

Fermilab Inspection & Acceptance Testing Assessment Report

**Office of Quality and Best Practices
Fermi National Accelerator Laboratory
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Approved By: _____


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1.0 Background

In 2009 a Quality Assurance (QA) assessment was conducted by Department Of Energy (DOE-CH) on behalf of the DOE Fermilab Site Office. During that assessment concern C6 was reported as "The level of documentation of acceptance testing varies between the various Fermilab D/S/Cs". The Fermilab Office of Quality & Best Practices (OQBP) issued Corrective Action Plan (CAP) OQ-01-04-2010-04 to address this by performing a series of assessments of the implementation and effectiveness of controls for Inspection & Acceptance Test relative to the requirements of Integrated Quality Assurance (IQA) in each Division, Section and Center (D/S/C). This document provides a lab-wide summary and conclusion drawn from each of the individual D/S/C assessment reports that were created during Q1 and Q2 of FY2011.

2.0 Conclusion

Inspection and Acceptance Testing requirements found in IQA chapter 8 are met and are effectively implemented within Accelerator Division (AD), Computing Division (CD), Environment Safety and Health (ES&H), Particle Physics Division (PPD) and Technical Division (TD). For all D/S/C organizations assessed, although the level of inspection and testing performed and documented varies, it appears to be commensurate with the complexity and importance of the task or material being assessed and the risks associated with nonconformance. CAPs were issued to Business Services Section (BSS), Facilities Engineering Services Section (FESS) and Workforce Development and Resources Section (WDRS) for either lack of test result documentation or for failure to segregate nonconforming material. The CAP for lack of test result documentation has been completed, verified, validated, and closed. OQBP is monitoring the progress on the other two CAPs.

3.0 Summary

Four assessments, each covering two D/S/Cs for a period of six weeks were conducted between October 2010 and March 2011. Implementation and effectiveness of controls for Inspection & Acceptance Test relative to the requirements of IQA were assessed via interview, observation, and examination of artifacts, documents and records within each of Fermilab's eight D/S/Cs (AD, BSS, CD, ES&H, FESS, PPD, TD, and WDRS). Ninety seven Fermilab employees from forty one different organizations representing eighty one different activities were interviewed. The assessments began as desk audits of documentation and progressed to on-site interviews and observation of work or work products.

The assessments were planned and executed under OQBP supervision. Checklists were prepared and DOE CRADS consulted during assessment planning. The assessment teams consisted of an OQBP Quality Assurance Engineer (QAE) who led each assessment and a Quality Assurance Representative (QAR) who was an assessor (not employed within the assessed D/S/C) and in some cases, an observer. Plans and schedules were provided to D/S/C line management ahead of time. Assessment scope, logistics and details were developed during early planning meetings and communicated at opening meetings with D/S/C management, their QAR and the assessed organizations in order to minimize disruption with ongoing operations. Issues were discussed and regular status briefs were held to avoid any surprises or misunderstandings between the assessment team, organizations assessed and their QAR.

The assessments examined samples from incoming, in process and final inspection and testing. Activities assessed included inspection and test of products, processes and procedures.

4.0 Findings

Three findings of noncompliance with IQA requirements for inspection and acceptance testing were identified. They were:

- BSS-20101203-01: Nonconforming material was found that had not been segregated from good material as required by IQA Chapter 8.
- FESS-20110127- 01 Segregation of nonconforming items is not adequately done in accordance with IQA Chapter 8 requirements.
- WDRS-20101130-01 Test and Inspection Results are not controlled in accordance with IQA Chapter 8 requirements.

5.0 Observations of Opportunities for Improvement

Observations are written for opportunities for improvement which are either outside the scope of the assessment or are isolated incidents. Thirteen observations were reported for which thirteen recommendations were made as follows:

- Three for failure to segregate nonconforming items
- Six for insufficient, incomplete or inadequate test records of test results or processes or documentation and
- Four for test and inspection improvement opportunities through improvement of test infrastructure or integration of databases for test results

6.0 Commendable Practices

Six commendable practices were noted in the following areas;

- One for quality improvement
- Four for acceptance testing and
- One for inspection.

The details of these practices are as follow:

- The use of WebDat to store, access and query data is a very effective tool. Its interface through the internet makes it easy to use and accessible.
- The Locks in the e-log system used by the T&I department is an effective way to document and communicate changes made to the test configurations. This tool shows the history of modifications and deviations from the standard configuration of the test stands.
- The Vector Traveler system provides easy access to systematically maintain documents and information.
- The T&I Department Improvement Plan for Magnet and Cavity Test Facilities analyze different risks and opportunities associated with the state of test facility systems. This provides clarity in strategic planning and the decision making process.
- The proxy hand held device used by the Site Operation Fire Protection group is a location-based tool which not only has all of the preventive maintenance checklists and requirements for the fire protection devices, but it also actively returns the status of Fermilab's fire and utility monitoring system (FIRUS) and other useful network-based information. This may be useful to anyone who utilizes checklists to routinely perform unique checks and measurements at a variety of locations, while at the same time, monitoring overall system status and behavior.
- In the property and inventory control stockroom, the bins containing Square D circuit breakers also contain HSS Safety bulletins that describe how to detect Suspect/Counterfeit Square D breakers. Although not required by the Site 38 stockroom, these bulletins are delivered along with the breakers to requestors.