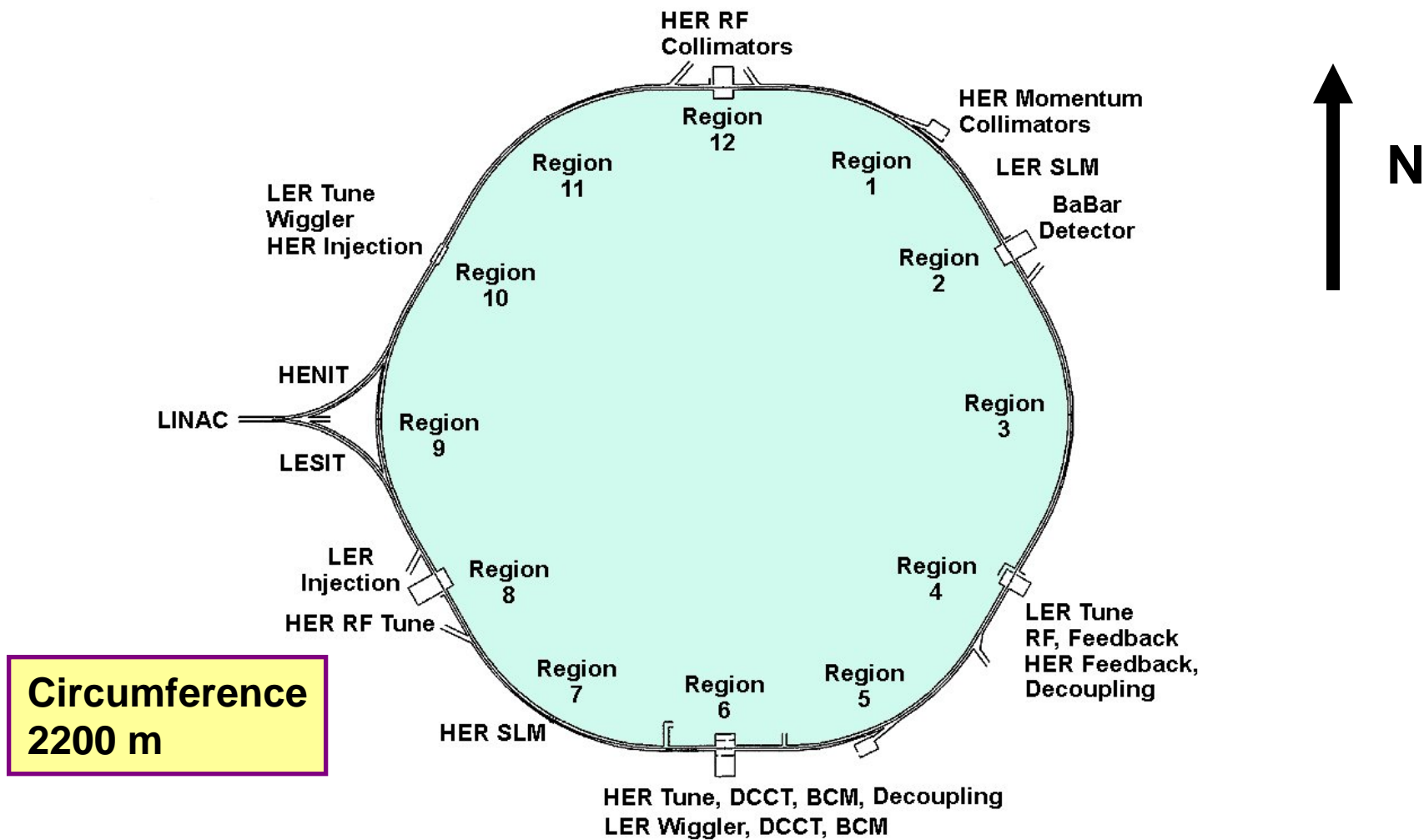


# PEP-II Overview and MMS Status

Michael Sullivan  
*SLAC National Accelerator Laboratory*

# PEP-II Layout

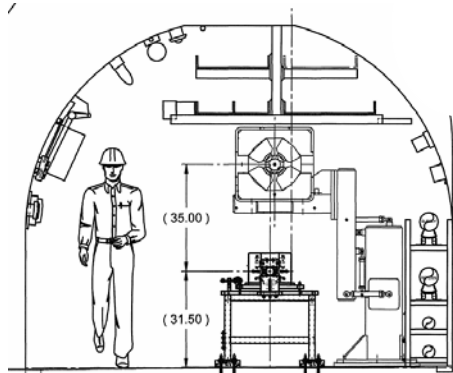


# SLAC and PEP-II





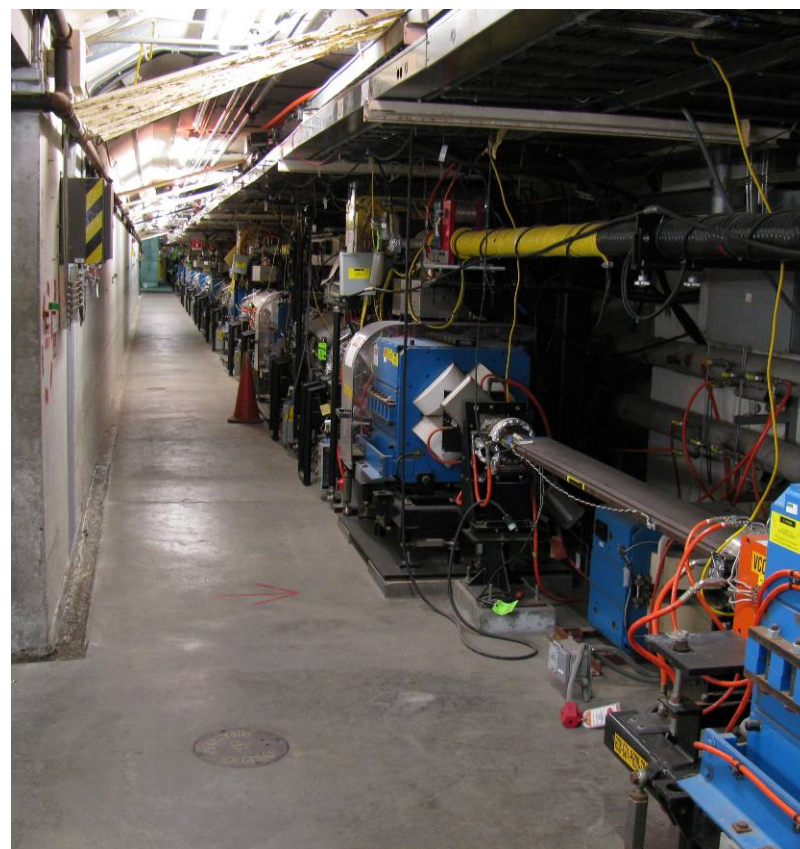
# Tunnel



Region 7

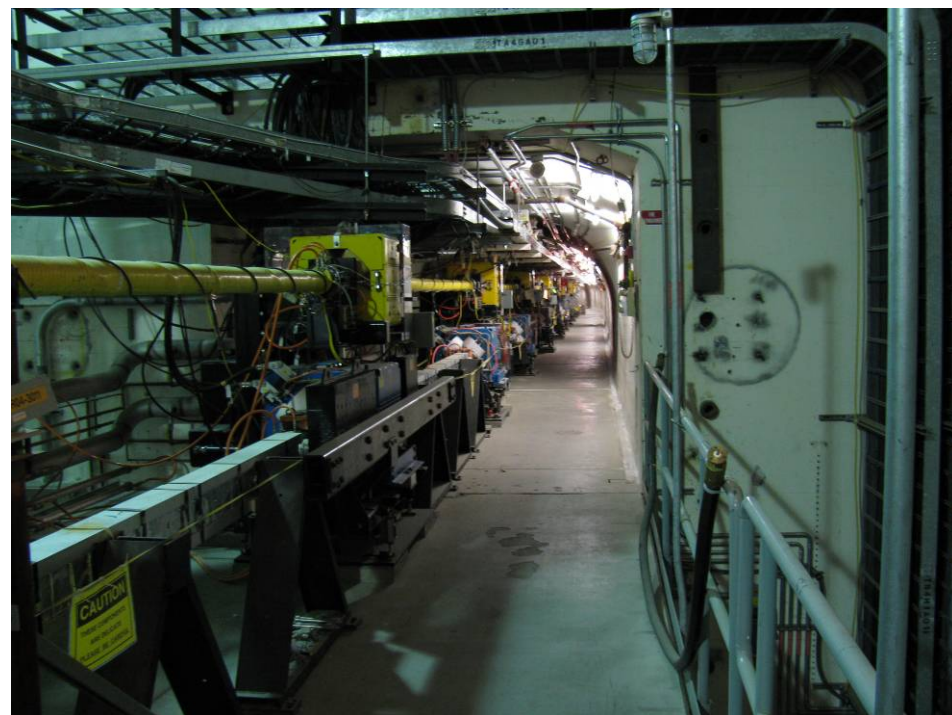
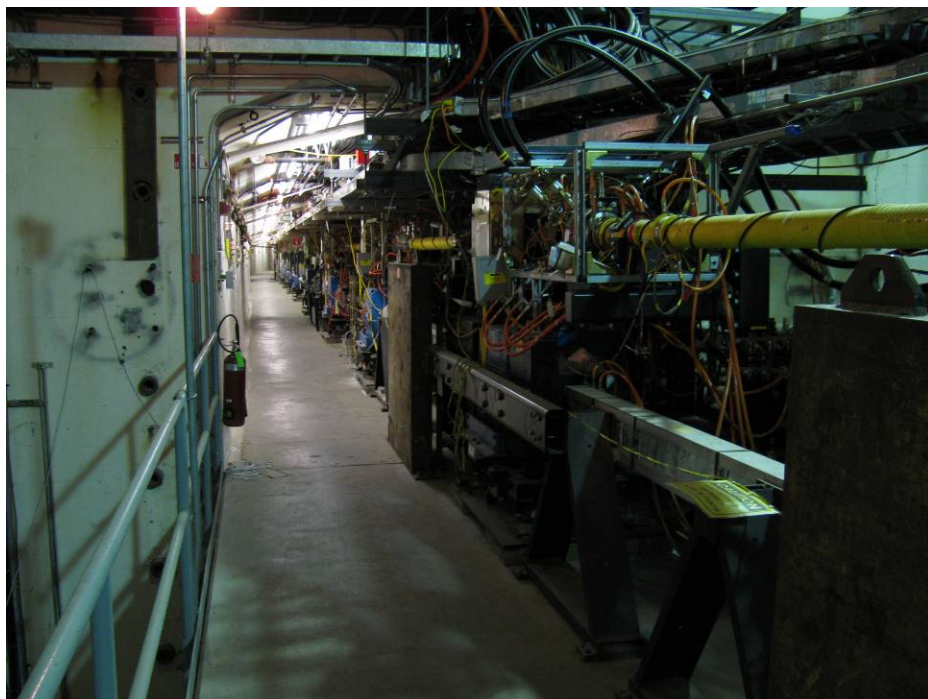


Region 8



# Tunnel

## Region 4



## Region 4



# Support Buildings

## Region 8



# Support buildings

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## Region 4



# Magnet Inventory

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## \* HER

- 194 main dipole magnets – 5.4 m long
- 202 quadrupoles – 0.56 m long
- 82 quadrupoles – 0.73 m long
- 284+ corrector magnets – 0.2 m long

## \* LER

- 194 main dipole magnets – 0.45 m long
- 353 quadrupoles – 0.43 m long
- 353+ corrector magnets – 0.2 m long

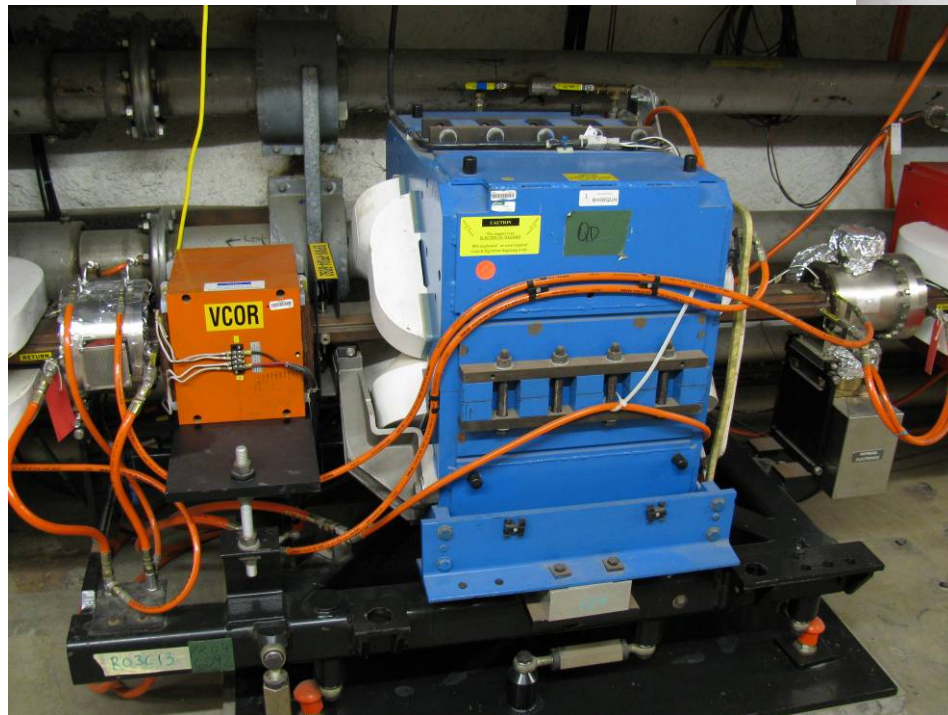
## \* HER/LER

- 188 sextupoles – various lengths



# HER magnets

## Corrector and quad



## Arc dipole

# LER magnets



Arc dipole  
and quad

# Power supplies

---

- \* **HER**
  - 20 main magnet string supplies (chopper supplies)
  - 81 Intermediate power supplies
  
- \* **LER**
  - 7 main magnet string supplies (chopper supplies)
  - 131 Intermediate power supplies
  - 6 solenoid winding power supplies
  
- \* **Miscellaneous HER/LER**
  - 6 final focus supplies (fairly big)
  - ~6 Kicker magnet power supplies



# Intermediate Power Supplies

## Region 4



# IR magnet power supplies



2 of 6  
final focus  
power  
supplies

Breaker  
control  
center



## RF systems

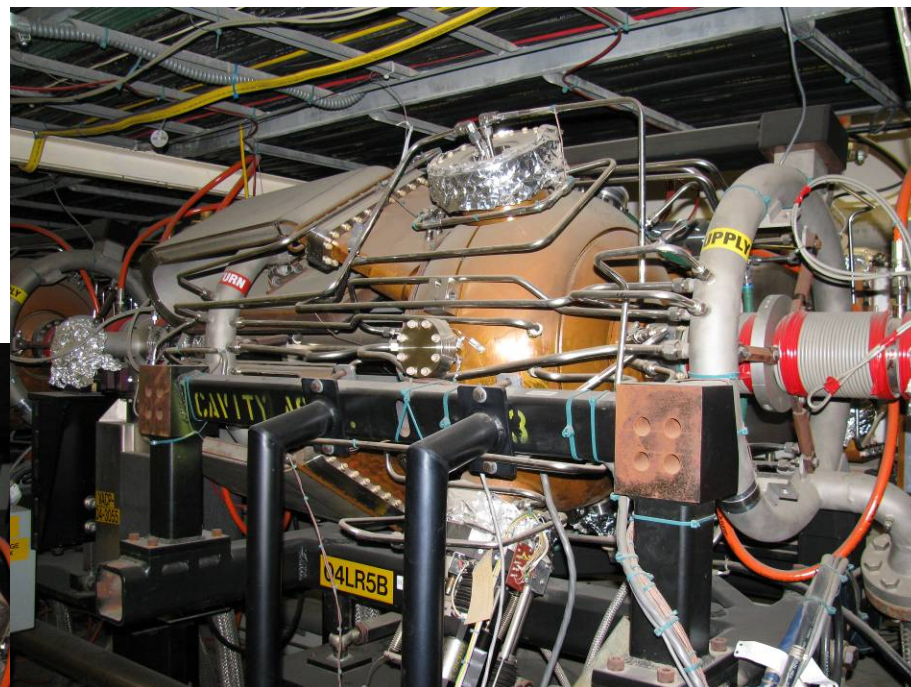
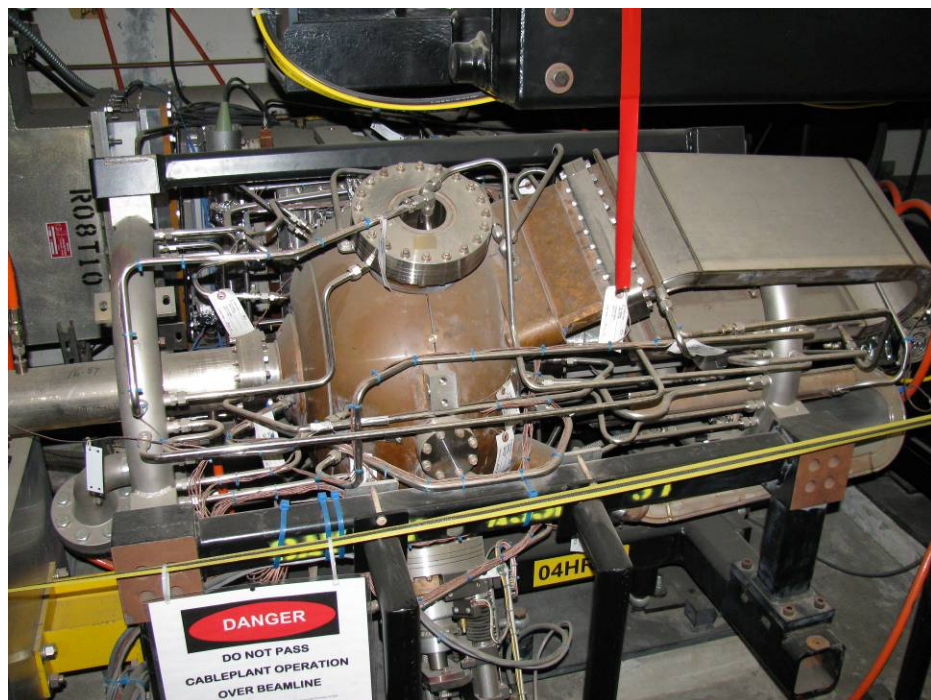
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- \* **15 1.2 MW CW klystrons – 476 MHz**
  - 12 Klystrons built by SLAC
  - 3 klystrons built by industry (Philips)
  - One or two spares industry built (near end of useful operation)
  
- \* **16 Two MW DC power supplies – 80 kV, 25 A**
  
- \* **16 high power RF circulators**
  
- \* **36 RF cavities**



# RF cavities

## Region 4



# Klystrons



## Region 4



circulator



# RF power supply



**There are 16 of these 2 MW power supplies. 15 are distributed around PEP-II, one is at the klystron test stand**

**Region 8**



## RF Power supplies

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6 in region 4  
6 in region 12  
3 in region 8

Region 4

Region 12



# Inventory list of items removed

- \* We maintain an up-to-date list of items removed from PEP-II
- \* Requests are channeled through John Seeman and/or myself
- \* Most of these items have so far been small and have gone to on site functioning accelerators
- \* One exception has been some vacuum chambers and bending magnets that were a dedicated test site for electron cloud studies. These components were shipped to Cornell for further research into electron cloud amelioration.

Area	Requestor	Component	Micro	Item Description	Quantity	Custodian/ Area Manager	Destination	Comments	Approver	Approval Date	Status
PEP II	Ratkovsky, S.	MCOR12 Power Supplies	All	MCOR12 Power Supplies	96	Ratkovsky, S.	LCLS	All PEP regions	Seeman	*4/14/2008	
PEP/PEP INJ	Turner/Srinivasan	Wire Scanners		wire scanners	6	Smith, P.	LCLS		Seeman	*4/14/08	
PEPII	SPEAR 3	Streak Camera (Hamamatsu)		board	1	Fisher, A.			Seeman	*5/18/08	
PEP	Brown, V.	Camera		LER ABORT Dump Camera	1	Burrows, K.	CTL Lab		Seeman	*5/23/08	
PEP	Brown, V.	Camera		HER ABORT DUMP Camera	1	Burrows, K.	CTL Lab		Seeman	*5/23/08	
PEP INJ	Brown, V.	Unit 9415 Camera	PI01	LER INJ TUD Camera	1	Smith, P.	CTL Lab		Seeman	*5/23/08	
PEP INJ	Brown, V.	Unit 9440 Camera	PI01	LER INJ SEPTUM Camera	1	Smith, P.	CTL Lab		Seeman	*5/23/08	
PEP INJ	Brown, V.	Unit 6420 Camera	PI11	HER INJ TUD Camera	1	Smith, P.	CTL Lab		Seeman	*5/23/08	
PEP INJ	Brown, V.	Unit 6440 Camera	PI11	HER INJ SEPTUM Camera	1	Smith, P.	CTL Lab		Seeman	*5/23/08	
PEPII	Fisher, A.	Streak Camera (Hadland)		Old camera, single axis	1	Fisher, A.	Accel. Lab		Seeman	*5/23/08	
PEP II	de Lira, A.	Intermediate P.S. 30V-333A		Intermediate P.S. 30V-333A	5	Ratkovsky, S.	LCLS/de Lira	2 units LER ring, 3 are spares	Seeman	*5/28/08	
PEP II	de Lira, A.	Intermediate P.S. 60V-250A		Intermediate P.S. 60V-250A	6	Ratkovsky, S.	LCLS/de Lira	used for BC2	Seeman	*5/28/08	
PEP II	de Lira, A.	Intermediate P.S. 45V-333A		Intermediate P.S. 45V-333A	2	Ratkovsky, S.	LCLS/de Lira	Return to LCLS (B3/B3M)	Seeman	*5/28/08	
PEP II	Chestnut, R.	Linux Servers BIC	IR6	Dell PowerEdge computers 1950	2	Fisher, A.	Chestnut/Zhou	bic06her01 & bic06ler01	Seeman	*5/28/08	
PEP II/PR12 ECI	Lipari, JJ	Power Supply	PR12	ESS 17kW power supplies	2	Lipari/Burrows	Cornell U		Sullivan	*6/19/08	
PEP II/PR12 ECI	Lipari, JJ	transducers	PR12	Danfysik Current transducers for ECI	2	Lipari/Burrows	Cornell U		Sullivan	*6/19/08	
PEP II/PR12 ECI	Lipari, JJ	Bitbus control chassis	PR12	Bitbus control chassis	1	Lipari/Burrows	Cornell U		Sullivan	*6/19/08	
PEP II/PR12 ECI	Lipari, JJ	Control/rack cabling	PR12	Control/rack cabling	1	Lipari/Burrows	Cornell U		Sullivan	*6/19/08	
PEP II/PR12 ECI	Lipari, JJ	DC cabling	PR12	DC cabling to magnets	1	Lipari/Burrows	Cornell U		Sullivan	*6/19/08	
		Bergoz BPM processors			54	Wittner, W	B684 Lab	53/T/1 spare	Seeman		
PEP II	Hill, A.	BSOIC's	All	BSOIC'S		Bong, P.	LCLS	List & RSWCF	Seeman	*6/11/08	

# Inventory spreadsheets

**We have overall inventory lists of all the components in each ring**

By David Kharakh,

Approval: HER System Manager-Uli Wienands

ARC [M]	PEP Stat. No. [Ft.]*	AREA UNIT NUMBERING	MAGNET STRINGS	LG. [M]	CELL NO.	Bar-Code	Ser. No.	Therr **	Mag. ***	NOTE	
01/20/01, 03/08/01		<b>PEP II B-FACTORY HER NOMENCLATURE</b>					06.25.07	08.07.02, 11.16.05, 08.20.2006			
11.9.98, 03.22.99		LATTICE 4her sxt Rev 2.1 "MAD" Ver. 8.22/12, Date 03.05.99.					06.22.99; 03.09.00, 07.11.00, 08.14.00, 05.29.01				
<b>01.12.96</b>		<b>REGION 1, ARC Disp. Suppressor</b>								<b>05.07.97</b>	
1893.655	3004	VACG-PR12-9011	VAC. GAUGE							Pirani Gauge	
1893.655	3004	VACP-PR12-9011	VAC. PUMP							LIP-60 liters/sec.	
1894.437792	<b>3006</b>	<b>QUAD-PR12-9012</b>	<b>QDS0XSR1</b>	0.56	<b>1</b>	PEP000205	127	1	D		
1894.858	3008	BPMS-PR12-9012	BPMHV							Converted single "Y" BPM to"XY"	
1895.023	3008	YCOR-PR12-9012	VCOR	0.3		PEP003084					
1895.213	3009	ABEL-PR12-9012	ARC BELLOWS	0.10				1			
1898.237792	<b>3019</b>	<b>BEND-PR12-9012</b>	<b>BEND</b>	<b>5.4</b>		PEP000385	076			CAMAC Location	
1901.138	3028	VDIP-PR12-9012	DIPCHAMB.				015			DIP-110 lit./sec./m	
1901.255	3029	VACP-PR12-9021	VAC. PUMP							LIP-60 liters/sec.	
1902.038	3031	QUAD-PR12-9022	QFS1SR01	0.56		PEP000304	120	1	D		
1902.458	3033	BPMS-PR12-9022	BPMHV							Converted single "X" BPM to"XY"	
1902.623	3033	XCOR-PR12-9022	HCOR	0.3		PEP002930					
1902.813	3034	ABEL-PR12-9022	ARC BELLOWS	0.10				1			
<b>1905.838</b>	<b>3044</b>	<b>BEND-PR12-9022</b>	<b>BEND</b>	<b>5.4</b>		PEP000418	027				
1908.738	3053	VDIP-PR12-9022	DIPCHAMB.				013			DIP-110 lit./sec./m	
1908.855	3054	VACP-PR12-9031	VAC. PUMP							LIP-60 liters/sec.	
1909.638	3056	QUAD-PR12-9032	QDS1SR01	0.56	<b>2</b>	PEP000526	171	1	D		
1910.058	3057	BPMS-PR12-9032	BPMHV							Converted single "Y" BPM to"XY"	
1910.223	3058	YCOR-PR12-9032	VCOR	0.3		PEP003022					



# Definition of the Minimum Maintenance State

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- \* Power supplies all locked off
- \* Vacuum systems vented and all pumps turned off
- \* Water systems
  - Magnet coils drained
  - Vacuum chambers drained
  - RF water systems drained
  - Water pumps off
- \* Left functional, on and/or maintained
  - Tunnel lighting
  - Fire protection
  - Sump pumps
  - Exit lighting
  - Telephones
- \* Tunnel access security
- \* Regularly scheduled walk-throughs (monthly)

# Ring Status

PEP VACUUM SYSTEM VENTING STATUS (COMPLETE)						
REGION		4-Feb	11-Feb	20-Feb	26-Feb	RGA
1	LER	VENTED				1 REMOVED
	HER	VENTED				
12	LER	VENTED				
	HER	all vented but RF cavity area	VENTED			
11	LER	VENTED				
	HER	VENTED				
10	LER	VENTED				
	HER	VENTED				
9	LER	VENTED				
	HER	VENTED				
8	LER	IN PROGRESS	VENTED			
	HER	IN PROGRESS	VENTED			
7	LER	VENTED				
	HER	VENTED				
6	LER		VENTED			
	HER		VENTED			
5	LER		IN PROGRESS	VENTED		
	HER		IN PROGRESS	VENTED		
4	LER			VENTED		1 REMOVED
	HER			VENTED		
3	LER			VENTED		1 REMOVED
	HER			VENTED		
2B STRAIGHT	LER			VENTED		1 REMOVED
	HER			VENTED		
IR2 RAFTS	LER			VENTED		
	HER			VENTED		
2A STRAIGHT	LER	VENTED				1 REMOVED
	HER			VENTED		

**During the month of February, both rings have been carefully (a section at a time) vented to atmospheric pressure with dry N2**

## Getting to MMS

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- \* Power supplies all locked off ✓
  
- \* Vacuum systems vented and all pumps turned off ✓
  
- \* Water systems **Ready to start**
  - Magnet coils drained
  - Vacuum chambers drained
  - RF systems drained
  - Water pumps off



# Organization

---

**J. Seeman  
M. Sullivan  
physicists**

**ES&H  
C. Ferguson**

**Engineering  
D. Kharakh  
S. Metcalf  
S. DeBarger  
B. Smith**

**Area manager  
K. Burrows  
T. Galetto**

**Inventory  
K. Burrows**

**RP  
S. Rokni  
J. Vollaire  
O. Legeti  
A. Sabourov**

# Budget

Fiscal Year	BABAR		PEP-II				
	D&D	Storage building	MMS	D&D planning & PED	D&D Project	Storage building	PEP-II D&D Total
2008	400						0
2009	3,966		1,913	566			0
2010	4,595		1,370	1,183			0
2011	4,009		1,030	1,600			0
2012	2,151	800		2,000	2,400	6,000	8,400
2013		1,000			10,000	6,200	16,200
2014					13,500		13,500
2015					6,500		6,500
<b>Total</b>	<b>15,121</b>	<b>1,800</b>	<b>4,313</b>	<b>5,349</b>	<b>32,400</b>	<b>12,200</b>	<b>44,600</b>

## Summary

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- \* PEP-II tunnel is in excellent shape
- \* The hardware has been maintained in essentially running condition
- \* We have vented the vacuum systems
- \* We are ready to proceed with draining the water from the magnets and chambers as manpower becomes available
- \* We plan to finish this in the next few months
- \* This will put us into a minimum maintenance state with regularly scheduled inspections
- \* The basic tunnel systems, lighting, sump pumps, fire protection, etc. will remain intact and maintained