28 July 2018

Review charge

1. The review will consist of two phases
   1. Near term commitment starting Monday, July 30, of 2-3 days.
   2. Follow-up meetings via remote connection of ~2 weeks to close with comments and recommendations.
2. Near term charge
   1. This is a fact-finding period. Collect information and observations of what we have, what happened, what has been done, what can cause damage. We will not have all the relevant data and information; the investigation and data analysis will be ongoing. We may form some preliminary conclusions, especially when we know the leak location, and formulate questions for further investigation and discussion.
   2. Observations in the assembly area in Industrial Center Building. We will begin Monday with the cryomodule still fastened to the truck, as during transport. Other cryomodules in various phases of assembly will be available to view.
   3. Are there possible failure-modes that have been overlooked?
   4. Comment on the analyses presented. Anything missing?
   5. We will discuss changes and improvements of the shipping system relative to previously for LCLS-II and for EU-XFEL. Do these changes reduce risks acceptably?
   6. Is the updated instrumentation workable and likely to be effective?
   7. Are there potential risks associated with the deployment of these changes and instrumentation?
   8. Formulate follow-up questions.
3. Longer term, remote conferencing to discuss observations, data, ask follow-up questions, formulate comments and recommendations.
   1. Assess the shipping system design and implementation.
   2. What requirement was missed, what goal did we not include that we should have?
   3. Is the design of the LCLS-II CM shipping system adequate to protect the cryomodule from transport vibration generated motion?
   4. Do you have recommendations for shipping criteria modifications and requirements?
   5. Are the primary internal resonances, (i.e. resonances most likely to cause damage), properly restrained and / or damped?
   6. Do you have recommendations regarding temperature fluctuations such as those expected any time of the year along the route from Jlab / Fermilab to SLAC?
   7. Are the shipping restraint installation-procedures fully developed and adequate to ensure correct installation?
   8. Is the instrumentation (logger) scheme well developed?
   9. Finally, what other suggestions do you have for successful shipping to SLAC?

Review agenda

* Monday. Meet at 9:00 AM in the Industrial Center Building (ICB). Meeting room to be announced.
  + Introductions, agenda discussion, and plans
  + Committee walk-around in ICB
    - Look at cryomodule structure via the various assemblies in ICB.
    - Explain bolting, Loctite, remediation of earlier F1.3-06 issues.
    - View the cryomodule on the truck. Any observations. Thoughts about what can cause damage. Talk about inner/outer frame structure and function. Explain end caps.
  + Meeting after walkthrough
    - Provide a background presentation on CM structure and modes, analyses.
    - Summarize F1.3-06 history in brief to explain fastener issue and subsequent discoveries of bellows failure.
    - Provide information on vacuum envelope, weak parts which one might think could leak.
    - Shipping specification, early versions, later thoughts. Note our recent consideration of displacement as the important specification factor for bellows protection.
    - What did prior tests show (Rich Stanek’s summary), what did we think we needed to do based on that test experience.
    - Prior data. Also look at JLab pCM shock loggers.
    - Intention for frame, design resonances for which frame was tuned.
  + When new views are available, break for another look at CM features such as after removal of “top hats” where we look at tie-downs and look for wear, and view the ends after removal of end caps
* Tuesday and Wednesday
  + Discussion and further cryomodule observations will follow the introduction of new information, especially the location of the leak, which we should know on Tuesday.
  + We will determine a more detailed agenda for Tuesday by the end of the day Monday.