**Document approvals**

|  |  |
| --- | --- |
| AD-METSD-Mechanical Fabrication Department HeadJim Alwyn | Date |
| AD-METS Technical Planning Department HeadKathleen Ratcliffe  | Date |
| AD-METSD-Mechanical Engineering Department HeadScott DeBarger | Date |
| AD-METS Metrology Department HeadGeorg Gassner | Date |
| AD-METS Division DirectorLydia J. Young | Date |

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| Revision | Date | By Whom | Description |
| 0 | 1/4/2017 | L. J. Young | Initial |
|  |  |  |  |
|  |  |  |  |

**Process for Nonconformance Reporting (NCR)**

# Purpose

This document explains the process for reporting nonconformities that may arise during the fabrication of SLAC parts and assemblies. This process is applicable to work performed at SLAC and by external vendors hired by SLAC.

# Applicability

This process minimally applies to SLAC Mechanical Fabrication shops. It may be adapted by any other SLAC shops. High formality projects (as defined in the Accelerator Directorate Conduct of Engineering Implementation Plan, SLAC-I-020-101-002-00) may elect to include additional controls (for example, requiring oversight by a project-defined Change Control Board).

# Objective

Non-conforming parts or assemblies are those that do not comply with drawings, specifications, requirements, traveler, or assembly procedures. These must be identified as being non-conforming and be separated for disposition. The classes of disposition are:

* + 1. **Use as-is**: If non-conforming parts are kept for use, then they need to be tagged and/or marked to match the version of revised or red-lined design documentation. These are considered deviations and DEV forms must be completed and accompanied by red-lines and other supporting documentation.
		2. **Rework**: If non-conforming parts are kept and re-worked or repaired to make usable, but are not identical to the design of record, then the parts need to be tagged and/or marked to match the version of the revised or red-lined design documentation. These are considered deviations and DEV forms must be completed and accompanied by red-lines and other supporting documentation.
		3. **Reject:** If non-conforming parts are scrapped, they need to be tagged and/or marked accordingly, and then segregated and then disposed of so that there is no possibility of use in the final project or system.

Non-conformances can be determined by the supplier or by SLAC staff.

# Process

## Submitting and Processing a Nonconformance Report

Figure 1 illustrates the process to be followed when a nonconformity is identified. A nonconformance report (NCR), Form #SLAC-I-020-701-002-00, must be initiated by the discoverer and submitted to the Responsible Engineer. The Responsible Engineer reviews and acknowledges the NCR (and if applicable, notifies the supplier and requests supplier review and acknowledgement).

The Responsible Engineer analyzes the situation, assesses the impact, and develops a recommended action (use-as-is, rework, or reject), which is then submitted for review and/or approval by a project manager/CAM, QA representative and/or project director/systems lead. Responsibilities for review/approval are determined via a risk-based graded approach defined as part of the initiation phase of the particular project (see AD-Conduct of Engineering Implementation Plan).

The Responsible Engineer, Cost Account Manager (CAM) and/or Quality Assurance representative may place a hold on work-in-progress while causes and compensatory measures are being evaluated.

Recommendations by the Responsible Engineer and CAM (and/or appointed QA representative and/or Change Control Board, if instituted) may include generation and approval of a Deviation Request to accept the material as-is, and/or generation of an engineering change request (ECR). Any holds placed on work-in-progress are lifted once review, recommendations, and approvals indicate that the issue is under control.

The completed NCR is filed in the affected part’s job file. Any documentation supporting the resulting disposition of the nonconforming part/assembly is filed in the SLAC job file.

**Figure 1: Process flow for managing nonconformities**


## Assessing Impact of a Nonconformance

Application of a risk-based method of assessing the impact of a nonconformance will help clarify for project managers and Responsible Engineers the levels of review and approval for a given situation. The Responsible Engineer completes the impact assessment table (Table 2) and determines the average score. Then the score is used in Table 3 to define the level of responsibilities to be applied for the given situation.

**Table 2: Nonconformance Impact Assessment Table**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Low = 1** | **Medium = 3** | **High = 5** |
| **Type of Item** | 🞏 Standard/Catalog | 🞏 Customized within Supplier-offered Range | 🞏 Fabricated per Print |
| **Item Cost** | 🞏 < $500 | 🞏 > $500, < $5,000 | 🞏 > $5,000 |
| **Purchase Order Total** | 🞏 < $5,000 | 🞏 > $5000, < $15,000 | 🞏 > $15,000 |
| **Time to address** | 🞏 < 4 hours | 🞏 > 4 hours, < 16 hours | 🞏 > 16 hours |
| **Average Score** (Sum each column, weight, then divide by 4) |  |  |  |

(Example: Standard, item cost $1000, Purchase Order $2000, <4 hr repair 🡪 (2 lows, 2 med) 🡪 (1x2+3x2) = 8. Divide by 4🡪 Score = 2. )

**Table 3: Nonconformance Responsibilities as defined by Impact Assessment Score**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Impact Score** | **Responsible Engineer** | **Project Technical Lead** | **Project QA Representative** | **Project CAM** | **Project System Lead (or Director)** |
| 1 | Recommends | Approves | Approves | Informed | Informed |
| 3 | Recommends | Approves | Approves | Approves | Informed |
| 5 | Recommends | Approves | Approves | Approves | Approves |

# References

|  |  |
| --- | --- |
| **Reference** | **Description** |
| SLAC-I-020-701-002-00 | Nonconformance Report Form |
| SLAC-I-020-101-002-00 | AD Conduct of Engineering Implementation Plan |
| SLAC-I-020-701-003-00 | Deviation Form |
|  | ECR Process |