

Dear CF&S System Friends,
July 20, 2006 3_CE_Questions_20july06.doc

Thank you for the very informative discussions on Wednesday. There were some ideas for cost reduction posed by the RDR Management Team which apply to your area. We did briefly mention these to you and started discussion at our meeting. We ask that you consider the following possible actions and report your *preliminary* thoughts on how much cost reduction might be possible and what would be the impact on accelerator performance, operations, reliability, commissioning, etc., before the end of this Vancouver meeting, say by Saturday morning, with a more detailed report by August 15. Yes, this is a very aggressive schedule, and will not allow a chance for much re-design activities, but the RDR Management Team needs an idea of whether these possible actions are reasonable.

- A. Enomoto will be at KEK from August 7-11, return from vacation August 21st
- M. Tanaka will be at KEK from August 7-11, return from vacation on August 19th
- JL Baldy return from vacation on August 14th
- M. Pohler return from vacation on August 14th
- G. Shirkov will be on vacation most of August
- Americas Region will meet by video conference (11:00 PDS and 1:00 CDS) on August 1st
- Americas Region will develop the first draft of answers to the questions posed
- Asian Region will be available for the CFS video conference on August 8th and will review first preliminary draft of answers with comments back to Tom Lackowski by Friday August 11th
- European Region will be available for the CFS video conference on August 15th and will have received responses based on Asian comments for discussion at the video conference. CFS will make every effort to discuss European comments and incorporate them into final draft answers for delivery to DCB by the end of the day on August 15th
- For first answers to be returned to the DCB by August 15th, the single tunnel question and shallow tunnel solution question will be addressed in terms of the Main Linac only. Life safety issues as well as installation issues will be addressed in both answers.

Possible considerations for cost reduction:

1. What can be saved by going to a single tunnel (This impacts many systems.).

CFS Group will prepare drawings for a single tunnel described in cross sections and plan views, to accommodate all needed equipment and still provide adequate life safety egress capability as well as address all other applicable safety issues. We will also develop a preliminary cost comparison study with respect to the existing baseline configuration to identify resulting cost deviations. This exercise will only address Conventional Facilities aspects of this issue. Accelerator performance, operations, reliability and commissioning issues will need to be addressed by experts in those respective areas. We will also make

a preliminary review of schedule adjustments that may result from this new configuration.

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A single tunnel cross section will be developed by Jerry Liebfriz for discussion at the next CFS video meeting on August 2nd Tomski will confer with Hanson Engineering and John F. to address costing issues

2. What can be saved by going to a shallow tunnel (anywhere, not necessarily near a current laboratory)?

CFS will review existing near surface solutions previously developed in order to identify advantages and disadvantages of such a solution. With the exception of the DESY and Dubna sites, no existing sample site can accommodate a shallow tunnel solution. We will investigate a “virtual” optimal site for a shallow solution as well, in order to fully review near-surface vs. deep tunnel issues. At this point in time, and by the August 15th deadline, it will not be possible to develop a credible cost comparison for this issue. Such a cost comparison will require an additional one to two months of dedicated work.

“Shallow” tunnel solution needs to be defined based on depth, construction methods, and combination of tunnel configurations. Suggestions are Full Cut and Cover, Combination Cut and Cover and Soft Tunnel Bored, Fully Tunnel Bored but Near Surface (DESY) with comparison to Deep Tunnel Solution.

Tomski will talk with Elaine McCluskey regarding Proton Driver configuration and costing.

Grigori will provide to Tomski shallow bored tunnel costs based on Dubna solution.

3. Are there cost advantages for a shallow site vs. deep site including shafts and cooling, etc. – need to be able to quantitatively say what premium there is for going deep

See No. 2 above

4. What are the relative costs of 4, 5, and 6 meter diameter tunnels for each region?

These costs are available from existing consultant reports and will be accumulated into a single spreadsheet and provided by August 15th.

All Regions need to provide all available units costs for underground construction to Tomski by August 11th

5. How can service tunnels be optimized, or done away with?

See No 1 above

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6. Why is a service tunnel necessary for BDS? – ask Andrei

The issue of a service tunnel for BDS was reinforced by the requirements of the positron by-pass tunnel, main beamlines and life safety egress issues. We will consult with Andrei and provide an answer for this issue.

Fred Asiri will talk with Andrei Seryi to develop a response for review at each subsequent CFSW video meeting

Please remember that these actions will likely have cost impact for other systems. You will likely have to interact with the CF&S leaders, so I'm forwarding this note to them.

Thank you,

Peter

Peter H. Garbincius
for the Cost Engineers

Additional questions raised during the vlcw06 Conference

- **Questions from the DCB through this letter**
- **Questions from Marc Ross**
 - **Increase delta T for the klystrons by a factor of 2**
 - **Remove chilled water system entirely and use 95 degree water for cooling of electronics**
 - **Reduce the number of water skids**
- **Issue regarding indicated 340 MW power consumption, Jon Pedersen will begin to develop a pie chart indicating the breakdown of overall power consumption**
- **Suggestion regarding construction schedule and the offering of tenders one year prior to the actual start of project with reimbursement of cost for sites that are not chosen**
- **Does the present CFS time schedule match the 7-year time span given at Bangalore**