Minutes of ATF2 meeting, 14th September, SLAC

1. Bipolar power supplies :

Manual switching is OK for the matching quadrupoles, where the polarities can be changed by cable connection. Location of the cable connection must be carefully determined. If the switching is often, it had better to avoid one in the rack. KEK takes a responsibility of switching cables. The optics can arrange that 4 of 6 matching quadrupoles will be used at standard operation with monopole power supplies and "non-zero" currents. The current stability is defined at full scale of current.

B.Lam measured the stability as a function of current. The stability was measured to be 10ppm at a few A. The relative stability was about 100 times for the maximum current of 200A, i.e. 1,000ppm=0.1% . Also, he commented that the HA-PS outputs about 1.5A with setting 0 as the reference value. So, it should be switched off whenever power supply is not used.

Also, one should note that "Switcing off the power supply to set zero current does not assure zero field becasue of residual field."

2. Schedule of HA-PS system

All the power supply modules will arrive by end of November from OCEM company at SLAC, which are only not received in the system. At preset, 5 prototype modules were checked without severe problem. So, it is on schedule. The system will be ready for shipment to KEK by end of January 2008.

After KEK receive the system, 3 colleagues will come to KEK for 6 weeks in order to install, check the system and for training KEK persons.

There are two methods of importing the system from SLAC in Japan as listed below;
(1) importation for scientific studies with 5% consumption tax based on the price which SLAC declares in invoice.
(2)donation as "in kind contribution" from SLAC for the international project of ATF2 with no any tax.
KEK would like to receive it with the second method, i.e. donation .

B.Lam will ask the person in charge of exportation at SLAC, for paper works take 2 or 3 weeks at least .

Note : there is another method; importation with re-exportation within a year. In this case, no tax is required, but the maximum extension is strictly for 5 years. If we are sure that it will be exported to SLAC within 5 years, we could choose this method. This is very unlikely. So, it is excluded for the HA-PS system.

3. Beam tuning software

The "flight simulator" has been developed by G.Whilte at SLAC, which is based on MATLAB for the graphical user interface to EPICS and MAD etc. . This simulator can allow to develop realtime tuning methods/programs outside of KEK. In general, it should be acceptable that any colleague can contribute in the software development. At ATF, the GUI has been provided by V-system which SLAC colleagues are unfamiliar to develop the software. Therefore, it must be needed to discuss on sharing roles of V-system and the "flight simulator" , and future software development which can be a model at ILC.

Andrei emphasized a necessity of finding a way to implement such as "flight simulator"
into a ATF conrol system so that colleagues of outside of KEK can contribute with their tools.

G.White will prepare questions to Terunuma who will present "Plan of work for control system interfaces ..." at next ATF2 weekly meeting , 26th September.

4. Carbon wire scanner geometry

Doug has asked the persons concerned for checking the geometry, especially vacuum pipe arrangement and support at the floor.

KEK (T.Tauchi) asked to minimize the 45 degree plate for space to access the Shintake monitor adjustment. Doug will examine the possibility to check availability of the plate.

5. OTR

OTR is now at KEK. If necessary, Doug will check possibility of installation in this December.

6. Electronics for S-band BPM

The electronics is needed for 9 channels in total, which consists of 4 (BPMs) x 2 (X,Y) + 1 (reference), as Steward explained. However, Steward has only 4 channels. So, a question is who makes the other 5 channels.

Tauchi explained an agreement at discussion with S.Boogert, E.S.Kim and him at LCWS2007, DESY. The agreement has been confirmed by all as;

> From: "T.Tauchi" <toshiaki.tauchi@kek.jp>
> Date: Mon, 11 Jun 2007 16:20:54 +0900
> To: kim Eun-san <eskim1@mail.knu.ac.kr>, stewart boogert
> <sboogert@pp.rhul.ac.uk>
> Cc: Andrei Seryi <seryi@SLAC.Stanford.EDU>, Junji Urakawa
> <urakawa@post.kek.jp>, honda yosuke <yosuke@post.kek.jp>, 照沼 信浩
> <nobuhiro.terunuma@kek.jp>
> Subject: Responsibility of S-band BPM
>

Dear Kim-san and Stewart,

I would like to confirm our agreement when we discussed at DESY during LCWS2007.

(1) Both RHUL/UCL and KNU will design the S-band BPM with 40mm aperture and low Q for multi-bunch beam in collaboration by September 2007.
- S-band BPM (36mm aperture?) has been designed for ESA experiment by A. Liapine (UCL) . The BPM was produced and will be installed at ESA in July. He can collaborate in the new design with Shin-san (KNU) .

(2) Stewart will visit KNU to finalize the design and see laboratory/facility at KNU in September 2007.

(3) KNU will fabricate a prototype (cold model) and test it by end of this year. The result will be reported at next project meeting in December 2007.

(4) RHUL/UCL will fabricate two BPMs with the new design. There is a reference cavity at ESA. The two BPMs will be installed at ESA. After the ESA experiment, the two BPMs and reference cavity will be

transported to KEK by summer 2008. The ESA program will end in Spring, 2008.

(5) KNU will fabricate two BPMs with the new design by end of March 2008, too.

(6) All the electronics (4 BPMs and reference cavity) will be borrowed from the ESA experiment. So, RHUL/UCL will transport them to KEK by summer 2008.

There is uncertainty of future plan after the first shutdown of ESA, i.e. There may be possibility of ESA continuation. Stewart will discuss on destiny of the BPMs, electronics with his collaborators at ESA .

Could you send us your correction and comment ?

Best regards,
Toshiaki Tauchi

From: eun-san kim <eskim1@mail.knu.ac.kr>
Date: Tue, 12 Jun 2007 16:02:24 +0900
To: "T.Tauchi" <toshiaki.tauchi@kek.jp>
Cc: the same memners
Subject: Re: Responsibility of S-band BPM

Dear Tauchi San,
I completely confirm the meeting note.
Sincerely yours,
Eun-San Kim

From: stewart boogert <sboogert@pp.rhul.ac.uk>
Date: Wed, 13 Jun 2007 10:24:26 +0100
To: "T.Tauchi" <toshiaki.tauchi@kek.jp>
Cc: the same memners
Subject: Re: Responsibility of S-band BPM

Dear Kim-san, Tauchi-san (et al)

I agree with the plan as described below. I am just getting together
the existing S-band design information for the KNU group.

Kind regards,
Stewart
---

7. Beam test in December

SLAC colleagues will visit to KEK for 3 weeks in December.
A question was raised on installation of correctors. During preparation, SLAC colleagues can install them.
In any case, it should be no problem.

8. Status of 5 Sextupoles in the final focus section

2 sextupoles with large bore at the final doublet will be re-used FFTB ones with 54mm aperture, 76.2mm length which are installed at the ATF extraction line. The major issue is thermal one, for they has no

water cooling while SD0 is operating at 6.5A . KEK measured their thermal property that it takes 150 minutes for thermal equilibrium. It is also too long and it is warmer .

SLAC made a water channel and installed it in the very similar sexupole. The channel can be slid into to the magnet with copper contact inside the iron ring-support. The test result shows that the temperature of iron went up by 3 degree with 40 minutes cooling at 6.5A, while the temperature rise in coil was 7 degrees. Although it looks nice, further improvement to reduce the temperature rise is highly desired. Mylar sheet (electric insulator) will be replaced with Capton sheet for better termal conductivity .
An additional copper sheet is suggested as the thermal conductor at coil and pole-tips.

The other 3 sexupoles can be re-used of SLC-SX3 with water cooling. There is an issue of alignment since SX3 has circular shape, i.e. the top is not flat. C. Spencer will study the alignment method.

9. Shipment of QC3 to LAPP

There must be no time to ship it. A spare QC3 has not been accepted for us. Two QC3 are under modification with slightly delay.

Since we will use the CLIC honeycomb table at commissioning, it had better to test the system at KEK, where all the components can be mounted at the ATF2 floor.