the issuance of shop copies of manufacturing change orders as required by the ECN.

Environmental, Safety, Security & Health: Shall be responsible for reviewing the ECR for impact on environment, safety, security and health.

6 Procedure:

6.1 The CE/CS, his designee, or any interested person ("the originator"), shall generate the ECR. If the originator is not the CE/CS, or designee, the initiator shall forward the ECN to the CE/CS.

6.2 The CE/CS shall submit the ECR to the Design Group Administrator. He or she shall make the administrator aware of whether the ECR is against a document that is presently out for contract. When an ECR could affect other ECRs already at a contractor, a note should be added to the description section of the ECR as follows: "REF ECR XXXX", where "XXXX" represents the number of the affected ECR already at the contractor.

6.3 The Design Room Administrator shall:

A. Verify that the following fields are completed:

- Drawing /Specification Title
- Drawing /Specification Number
- Description of Change
- Revision – From
- Reason for change
- Requester.

B. Assign an ECR number. The number shall be the next unassigned number from the sequential log book.

C. Enter the ECR data into PICS.

D. Return the ECR to the CE/CS for further processing.

6.4 The CE/CS shall seek out Division Management (Mechanical Engineering Section Head or Division Head) for a conceptual review of the proposed ECR. The Conceptual Review may take place at a formal or informal meeting.

6.5 Should the proposed change be withdrawn as a result of the conceptual review, the ECR should be processed per Appendix 1, Item 1.

- 6.6 Once the Conceptual Review has been held, the CE/CS /designee shall be responsible for completing the ECR package. This includes providing a copy of the latest issue of the drawing, document, or list (including all outstanding/unincorporated ECNs) which is to be revised by the ECR, and any other supporting documentation so that the persons who must review and approve the ECR can properly analyze and understand the proposed change. If the CE/CS/designee requires assistance completing the ECR package, the Design Group Supervisor shall assign a designer who will be responsible for providing the necessary support. When the CE/CS is satisfied that the package is complete, he/she shall forward it the Design Group Administrator.
- 6.7 The Design Group Administrator will assign the package to a Checker. The Checker shall check the package for completeness in the following items:
- A. ECR No. appears on all sheets and each sheet is numbered.
  - B. Description of change is clearly defined for designer to incorporate, i.e.: "From/To" drawing, parts list (PL) or specification; cut and pasted, marked-up portions of a drawing showing From/To conditions; reduced, marked-up print; clearly written From/To narrative description.
  - C. Reason for change is specific, clear, and concise; i.e., justification for change is provided; a definition of what caused the need for the design change; why it is necessary. Cursory statements or meaningless and obvious expressions such as "Engineering Change" or "Sponsor's Request" are not acceptable.
  - D. Effectivity /Disposition table is completed.
  - E. CE/CS has signed in the proper place.
  - F. All drawings, partslist and documents affected appear on either first sheet or on a "drawing affected" continuation sheet (SMD-QF-012).
  - G. Each drawing, partslist and document affected by change has its own individual continuation sheet of ECR (SMD-QF-011)
- 6.8 The Checker shall return the package to the CE/CS.
- 6.9 If the ECR affects a contract, then the CE/CS is responsible, as a minimum, for contacting the affected supplier through the Procurement Representative and performing an impact assessment. The CE/CS shall evaluate the supplier comments and/or ECP.
- 6.10 If the ECR does not affect a contract, then the CE/CS is responsible for assessing the impact of the change on in-house efforts.

- 6.11 Based on the previous steps, the CE/CS will perform an impact assessment, taking into account the impact to the cost, schedule, other systems and safety/environmental issues. The CE/CS shall document on the ECR, in the "Impact Assessment" section the results of the assessment.
- 6.12 If the CE/CS decides not to continue processing of the ECR, then the ECR shall be voided in accordance with Appendix 1, Step 1.
- 6.13 If the CE/CS decides to continue processing of the ECR, then he/she shall forward the package to the Design Group Administrator. The Design Group Administrator shall check that the "Impact Assessment" section is complete. Additionally, the Design Group Administrator will assign the proper Class to the ECR.
- 6.14 Upon receiving a completed, checked ECR package for processing, the Design Group Administrator shall do the following:
  - A. Put a copy of the ECR, stamped "File Copy" in red ink, on file.
  - B. Enter the ECR data into the PICS. The ECR is now considered "outstanding" to the drawing, partslist or document.
  - C. Generate a routing sheet and route the ECR package to the following groups for approval:

For Class II Changes:

- a. Mechanical Engineering Section Head Review
- b. Cognizant Electrical Engineer (if applicable to change)
- c. Division Quality Assurance Representative
- d. Environmental, Safety, Security & Health Representative
- e. Other Systems - This requires careful consideration and should include individuals or groups outside the SMD who may be affected by the proposed change, e.g., when an interface control drawing/ specification/document is changed.

For Class I Changes:

- a. All those signatures required by Class II.
- b. Additional signatures as required by the Division Head (e.g., DOE, etc.)

### **NOTE**

**If a change is made to an ECR that already contains signatures, the ECR must be rerouted to those persons who shall re-initial next to their names, indicating concurrence with the change to the ECR.**

- 6.15 It is the responsibility of each reviewer to review the ECR in a timely manner for concurrence/nonconcurrence.
- 6.16 If any of the reviewing authorities reject the ECR, then processing of the ECR should proceed per Appendix 1, Step 2.
- 6.17 If all the necessary signatures are obtained, then the CE/CS shall forward the ECR to the Design Group for further processing.
- 6.18 When the approved ECR is returned to the Design Group, it will officially become an ECN. The Design Group Administrator shall:
  - A. Check that the ECN contains the proper signatures and dates and enter an "A" into the appropriate field of PICS
  - B. Cross out "ECR" in the ECR/ECN number box.
  - C. Mark all affected drawings with outstanding ECN number.
  - D. Check revision level of drawings, parts lists and documents, and enter new revision on ECN. Updated revisions and status shall be entered into PICS.
  - E. Distribute according to the ECN Distribution List and additional individuals as designated by the CE/CS.
- 6.19 For ECNs affecting items at a vendor or subcontractor, the CE /CS is responsible for coordinating the transmittal of the change to the Procurement Representative for incorporation by the vendor. This may be done before the ECN is incorporated into the drawing, or after.
- 6.20 When a rework or repair action is required at BNL per the "Disposition of Items Covered by Referenced Drawing/Specification" section of the ECN, the CE/CS shall designate an individual who is responsible for documenting that the required actions are taken. That designated individual is responsible to complete form SMD-QF-014 "Manufacturing Change Order". The completed change order shall be issued to the shop floor by MDC.

- 6.21 The Design Group Administrator shall assign the package to an individual for incorporation. For drawing changes, that person shall be a designer. For specification changes, the Division Secretary shall be the incorporator.
- 6.22 The assigned individual shall incorporate the ECN; sign and date it, and forward the package to the checker. The checker shall insure that all changes called for by the ECN have been completely and correctly incorporated, and if they have, shall sign and date the ECN. If all the changes have not been properly incorporated, then the checker shall return the package to the designer.
- 6.23 When the checker has signed the ECN, the Design Group Administrator shall:
  - A. Update PICS status to indicate status and dates.
  - B. For Drawings: Verify that the affected drawing(s) have been correctly filed in the CAD drawing database. Design Group Administrator to configure those drawings to indicate released status and to prevent unauthorized changes.
  - C. For Specifications: Verify that affected specification(s) have been correctly published to the SMD website



## Appendix 1

### Handling of a Rejected /Withdrawn ECR

- 1) If at any point the originator determines the ECR to be no longer appropriate or desirable, it may be withdrawn by filling out name, reason for rejection, and date, and proceeding to step 3).
- 2) If a person other than the originator does not concur with the proposed change, then he/she shall generate a written explanation for the non-concurrence and send it with the ECR package to the CE/CS for consideration. If the CE/CS agrees with the reason for non-concurrence and wishes to discontinue processing of the ECR, it may be withdrawn by filling out name, reason for rejection, and date, and proceeding to step 3). Should the CE /CS wish to proceed with the change, the matter shall be referred to the Division Head. In absence of the non-concurring individual's signature, the ECR may be approved only with the signature of the Division Head. Should he/she not agree with the proposed change, then the ECR must be withdrawn by proceeding to step 3).
- 3) To withdraw the ECR, the Design Group Administrator shall write "VOID" across all pages of the original ECR and enter a "W" (withdraw) in the appropriate field of PICS. The voided, original copy shall be kept on file. All other file copies shall be discarded. Processing of the ECR ends with this step.