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**3310 Appendix T2
 Operational Safety Procedure Form**

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 OSP/TOSP Instructions

Serial Number: PHY-12-064-OSP

(Assigned by ESH&O Document Control x7277)

OSP **TOSP**

*Attach the Task Hazard Analysis (THA) related to this procedure

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Issue Date: 7-16-2012

Expiration Date:

7-16-2015

(No more than three years from Issue Date except TOSP which is three months from issue date)

Title: Fastbus test setup in TEDF High Bay

Location: TEDF

Risk classification
 (See *ESH&Q Manual Chapter 3210 Appendix T3 Risk Code Assignment.*)

Without mitigation measures (3 or 4): 2

With mitigation measures in place (0, 1, or 2): 1

Document Owner(s): Alexandre Camsonne

Date: 09/12/2012

Supplemental Technical Validations:

Hazard Reviewed (per ES&H Manual 2410-T1):	Subject Matter Experts Signature:	Date:
Electrical Hazards	Chris Cuevas <i>RC</i>	
Electrical Hazards	Charles Hightower <i>Charles Hightower</i>	<u>7-16-12</u>

Approval Signatures:	Print	Signature	Date:
Division Safety Officer:	<u>Patrizia Rossi</u>	<i>for P. Rossi</i>	<u>7/16/12</u>
Department or Group Head:	<u>Cynthia Keppel</u>	<i>[Signature]</i>	<u>7/13/12</u>
Safety Warden of Area:	<u>Douglas Higinbotham</u>	<i>[Signature]</i>	<u>12/28/2012</u>
Other Approval(s):	<u>Charles Hightower</u> <u>7/16/12</u> <u>Chris Cuevas</u>	<i>[Signature]</i>	<u>12 July 2012</u>

Document History:

Revision:	Reason for revision or update:	Serial number of superseded document
<u>1</u>	<u>First revision</u>	<u>1</u>

Distribution: Copies to: affected area, authors, Division Safety Officer, ESH&Q Document Control
After expiration: Forward original and log sheet of trained personnel to ESH&Q Document Control.

ISSUING AUTHORITY	APPENDIX AUTHOR	APPROVAL DATE	EFFECTIVE DATE	EXPIRATION DATE	REV.	Page
ESH&Q Division	Harry Fanning	10/05/09	01/01/10	10/05/12	0	1 of 6

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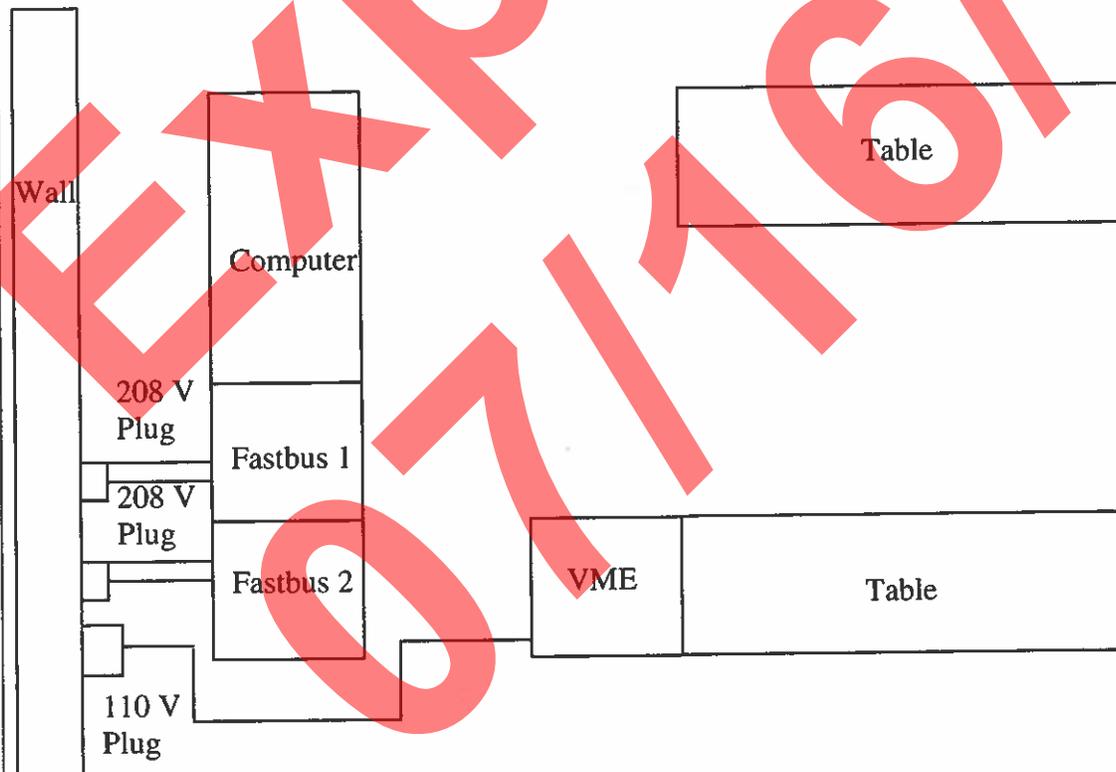
1. Purpose of the Procedure

The purpose of this document is to describe the Fastbus test setup installed in the TDEF High Bay Area for development of the AIn Data Acquisition system. People who will be working on this test setup will have to read this document in order to safely operate it.

2. Scope – include operations, people, and/or areas where procedure applies

A Fastbus test setup was installed in the TEDF High Bay. It consists of 3 racks, 2 of those holdings Fastbus crates and the other one for VME electronics. The Fastbus power supply deliver current up several hundreds of amps requiring proper protection to avoid any potential injuries due to short circuits.

3. Description of the Facility: (include floor plans and layout of a typical experiment or operation)



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4. Authority and Responsibility:

4.1 Who has authority to implement/terminate

Bert Manzlak

4.2 Who is responsible for key tasks

Alexandre Camsonne

5. Who analyzes the special or unusual hazards (See ES&H Manual Chapter 3210 Appendix T1 Work Planning, Control, and Authorization Procedure)

Bert Manzlak

6. Personal and environmental hazard controls including:

6.1 Shielding

Power supply DC output connection lugs will be covered with a plastic shields.
 All cables between the equipment racks and the wall will be covered with a floor cable tray to mitigate trip hazards.

6.2 Interlocks

No interlocks are required nor installed for this test system.

6.3 Other

7. Monitoring systems

None

8. Ventilation

9. List of safety equipment (i.e: personal protective equipment or special tools)

None

10. Associated administrative procedures

11. Operating guidelines

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The FastBus power supplies have clear plastic shield covers for all the DC high current output connections. These shields must be installed when operating this equipment. Manipulative measurements or adjustments when troubleshooting the power supply units is a Class 2, Mode 2 electrical hazard and is not addressed in this OSP. Troubleshooting and modifications to this FastBus equipment shall be performed by qualified personnel only.

12. Notification of Affected Personnel (How and Who)

13. List of steps required to execute the procedure from start to finish.

Powering system up

1. Make sure leads in Fastbus backplane are covered by the plastic guards
2. Plug to 208 V plug
3. Switch power supply on

Powering off

1. Turn power off on power supply

Adding / removing modules

1. Turn power off on power supply
2. Make sure power is off
3. Add/remove modules as needed
4. Turn power back on

Servicing :

1. Turn power off
2. Unplug from 208V plug
3. Call Electronics group or Hall A technician to service the power supplies

Back plastic guards cover should only be removed by a qualified person from Hall A or electronics group.

14. Back out procedures, i.e., steps necessary to restore the equipment/area to a safe level.

Turn off and unplug from main 208 V

15. Special environmental control requirements:

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None
16. Environmental Impacts (See EMP-04 Project/Activity/Experiment Environmental Review)
None
17. Abatement Steps – Secondary Containment, or Special Packaging requirements
None
18. Training requirements
EHS
19. Unusual/Emergency procedures e.g., Injury, Fire, Loss of power
In case of fire, operate breaker and use non water based fire extinguisher
20. Instrument calibration requirements, e.g., safety system/device recertification, RF probe calibration
None
21. Inspection schedules
None
22. References/Associated Documentation
None
23. List of Records Generated (Include Location / Review and Approved procedure)
None

Authorized/Trained Individuals

Print Name/Signature	Date
Alexandre Camsonne (GATEKEEPER)	
Daniel Kirby	
Sergey Abrahamyan	
Eric Jensen	
Bogdan Wojtsekhowski (ALTERNATE GATEKEEPER)	

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Jefferson Lab <small>Thomas Jefferson National Accelerator Facility</small>	TITLE:	<u>ES&H Manual</u>
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Print Name/Signature	Date

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3210 Appendix T2 Task Hazard Analysis (THA) Worksheet

Click
For Word Doc

Author:	Alexandre Camsonne		
Date:	07/09/2012	Task #: <small>if applicable</small>	Frequency of use: daily
Complete all information. Use as many sheets as necessary			
Task Location:	TEDF Jigh Bay	Task Title:	Fastbus test setup in TEDF High Bay
Division:	Physics	Department:	Hall A
Lead Worker:	Alexandre Camsonne		
Mitigation already in place:			
Standard Protecting Measures			
Work Control Documents			

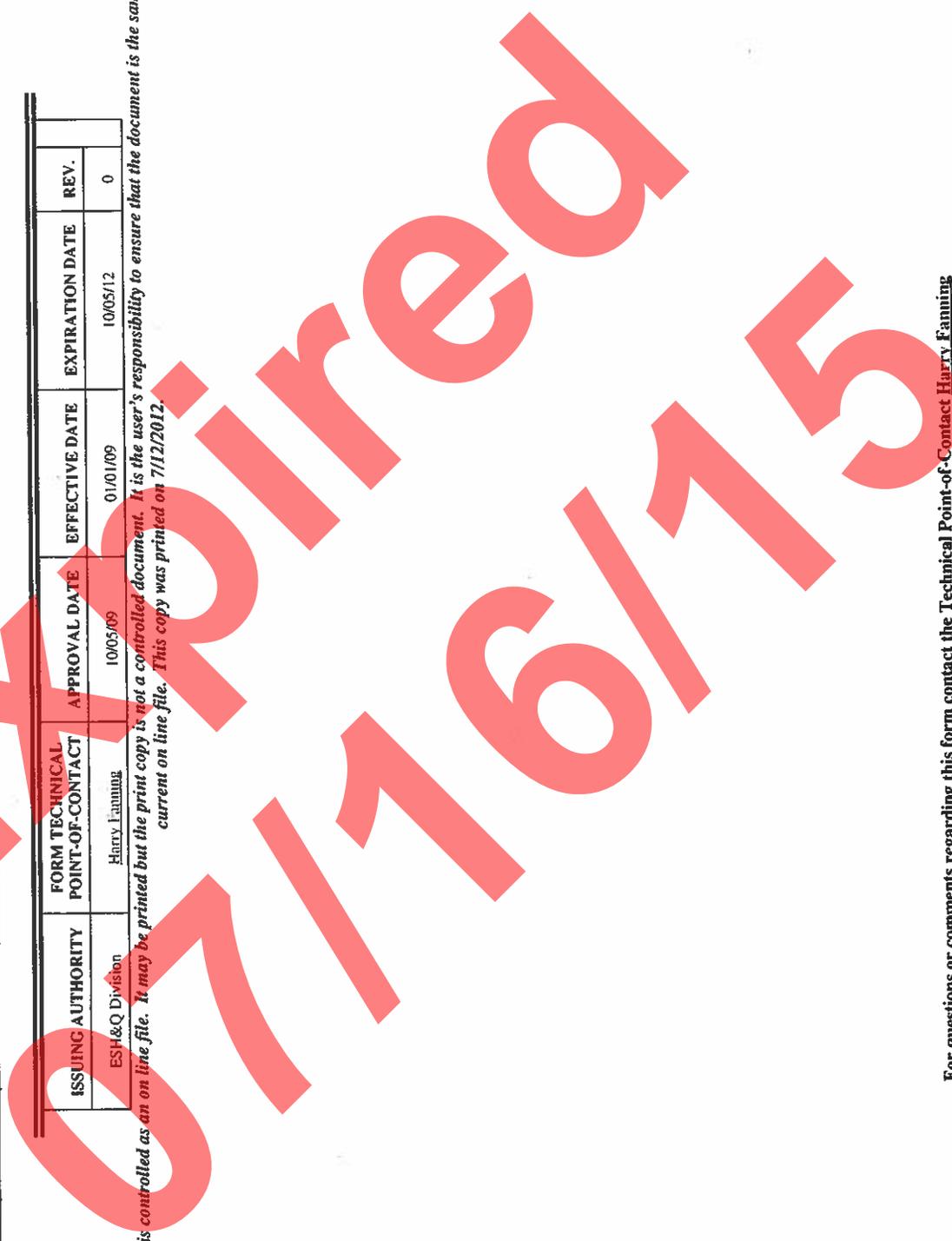
Sequence of Task Steps	Task Steps/Potential Hazards	Consequence Level	Probability Level	Risk Code (before mitigation)	Proposed Mitigation (Required for Risk Code >2)	Safety Procedures/Practices/Controls/Training	Risk Code (after mitigation)
1	Trip hazard	L	M	2	Use cable tray	Make sure cables are in trays	1
2	Short circuit	M	L	2	Use plastic covers on DC output connections lugs	Always unplug before taking covers off. Make sure covers are installed before applying power. Only trained people can operate the setup	1

	Highest Risk Code before Mitigation:	2		Highest Risk Code after Mitigation:	1
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When completed, if the analysis indicates that the Risk Code before mitigation for any steps is "medium" or higher (RC≥3), then a formal Work Control Document (WCD) is developed for the task. Attach this completed Task Hazard Analysis Worksheet. Have the package reviewed and approved prior to beginning work. (See ES&H Manual Chapter 3310 Operational Safety Procedure Program.)

ISSUING AUTHORITY	FORM TECHNICAL POINT-OF-CONTACT	APPROVAL DATE	EFFECTIVE DATE	EXPIRATION DATE	REV.
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Operational Safety Procedure
For the
Jefferson Lab Experimental Areas

FASTBUS Backplane Manipulative Measurements

19-August-1999

Introduction

The purpose of this OSP is to provide a written description outlining the procedure for performing manipulative measurements on the backplane of a powered FASTBUS card enclosure.

Description

A FASTBUS card enclosure system is comprised of three main chassis. The first chassis is the main power chassis that contains the low voltage, high current DC power supplies. This main chassis controls the AC mains and monitors the voltage and current from each of the five (5) DC supplies. The second chassis is a large blower unit that provides forced airflow cooling to the FASTBUS card enclosure. The card enclosure or "crate" is the third component of a FASTBUS station and the card enclosure provides card guides to a large standard monolithic circuit board "backplane". The DC power supplies are connected to this backplane which distributes power to each of the cards in the enclosure.

There are many instances during field troubleshooting when critical timing measurements must be performed on an energized FASTBUS card enclosure. These measurements are manipulative as connections from the backplane to test equipment are performed with the DC power supplies in an energized state. These measurements are described for ONLY the backplane signals and not for servicing the power supply chassis.

Hazard Identification and Precautions

The DC power for the FASTBUS card enclosure is defined as a Class 2 electrical hazard in the EH&S Manual section 6230. The risk for performing manipulative measurements is classified as mode 3.

Extra precautions have been taken to prevent accidental contact with the DC power leads and protective non-conducting shields are mounted on the output of the DC power supplies as well as the DC power connections to the FASTBUS backplane. The FASTBUS backplane pins are exposed at the rear of the card enclosure. The protective barriers must be in place before performing any measurements on the FASTBUS backplane.

Testing Procedure

1. In accordance with EH&S policy section 6230, at least two qualified persons, including the worker, must be in continuous sight and sound communications.
2. The qualified persons have read and understood this OSP and are designated their supervisors as having sufficient understanding of the measurements and hazards associated with the system under test.
3. Appropriate schematics that designate the proper FASTBUS backplane pins should be available. The persons performing the manipulative measurements have identified the proper signal(s) pin(s) that will be connected to a multi-meter or oscilloscope. Conductive jewelry worn on the fingers should be removed to prevent accidental contact between backplane power pins and backplane ground pins.
4. Due to the high current capability of the FASTBUS DC power supplies, extreme caution must be observed when making connections to the powered FASTBUS backplane during measurements. For instance, oscilloscope probe ground clips must be securely connected to a FASTBUS ground pin. In the case of multi-meter connections, each probe lead should not touch more than one pin.
5. All probes will be disconnected from the backplane after the test has been completed. Test results or required repairs should be entered in the electronic log or documented in the qualified person's lab notebook.

Test Schedule and Summary

Critical timing measurements performed on the FASTBUS backplane during field troubleshooting in the experimental areas, is inevitable during the year. On many occasions troubleshooting is performed during an experiment in controlled access and removing power from the FASTBUS card enclosure may produce data acquisition problems. This OSP will be in effect for the duration of each experiment and shall be reviewed on an annual basis.