

# **Minutes of the Conceptual Design Review for the Hard X-Ray Spectrometer (HXS)**

John Seely, Finalized 4/12/00

The CDR teleconference was held on April 7, 2000, beginning at 11:00AM EDT.  
Attending the teleconference were the following:

## LLE

David Meyerhofer	<a href="mailto:ddm@lle.rochester.edu">ddm@lle.rochester.edu</a>
Greg Pien	<a href="mailto:pien@ftp.lle.rochester.edu">pien@ftp.lle.rochester.edu</a>
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Tom Hinterman	<a href="mailto:thin@lle.rochester.edu">thin@lle.rochester.edu</a>
Judy Mathers	<a href="mailto:mathers@lle.rochester.edu">mathers@lle.rochester.edu</a>
Jack Armstrong	<a href="mailto:jarm@lle.rochester.edu">jarm@lle.rochester.edu</a>

## NRL

John Seely	<a href="mailto:john.seely@nrl.navy.mil">john.seely@nrl.navy.mil</a>
Glenn Holland	<a href="mailto:gholland@ssd5.nrl.navy.mil">gholland@ssd5.nrl.navy.mil</a>
Layne Marlin	<a href="mailto:lmarlin@ssd5.nrl.navy.mil">lmarlin@ssd5.nrl.navy.mil</a>
Rob Atkin	<a href="mailto:ratkin@tigerinnovations.com">ratkin@tigerinnovations.com</a>

## NIST

Richard Deslattes	<a href="mailto:deslatt@email.nist.gov">deslatt@email.nist.gov</a>
Larry Hudson	<a href="mailto:larry.hudson@nist.gov">larry.hudson@nist.gov</a>

## LLNL

Perry Bell	<a href="mailto:e061547@popeye.llnl.gov">e061547@popeye.llnl.gov</a>
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Seely introduced the NRL and NIST participants and presented the Agenda:

### John Seely - 15 minutes

- Introduction of participants
- CDR meeting Agenda
- Project schedule
- Relationship to the NIF/HENEX instrument

### Larry Hudson - 20 minutes

- Optical design, bent crystal
- Plate function and resolving power
- Instrument functionality characterization

### Glenn Holland - 20 minutes

- TIM mounting structure
- Nosecone and Be filter, pointer
- Standoff and laser beam exclusion zone
- Stepwedge filter for exposure control
- TREX Trophy CCD, x-ray images

### Rob Atkin - 20 minutes

- Electronics and DAS
- Timing and trigger fiducial, fiber optic

### All - 10 minutes

- Action Items

The CDR proceeded according to the Agenda with discussions of each item. LLE indicated that they could not see the graphics very well (Action Item #5) and referred to documents and images downloaded from the website [spectroscopy.nrl.navy.mil](http://spectroscopy.nrl.navy.mil). Seely presented the project schedule as contained in the LLE Target Diagnostic Qualification Checklist and the relationship of the HXS to the pending NIF/HENEX instrument.

Hudson and Deslattes presented the optical design, the bent crystal, plate function, resolving power, and instrument characterization. It was decided to buy back unused crystals from the NIST customer and also to procure new quartz crystals that are wide and will fill the CCD. Stoeckl will send to Hudson the estimated x-ray flux, including the 200 keV flux, if the flux is different than that sent previously during the proposal process and contained in the Concept Design document on the website (Action #6).

Holland presented the overview sketch of the instrument and discussed the nosecone, Be entrance filter, pointer, beam exclusion zone, and the stepwedge filter. It was agreed that all CAD drawings (dxf format is preferred) be sent to Marlin who will assemble and prepare the CAD drawing package during the design phase. LLE requested that CAD drawings, particularly of the nosecone, be sent to Judy Mathers for approval of the standoff and laser beam clearances (Action #7). Mathers will send the LLE nosecone design to Holland (Action #8). Bell will send drawings of the streak camera interface to Holland (Action #9). As suggested by Bell, NRL agreed to implement an LED for the purpose of checking the instrument for aliveness.

Atkin discussed the electronics, computer control system, and DAS. Alternatives for the timing, CCD triggering, interface to the LLE DAS, and power were discussed. Atkin, Hinterman, and Holland will settle these issues, and Atkin and Holland will provide updated information for the website (Action #10). NRL will estimate the instrument's heat load (Action #11).

Seely summarized the Action Items. Seely will post the CDR minutes and the Action Items on the website (Action #1) and will notify the telecon participants when the website is updated. LLE will review and approve the construction/deployment schedule in the Target Diagnostic Qualification Form and the development responsibilities in the Conceptual Design document (Actions #2 and #3) that will be posted on the website. All CDR action items should be resolved by April 21 (Action #4).

The next telecon will be the Final Design Review on June 12. The CDR concluded at 12:45.