

SUBJECT:	Fermilab Assessment Manual – Chapter 4 Independent Assessment Procedure – Form 1	NUMBER:	3902.1004 FORM 1
RESPONSIBILITY:	Quality Assurance Manager	REVISION:	000 C1
APPROVED BY:	Head, Office of Quality and Best Practices	EFFECTIVE:	

FERMILAB INDEPENDENT ASSESSMENT REPORT FORM

Fermilab Independent Assessment Report	
Assessment Number & Title: 11-IA-QA-003-AD Inspection and Acceptance Testing & Suspect/Counterfeit Items	Version: 1
Date(s) of Assessment: 10/18/10 – 12/3/10	
Performing Organization: Office of Quality and Best Practices	
Assessed Organization(s): Accelerator Division, Departments: <ul style="list-style-type: none"> • Mechanical Support • Electrical/Electronic Support • Cryogenic • RF • Accelerator Controls 	
Report Content This report contains the following sections: <ul style="list-style-type: none"> • Assessment Activities & Scope • Scope Limitations • Activities Reviewed Within This Assessment • Description of Implementation & Effectiveness of Observed Activities • Conclusions • Findings • Observations, & Recommendations Assessment Activities & Scope: Implementation and effectiveness of controls for Inspection & Acceptance Test and Suspect/Counterfeit Items (S/CI) relative to the requirements of Integrated Quality Assurance (IQA), Suspect/Counterfeit Item (S/CI) Program, 1006, and Controlling Suspect/Counterfeit Items Procedure, 1006.1001, were examined via interview, observation, and document & record review. These controls were examined across the AD departments listed in the “Assessed Organization(s)” section of this report. Scope Limitations: The scope of this assessment was limited to those activities or services associated with S/CI and Inspection and Acceptance Testing within Fermilab’s Accelerator Division. Procurement activities and IQA section 8.5 “Control of Measuring and Test Equipment (M&TE)” were not within the scope of this assessment. In order to make the results of the assessment more relevant and useful, the assessment team only looked at Inspection & Acceptance Test and S/CI for items purchased within the last year.	

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Activities Reviewed Within this Assessment:

The following activities were reviewed during this assessment:

- Inspection and Acceptance Test of Purchase Order Items
- Inspection and Acceptance Test of Procard Order Items
- Control of Nonconforming Items
- S/CI Coordinator Functions
- Procedure for Controlling S/CI

Description of Implementation & Effectiveness of Observed Activities:

Inspection and Acceptance Testing:

Inspection and Acceptance Testing requirements found in IQA chapter 8 are met and are effectively implemented within the AD departments assessed. The level of inspection and testing performed is commensurate with the complexity, importance, and cost of the incoming product. The more complex and important the incoming product, the more comprehensive are the inspections and tests conducted.

For simple items such as circuit breakers, a sample of the breakers is tested for current flow. The test procedure is not documented, and no test records are kept according to interviewees. Because the part is simple, the level of testing and record keeping is appropriate. Purchases are made through authorized dealers to avoid receipt of nonconforming parts or S/CI.

For a more complex part, such as the Power Tetrode Tube, part number 4CW800F, more formality in inspection and test is used. Tilt and impact sensors are inspected when the tube first arrives onsite. A documented test procedure, *Booster RF PA Test Procedure*, revision October 2010, (File 01) is used to test every new tube received. Records of test results were examined for tube BJAf-0086 which was received as part of purchase order 587722 on 10/26/2010. Test results for this tube included Initial tube test, Tube Ager run data, and Tube Test After Ager run (File 02).

For even more complex purchases, such as New Muon Lab Superfluid Cryogenic Plant, inspection and test procedures are even more formal. For the Cryogenic Plant, a detailed *Technical Specification, 1650-ES-381352* (File 03, File 04) has been written that contains inspection and acceptance test criteria. This specification has been sent to 4 prospective vendors (File 05) who are responsible for ensuring the plant meets all the specified test criteria. Fermilab employees plan to verify the test results at the vendor site before accepting receipt of the plant. Because the testing phase has not yet been reached, this could not be verified.

Suspect/Counterfeit Items:

Suspect/Counterfeit Item (S/CI) requirements found in IQA Chapter 10 and Controlling Suspect/Counterfeit Items Procedure, 1006.1001 requirements have not been effectively implemented within the AD departments assessed. One instance of S/CI was discovered since 1/1/2010, and these items were not processed according to Procedure 1006.1001. In addition, there was a lack of awareness and training of some key employees.

There were S/CI tagged shackles in the AD S/CI cabinet dated 4/29/10. These shackles were not listed in the AD S/CI log as required by Procedure 1006.1001.

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Eleven of 14 persons interviewed during the assessment have no records of S/CI training. There were 3 persons responsible for receiving, inspecting, and testing incoming items that did not know what the term “S/CI” meant.

Conclusions:

The AD departments in the scope of this assessment employ an effective system of inspection and acceptance test controls to ensure that the proper level of evaluation is performed on incoming products and items. The level of controls used is commensurate with the complexity of the item being tested, with sufficient formality being used for the more complex items being received. For simpler items, the formality of documented inspection and test procedures and records is not always used.

S/CI procedures and training have not been fully implemented within the AD departments assessed. Two of 3 persons purchasing items prone to S/CI such as shackles, circuit breakers, and bolts had no records of S/CI training required by the S/CI Program 1006. There was no evidence that Procedure, 1006.1001 has been effectively implemented.

Finding:

Controlling Suspect/Counterfeit Items Procedure, 1006.1001 is not fully implemented.

Controlling Suspect/Counterfeit Items Procedure, 1006.1001 section 5.4 states: “The D/S/C S/CI Coordinator coordinates the investigation with line management and other staff, updates and ensures the S/CI log and supporting materials contain adequate information.” However, for the shackles found in the AD S/CI locker tagged as S/CI and dated 4/29/10, there is no evidence that an S/CI investigation has been initiated and the S/CI log has not been updated as of 11/5/10. Investigation is required to ensure the laboratory does not have other incidences of a similar nature and that actions are taken to prevent future recurrence

Integrated Quality Assurance, 1001, Chapter 10, Suspect/Counterfeit Items, section 10.2 paragraph 1 states: “Line management is responsible for identifying individuals requiring S/CI training, [using ITNA questions] ensuring they receive this training, and providing necessary resources for implementing the S/CI program.” There are no records of S/CI training for 11 of the 14 AD interviewees. IQA Chapter 10 Suspect/Counterfeit Items, section 10.2 paragraph 4 states: “All personnel are informed of the risks associated with S/CI and the S/CI reporting process.” Three persons responsible for purchasing and incoming inspection of products did not know what the term “S/CI” meant.

Observations and Recommendations:

1. **Observation:** There was 1 instance of nonconforming material that was not segregated or tagged. The assessment team feels that this was an isolated incident and therefore has categorized it as an observation rather than a finding.
Recommendation: Re-emphasize the need to segregate or tag nonconforming material to avoid inadvertent use.
2. **Observation:** There were a few instances of missing inspection and test plans and missing inspection and test records. According to IQA chapter 8, section 8.3, inspection and acceptance testing plans are only required “where applicable”. However, according to section 8.4, “Inspection

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and test results are documented and preserved”, implying they are required.

Recommendation: As noted earlier, AD matches the level of inspection and test controls used to the complexity of the item or product being inspected or tested. It is suggested that AD verify if test and inspection plans and test and inspection records are needed, especially for the simpler, lower cost items. For more complex, more costly items, the proper level of controls is being used.

Names of Person Interviewed:

- Debbie Cobb
- Steve Conlon
- Ralph Ford
- John Holm
- Pat Hurh
- Jeneen Irvin
- Chris Jensen
- Arkadiy Klebaner
- Jeff Meisner
- Rene Padilla
- John Reid
- E. Henry Schram
- James Williams
- Jim Wilson

Documents Reviewed:

- Fermilab Procurement Policy and Procedures Manual 12/22/2003
- Fermilab Procurement Card (ProCard) User’s Guide January 2008
- Fermilab Subcontract General Provisions F1-1 rev.12/09
- Fermi National Accelerator Laboratory Engineering Manual
- E/E support department ADDP-EE-1001 rev. 0 Procedure Control and Responsibilities
- E/E support department ADDP-EE-2001 rev. 2 Special Electrical Hazard Review
- E/E support department ADDP-EE-2002 rev. 2 Portable HI-POT Operations and Training
- E/E support department ADDP-EE-2003 rev. 0 Maintenance and Quality Control Guidelines
- E/E support department ADDP-EE-2004 rev. 1 Quality control and maintenance considerations in equipment design
- Mechanical support department ADDP-ME-000132 rev. A Formal Design Review Policy
- EIMAC 4CW800F Tube Testing
- CPI VKL-8301B Multiple Beam Klystron specifications
- Booster Power Amplifier Spare test data for serial # 26, 25, 29-F
- Booster RF Power Amplifier Test Procedure rev. 10/10
- Selection of used 4CW800F tubes for D.A. Service dated 10/15/91
- 800F Tube test data for serial #BJAF-0086
- Fermilab 4CW-800F Tube Aging System dated 3/29/83
- Proton Driver Charging Supply Filter Capacitor Specification 9230-ES-438001 dated 9/27/04
- Purchase Requisition 211291, Booster RF Power Supply
- Purchase Requisition 213302, 1400uF Capacitor bank

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- Purchase Requisition 217521, Superfluid Cryogenic Plant
- Purchase Requisition 210646, 4CW800F Tetrodes
- Purchase Requisition (Procard) 135049, BNC Connectors
- Purchase Requisition (Procard) 136655, Circuit Breakers, Fuses
- Purchase Requisition 219613, Leak Detector Upgrade Kit
- Purchase Requisition (Procard) 126517, Wire rope sling, Shackles
- Purchase Requisition (Procard) 134880, shims, bolts, gauges
- Purchase Requisition 216810, Dell Desktop T2300 PCs
- Purchase Requisition (Procard) 134524, cabling
- Purchase Requisition 219844, Regulating 200 VA transformer

Requirements Applied:

Fermilab Integrated Quality Assurance (IQA), Document 1001
Chapter 8 – Inspection and Acceptance Testing
Chapter 10 – Suspect/Counterfeit Items
Suspect/Counterfeit Item (S/CI) Program, 1006,
Controlling Suspect/Counterfeit Items Procedure, 1006.1001

Describe or List Any Other Assessment Methods Used:

Examination of work areas and stockrooms for nonconforming materials and S/CI

Corrective Action Plan Issued:

AD-20101203-01: Controlling Suspect/Counterfeit Items Procedure, 1006.1001 is not fully implemented.

Assessors' Names (asterisk indicates team leader):

Bakul Banerjee
Tom Gehrke
John Martzel*

Submitted by: John Martzel

Date: 12/03/10

Distribution:

Paul Czarapata	Bob Grant
Roger Dixon	Jeff Cotton
Pat Hurh	Jed Heyes
Arkadiy Klebaner	Bakul Banerjee
Jim Patrick	Tom Gehrke
Don Rohde	John Martzel
Dan Wolff	

Attachments:

File 01 *Booster RF PA Test Procedure*, revision October 2010
File 02 800F Tube Database record 1 for serial #BJAF-0086 received 10/26/10, record date 10/28/10
File 03 *Technical Specification, 1650 –ES-381352* – cover sheet
File 04 *Technical Specification, 1650 –ES-381352* – table of contents
File 05 Bid list for the NML Superfluid Cryogenic Plant 1650-ES-381352