

# PS Commissioning: LCLS Injector + Sec 21

- List of PS
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## List of PS per LCLS Area

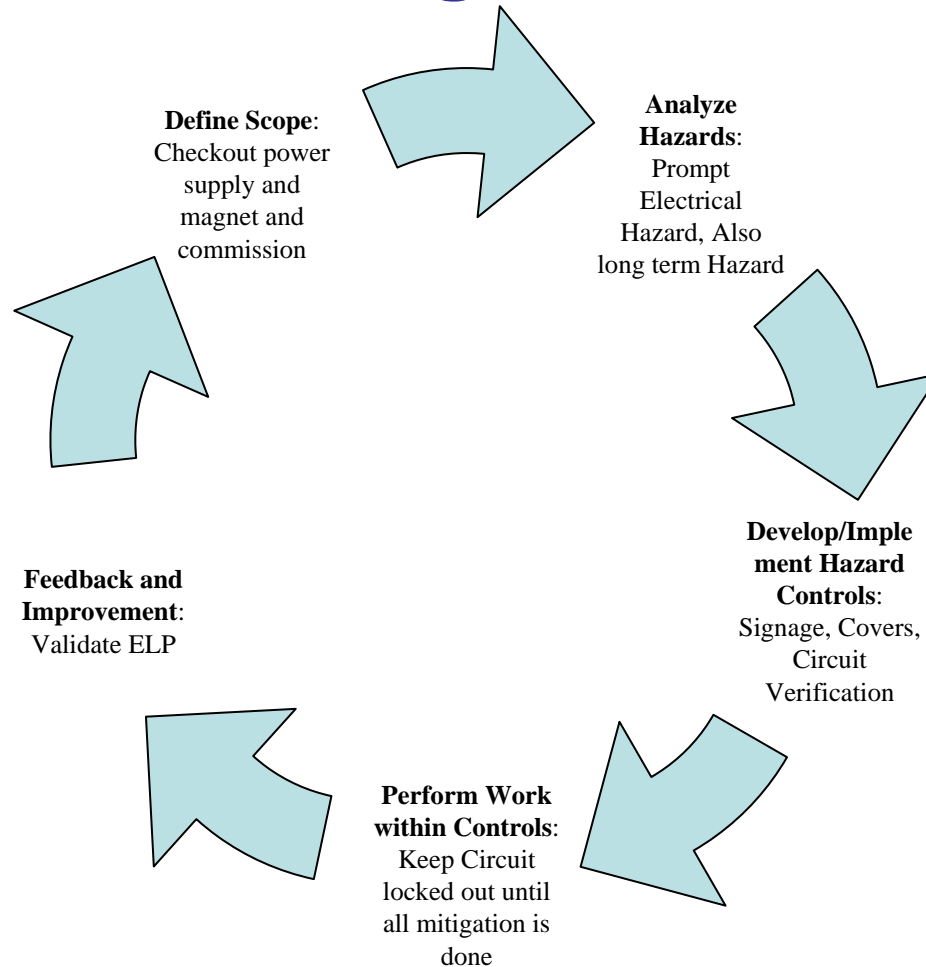
PS Systems	GUN	GSPEC	INJ	ISPEC	DL1	L1	BC1	L2	ALL	TOTAL # of PS
<i>Intermediate</i>	1		3		1		1			6
<i>MCOR Bulk</i>									3	3
<i>MCOR6</i>	3						5	4		12
<i>MCOR12</i>	5	6	25	6	7	8	11			68
<i>MCOR30</i>	1		1							2
<i>SCOR6</i>						2	2	8		12
<i>EMHP</i>							0.25	0.75		1
<i>Power Ten</i>							2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

# Commissioning Plan

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

*In collaboration with J. Turner*

# Commissioning Plan and ISMS



by J. Turner

# Commissioning Plan

#	Task	LCLS	PCD	Notes
<b>1</b>	<b>Lock and tag</b>			
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
<b>2</b>	<b>Inspection of the magnets</b>			
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			If LCW is available
<b>3</b>	<b>Secure the area with caution tape</b>			
3.1	PS racks back and front		x	
3.2	Magnets under test	x	x	
<b>4</b>	<b>Remove magnet terminal covers</b>	x		
<b>5</b>	<b>Check cable tags</b>			
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	

# Commissioning Plan

#	Task	LCLS	PCD	Notes
<b>6</b>	<b>Verify the magnet/PS are one circuit</b>			With a low power PS: < 50 V, < 10 A
6.1	Connect a lab PS in parallel to output of existing magnet PS		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		
<b>7</b>	<b>Check tightness of cable connections to magnet</b>			
7.1	Power cables		x	
7.2	Klixon cables		x	
<b>8</b>	<b>Put covers back on the magnets</b>	x		
<b>9</b>	<b>Hi pot cables</b>			Follow the EWP procedures for hi pot
9.1	Disconnect cables from output of PS		x	One PS system at a time
9.2	Power cables		x	
9.3	Klixon cables		x	
9.4	Sign off PS system check list		x	
<b>10</b>	<b>Reconnect cables</b>			
10.1	Reconnect power cables to PS output terminals		x	
10.2	Reconnect klixon cable connectors to EPSC		x	
10.3	Sign off PS system configuration control list		x	

# Commissioning Plan

#	Task	LCLS	PCD	Notes
<b>11</b>	<b>Energize PS</b>			If all the PS in the rack have been checked
11.1	Remove locks and tags from circuit breakers to the PS	x	x	
11.2	Test PS system in the local mode		x	
<b>12</b>	<b>Validate the ELPs</b>		x	Follow the steps from the ELP
<b>13</b>	<b>Install magnet stickers</b>	x		
<b>14</b>	<b>Check the ground fault detection</b>			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 until PS trips on GND FLT		x	
<b>15</b>	<b>Tune the PS system</b>		x	Follow procedures for tuning the PS system
<b>16</b>	<b>Test the PS system in remote mode</b>			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 klaxon, water flow, GND FLT interlocks and display status	x	x	

# List of Procedures

- EWPs 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
<b>Installation</b>		
Certify the 480V and 120V connections to LKG-01 trou LKG-06		Thu 11/30/06
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
<b>Intra-rack installation</b>		
Finish intra-rack control wiring	Mon 12/11/06	Fri 12/15/06
<b>Commissioning of PS Systems in the LINAC</b>		
ISPEC	Mon 12/11/06	Fri 12/29/06
DL1		
L1		
BC1		
L2		
<b>Commissioning of PS Systems in the LCLS Injector</b>		
GUN	Mon 12/04/06	
GSPEC	Mon 12/04/06	
INJ	Mon 12/04/06	