# LTU & Beam Dump Installation Readiness Review

## Magnet Power Supplies
## Phase 4 Installation

Antonio de Lira

Power Conversion
Solutions for Challenging Problems

# Magnet PS Phase 4 Installation – Agenda

- Installation Program
- Rack profiles
- Overall schedule
- Procurement status
- Rack readiness
- Installation Documentation
- Project Staff
- Open items
- Lessons learned - 2007 downtime experience


Antonio de Lira
delira@slac.stanford.edu

# Magnet PS – PH4 Installation Program

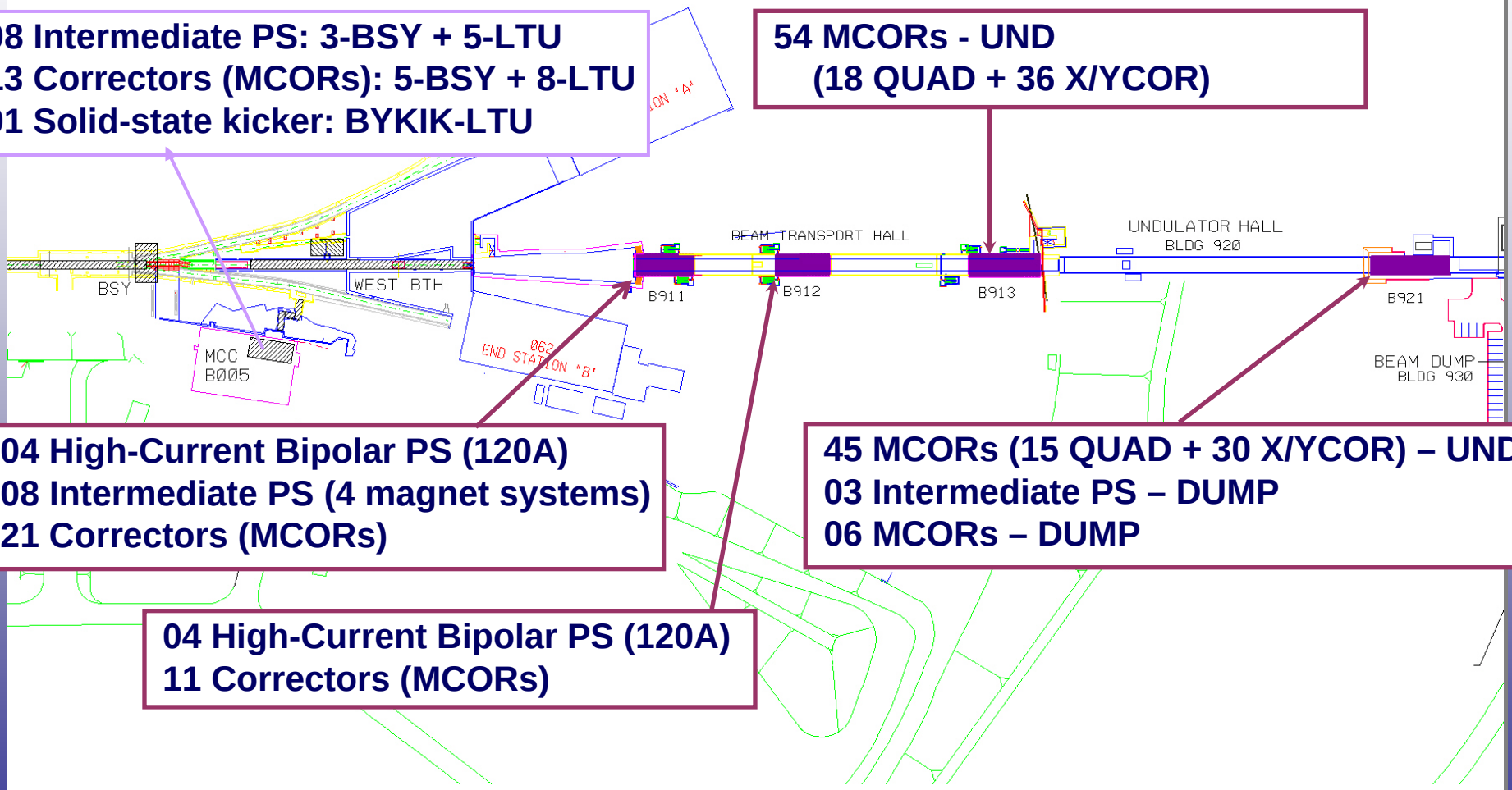
- B005 – BSY + LTU
  - 08 Intermediate PS: 3-BSY + 5-LTU
  - 13 Correctors (MCORs): 5-BSY + 8-LTU
  - 01 Solid-state kicker: BYKIK-LTU
- B911 - LTU
  - 04 High-Current Bipolar PS (120A)
  - 08 Intermediate PS (4 magnet systems)
  - 21 Correctors (MCORs)
- B912 – LTU
  - 04 High-Current Bipolar PS (120A)
  - 11 Correctors (MCORs)
- B913 – UND
  - 54 MCORs (18 QUAD + 36 X/YCOR)
- B921 – UND + DUMP
  - 45 MCORs (15 QUAD + 30 X/YCOR) – UND
  - 03 Intermediate PS – DUMP
  - 06 MCORs – DUMP


Antonio de Lira
delira@slac.stanford.edu

# Magnet PS - PH4 Installation Program

**08 Intermediate PS: 3-BSY + 5-LTU**
**13 Correctors (MCORs): 5-BSY + 8-LTU**
**01 Solid-state kicker: BYKIK-LTU**

**54 MCORs - UND**
**(18 QUAD + 36 X/YCOR)**



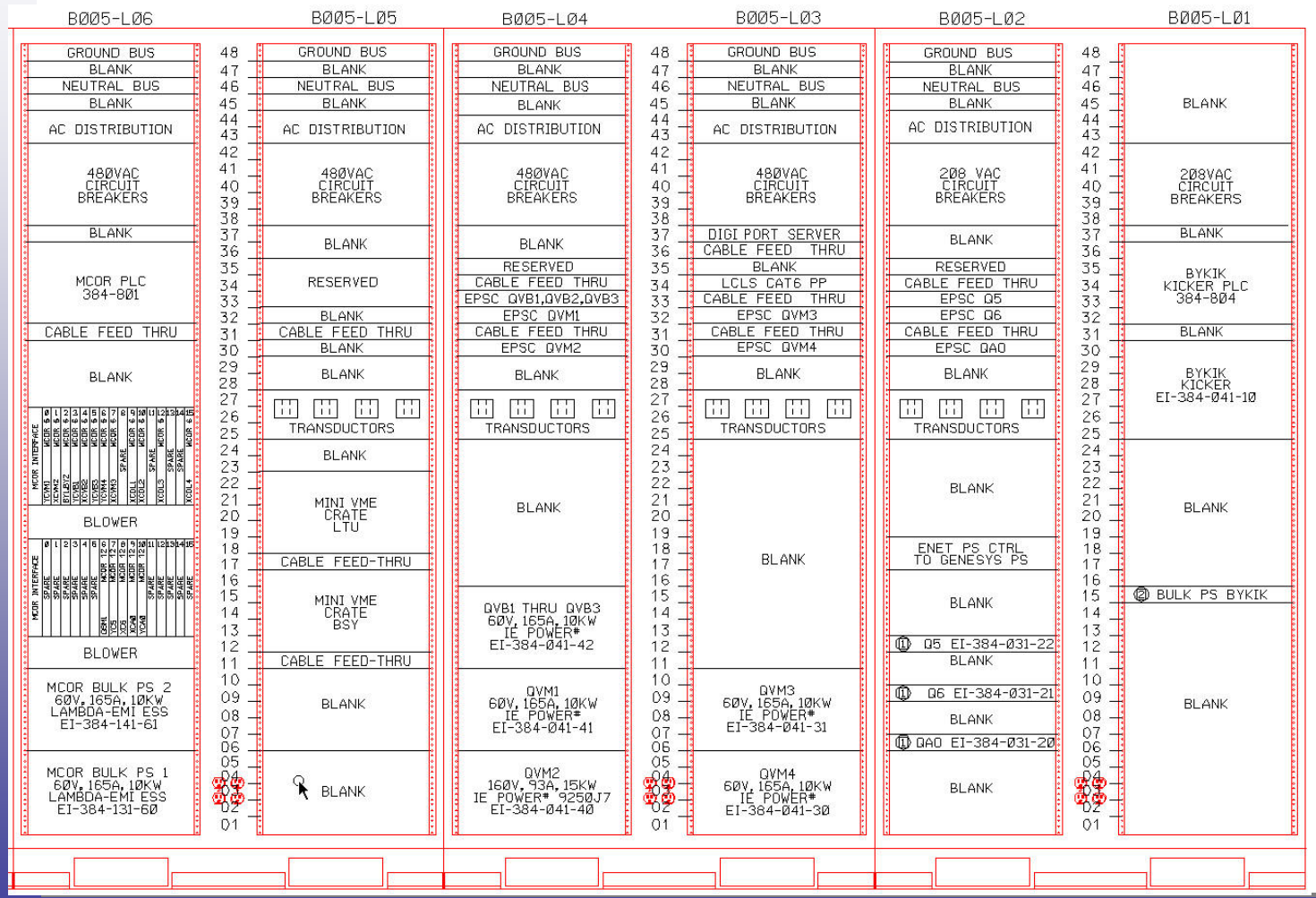

**04 High-Current Bipolar PS (120A)**
**08 Intermediate PS (4 magnet systems)**
**21 Correctors (MCORs)**

**45 MCORs (15 QUAD + 30 X/YCOR) – UND**
**03 Intermediate PS – DUMP**
**06 MCORs – DUMP**

**04 High-Current Bipolar PS (120A)**
**11 Correctors (MCORs)**


Antonio de Lira
delira@slac.stanford.edu

# Magnet PS Installation Program – B005



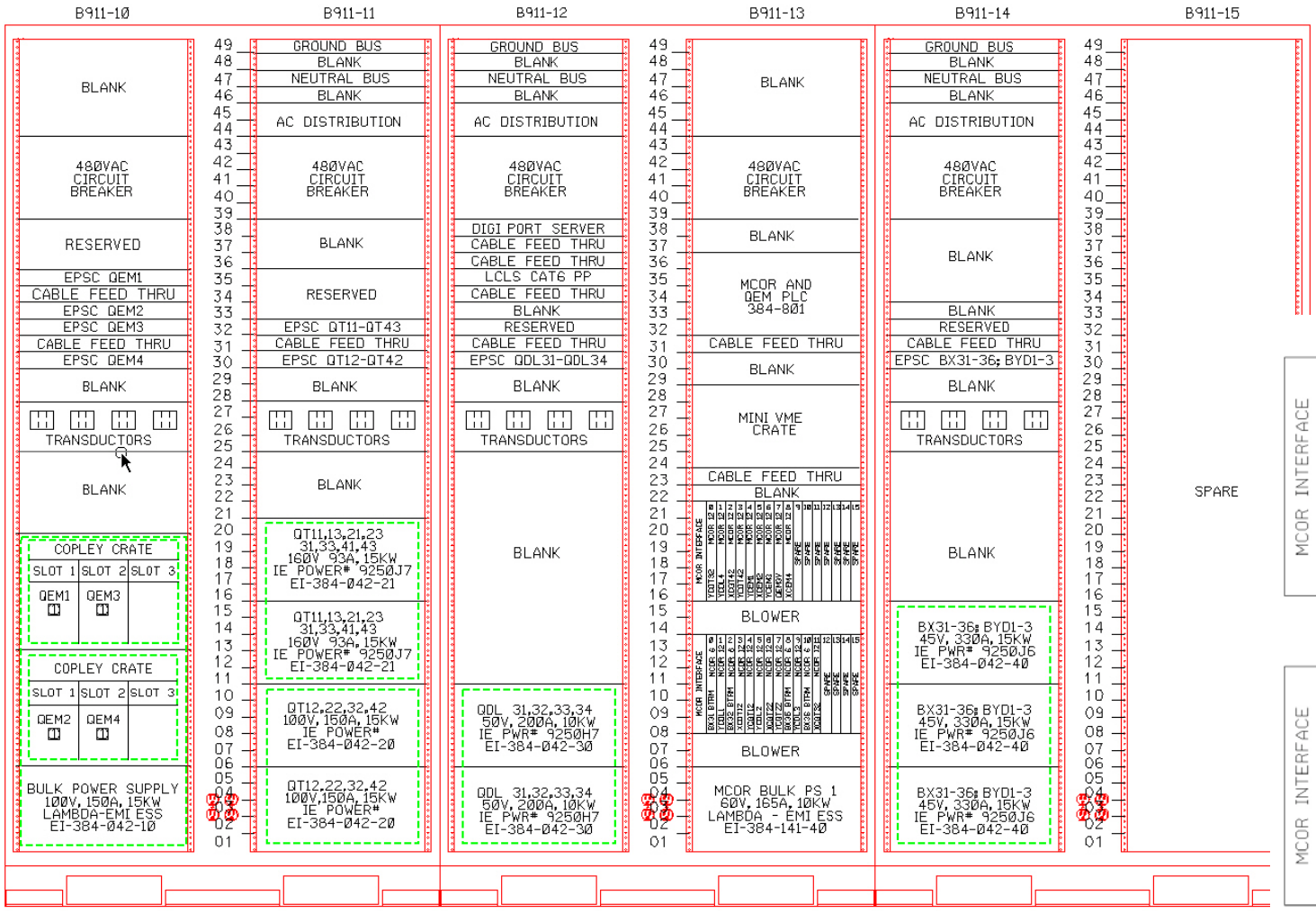

08 Intermediate
- 3 - BSY
- 5 – LTU

13 MCORs
- 5 - BSY
- 8 – LTU

01 Solid state kicker
- BYKIK-LTU


Antonio de Lira
delira@slac.stanford.edu

# Magnet PS Installation Program – B911




- 04 High-Curr Bipolar
- 08 Intermediate
- 21 MCORs

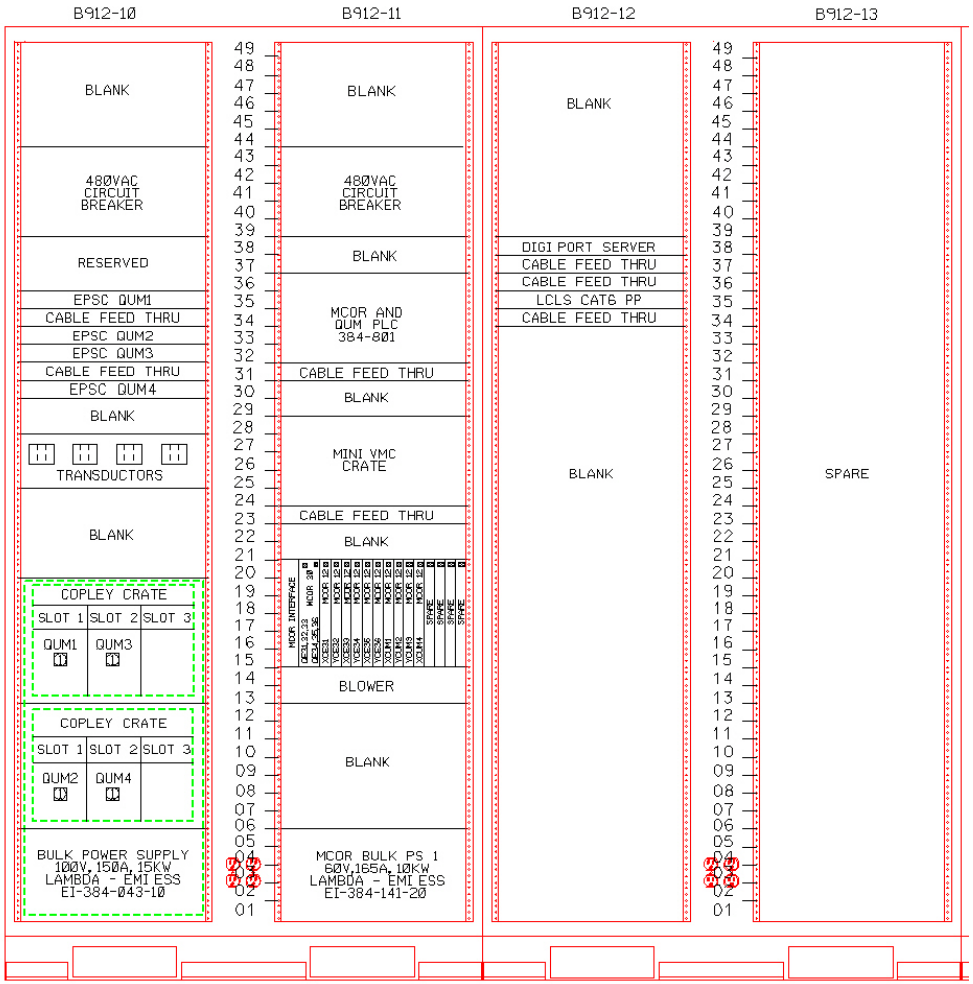
B911-13

| MCOR INTERFACE | MCOR 12 Ø | MCOR 12 1 | MCOR 12 2 | MCOR 12 3 | MCOR 12 4 | MCOR 12 5 | MCOR 12 6 | MCOR 12 7 | MCOR 12 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YCQT32 | YCDL4 | XCQT42 | YCQT42 | YCEM1 | XCEM2 | YCEM3 | QEM3V | XCEM4 | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE |

| MCOR INTERFACE | MCOR 6 Ø | MCOR 12 1 | MCOR 6 2 | MCOR 12 3 | MCOR 12 4 | MCOR 12 5 | MCOR 12 6 | MCOR 12 7 | MCOR 6 8 | MCOR 12 9 | MCOR 6 10 | MCOR 12 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BX31 BTRM | YCDL1 | BX32 BTRM | XCQT12 | YCQT12 | YCDL2 | XCQT22 | YCQT22 | BX35 BTRM | YCDL3 | BX36 BTRM | XCQT32 | SPARE | SPARE | SPARE | SPARE | SPARE |


Antonio de Lira
delira@slac.stanford.edu

# Magnet PS Installation Program – B912



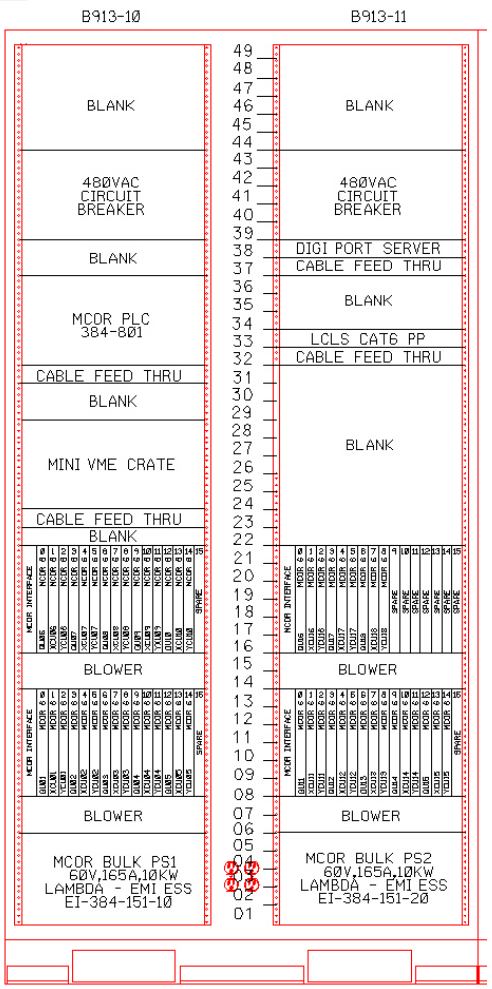

04 High-Curr Bipolar

11 MCORs

B912-11

| MCOR INTERFACE | 0 1 |
|---|---|
| QE31,32,33 QE34,35,36 | MCOR 30 |
| XCE31 | MCOR 12 2 |
| YCE32 | MCOR 12 3 |
| XCE33 | MCOR 12 4 |
| YCE34 | MCOR 12 5 |
| XCE35 | MCOR 12 6 |
| YCE36 | MCOR 12 7 |
| XCUM1 | MCOR 12 8 |
| YCUM2 | MCOR 12 9 |
| YCUM3 | MCOR 12 10 |
| XCUM4 | MCOR 12 11 |
| SPARE | 12 |
| SPARE | 13 |
| SPARE | 14 |
| SPARE | 15 |

# Magnet PS Installation Program – B913




54 MCORs

B913-10

UND1

| MCOR INTERFACE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCOR 6 | QU06 | XCU06 | YCU06 | QU07 | XCU07 | YCU07 | QU08 | XCU08 | YCU08 | QU09 | XCU09 | YCU09 | QU10 | XCU10 | YCU10 | SPARE |

UND1

| MCOR INTERFACE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCOR 6 | QU01 | XCU01 | YCU01 | QU02 | XCU02 | YCU02 | QU03 | XCU03 | YCU03 | QU04 | XCU04 | YCU04 | QU05 | XCU05 | YCU05 | SPARE |

B913-11

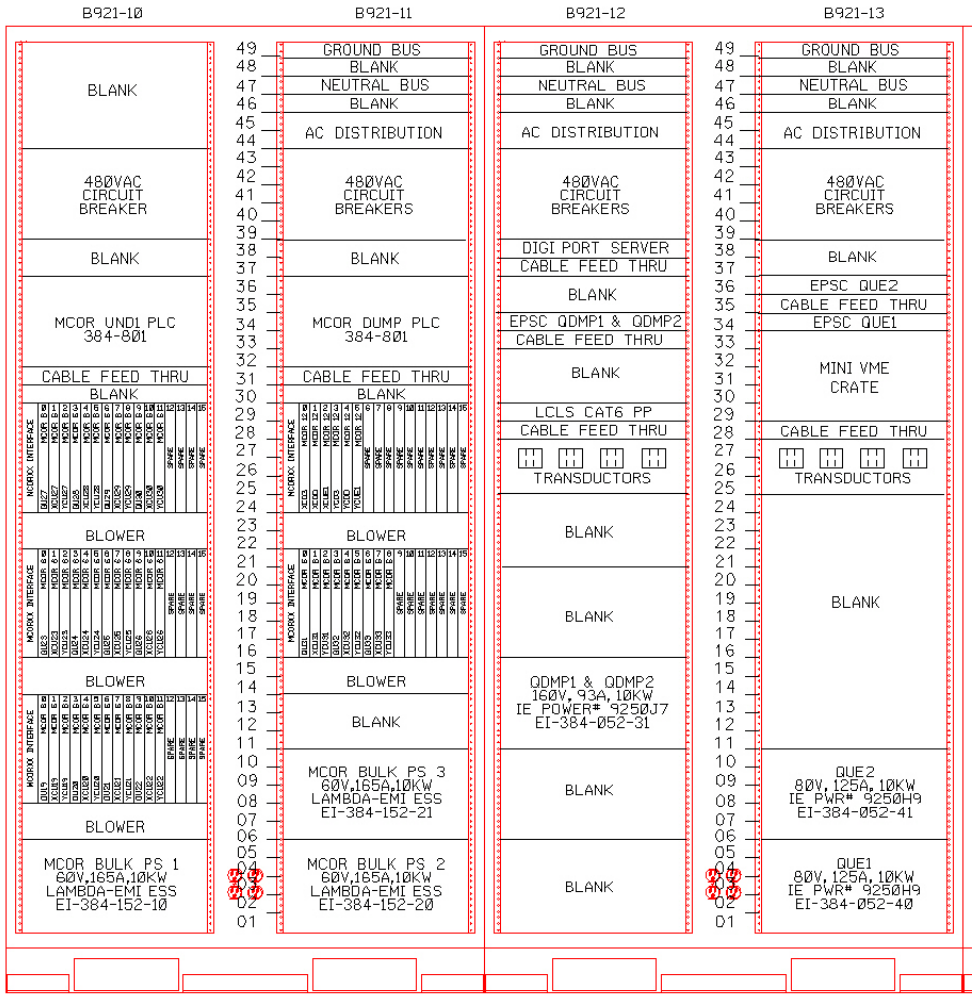
UND1

| MCOR INTERFACE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCOR 6 | QU16 | XCU16 | YCU16 | QU17 | XCU17 | YCU17 | QU18 | XCU18 | YCU18 | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPACE |

UND1

| MCOR INTERFACE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCOR 6 | QU11 | XCU11 | YCU11 | QU12 | XCU12 | YCU12 | QU13 | XCU13 | YCU13 | QU14 | XCU14 | YCU14 | QU15 | XCU15 | YCU15 | SPARE |

# Magnet PS Installation Program – B921




03 Intermediate
45 MCORs – UND
06 MCORs - DUMP

B921-10

UND1

| MCORXX INTERFACE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MCOR 6 | | | | | | | | | | | | SPARE | | | |
| QU27 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU27 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU27 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU28 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU28 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU28 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU29 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU29 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU29 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU30 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU30 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU30 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |

B921-11

DUMP

| MCORXX INTERFACE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MCOR 12 | | | | | | | | | | | | | | | |
| YCUE1 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE |
| XCUE1 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE |
| YCD3 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE |
| XCD3 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE |
| YCDD | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE |
| XCDD | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | MCOR 12 | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE | SPARE |

UND1

| MCORXX INTERFACE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MCOR 6 | | | | | | | | | | | | SPARE | | | |
| QU23 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU23 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU23 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU24 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU24 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU24 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU25 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU25 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU25 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU26 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU26 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU26 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |

UND1

| MCORXX INTERFACE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MCOR 6 | | | | | | | | | | | | SPARE | | | |
| QU31 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU31 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU31 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU32 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU32 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU32 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU33 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU33 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU33 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |

UND1

| MCORXX INTERFACE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MCOR 6 | | | | | | | | | | | | SPARE | | | |
| QU19 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU19 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU19 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU20 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU20 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU20 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU21 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU21 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU21 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| QU22 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| XCU22 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |
| YCU22 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | MCOR 6 | SPARE | SPARE | SPARE | SPARE |

# Overall Schedule – Cable Plant

- Magnet PS Cable Plant (Phase 4)
  - Ponce Rodriguez – This review
    - 01/30/08 Site Visit
    - 02/19/08 Bid Opening
    - 03/04/08 Award
    - 04/01/08 Installation Start
    - 10/31/08 Installation Complete

# Overall Schedule – AC Power Installation
# LCLS Facilities – Khalid Ahmed

- B005 – 100% done
- B911, B912, B913, B921
  - Initial Design – 100% done
  - Request for Procurements
    - DOE
    - Walk-through – April
    - Award – April/May
    - Estimate $ 500k
  - Construction starts in May

# Overall Schedule – Related Systems

- LCW Systems
  - Phil Cutino – This review
- Magnet PS Control Systems
  - Kristi Luchini – This review

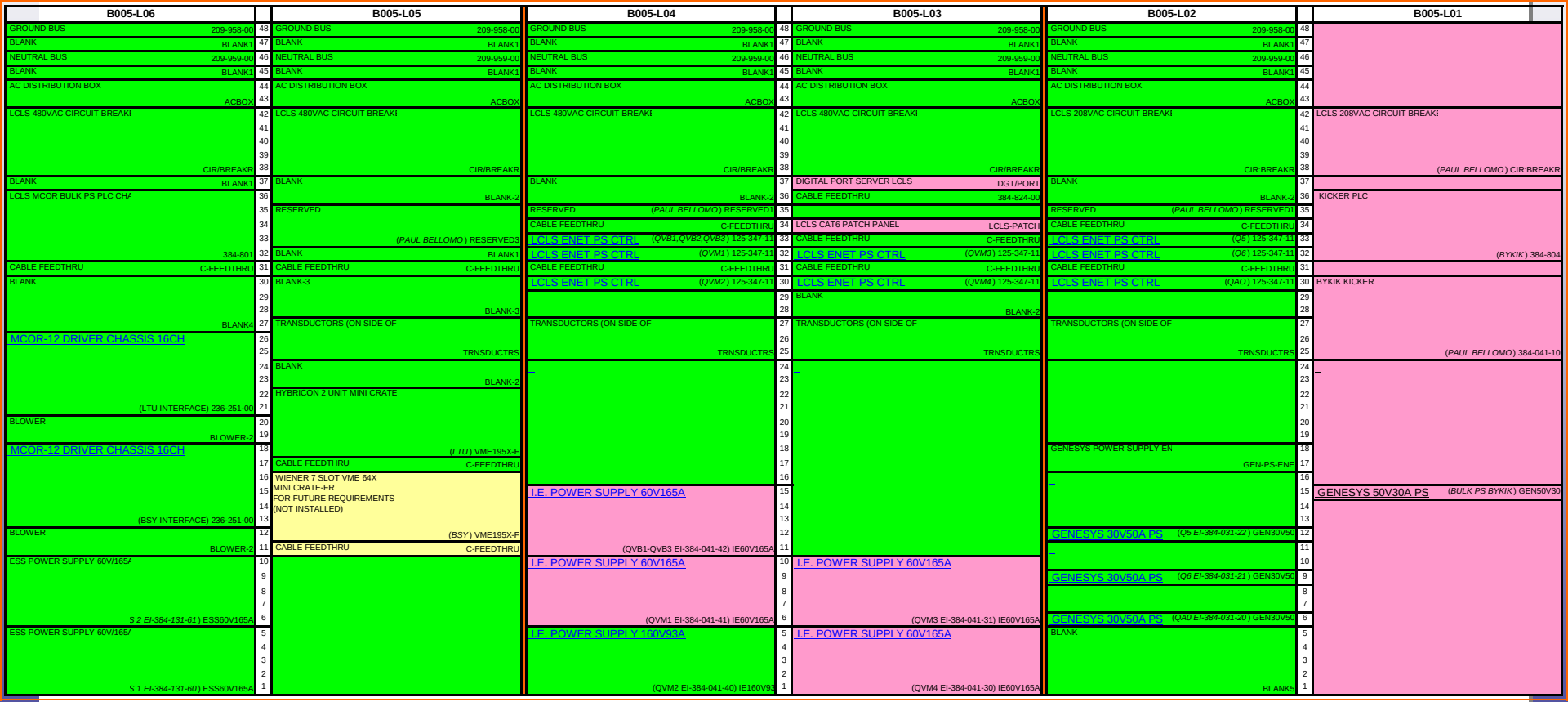
# Magnet PS Systems – Procurement Status

- Racks – 100% (received)
- Power supplies – 100%
  - 15 intermediate PS to be received by March/08
  - 66 MCORs for UND correctors from PEP
- Intra-rack components – 100% (received)
- Cables : 100% ordered, some received already
- Lugs: 100% ordered, 90% on-hand

# Magnet PS Controls – Procurement Status

- VME Crates – 100% (received and installed)
- VME I/O – 100% (received and installed)
- PLC I/O and Crates – 100% (received, 99% installed)
- MCOR-VME Intra-rack cables – 100% (received, installed)
- Ethernet Intra-rack cables – 100% (received)
- Terminal Server – 100% (received, installed)

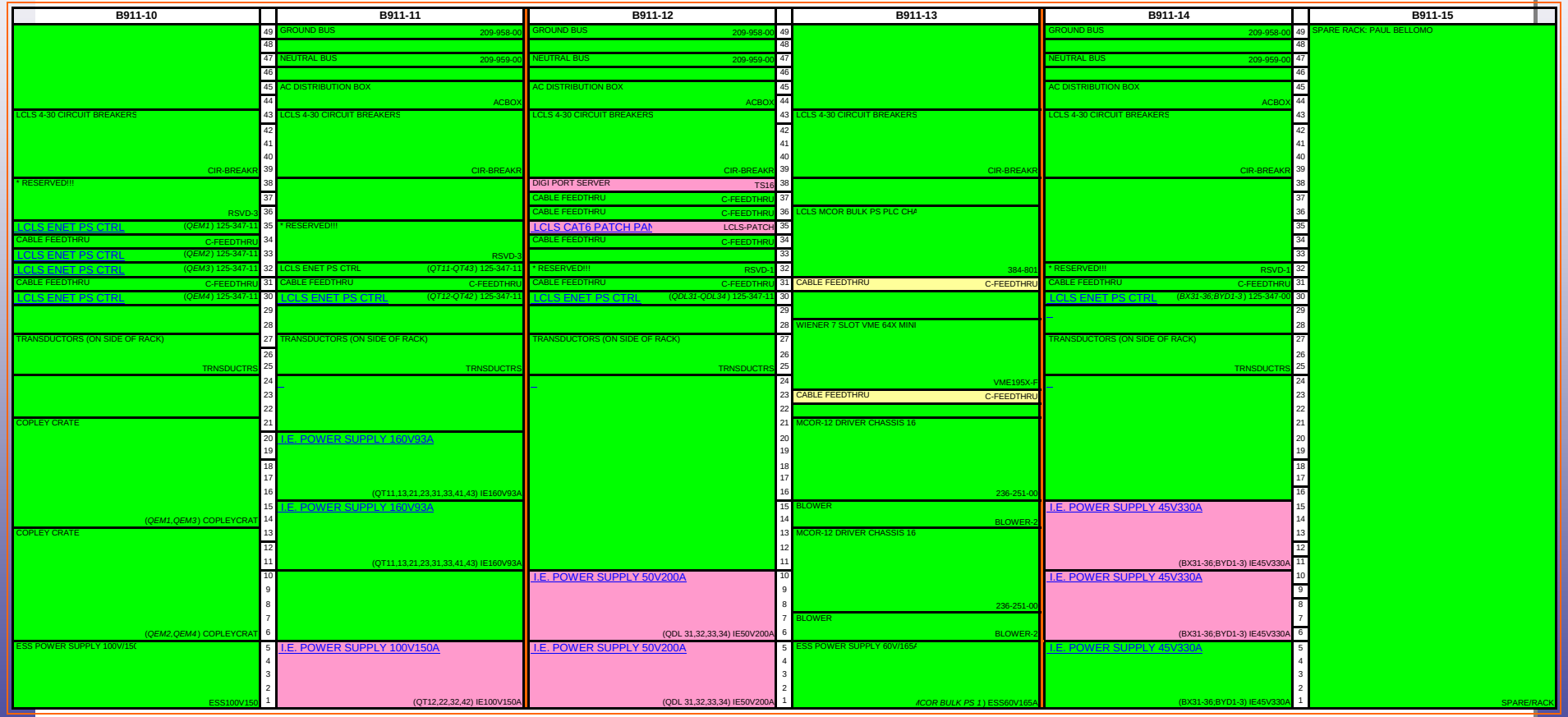
# Equipment Status / Rack Readiness – B005



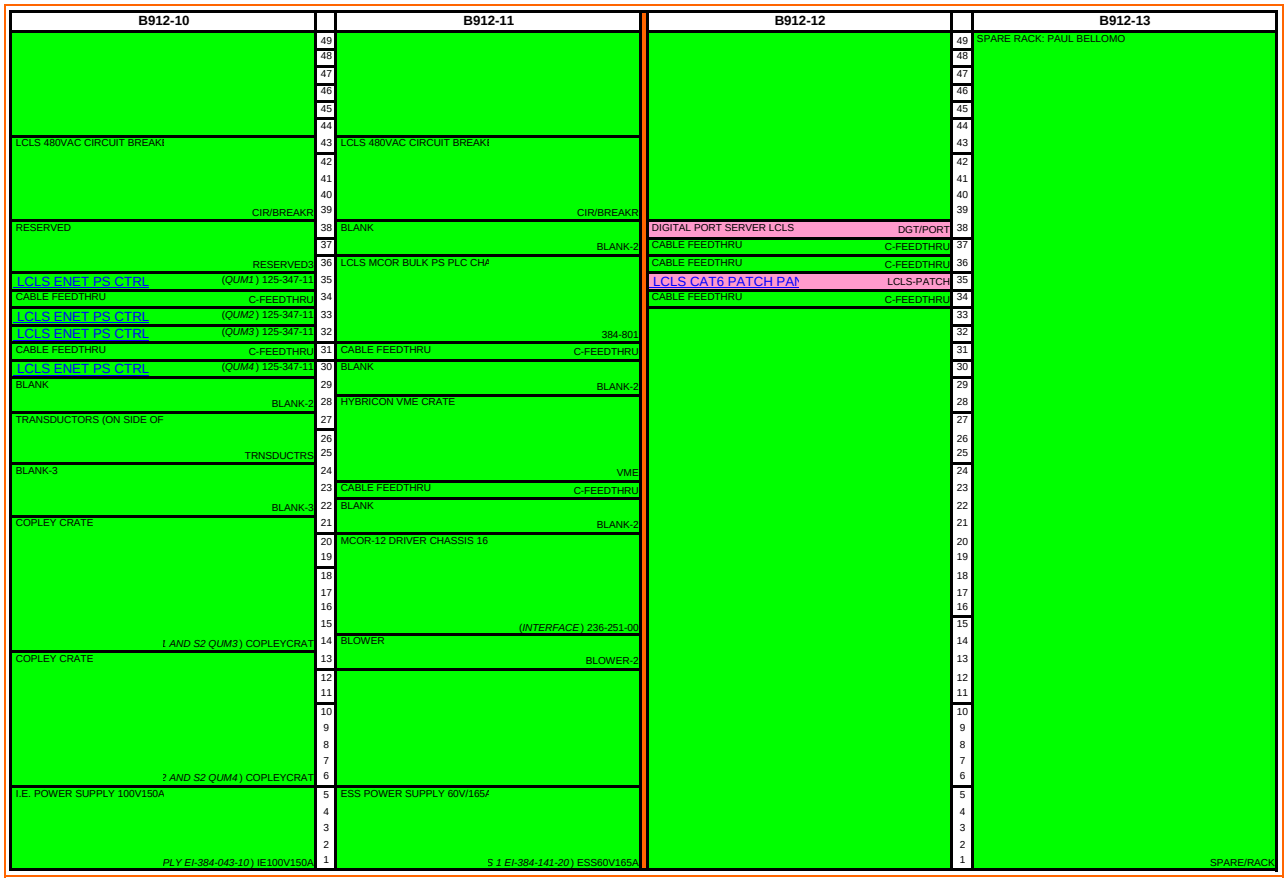


Antonio de Lira
delira@slac.stanford.edu

# Equipment Status / Rack Readiness – B911



# Equipment Status / Rack Readiness – B912





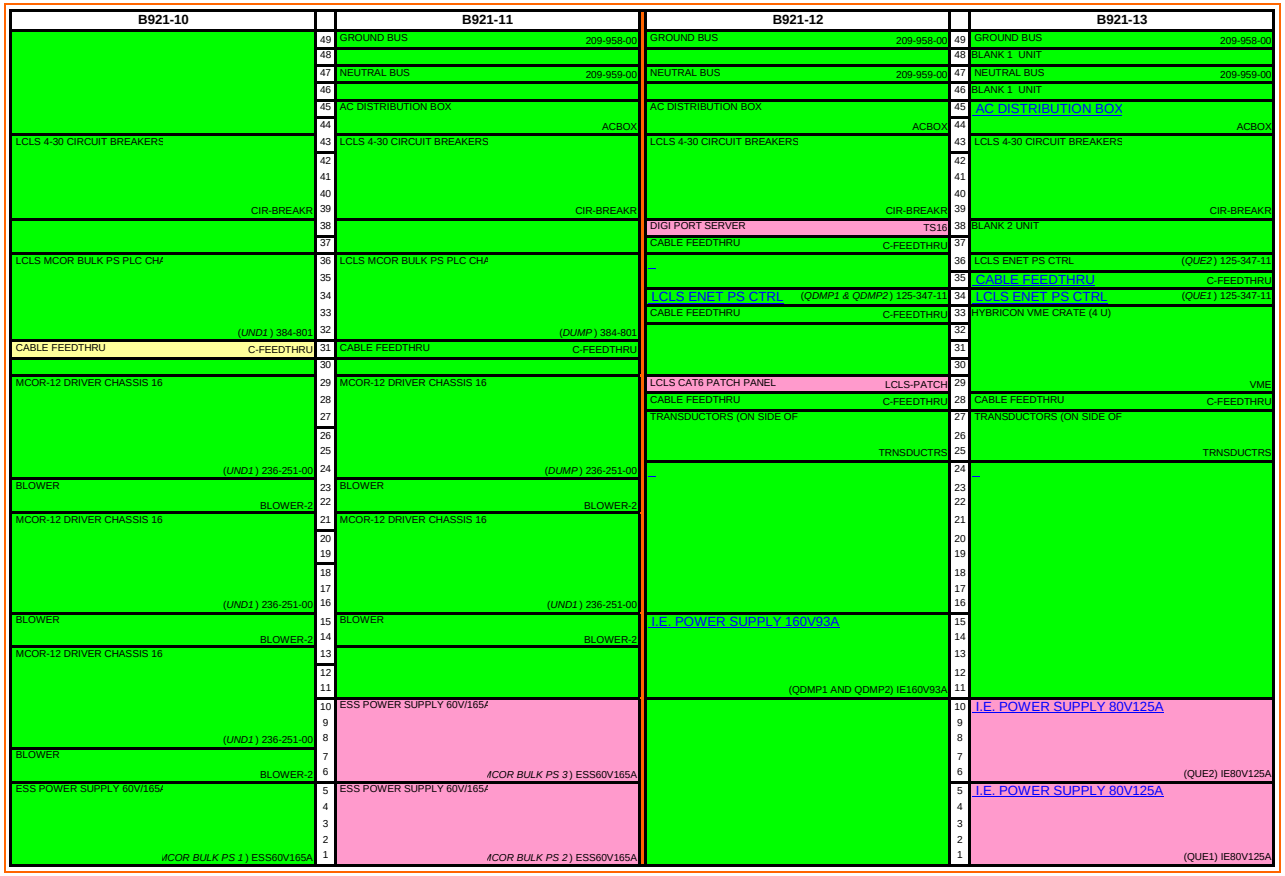
Antonio de Lira
delira@slac.stanford.edu

# Equipment Status / Rack Readiness – B913

| B913-10 | | B913-11 |
|---|---|---|
| BLANK 5 UNIT | 49 48 47 46 45 44 | |
| LCLS 480VAC CIRCUIT BREAKI CIR/BREAKR | 43 42 41 40 39 | LCLS 480VAC CIRCUIT BREAK CIR/BREAKR |
| BLANK BLANK-2 | 38 37 | DIGITAL PORT SERVER LCLS DGT/PORT<br>CABLE FEEDTHRU 384-824-01 |
| LCLS MCOR BULK PS PLC CHA 384-801 | 36 35 34 33 32 | LCLS CAT6 PATCH PANEL LCLS-PATCH<br>CABLE FEEDTHRU 384-824-01 |
| CABLE FEEDTHRU 384-824-01 | 31 | |
| BLANK 2 UNIT | 30 29 | |
| HYBRICON 4UNIT VME VME | 28 27 26 25 24 | |
| CABLE FEEDTHRU 384-824-01 | 23 | |
| BLANK 1 UNIT | 22 | |
| MCOR-12 DRIVER CHASSIS 16CH (UND1 INTERFACE) 236-251-00 | 21 20 19 18 17 16 | MCOR-12 DRIVER CHASSIS 16CH (UND1 INTERFACE) 236-251-00 |
| BLOWER BLOWER-2 | 15 14 | BLOWER BLOWER-2 |
| MCOR-12 DRIVER CHASSIS 16CH (UND1 INTERFACE) 236-251-00 | 13 12 11 10 9 8 | MCOR-12 DRIVER CHASSIS 16 (*UND1 INTERFACE*) 236-251-00 |
| BLOWER BLOWER-2 | 7 6 | BLOWER BLOWER-2 |
| ESS POWER SUPPLY 60V/165A (MCOR BULK PS1 EI-384-151-10) ESS60V165A | 5 4 3 2 1 | ESS POWER SUPPLY 60V/165A (MCOR BULK PS2 EI-384-151-20) ESS60V165A |


Antonio de Lira
*delira@slac.stanford.edu*

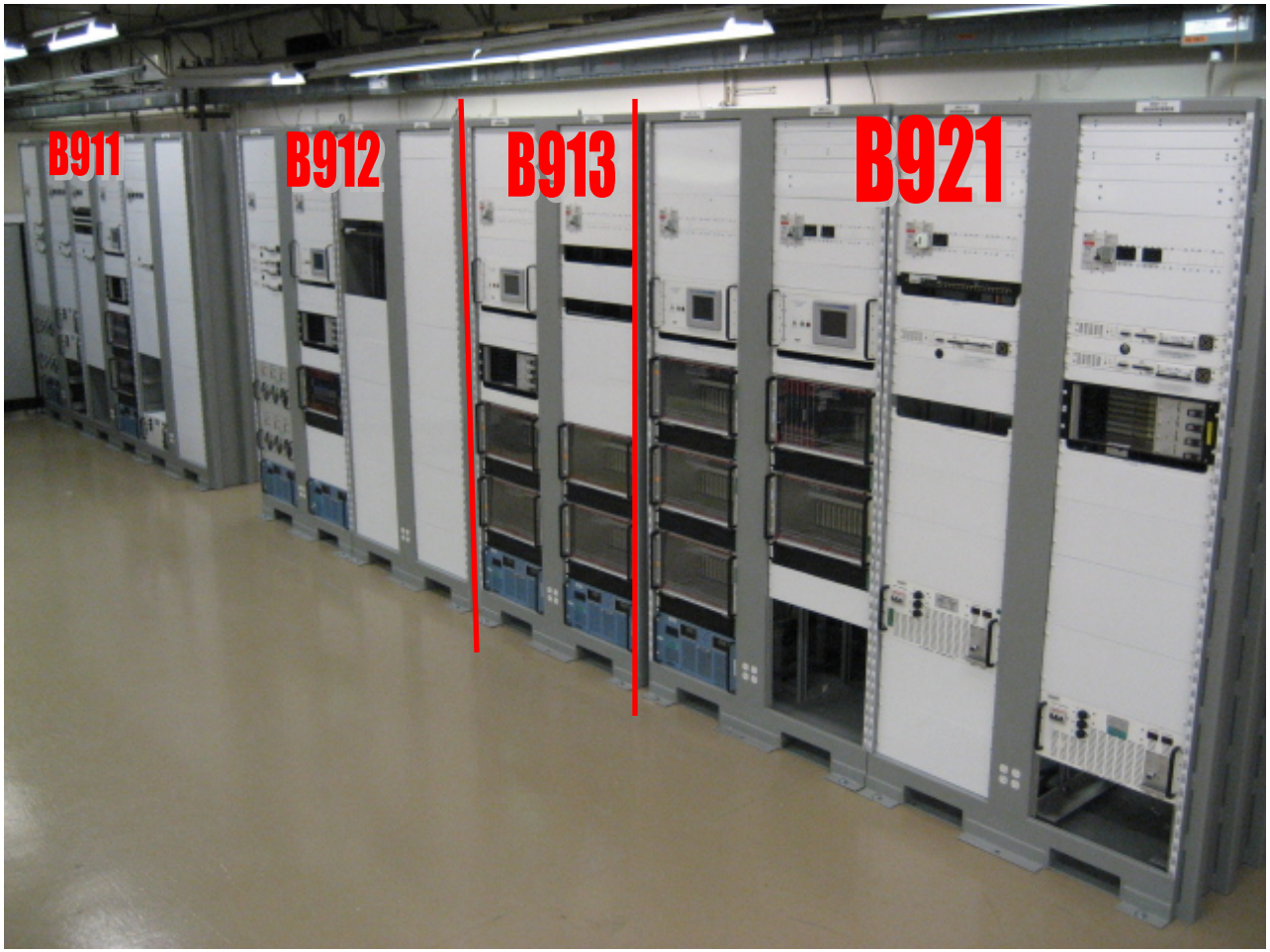
# Equipment Status / Rack Readiness – B921





Antonio de Lira
delira@slac.stanford.edu

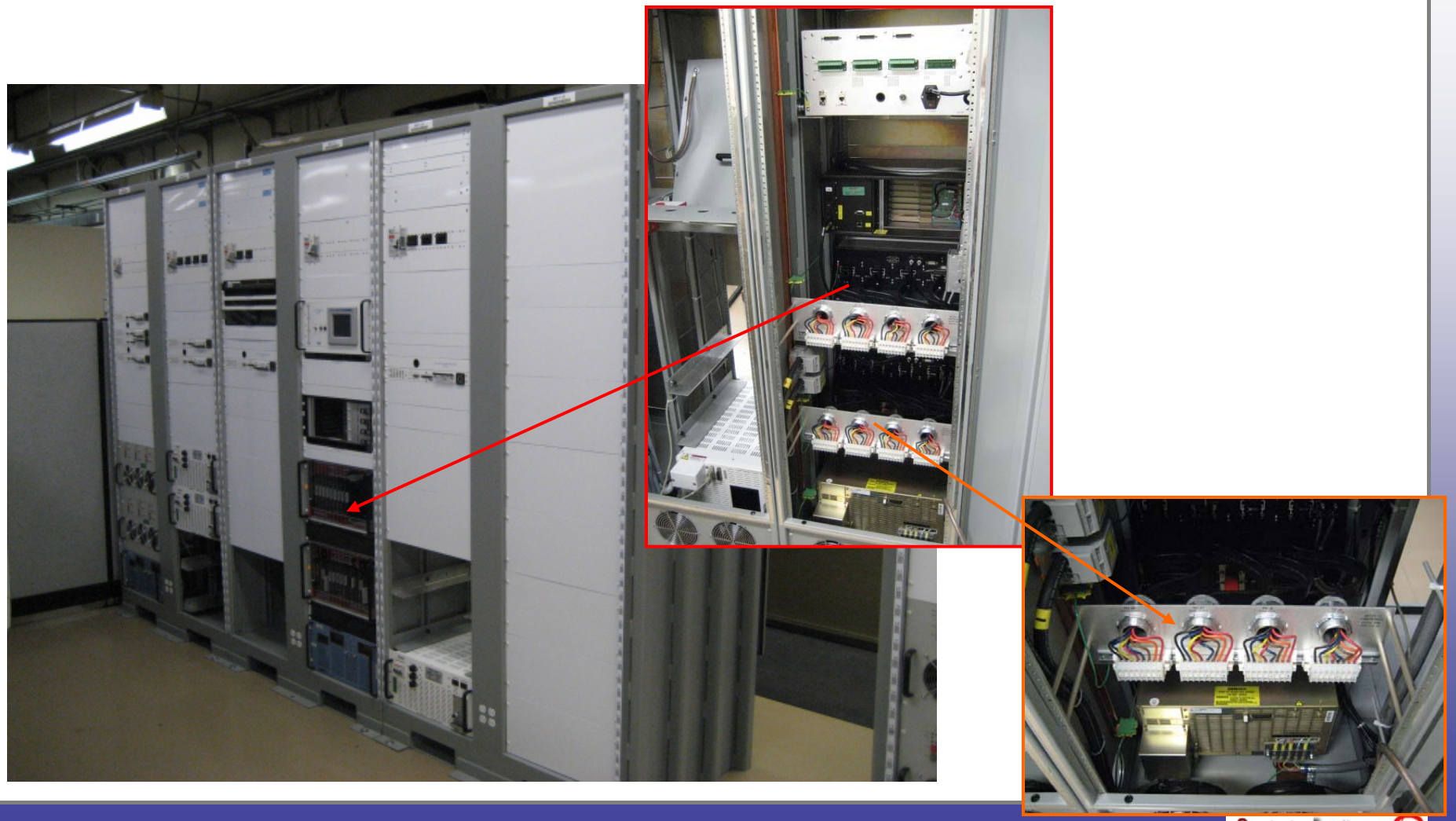
# Equipment Status / Rack Readiness
# B24 Staging Area





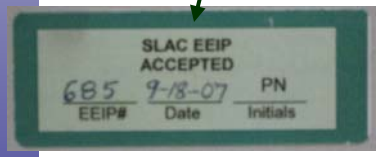
Antonio de Lira
delira@slac.stanford.edu

# Equipment Status / Rack Readiness – B911




Antonio de Lira
delira@slac.stanford.edu

# Equipment Status / Rack Readiness – B912





Antonio de Lira
delira@slac.stanford.edu

# Equipment Status / Rack Readiness – B921


Antonio de Lira
delira@slac.stanford.edu

# Installation Documentation

- Up-to-date Comprehensive LCLS PS List
  - Inputs:
    - R_mag, I_MAX, Z_mag
  - Outputs:
    - PS requirements, Cable sizing
- Rack profiles – 100%
- CAPTAR – 100%
- Electrical Interconnect (EI) – 100%

# Magnet PS Installation - Safety

- Safety oversight (who's responsible?)
  - Antonio de Lira
  - Clay Corvin - PCD Electrical Safety Officer
  - LCLS
    - Richard M. Boyce – Project Office
    - Jim Turner – Magnet Connection Checkout

# Magnet PS Installation - Safety

- Procedures (which ones are in place?)
  - Initial lockout by LCLS Project Office & PCD
  - Testing procedural
    - To release locks from LCLS Project Office
- Engineering notes & approvals – ESDs
  - Intermediate PS
  - Pulsed systems
- Safety process, reviews and approvals
  - Electrical lock-and-tag procedures (ELP)
- Work authorizations
  - Electrical Work Plan
    - Non-routine work – Hi potting magnets and their cabling


Antonio de Lira
delira@slac.stanford.edu

# Magnet PS Installation - Safety

- Progress/status and control methods for all safety hazards
- Same model from LCLS injector + BC2 installation
  - Initial lockout by LCLS Project Office + PCD
  - Procedures by LCLS Project Office + PCD to release power
  - Electrical lock-and-tag procedures (ELP)
  - Magnet covers
  - Magnet cores grounded
  - Certification stickers

# Project Staff – Key Personnel

- Magnet PS System Management
  - Antonio de Lira
- PCD Electrical Safety
  - Clay Corvin
- Coordination
  - John Hugyik
  - David Misaki
- PS System Testing
  - Antonio de Lira
  - Briant Lam
  - JJ Lipari
- EPSC & Controls Interface
  - Dave MacNair
- Technical Support
  - Phillip Nguyen
  - PEM Staff
  - PCD Cable Shop
- Cable Plan
  - Ponce Rodriguez
- Controls Integration
  - Kristi Luchini
- Networking
  - Terri Lahey
- Pulsed Systems
  - Tony Beukers
  - John Krzaszczak
- Equipment Inspection (EEIP)
  - Phillip Nguyen
- Magnet - PS Cable Connection
  - Davis-Bacon (Ponce)
  - PCD Cable Shop
- Magnet Mech Installation
  - Carl Rago
  - MFD Staff

# Open Items – Under Design

- 66 MCOR2s for UND correctors
- BCS interface to BX31-36 + BYD1-3 System
- MPS interface to BYKIK


Antonio de Lira
delira@slac.stanford.edu

# 2007 Downtime Experience -

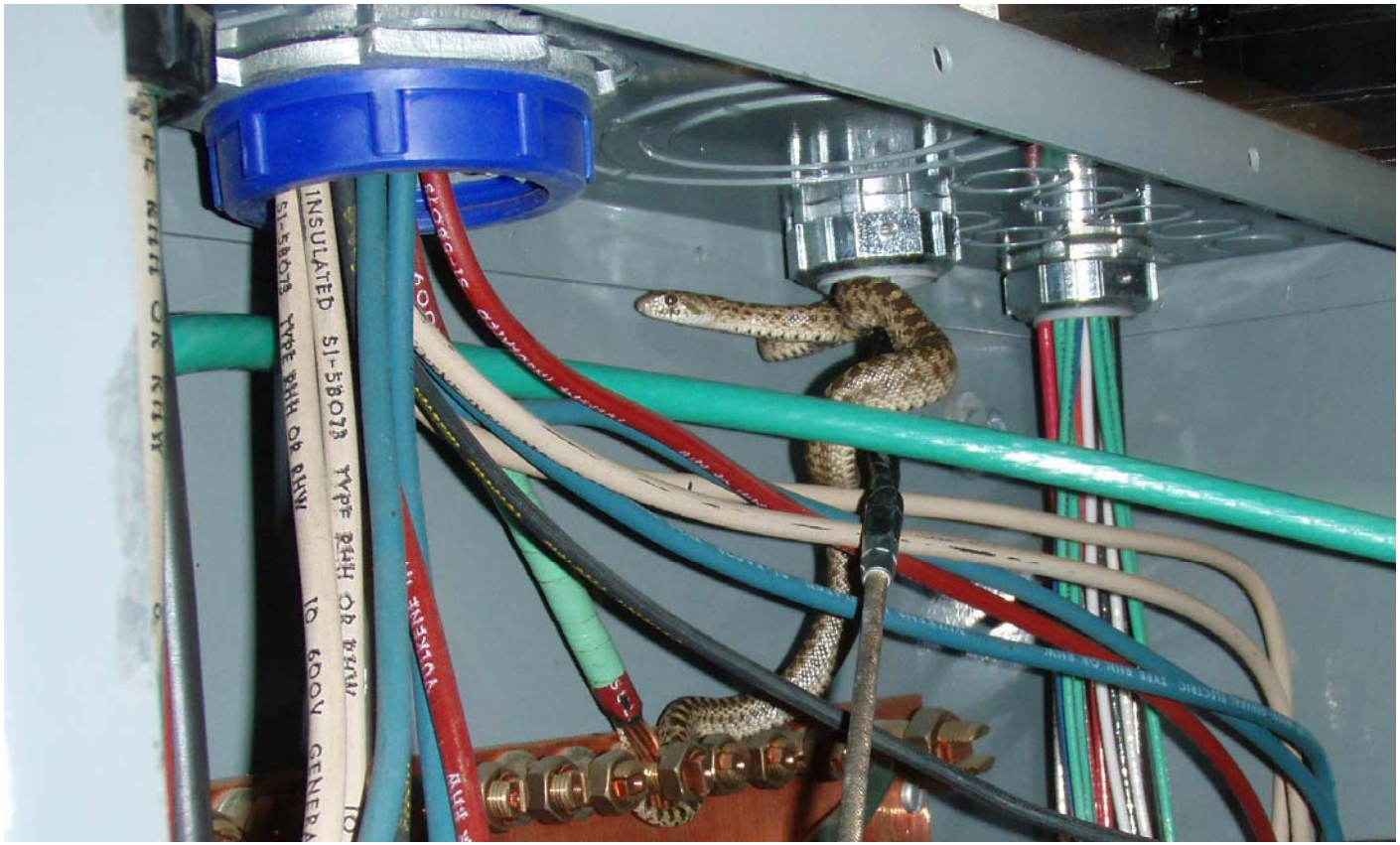
- Lockdown procedures as a good model to secure hazards during installation
- Pre-testing PS systems in staging area

# 2007 Downtime Experience -

- Magnet - PS connection
  - Mismatches: magnet terminals – cable lugs
  - No GND-ing points previously assigned
  - No covers for magnet terminals
- Mismatch: PS rating – magnet requirements
- Magnets not on-time for connection
- Conflicting schedules
- Network not on-time (including wireless)
- Timing cables not on-time (BXKIK)

# 2007 Downtime Experience -

- Snakes on a Plan





Antonio de Lira
delira@slac.stanford.edu