PS Commissioning: LCLS Injector + Sec 21

- List of PS
- Commissioning Plan
- List of Procedures
- Checklists
- Schedule

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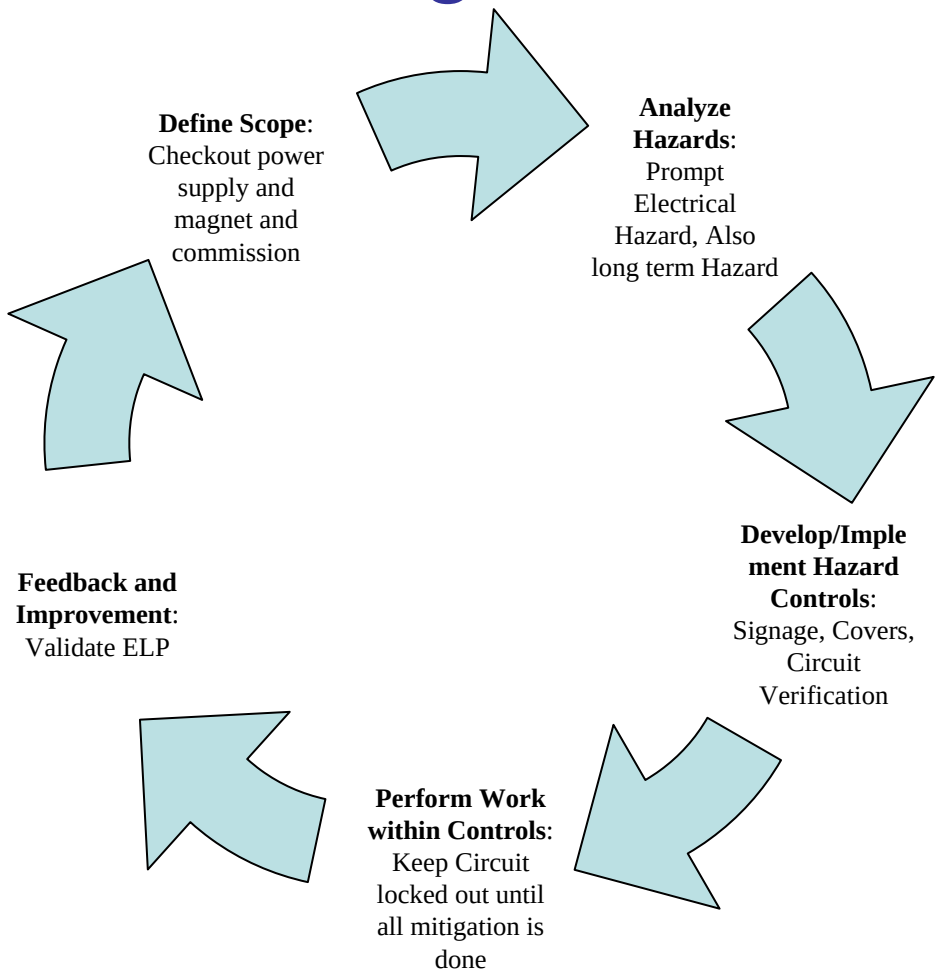
List of PS per LCLS Area

PS Systems	GUN	GSPEC	INJ	ISPEC	DL1	L1	BC1	L2	ALL	TOTAL # of PS
Intermediate	1		3		1		1			6
MCOR Bulk									3	3
MCOR6	3						5	4		12
MCOR12	5	6	25	6	7	8	11			68
MCOR30	1		1							2
SCOR6						2	2	8		12
EMHP							0.25	0.75		1
Power Ten							2	6		8
# of PS	**10**	**6**	**29**	**6**	**8**	**10**	**21.25**	**18.75**	**3**	**112**

Commissioning Plan and ISMS



by J. Turner

Commissioning Plan

#	Task	LCLS	PCD	Notes
0	Initial condition: magnet power cables disconnected from PS		x	
1	Lock and tag	x	x	
2	Inspection of the magnets	x	x	
3	Secure the area with caution tape		x	
4	Remove magnet terminal covers	x		If this is the case
5	Check cable tags		x	
6	Verify the magnet/PS are one circuit	x	x	With a low power PS: < 50 V, < 10 A
7	Check tightness of cable connections to magnet		x	
8	Put covers back on the magnets	x	x	
9	Hi pot cables		x	Follow the EWP procedures for hi pot
10	Install magnet stickers	x		
11	Complete PS system's cables connections		x	
12	Energize PS		x	If all the PS in the rack have been checked
13	Validate the ELPs		x	Follow the steps from the ELP
14	Check the ground fault detection		x	Follow procedures
15	Tune the PS system		x	Follow procedures for tuning the PS system
16	Test the PS system in remote mode	x	x	When SCP/EPICS becomes available

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Commissioning Plan

#	Task	LCLS	PCD	Notes
0	**Initial condition: magnet power cables disconnected from PS**		x	
1	**Lock and tag**	x	x	
1.1	Master circuit breakers to the PS in the rack(s) under test	x	x	
1.2	Other sources of hazards	x	x	Such as RF, modulators, vacuum
2	**Inspection of the magnets**	x	x	
2.1	Check tightness of magnet core ground connection		x	
2.2	Check tightness of magnet LCW connections	x		
2.3	Check for water leaks	x	x	If LCW is available
3	**Secure the area with caution tape**		x	
3.1	PS racks back and front		x	
3.2	Magnets under test		x	
4	**Remove magnet terminal covers**	x		If this is the case
5	**Check cable tags**		x	
5.1	Check power cable tags - magnet side		x	
5.2	Check power cable tags - PS side		x	
5.3	Check klixon cable tags - magnet side		x	
5.4	Check klixon cable tags - PS side		x	

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Commissioning Plan

#	Task	LCLS	PCD	Notes
6	**Verify the magnet/PS are one circuit**	x	x	With a low power PS: < 50 V, < 10 A
6.1	Connect a lab PS to the magnet power cables		x	One PS system at a time
6.2	Check DCCTs polarity indications on local control board		x	
6.3	Check cable polarity at magnet's terminals		x	
6.4	Check magnet polarity	x		
7	**Check tightness of cable connections to magnet**		x	
7.1	Power cables		x	
7.2	Klixon cables		x	
8	**Put covers back on the magnets**	x	x	
	Check proper grounding of magnet covers	x	x	If metallic covers are used
9	**Hi pot cables**		x	Follow the EWP procedures for hi pot
9.1	Make sure magnet power cables are disconnected from their PS		x	One PS system at a time
9.2	Hi pot Power cables		x	
9.3	Klixon cables		x	
9.4	Sign off PS system check list		x	
10	**Install magnet stickers**	x		

Commissioning Plan

#	Task	LCLS	PCD	Notes
11	**Complete PS system's cables connections**		x	
11.1	Connect power cables to PS output terminals		x	
11.2	Reconnect klixon cable connector to EPSC		x	
11.3	Sign off PS system configuration control list		x	
12	**Energize PS**			If all the PS in the rack have been checked
12.1	Remove locks and tags from circuit breakers to the PS	x	x	
12.2	Test PS system in the local mode		x	
13	**Validate the ELPs**		x	Follow the steps from the ELP
14	**Check the ground fault detection**		x	Follow procedures
14.1	Connect a 10-ohm 10-W resistor from PS + output to ground		x	
14.2	Turn the PS ON on local control mode		x	
14.3	Slowly increase the PS output voltage unitl PS trips on GND FLT		x	
15	**Tune the PS system**		x	Follow procedures for tuning the PS system
16	**Test the PS system in remote mode**	x	x	When SCP/EPICS becomes available
16.1	Verify that addressing is correct	x	x	
16.2	Verify voltage and current compliance	x	x	
16.3	Check that all readbacks are functional	x	x	
16.4	Check klixon, water flow, GND FLT interlocks and display statuts	x	x	

Plans and Procedures

- PS System Commissioning Plan
- Transfer of Responsibility 480V
  - LCLS Project Office ↔ PCD
- EWP to Hi Pot Magnets + Cables
- ELPs
- Testing of Sec 21 Switchover
- PS System Commissioning
  - GND Fault Detection
  - Tuning of PS System

Checklists

- Magnet inspection *(LCLS)*
- Power and klixon cable tag checking
- DCCTs polarity
- Cable polarity at magnet terminals
- Magnet polarity checking *(LCLS)*
- Cable + magnet hi potting
- GND fault detection
- PS system tuning

Schedule

Task Name	Start	Finish
Installation		
Certify the 480V and 120V connections to LKG-01 trou LKG-06		Thu 12/01/06
Install conduit for signal cables between racks LKG-02 to LKG-03	Mon 12/04/06	Tue 12/19/06
Connect power cables to magnets	Mon 12/04/06	Tue 12/19/06
Connect klixon cables to magnets	Mon 12/04/06	Tue 12/19/06
Connect power cables to PS	Mon 12/04/06	Tue 12/19/06
Connect klixon cables to PS controllers	Mon 12/04/06	Tue 12/19/06
Ground the magnet cores	Mon 12/11/06	Tue 12/19/06
Intra-rack installation		
Finish intra-rack control wiring	Mon 12/11/06	Fri 12/15/06
Commissioning of PS Systems in the LINAC		
ISPEC	Mon 12/11/06	Fri 12/29/06
DL1	Mon 12/11/06	Fri 12/29/06
L1	Mon 12/11/06	Fri 12/29/06
BC1	Mon 12/11/06	Fri 12/29/06
L2	Mon 12/11/06	Fri 12/29/06
Commissioning of PS Systems in the LCLS Injector		
GUN	Thu 02/01/07	Thu 03/15/07
GSPEC	Thu 02/01/07	Thu 03/15/07
INJ	Mon 12/11/06	Thu 03/15/07