

**Instrumentation Racks**  
**for the**  
**Readout Electronics**  
**In Hall D**

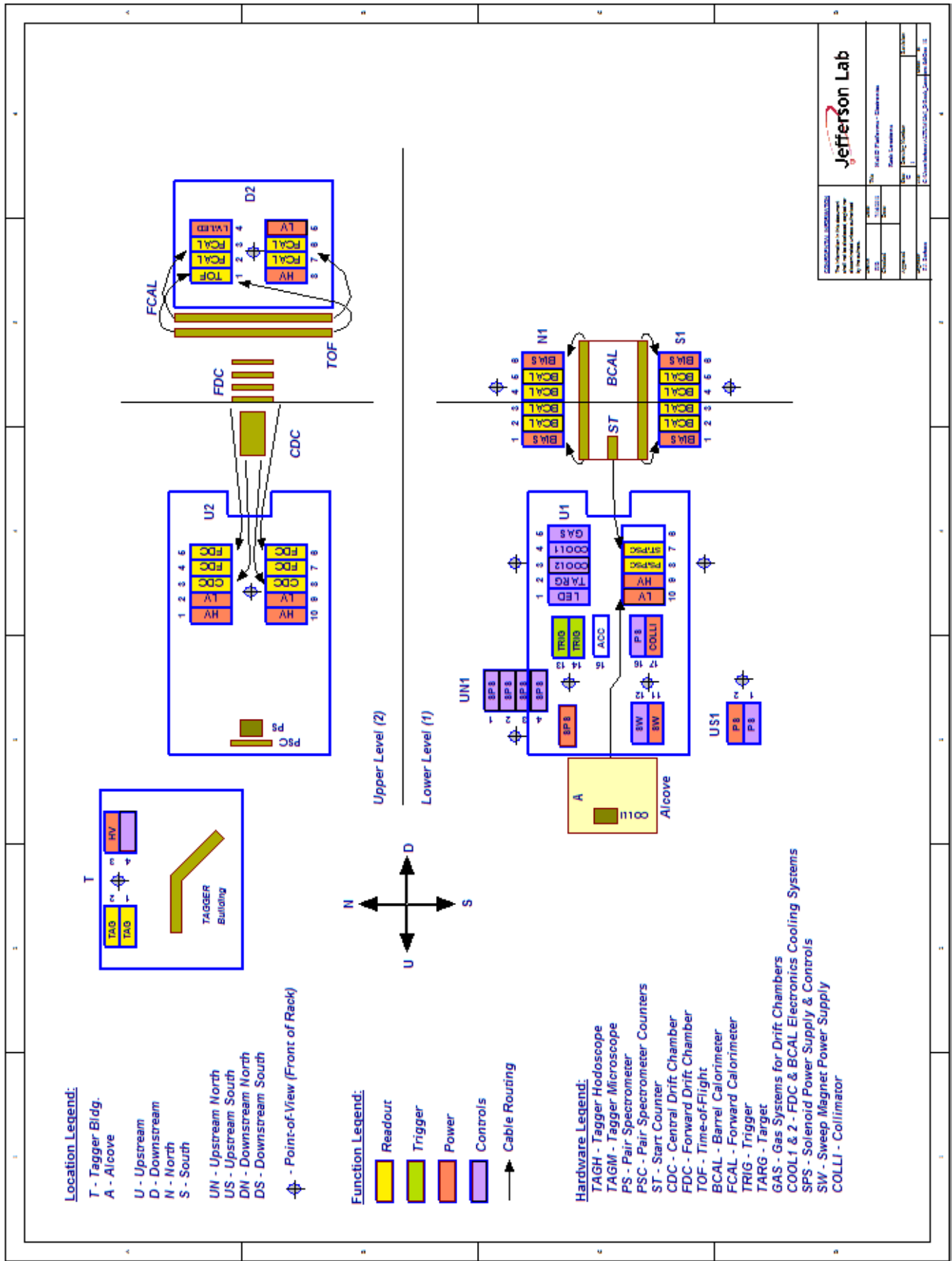
Fernando J. Barbosa  
 9 September 2013

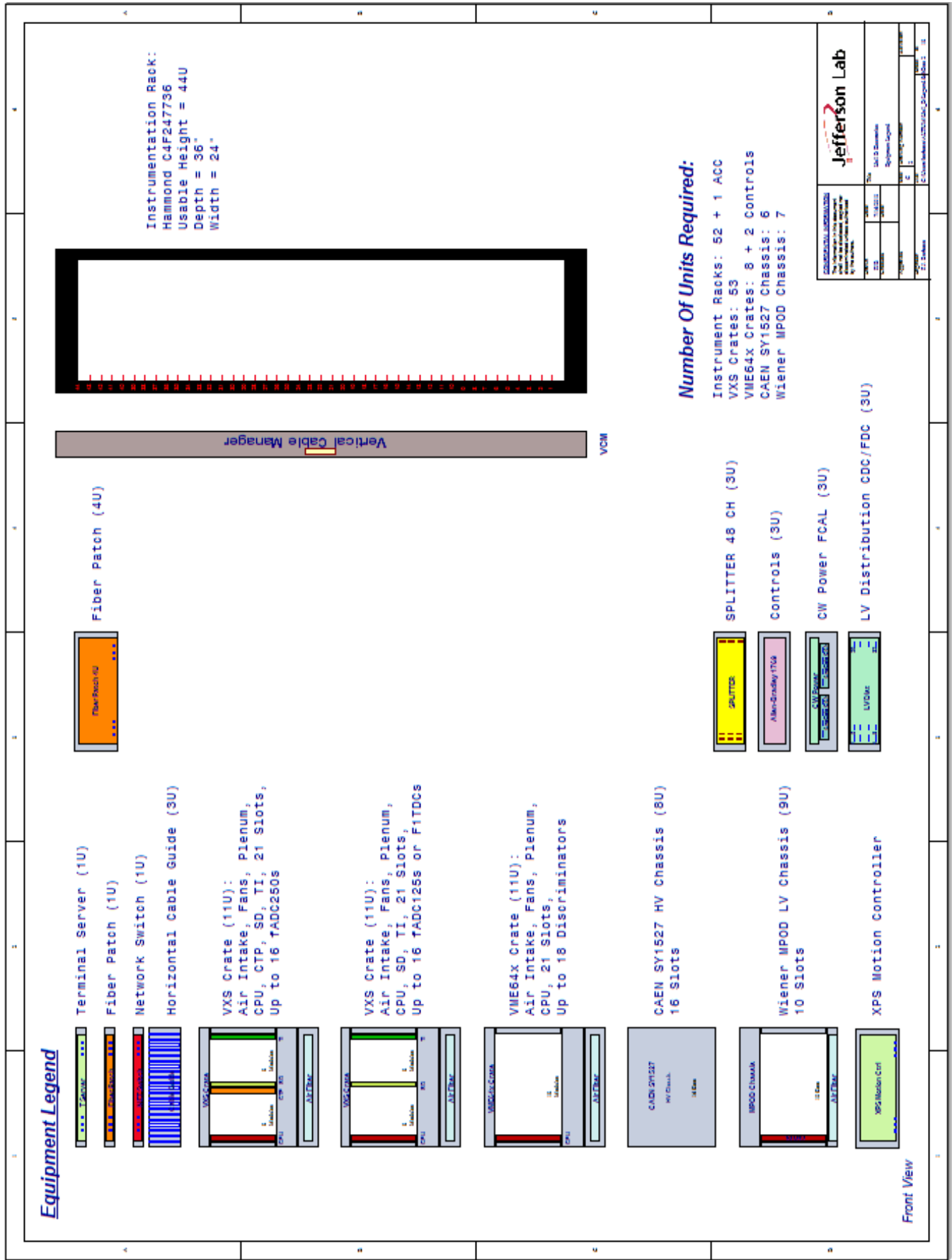
**1. Overview**

This document presents the location of the readout electronics anticipated for all the detectors in Hall D. The reader is encouraged to refer to GlueX-doc-747 for a summary presentation of the Hall D detectors, their basic characteristics, number of channels and locations; GlueX-doc-1035 presents the system diagrams with detailed information on detector instrumentation, readout modules, crates and interconnections.

**2. Index**

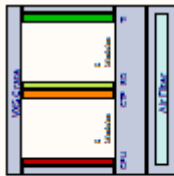
	<u>Page</u>
<b>Rack Locations</b>	2
<b>Equipment Legend</b>	3
<b>Crate Slot Numbering Convention</b>	4
<b>Module Channel Numbering Convention</b>	5
<b>T1 – Tagger Microscope &amp; Hodoscope</b>	6, 7
<b>U1 – Target, Gas System, Cooling Systems</b>	8
<b>U1 – Pair Spectrometer, Start Counter</b>	9, 10
<b>U1 – Sweep Magnet, Trigger</b>	11
<b>U1 – Accelerator, Pair Spectrometer, Collimator</b>	12
<b>N1 - BCAL</b>	13
<b>S1 – BCAL</b>	14
<b>US1 – Collimator, Pair Spectrometer</b>	15
<b>U2 – CDC, FDC</b>	16, 17
<b>D2 – TOF, FCAL</b>	18, 19, 20





### Crate Slot Numbering Convention

#### VXS Crate Slots [fADC250]:



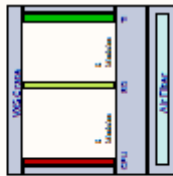
- 1 CPU
- 2 Reserved
- 3-10 fADC250 modules (8)
- 11 CTP
- 12 SD
- 13-20 fADC250 modules (8)
- 21 TI

CAEN SY1527 HV Chassis Slots:  
 HV modules are on the rear of the chassis  
 A1550P/N - Single Slot  
 A1535SN - Dual Slot



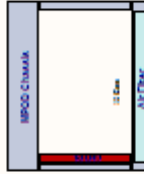
- 0-15 HV Modules (16)

#### VXS Crate Slots [fADC125 & F1TDC]:



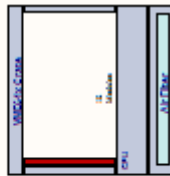
- 1 CPU
- 2 Reserved
- 3-10 fADC125/F1TDC modules (8)
- 11 Reserved
- 12 SD
- 13-20 fADC125/F1TDC modules (8)
- 21 TI

WIENER MPOD LV Chassis Slots:



- 0-9 LV Modules (10)

#### VME64x Crate Slots [Discriminator]:



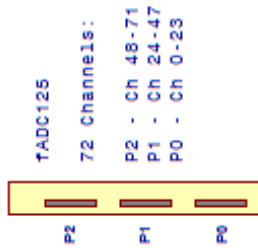
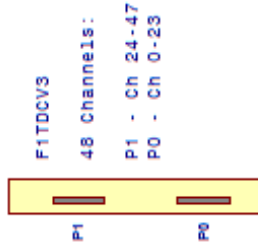
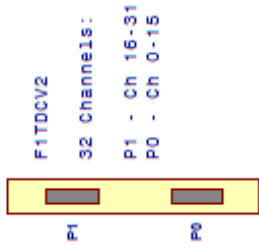
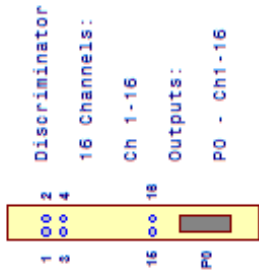
- 1 CPU
- 2 Reserved
- 3 Reserved
- 4-21 Discriminator (18)

- NOTES: 1. Slots are numbered from Left to Right, as seen from the module insertion side.  
 2. VXS, VME64x Crates: Slots are populated from Left to Right.  
 3. HV, LV Chassis: Slots are populated from Left to Right, except if segregated by function.

<b>CONFIDENTIAL INFORMATION</b> The information on this document is the property of Jefferson Lab and is not to be distributed outside of the institution.			
PROJECT	SYN	DATE	04-13-2010
VERSION	0001	CLASSIFIED	None
APPROVED		APPROVED	
BY	J. Barboza	DATE	04-13-2010
FOR	TI	CLASSIFIED	None
BY	J. Barboza	DATE	04-13-2010

**Module Channel Numbering Convention**

NOTE: Channels are numbered from bottom to top and starting at 0, except as indicated.



**CONFIDENTIAL INFORMATION**  
The information on this document is the property of Jefferson Lab and is not to be distributed outside of the facility.

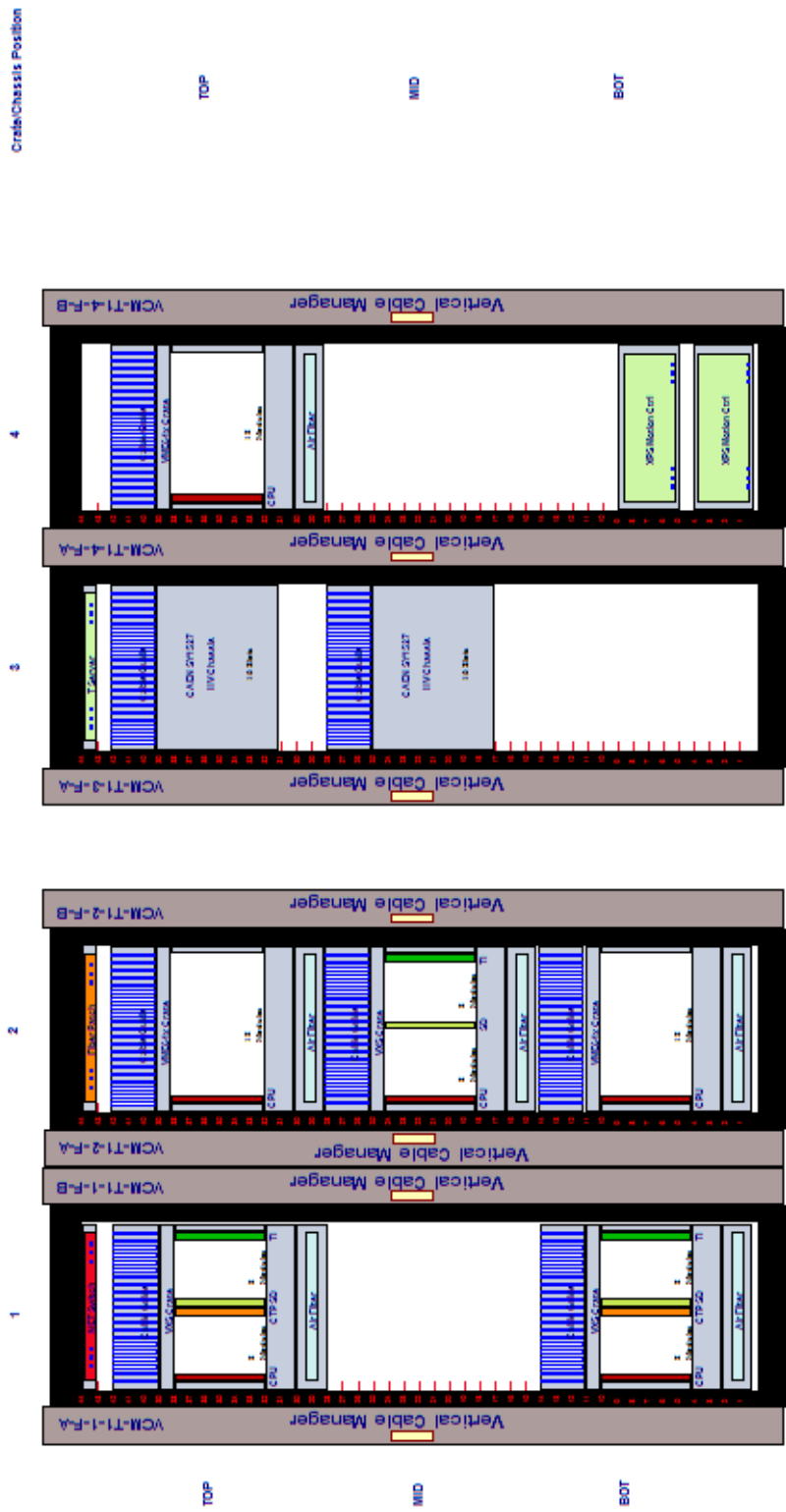
**Jefferson Lab**

PROJECT	DATE	BY
DESCRIPTION	REVISION	REVISION
APPROVED	DATE	BY
REVIEWED	DATE	BY
TESTED	DATE	BY

DACS Database  
Database Channels  
P0 - Ch 0-15  
P1 - Ch 16-31  
P2 - Ch 32-47

21: Diskette  
22: User Software (L2TDC) Data\_21.Diskette  
23: Diskette

**Location: T1**  
**Sub-System: TAGM, TAGH**



**Sub-System:** TAGM/TAGH  
**Function:** 8 fADC250  
 Splitters  
 15 fADC250

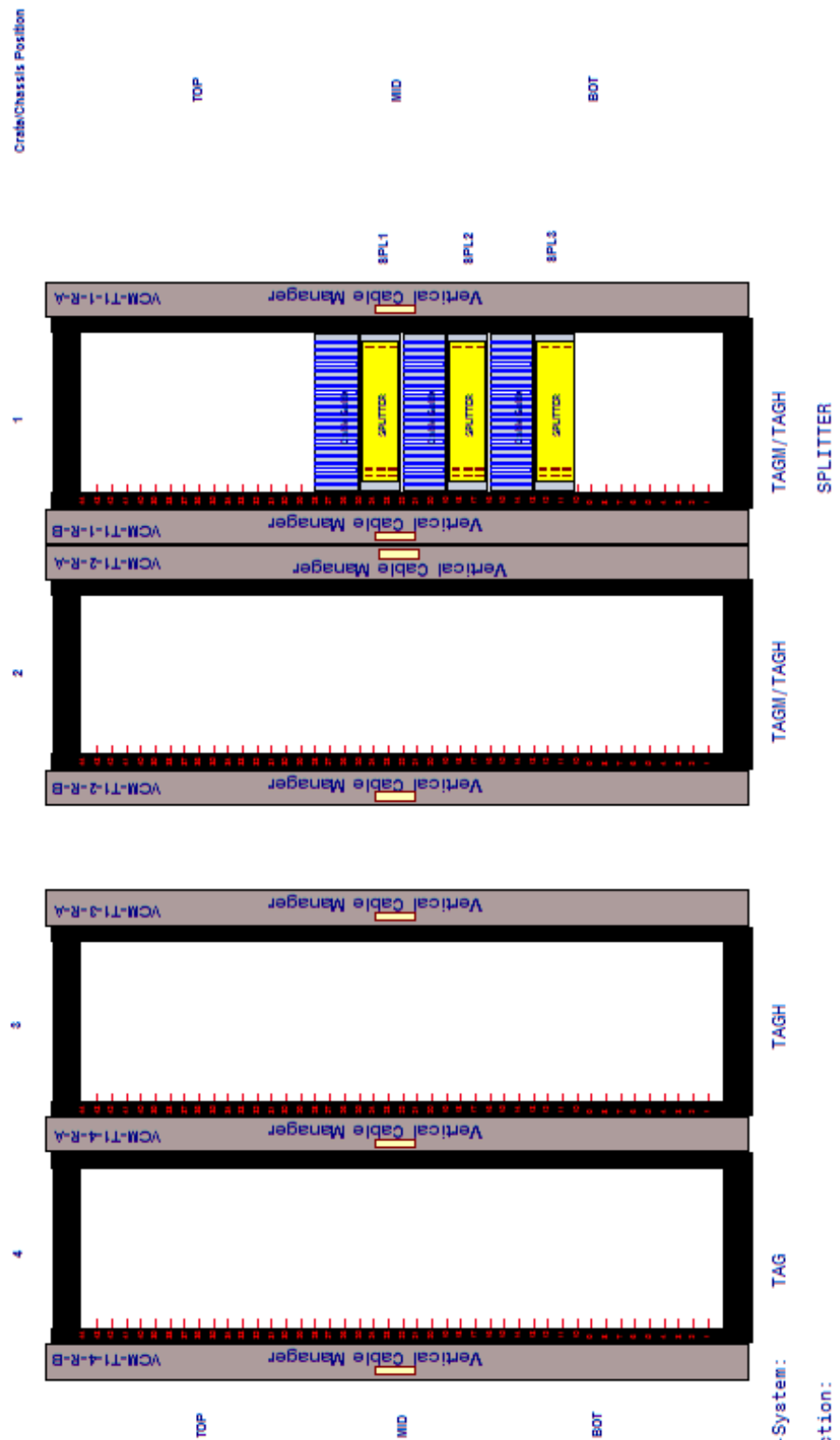
Note 1: Crate/Chassis Numendature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Numendature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

<b>CONFIDENTIAL INFORMATION</b> The information on this document is confidential and is intended only for the individual named. If you are not the named individual you should not disseminate or distribute the information. If you have received this document by mistake, please notify the sender immediately by e-mail. © 2005 Jefferson Lab	
PROJECT:	NO. RAISED CLEARANCE
DATE:	T1
APPROVED:	DATE:
REVISION:	DATE:
BY:	DATE:
FOR:	DATE:
BY:	DATE:
FOR:	DATE:

**Location: T1 (REAR)**  
**Sub-System: TAGM, TAGH**



Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

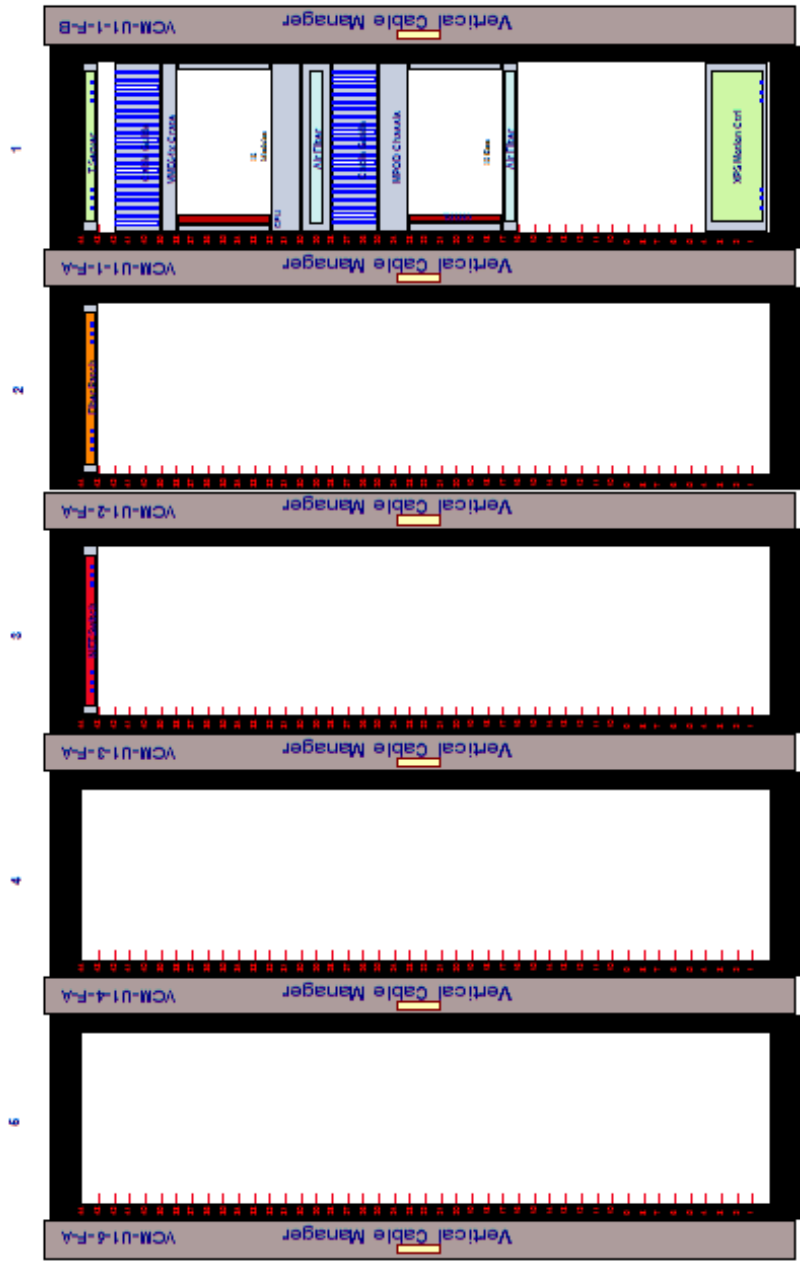
Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Sub-System: TAG  
 Function: TAGM/TAGH SPLITTER

Rear View

<small>CONFIDENTIAL INFORMATION          The information in this document is the property of Jefferson Lab and is to be controlled and distributed in accordance with the policies of the Office of Technical Services.</small>	<small>Rev. 0001          Date: 01/20/2015          Title: T1-2015          Author: J. J. ...          Reviewer: ...          Approved: ...          Date: ...</small>

**Location: U1 (A)**  
**Sub-System: TARG, GAS, COOL, BCAL LED Pulsar**



Sub-System: GAS

Function: LED Pulsar  
LED LV/Bias Controls

Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

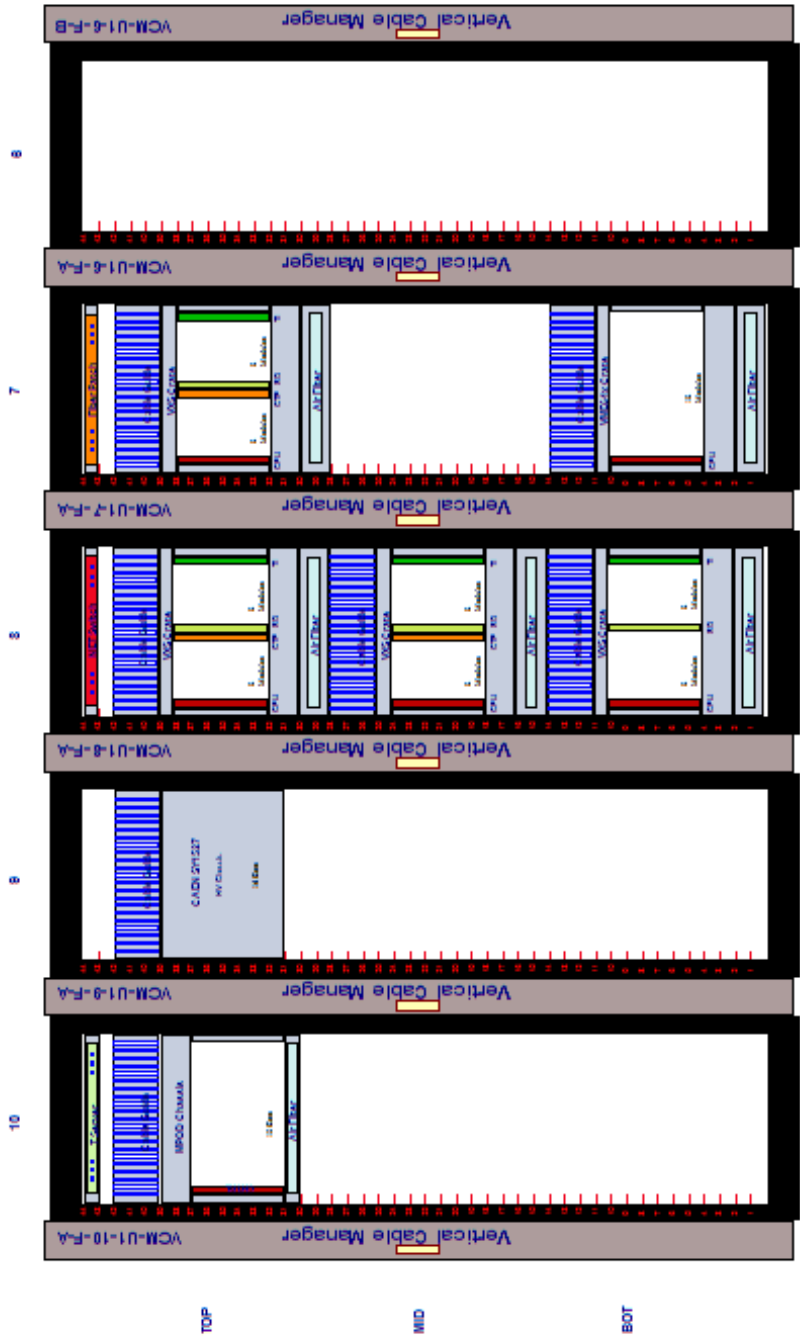
**CONFIDENTIAL INFORMATION**  
 The information on this document is the property of Jefferson Lab and is not to be distributed outside the Lab without the express written permission of the Lab Director.

**Jefferson Lab**

PROJECT	2008	2008	2008
ISSUE	1.0	1.0	1.0
DATE	11/11/08	11/11/08	11/11/08
APPROVED	[Signature]	[Signature]	[Signature]
DESIGNED	[Signature]	[Signature]	[Signature]
TESTED	[Signature]	[Signature]	[Signature]
DATE	11/11/08	11/11/08	11/11/08
BY	[Signature]	[Signature]	[Signature]
DATE	11/11/08	11/11/08	11/11/08
BY	[Signature]	[Signature]	[Signature]



**Location: U1 (B)**  
**Sub-System: PS, PSC, ST**



Sub-System:	ST/PS	PSC	PS/PSC/ST	ST/PSC
Function:	6 BIAS/ 2 LV	1 HV (2 Slots)	16 fADC250 4 fADC250 2 FITDC	2 fADC250 Splitters 3 Disc

Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).  
 Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

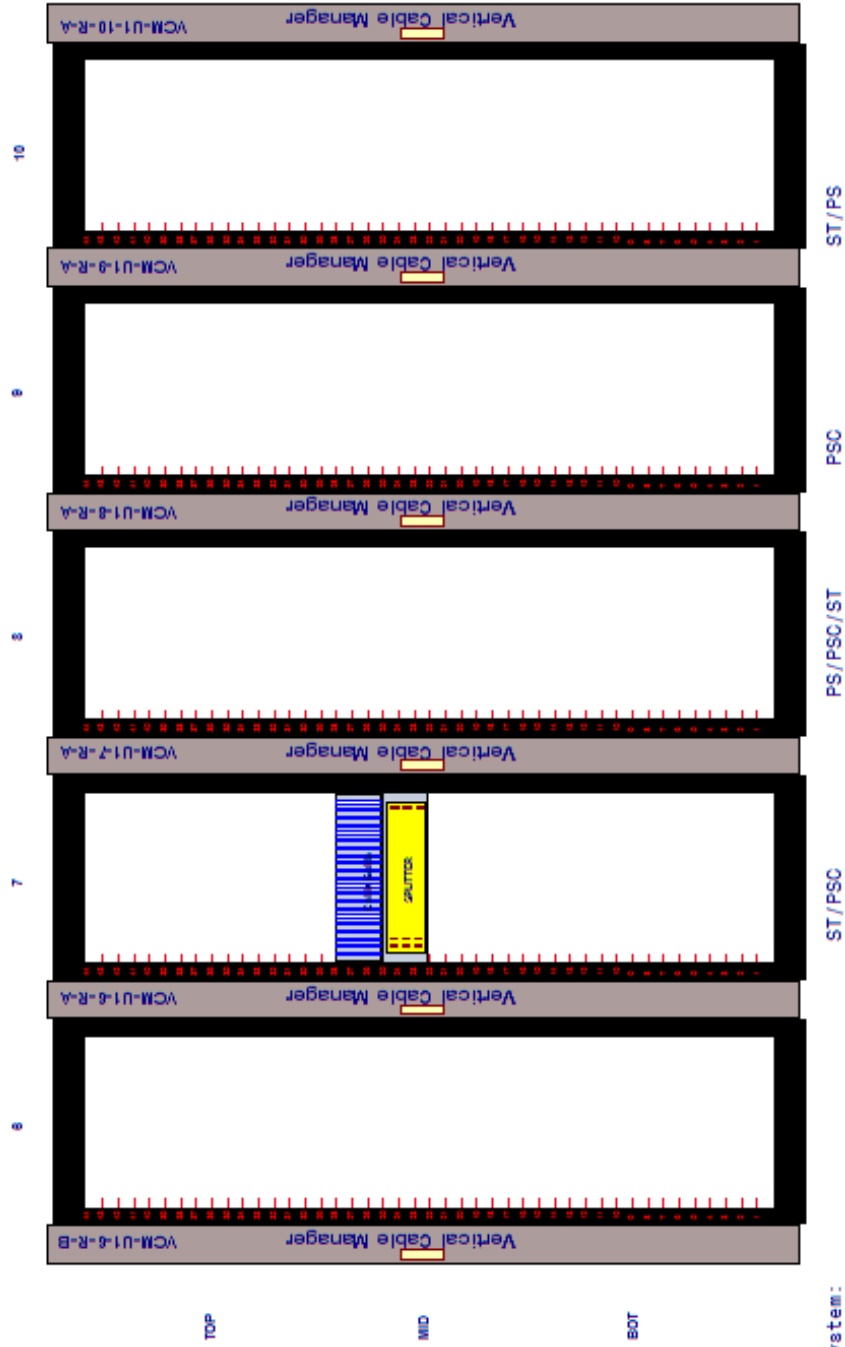
Front View

**JEFFERSON LABORATORIES**  
 The University of the Sciences  
 Philadelphia, PA 19104-6399  
 215-381-2000

**Jefferson Lab**  
 6000 Central Expressway  
 Newport News, VA 23606  
 800-551-8600

PROJECT	5000	REV	01
DATE	08/20/2013	BY	U1
APP'D		DATE	
DESIGNED BY		CHECKED BY	
© 2013 Jefferson Lab			

**Location: U1 (B REAR)**  
**Sub-System: PS, PSC, ST**



Sub-System: ST/PSC

Function: Splitters

Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.

Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Rear View

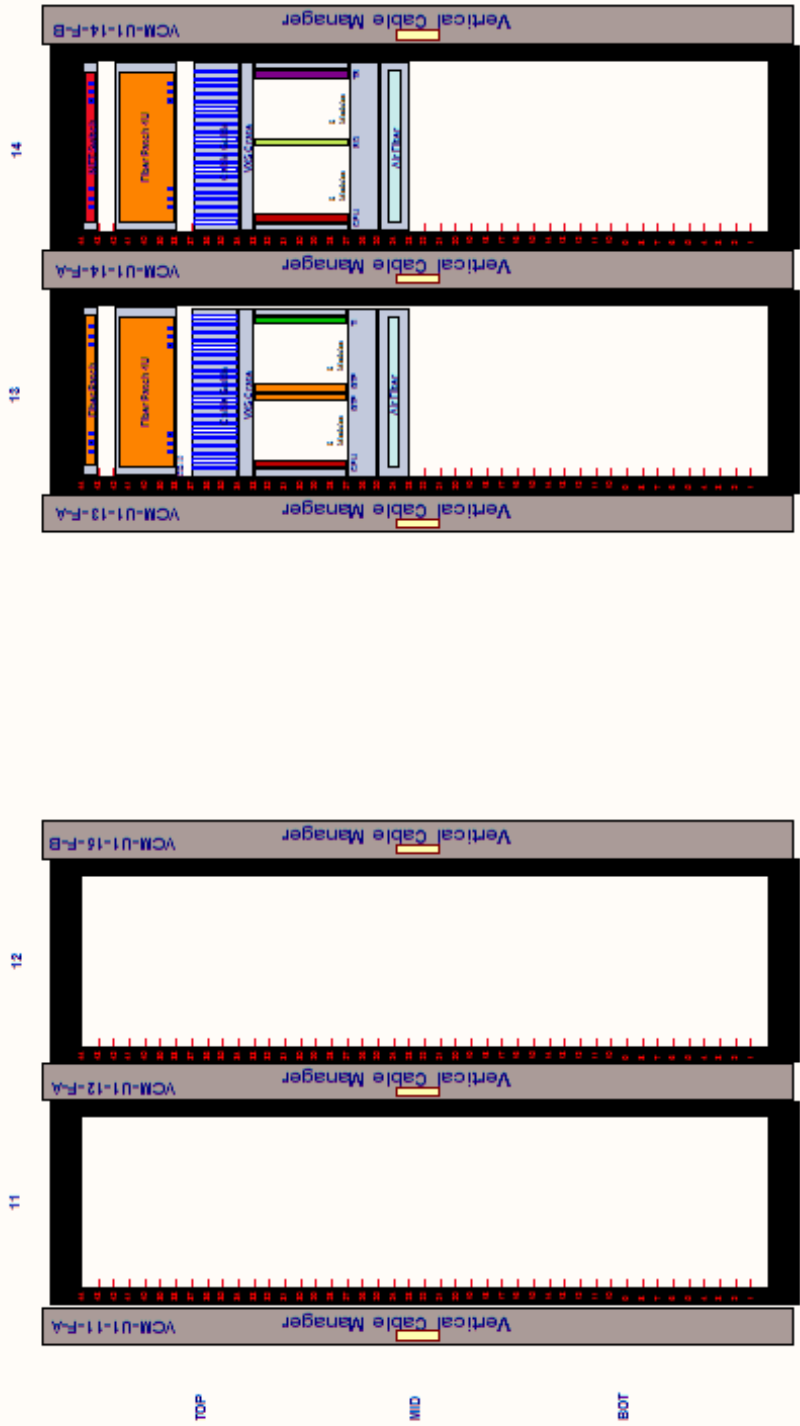
**Jefferson Lab**

CONTRACT NUMBER: JLAB-CR-14-0001  
 The information on this document is the property of Jefferson Lab and is to be controlled and distributed in accordance with the policies of the Jefferson Lab.

DATE	2014-01-28	REV	1.0
ISSUE	1.0	DATE	2014-01-28
DESCRIPTION	Vertical Cable Manager		
APPROVED	[Signature]		
DATE	2014-01-28		

© 2014 Jefferson Lab  
 Jefferson Lab is a U.S. Department of Energy Office of Science facility.

**Location: U1 (C)**  
**Sub-System: SW, TRIG**



Sub-System: SW

Function: SW

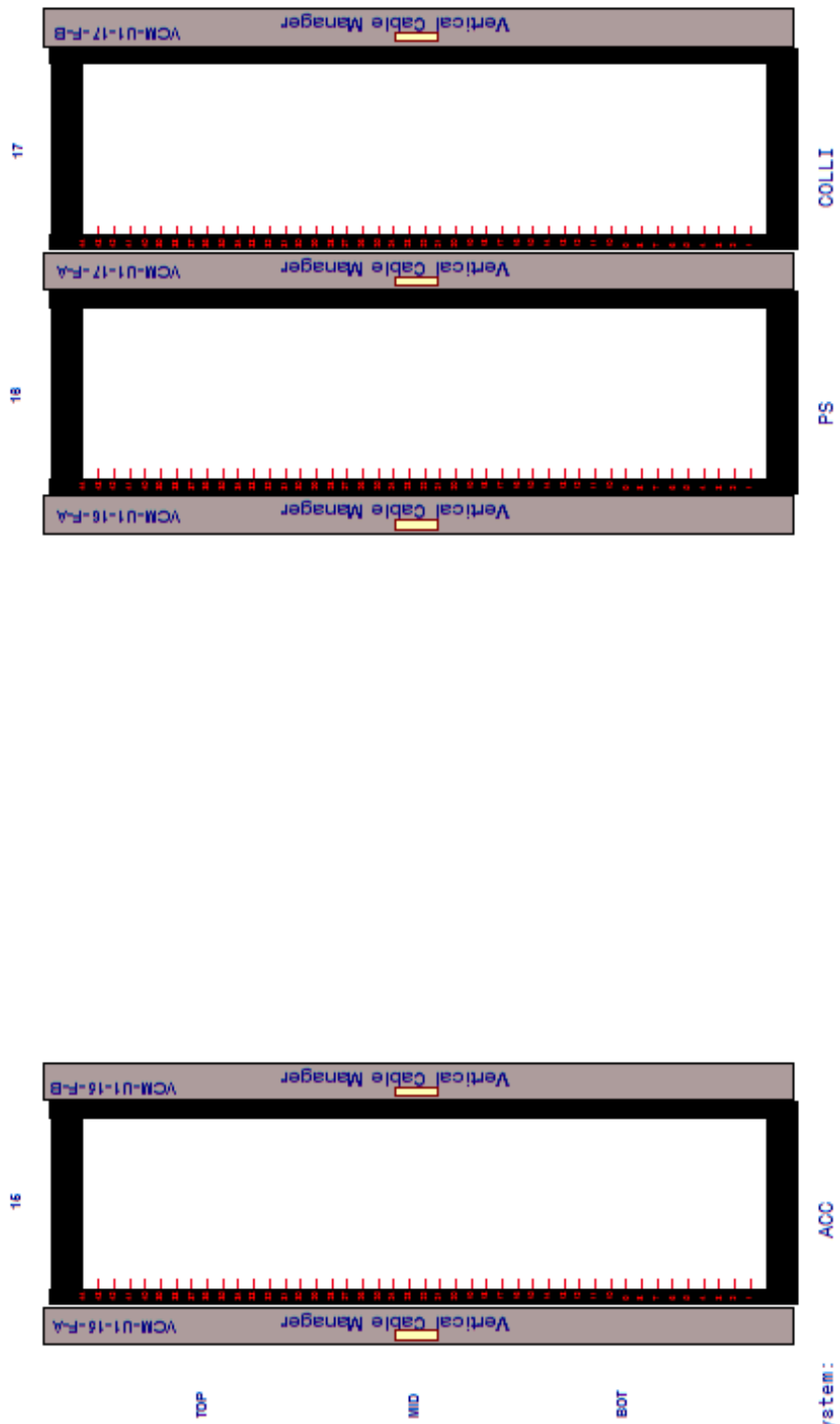
Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

<b>Jefferson Lab</b>	
<small>CONFIDENTIAL INFORMATION</small> <small>This information is the property of Jefferson Lab and is not to be distributed outside of the Jefferson Lab.</small>	<small>Doc ID: 1000000000</small> <small>Doc Title: VCM-U1-14-FA</small> <small>Doc Version: 1.0</small> <small>Doc Date: 10/12/2010</small> <small>Doc Author: JLab</small> <small>Doc Reviewer: JLab</small> <small>Doc Status: Draft</small>

**Location: U1 (D)**  
**Sub-System: ACC, PS, COLLI**



Note 1: Crate/Chassis Numenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

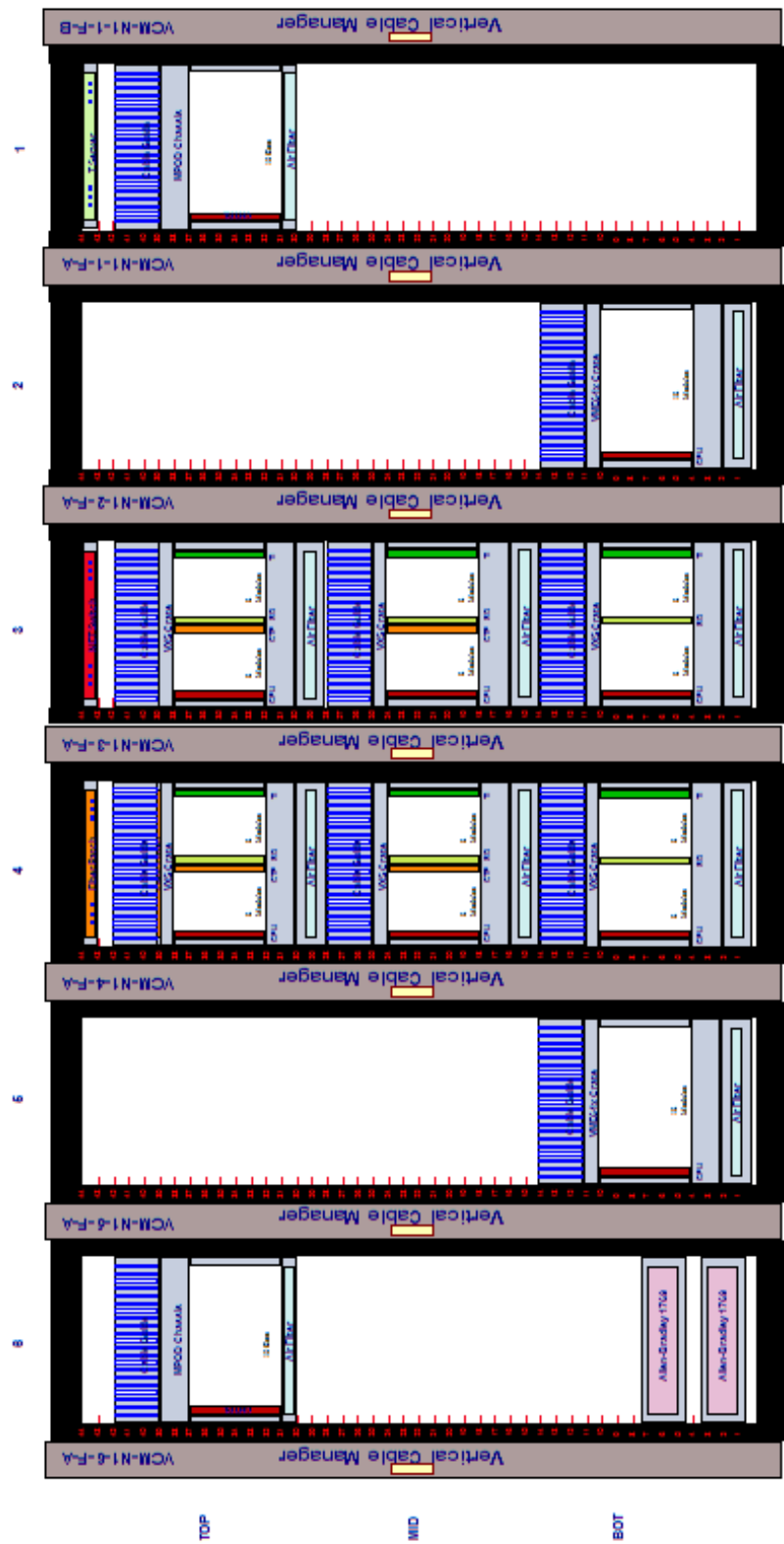
Note 2: An equal and corresponding number of Vertical Cable Managers are intalled on the rear of the racks.  
 Numenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Sub-System:  
 Function:

Front View

<b>CONFIDENTIAL INFORMATION</b> The information on this document is the property of Jefferson Lab and is to be controlled and disseminated only to those authorized by the document.		<b>Jefferson Lab</b>	
DATE	BY	DATE	BY

**Location: N1**  
**Sub-System: BCAL**



Sub-System: BCAL  
 Function: 6 BIAS/2 LV  
 Temp Monitor 18 DISC

BCAL  
 6 BIAS/ 2 LV  
 BCAL  
 18 DISC  
 BCAL  
 12 fADC250  
 12 fADC250  
 9 FITDC  
 BCAL  
 12 fADC250  
 12 fADC250  
 9 FITDC  
 BCAL  
 18 DISC

**Jefferson Lab**

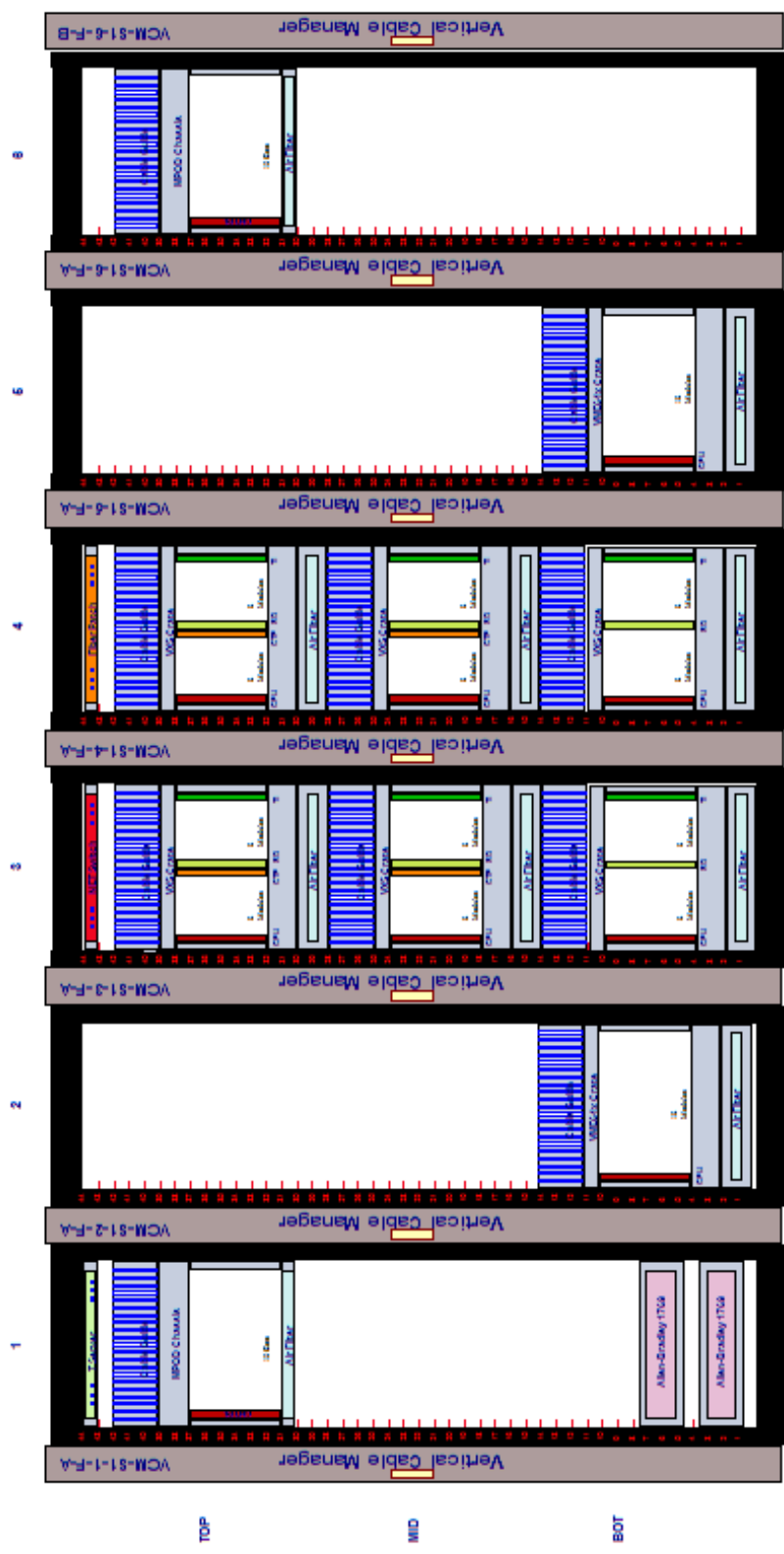
CONFIDENTIAL INFORMATION  
 The information on this document is the property of Jefferson Lab and is to be controlled and distributed only by the author.

PROJECT	NOV 2000	NOV 2000	NOV 2000
ISS	11-0000	11-0000	11-0000
APPROVAL	11-0000	11-0000	11-0000
DATE	11-0000	11-0000	11-0000
BY	11-0000	11-0000	11-0000
FOR	11-0000	11-0000	11-0000
REVISION	11-0000	11-0000	11-0000

Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).  
 Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

**Location: S1**  
**Sub-System: BCAL**



Sub-System: BCAL

Function: 6 BIAS/2 LV

Temp Monitor

18 DISC

12 fADC250

12 fADC250

9 F1TDC

12 fADC250

12 fADC250

9 F1TDC

18 DISC

6 BIAS/ 2 LV

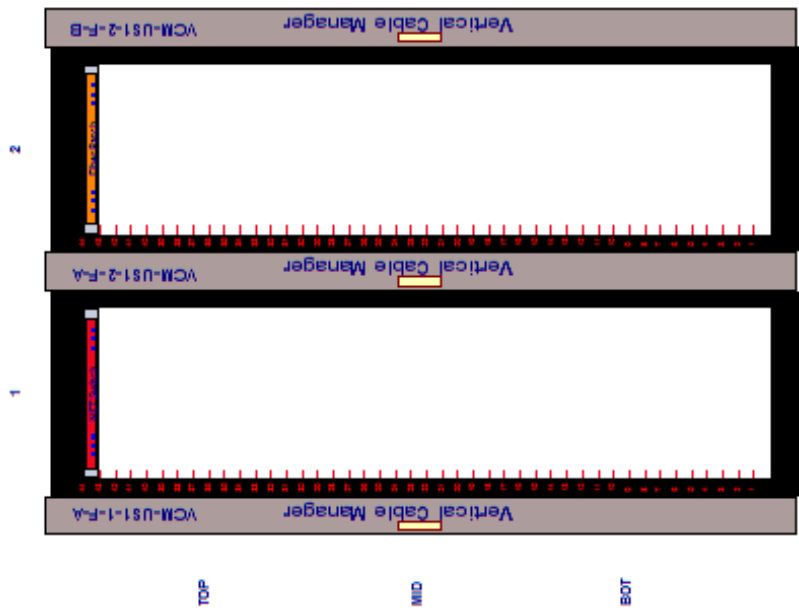
Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

PROJECT: DATE: DRAWN BY: CHECKED BY: APPROVED BY: DATE:	TITLE: SHEET NO.: OF: DATE:

**Location: US1**  
**Sub-System: COLLI, PS**



Sub-System: PS

Function:

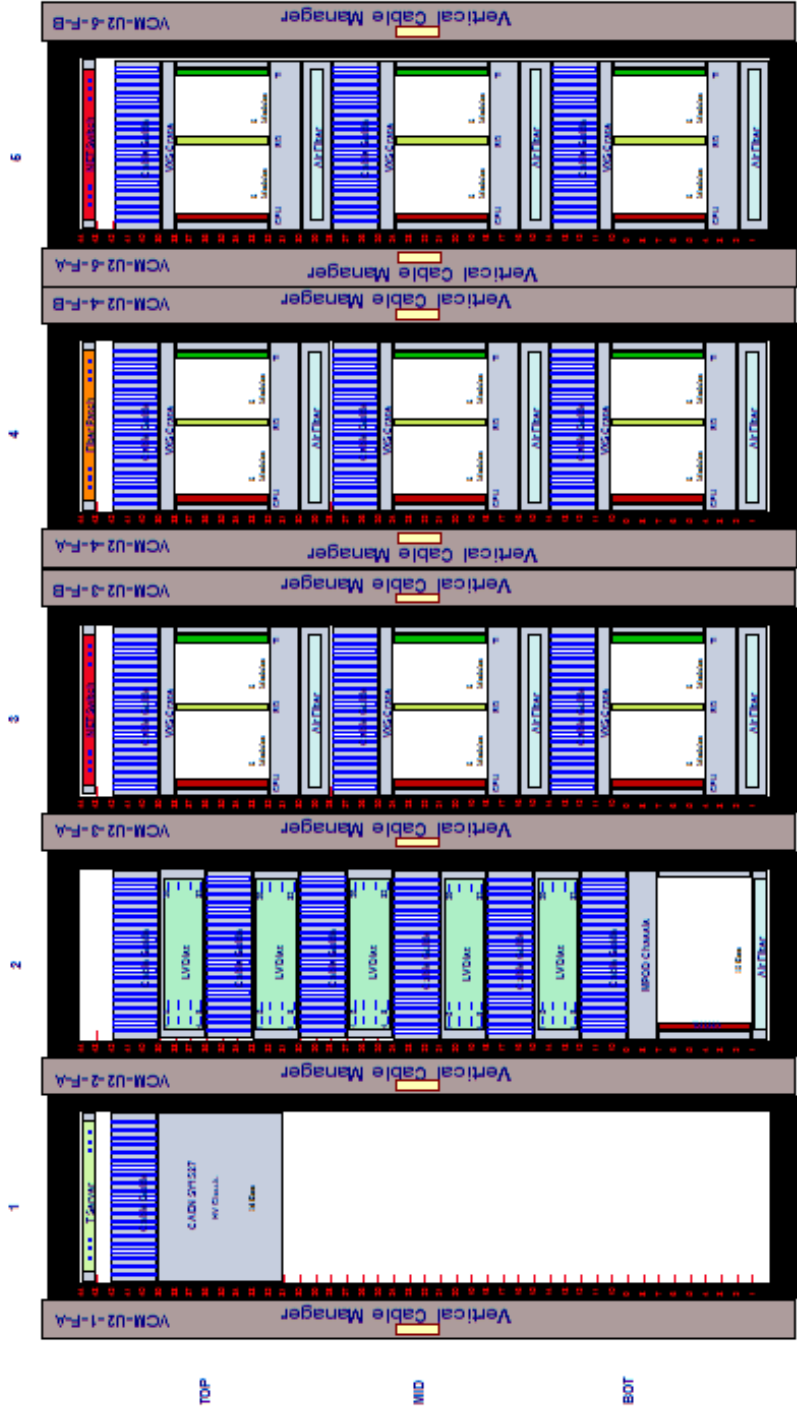
Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

<p><b>CONFIDENTIAL INFORMATION</b>          The information on this document is the property of Jefferson Lab and is to be controlled, stored, and disseminated in accordance with the policies of the laboratory.</p>	<p>DATE: 04/15/2013          TIME: 10:01          USER: jbarbosa</p>
<p>PROJECT: COLLI          TITLE: PS          AUTHOR: jbarbosa</p>	<p>DATE: 04/15/2013          TIME: 10:01          USER: jbarbosa</p>
<p>REVISION: 1.0</p>	<p>DATE: 04/15/2013          TIME: 10:01          USER: jbarbosa</p>
<p>APPROVED: jbarbosa</p>	<p>DATE: 04/15/2013          TIME: 10:01          USER: jbarbosa</p>

**Location: U2 (A)**  
**Sub-System: CDC, FDC**



Sub-System:	CDC/ FDC	FDC	CDC/ FDC	FDC	FDC	FDC	FDC
Function:	7 HV (3+/4+)	Anodes (1) Cathodes (4) 10 LV	13 fADC125 12 fADC125 12 F1TDC	14 fADC125 14 fADC125 12 F1TDC	14 fADC125 15 fADC125 15 fADC125		

Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).  
 Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

**Jefferson Lab**

APPROVALS

PROJECT	0000000000
DATE	01/15/2011
BY	0000000000
REVISION	0000000000
APPROVED	0000000000
DATE	01/15/2011
BY	0000000000

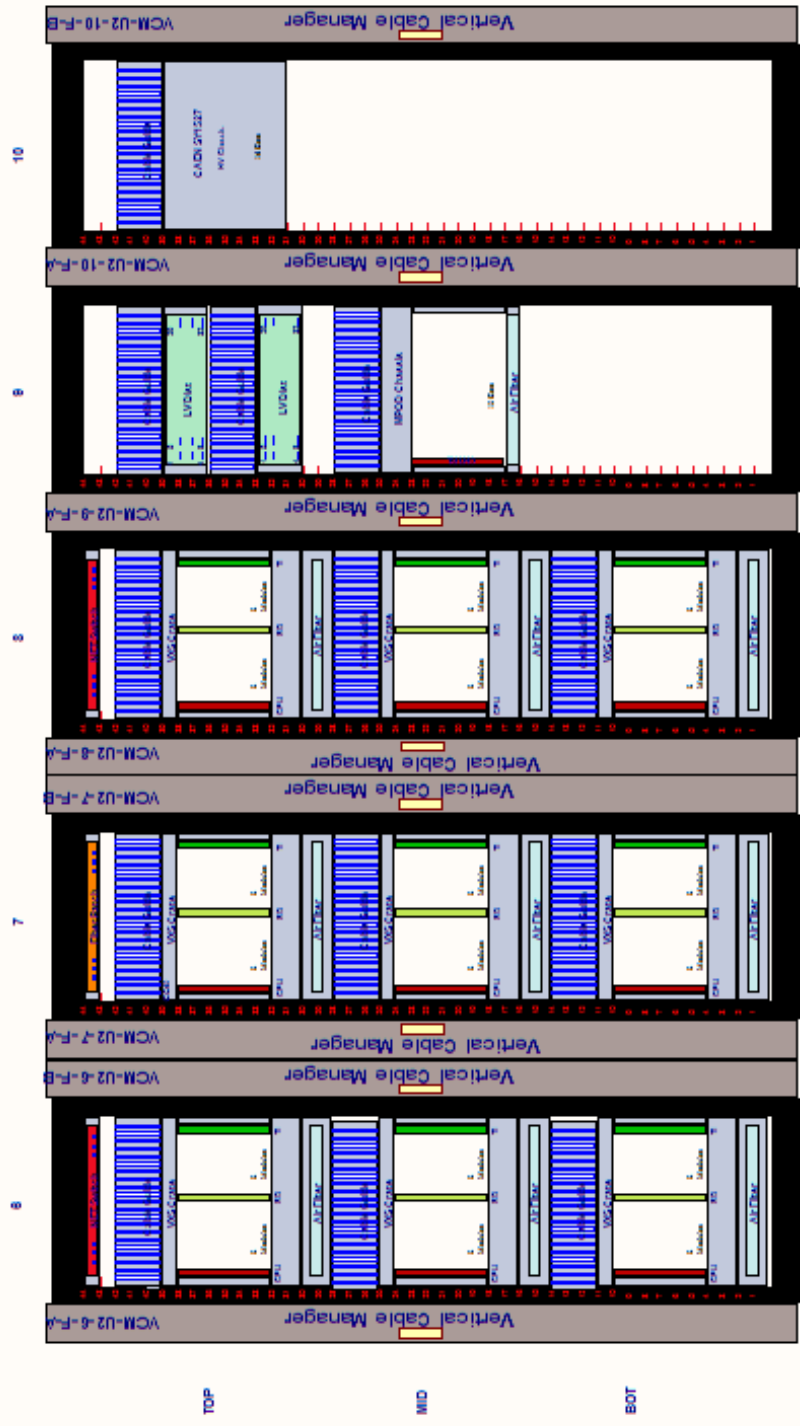
APPROVED FOR THE PROJECT BY THE OFFICE OF THE DIRECTOR OF THE FACILITY

APPROVED FOR THE PROJECT BY THE OFFICE OF THE DIRECTOR OF THE FACILITY

APPROVED FOR THE PROJECT BY THE OFFICE OF THE DIRECTOR OF THE FACILITY



**Location: U2 (B)**  
**Sub-System: CDC, FDC**



Sub-System:	FDC	FDC	CDC/FDC	CDC	CDC/FDC
Function:	14 fADC125	14 fADC125	12 fADC125	Anodes (2)	7 HV (3+/4-)
	15 fADC125	14 fADC125	13 fADC125	3 LV	
	15 fADC125	12 F1TDC	12 F1TDC		

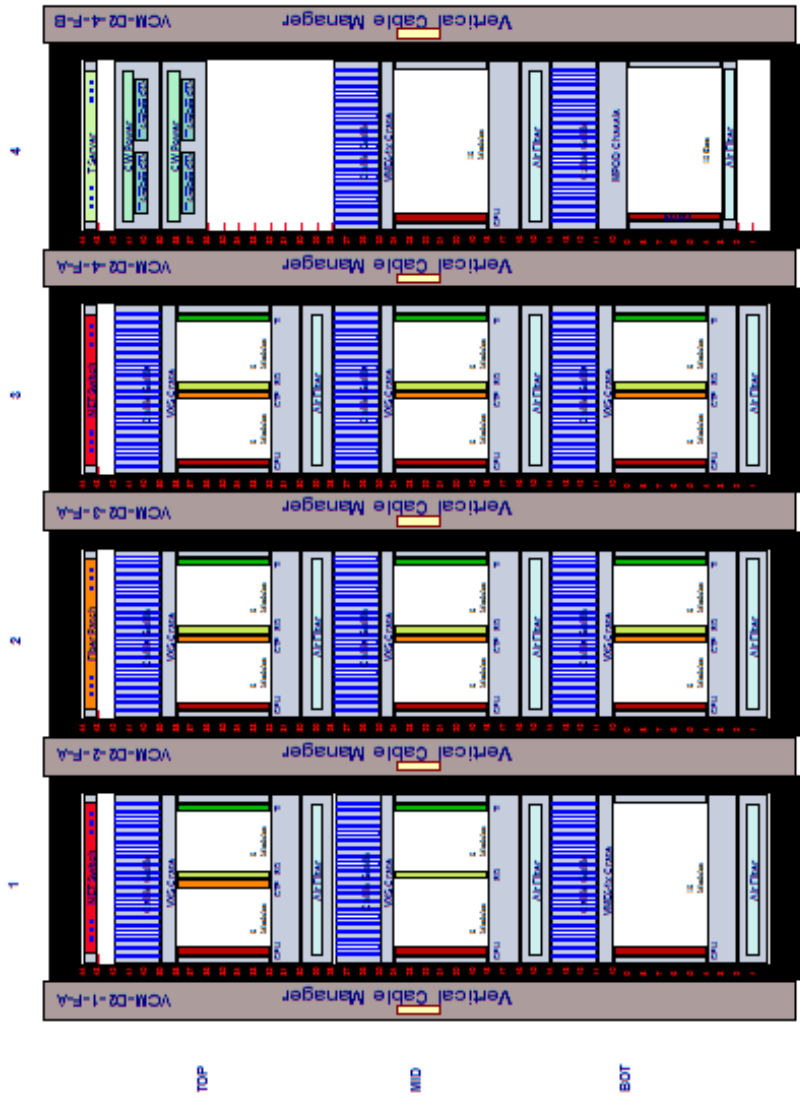
Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

PROJECT	764
DATE	04/13/2016
DESIGNER	LS
CHECKER	
APPROVER	
DATE	
BY	
DATE	

**Location: D2 (A)**  
**Sub-System: TOF, FCAL, LED Pulser**



Sub-System:	TOF	FCAL	FCAL	FCAL
Function:	11 fADC250 6 CAEN TDC 11 DISC	15 fADC250 15 fADC250 15 fADC250	14 fADC250 15 fADC250 14 fADC250	CW Power LED Pulser LED LV/Bias

Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).  
 Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

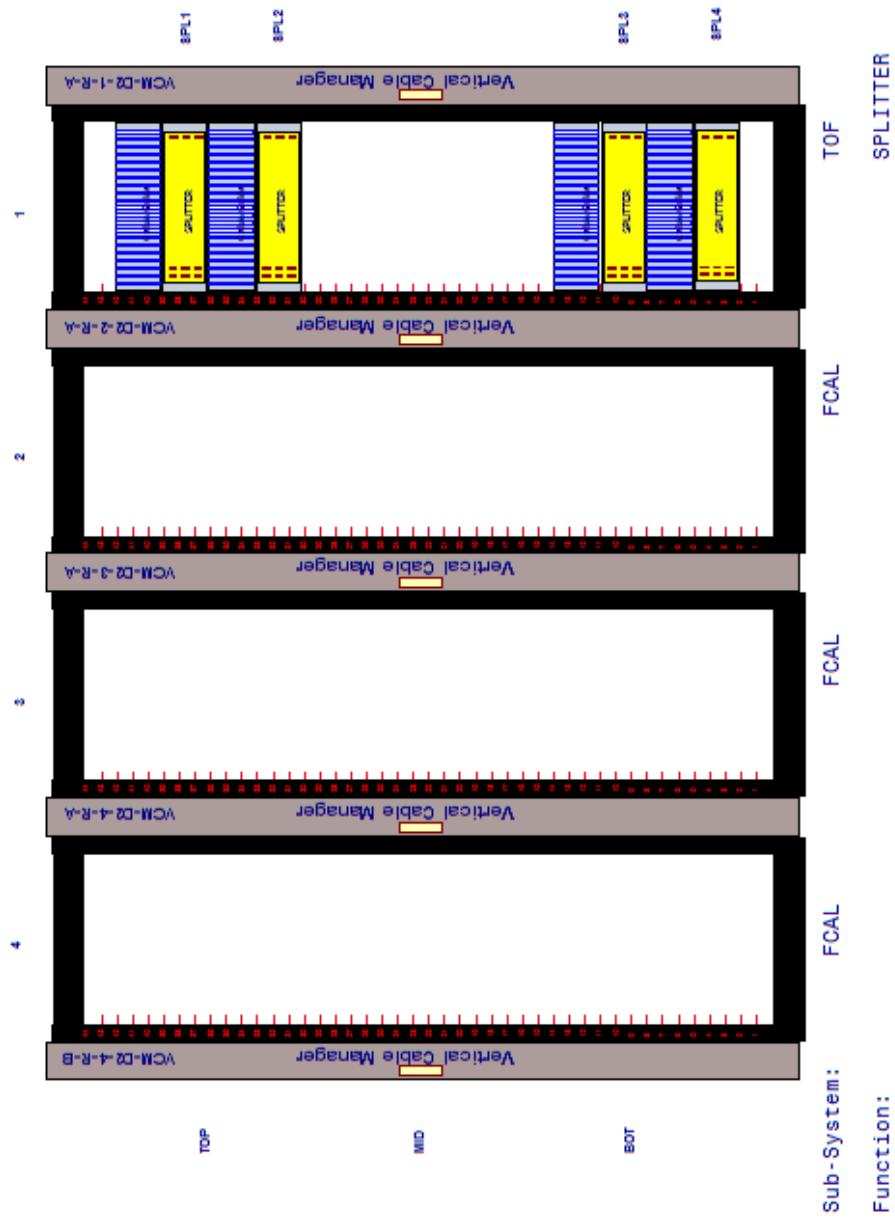
Front View

**CONFIDENTIAL INFORMATION**  
 The information on this document is confidential and is intended only for the individual named. If you are not the named individual you should not disseminate, distribute or copy this document. If you have any questions concerning copyright, confidentiality or other matters, please contact the Jefferson Lab Information Services Group.

**Jefferson Lab**

PROJECT: EIC  
 DATE: 11/2015  
 VERSION: 1.0  
 AUTHOR: J. Barabga  
 REVIEWER: J. Barabga  
 DATE: 11/2015

**Location: D2 (A) (REAR)**  
**Sub-System: TOF, FCAL, LED Pulsar**



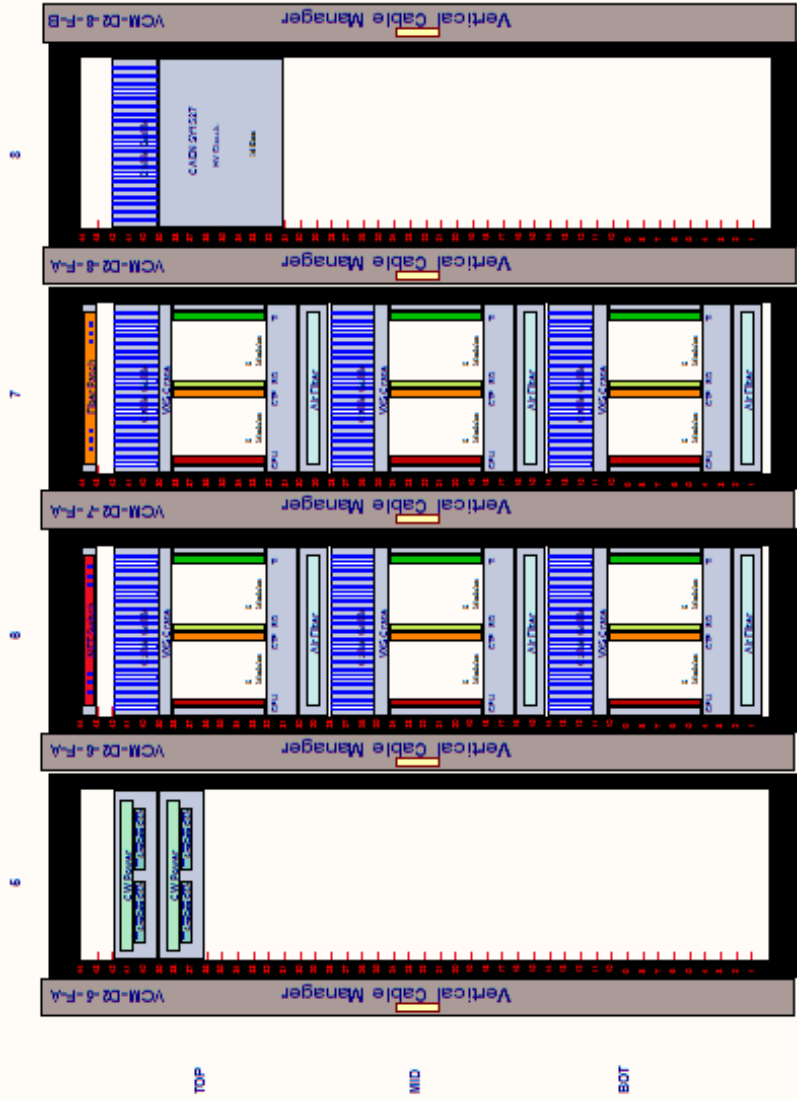
Sub-System: FCAL  
 Function: SPLITTER

Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).  
 Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

<b>Jefferson Lab</b>	
PROJECT: E2	Task: Hall C Upgrade
ISSUE: 01	REV: 01
DATE: 12/15/11	REVISED: 01/11/12
DESIGNED BY: [Name]	APPROVED BY: [Name]
CHECKED BY: [Name]	DATE: 12/15/11
SCALE: 1:1	DATE: 12/15/11
PROJECT NUMBER: [Number]	DATE: 12/15/11
ISSUE NUMBER: [Number]	DATE: 12/15/11
REVISION NUMBER: [Number]	DATE: 12/15/11
DATE: 12/15/11	DATE: 12/15/11

**Location: D2 (B)**  
**Sub-System: TOF, FCAL**



Sub-System: FCAL

Function: CW Power

14 fADC250  
 15 fADC250  
 14 fADC250

FCAL

15 fADC250  
 15 fADC250  
 15 fADC250

TOF

8 HV (16 Slots)

Note 1: Crate/Chassis Nomenclature: Platform/Location-Rack-Position ( e.g., T1-1-TOP).

Note 2: An equal and corresponding number of Vertical Cable Managers are installed on the rear of the racks.  
 Nomenclature: Type-Platform/Location-Rack-Front/Rear-A/B  
 (e.g., VCM-T1-1-F-A and VCM-T1-1-R-A, etc.)

Front View

**JEFFERSON LABORATORY**  
 The Jefferson Lab is a DOE Office of Science user facility for the study of the structure and interactions of matter at the quark and nucleon level. It is a part of the Thomas Jefferson National Accelerator Facility.

**Jefferson Lab**

PROJECT	NO.	DATE
ISSUE	ISSUED	BY
APPROVED	APPROVED	DATE
REVISION	REVISION	DATE
BY	DATE	BY
DATE	DATE	DATE

100 Jefferson Lab  
 1200 Jefferson Lab  
 1400 Jefferson Lab  
 1600 Jefferson Lab  
 1800 Jefferson Lab  
 2000 Jefferson Lab  
 2200 Jefferson Lab  
 2400 Jefferson Lab  
 2600 Jefferson Lab  
 2800 Jefferson Lab  
 3000 Jefferson Lab