

Burke, David L.

From: Burke, David L.
Sent: Tuesday, July 31, 2001 8:58 AM
To: Adolphsen, Chris; Cornuelle, John C.; Garwin, Edward; Jobe, R. Keith; Miller, Roger H.; Pearson, Chris; Ross, Marc; Sprehn, Daryl W.; Tantawi, Sami Gamal El-Din; Wang, Juwen
Cc: Burke, David L.; Caryotakis, George; 'holmes@fnal.gov'; Paterson, Ewan; Ruth, Ronald D.; 'toge@lcdev.kek.jp'
Subject: HiGrad Coord Committee

Reminder

High Gradient Coordinating Committee
Tuesday, July 31
1:30 in the Fuji Room

Agenda

1. High Gradient R&D Schedule (To be Distributed)
2. Update on NLCTA Operations (Adolphsen)
3. What to do with presently installed structures after removal from NLCTA (All)
4. Plans for next two rounds of structures (All)

NLCTA Planning Meeting on 7/24/01

- The last major NLCTA planning meeting was on 6/26/01. The notes from the 6/26 meeting were published and need to be used with these 7/24 notes.
- Station 2 Bypass: Because of the loss of a klystron feeding Station 2 and the subsequent apparent exposure to air, most activity is being delayed until the next structure install. The parts for the bypass of the SLED head on Station 2, the bypass of the T53VG5R structure, and the bypass of the attenuator that is before the T53VG3R structure are scheduled to be ready by the end of July. This work could then take place at any time in the future if desired.
- Station 1 Upgrade/400 MW Test
 - The parts to upgrade the SLED head by substituting a planar hybrid for the existing magic-T will be ready to be installed beginning 8/13. The part and installation preparation will continue, but most likely this upgrade will be delayed.
 - The new bypass for the upgraded SLED head (2nd generation bypass) to enable the standing wave structures to continue running as they are now has not yet been designed. Its availability is estimated to be 9/14, just prior to the next structure install. This means that if the SLED head upgrade alone is performed, Station 1 will not be able to run the standing wave structures. This upgrade will therefore most likely be done after the standing wave structures are removed from NLCTA.
 - Parts and installation planning for the 400 MW test are continuing as if it will be pursued, with a readiness date of 8/20. Some of the parts needed for this (such as the stand for the load tree and the x-ray shielding) have either not been designed or need design work.
 - The loads incorporated into the standing wave girder assembly are needed for the 400 MW test, which will be located on the NLCTA roof. So if the 400 MW test is initiated, the standing wave setup will also be dismantled to some degree.
- Next Structure Installation: This is scheduled to begin on 9/20 based on the availability of the T53VG3RA structure on 9/19 (was 9/7 in the 6/26 plan).
 - There continues to be an interest in providing more reduced width (WR525) waveguide prior to the input coupler of the T53VG3RA coupler. The intent is to manufacture a part that will substitute for SA-290-304-08, which is a WR90 U-bend connecting the coupler arm to the power splitter above, and also the short straight section of WR90 that exits from the same power splitter. This part has not been designed yet, so it may well not be ready in time for the 9/20 install.
 - There will be some minor improvements to the supports for the structures on the strongbacks for the next install. Keith needs to see these drawings when they are available to make sure there are no installation or related problems.
 - The entire standing wave structure girder needs to be removed from NLCTA and moved upstairs to the clean assembly area to do cold testing prior to being dismantled. This is estimated to take one week. The cold testing after the installation of the new SW20PIL structures is also estimated to take one week. The total time to remove the standing wave girder from NLCTA and have it ready to be reinstalled with new structures is estimated to be four weeks. The removal process will therefore begin on 8/20.
 - Keith requested a review of the mechanical design to be utilized for nitrogen purging during the cold testing process. Sami suggested using the standard WR90 pumpouts.
 - There are no other changes to the next structure installation plan outlined in the 6/26 meeting notes.
- Next Structure Installation: High Phase Advance Structures and new Standing Wave Structures.
 - These structures are partially in the design stage and partially in the fabrication stage. They will be ready for installation on 11/26/01. Bakeout will terminate on 12/21/01. The test run will begin on 1/2/02.

T20/T105 versus T53 Differences

Item	T20/T105	T53's
Cells		
Copper Mill	Hitachi	Hitachi Heat No 91V3523
Copper Batch/Lot	JIS H3510 C1011BD H62-500	From SLAC ID K2331.1,.2
Part Fabricator	KEK	Robertson
Final Lathe Work	Precision Diamond-Turning Lathe	Conventional CNC Lathe
Final Cutting Tool	Single-Crystal Natural Diamond (IHI Used Synthetic)	Polycrystalline Diamond
Cutting Fluid	Air/Kerosene Mist	Petroleum Oil/Water Emulsion "Trim Sol"
Supplier Degreasing Process	Ultrasonic Ethanol/Acetone	Acetone
Other Pre-SLAC Cleaning	None	None
SLAC Degreasing	Not Required	Perchloroethylene (PCE) (2X)
SLAC Cleaning	Modified Process C01a	Modified Process C01
Etching Time	Five Seconds	One Minute
Material Removed During Etching	160 Nanometers	2000 Nanometers
Couplers	Identical	Identical
Bonding/Brazing	Identical	Identical
Wet Hydrogen Fire	60 min. at 950 °C	60 min. at 950 °C
Hold Time Prior to Dry Fire	1 Day T20 / 13 Days T105	2 Days VG3 / 3 Days VG5
Dry Hydrogen Fire (Cleanup)	T20: 10 min. @ 980 °C + 2 Hrs @ 955 °C T105: 2 Hrs @ 950 °C	2½ Hrs @ 950 °C (Orientation flipped 180° 1 Hour @ 950 °C between firings)
Hold Time Prior to Vac Bake	13 Days T20 / 1 Day T105	1 Day VG3 / 2 Days VG5
<u>Vacuum Bake in Cans</u>		
Pre-Structure Can Processing	Hydrogen Firing Only	T20/T105 Vacuum Bake
Time to Reach 10 ⁻⁸ Scale	14 Days	8 Days
Ultimate Pressure Hot	8-10 x 10 ⁻⁸	6 x 10 ⁻⁸
Ultimate Pressure Cold	1 x 10 ⁻⁹	1 x 10 ⁻⁹
<u>Nitrogen Purging</u>		
Can Opening to In-Situ Bake Time (Days)	12 Days	12 Days
Nitrogen Purging During Final Assembly	4 Hours	8 Hours
Nitrogen Purging During Cold Test	24 Hours	24 Hours
Nitrogen Purging During Field Installation	120 Hours	30 Hours
In Situ Bake Time	325 Hours	92 Hours
Extensive Waveguide Baking	No	Yes, at 250 °C