

Follow up requests for the Tue 09/01/2015 meeting:

Sorry for the late e-mail. See below. This is basically a follow up to the bullet list I sent out after the kickoff meeting. To the degree possible (I realize some of things I listed will take time), if everyone involved could have the relevant materials at hand tomorrow it will help move our discussions along.

Note: "Have available" means be able to show on the projector.

Thanks.

KSS

- 1) Jorg
 - a. Have available drawings / diagrams of the latest proposed LEReC beamline layout.
 - b. Have available optics simulations for (1.a) with beta functions and relevant dispersion / bunch compression params.
- 2) Wencan
 - a. Have available the analysis you sent re: FPC Qext modification.
 - i. **Nominal result from Wencan's simulation: Withdraw FPCs by 18mm.**
 - b. Need detailed drawings of FPC and cavity / cryostat mechanicals.
 - c. Analysis of required cooling for max Phase II RF power.
- 3) Mike Blaskiewicz
 - a. Wakefield basic result from MMB:

"Hello All, CJ gave me the specs for the ridges in the choke section and I calculated the wakes. For 100 pC and rms length 1 cm the longitudinal voltage. Looks like the derivative of the bunch shape with a peak value of 15 volts. This seems quite small to me but my intuition is not good here.—Mike"
 - b. Q: Who has primary responsibility for formal wakefield simulations via MWS-PS?
 - i. Who's doing them for the beamline overall?
- 4) Joe
 - a. Will someone have available both cartoons and detailed dimensioned drawings of the existing gun / choke structure and current proposed modifications?
 - b. See also (2.b) above.
 - c. Since we're considering a solution involving a pipe insert relying on a compression RF seal to the existing Nb "pipe" on the gun cavity:
 - i. Who will verify that the innermost Nb "pipe" is suitable for this?
 1. Three obvious considerations:
 - a. Is the would be mating surface flat and flush?
 - b. Required compression force and stress analysis.
 - i. Safe for pipe?
 - ii. Safe for cavity?
 1. Resulting cavity detuning?
 2. Can we compensate?
 - c. How accurately can survey, internal guides, assembly process etc. guarantee no offset and no angle of beam pipe insert vs Nb pipe?
 - i. That's to say a complete RF seal and no/minimal discontinuity seen by bunch fields on the ID of the beam pipe.
 - ii. Someone should do a prelim analysis to verify this nominally doable.
 1. Mechanical analysis and then RF analysis based on mechanical results.
 - d. If we go this route, I like Scott's thought that somehow the existing clamping mechanism might be used.
 - i. Lots of detail to be looked at.

From prior e-mail:

Well, more like bullet point action items than notes ...

- 1) All
 - a. Figure out required modification to convert existing cathode choke interface to a beam pipe insert interface.
 - i. Seems we're off to a fine start with at least as many ideas as people in the room.
- 2) Jorg
 - a. What is the minimum acceptable aperture required at the location of the gun cavity cathode choke / new beam pipe insert.
 - b. Get drawings of the existing gun so you have access to existing dimensions. See 6a.
- 3) Gary
 - a. Start development of an installation schedule that works backwards from required install complete and cavity ready for cold test in IR2 to start of gun conversion.
 - b. Goal is to start pinning down an ERL Gun operation drop dead date, i.e. when do we need to start Gun conversion?
- 4) Wencan
 - a. FPC modification to reduce Q_{ext}
 - i. Wencan has already sent out his analysis. Looks very doable and low risk.
 - b. WRT to converting from cathode to beam pipe insert, Wencan requested an arc detector and an RF pickup in the volume where the RF seal is.
- 5) Mike Blaskiewicz
 - a. Wake field analysis including existing grooves on the inside of the Nb pipe.
- 6) Joe for assignment to ?
 - a. Distribute appropriate drawings, cartoons, pictures of existing gun structure and proposal for modification.
- 7) No one yet – or I forgot who
 - a. HOM damper
 - b. HTSS
 - c. Warm solenoid
 - d. Correctors
- 8) General
 - a. Is there an existing wiki page for LEReC RF or should I start one?
 - i. For the ever changing parameter set.
 - ii. Drawings
 - iii. Repository for notes.