

# ControlsMeetingMinutes-Apr-26-2006

## Controls Group Meeting, April 26, 2006

date:	April 26, 2006
subject:	<b>LCLS Controls Group Meeting</b>
from:	Doug Murray
	x2235
department :	LCLS Controls

### Attendees:

Arturo Alarcon	Bill White	Bob Dalesio	Bob Fuller
Cecile Limborg	Dayle Kotturi	Debbie Rogind	Diane Fairley
Doug Murray	Hamid Shoaee	James Bong	John Dusatko
Kristi Luchini	Mario Ortega	Michael Cecere	Mike Browne
Mike Zelazny	Nancy Spencer	Patrick Bong	Patrick Krejcik
Paul Emma	Ron Chestnut	Ron Johnson	Sergei Chevtsov
Sheng Peng	Stephanie Allison	Stephen Schuh	Steve Lewis (remote)
Steve Smith	Terri Lahey	Till Straumann	Tom Porter

### Agenda:

1. Paul Emma and Bill White will review the commissioning process.
2. Discuss outstanding concerns and status.
3. Review procurement issues.

### Previous Actions:

1. None from Last Week.

### New Actions: (*summary; see details below*)

1. None.

### Minutes

1. Paul described the injection commission process. [To Get a Copy of Paul's Presentation, Click Here](#)
  - a. He reviewed the schedule, independent of installation or alignment tasks.
    - i. He didn't describe any laser commissioning tasks in detail, but he mentioned that would occur during the down time later this year.
    - ii. He said his schedule addressed everything that needs to be done after electrons are produced.
    - iii. It also includes the pre-beam checkout, such as magnet polarities, motion control basics, etc.
    - iv. The schedule is in Microsoft Project format, located on the "V:" drive. V:\LCLS\Group\Commissioning\Commissioning Schedule\Commissioning\_Master.mpp
    - v. Dayle asked if this schedule could be integrated with the existing P3 based schedule for Primavera, and why that wasn't used.
      1. Paul said this schedule had been started quite a long time ago, before Primavera was available to us.
  - b. His philosophy in making the schedule is that it should be done with a simple, layered approach.
    - i. First to understand the operation and behaviour of the basic components.
    - ii. The beam characterization comes later.
    - iii. The final steps include measurements like emittance. They won't happen in the first three months, we will be testing diagnostic equipment and procedures that will go into those studies.
  - c. The overall commissioning steps for the LCLS include commissioning each of the:
    - i. Drive Laser,
    - ii. Gun and Injector,

- iii. Linac,
    - iv. Undulator,
    - v. Free-electron Lasing,
    - vi. X-Ray transport, optics and Diagnostic (XTOD) areas and the X-Ray experimental stations (XES).
  - d. Using the beam stop after BC1, the main commissioning effort will start in January 2007.
    - i. He suggested getting beam to the DL2 beam stop without using any accelerating sections or BC2, with the intent of using the existing transverse cavity, before it moves to its final position.
      - 1. This would happen later in the spring of 2007 (perhaps May)
      - 2. The transverse cavity would be used to confirm compression from BC1.
      - 3. It was agreed that a lower beam rate should be used, perhaps 1Hz or even single shot mode.
    - ii. The BC2 will be added in the fall (Aug to Nov) of 2007.
    - iii. He would like to have beam through the LTU to the Undulator in March 2008.
  - e. Bill White mentioned that the laser installation would be delayed because of ongoing work near Sector 20. The schedule now indicates Laser installation will begin between July 24 and 26.
    - i. Paul mentioned that it is possible for some laser and e-beam commissioning tasks to overlap.
  - f. Paul then described three passes for commissioning for each of the major areas, ranging from the ability to find initial beam, to measure basic characteristics, and ultimately to measure more elaborate aspects such as bunch length, emittance, and more.
    - i. For the injector, that means setting the machine to get minimal beam loss, first in the injector and then Linac. Pass 3 will provide more details about optimizing load charge configuration, and will include Sector 29 transverse cavity bunch length measurement.
    - ii. Patrick suggested that we use a new camera on the transverse cavity to get the optics right; he suggested using Vern Brown to get it right.
      - 1. Paul voice some concern about the existing LabView solution, and asked if it was working. Patrick said it was not.
      - 2. It was suggested that it might be easier to take Sheng's test camera setup to Sector 29.
      - 3. Bob Fuller suggested the radiation levels must be understood.
  - g. Paul mentioned that the laser heater will require undulator motion by December 2007.
  - h. He then described the expectations for manpower during commissioning.
    - i. As an example, he suggested a typical schedule to be followed 5 days per week until Dec 1 2006.
    - ii. It included Bill White, J. Castro, Dave Dowell, Sasha Gilevich, Henrik Loos, and Sheng as needed. Also available would be Paul, Patrick Krejcik, Cecile and John Schmerge.
    - iii. There would be no swing or owl shifts.
    - iv. Stephanie asked if there would be a trailer with offices close by to allow us to help on short notice.
      - 1. Paul said he hadn't considered that as an option, but would do so.
    - v. The then suggested that from Dec to Aug there would be 1 lead physicist, 1 controls engineer, 1 system engineer, an LCLS operator and 1 laser operator.
      - 1. There would be a swing shift with 1 lead physicist, 1 accelerator physicist, 1 LCLS operator and 1 laser operator.
      - 2. There would be a smaller owl shift with 1 LCLS operator, 1 machine operator, potentially 1 laser operator, at least initially.
      - 3. Ge also indicated there would be no runs during holidays.
      - 4. He reiterated that these are tentative plans only.
    - vi. He said that he felt it important for Controls Engineers to see the commissioning process and equipment usage first hand, and to observe operators working.
    - vii. Hamid suggested there be a general controls support person, but also the responsible controls engineer depending on what stage of commissioning was being performed. Stephanie pointed out that SPEAR used 2 Controls people per shift.
    - viii. Bob Fuller asked about support at Sector 20 and MCC, specifically if we need resources at both places. Paul said Yes, perhaps in December. Bill agreed with having someone at Sector 20 initially. Paul agreed, but encouraged people to move from the Sector 20 Laser Room to the MCC as early as possible.
  - i. Paul then reviewed the expected beam characteristics for the upcoming year.
    - i. It included 30Hz RF, beam at less than 30Hz (1 and 10 Hz will enable 90% of the work) 120 Hz drive laser, 200-500 pC bunch charge, 10 psec FWHM beam width, and a gun gradient of 120 MV/m
  - j. He then mentioned there was an understanding that control capabilities might be limited initially, and that controls would be mixed between the SLC and LCLS/EPICS control systems.
    - i. He confirmed that most high level applications would be performed through MATLAB software.
    - ii. He also pointed out that most LCLS physicists not yet experienced with SLC controls, and would expect some support from the operations group initially.
  - k. Paul then suggested there be an LCLS operations lecture series.
    - i. He suggested it start as soon as May, and would have several talks to communicate what we're doing. It was agreed they should be videotaped.
2. Hamid then spoke about other outstanding issues.
- a. The phase 1 cable plant is almost under control, and phase 2 (for August/September) is already under way.
  - b. Mario said some cables will be late, not arriving until first week of June. This Friday (April 28th) the contractor starts tray installation.
  - c. It was reiterated that any procurement take place as soon as possible.
  - d. Mario also mentioned that LVDT cabling is not available as ordered, because of the low smoke, zero halogen insulation. These are need for wire scanners and similar subsystems.
  - e. Bob pointed out that the worst-case scenarios for cabling had been used for initial estimates, and to please review the cable needs to see if numbers can be reduced.
  - f. Hamid mentioned that each subsystem will still need to review their requirements for engineering reviews, cable lists, wiring and EI diagrams and procurement dates.
  - g. Subsystem coordinators were reminded that they should be developing detailed schedules to include the cable plant, pre-loading crates in Building 24, testing, onsite tests, and end-to-end testing during the final 3 weeks in Nov.
  - h. The subsystems should be fully tested by December 1, 2006.
    - i. Everyone is reminded that the BCS rework needs to be going on now.
3. Hamid mentioned there will be a new PeopleSoft version upgrade in the first two weeks of May. We were reminded that orders over \$10,000 should be submitted by May 8th, and those under that amount by May 10th.
- a. Kristi asked what would happen to orders that aren't added in time. Hamid said they would still be done manually.
  - b. Till asked if CPUs, crates and other equipment had been ordered. Bob said there are 50 CPUs on order, and other items have been ordered as well.
  - c. Dayle requested information from each subsystem to confirm the order for EVR timing modules.