FETS Meeting:

RAL, R2, CR6 – 23rd October 2013

Present: J. Pozimski, A. Letchford, P. Savage, M. Dudman, S. Lawrie, S. Gibson, S. Alsari, P. Posocco, M. Aslaninejad, A. Bosco, P. Wise,

Apologies: R. D'Arcy, C. Gabor, G. Boorman, K. Kruchinin, C. Plostinar, D. Faircloth, M. Clarke-Gayther, S. Jolly, J. Back,

Circulation: All

Next meeting date: 20th November 2013 – RAL

Administration

1. There will be an OsC meeting on the 5th or 6th of December 2013. This occurs approximately every six months.

Finances

1. Everyone was again asked to consider their spending requests for single items under 10K, to ensure that a last minute panic spend does not occur at the end of the financial year.

Minutes

1. None

AOB

1. There has been a request for the use of pictures from the FETS page. It was discussed whether to give people access to the web page or to send the photos separately by email. It was generally decided to limit the amount of people who have access to a minimum.

MEBT

Lattice (M. Aslaninejad)

1. A presentation was given on the status of the MEBT lattice design and field maps.
2. All un-chopped particles fit within a diameter of 34mm.
3. There will be more runs at different voltages.
4. Space for diagnostics is required in the first meter of the MEBT.
5. It was decided that the transmission results were satisfactory.
6. Possible position of BPM's should be before Q1 and Q4.
7. A question was raised regarding the alignment of the beam. 'Perfect' alignment was only relative to what can actually be measured, for example any alignment under 1%. However a small misalignment could dramatically change the overall percentage of beam losses.

8. A. Letchford asked if an elliptical hole in the cavity could be viable to match the beam profile. Losses in the cavity are not good due to possible sparking.

Chopper (J. Pozimski)

1. J. Pozimski presented some results on behalf of M.C. Gayther.
2. Beam losses will be unavoidable and will therefore be in the 99 % range and not 100%. This is to be expected as FETS is an experimental beam line where 'Perfect' chopping will be difficult to achieve.

MQP Status (S. Lawrie)

1. Quads and dipole steerers are out for tender which is due in the end October. It is estimated to be between 20K and 50K.
2. The small bore quads specs are 20 Tm^{-1}, 1.7T, 43mm bore diameter, 60mm yoke and 80mm in length.
3. The large bore quad specs are 9 Tm^{-1}, 1.5T, 64mm bore diameter, 130mm yoke and 150mm in length.
4. A 50mm space has been left for the inclusion of kinematic mounts.
5. A question was raised if it was necessary to rotate the magnets. It was thought quote should be with or without option to see reflection in cost. It was noted that having both options will affect water cooling service routes.
6. The tolerance between the magnetic and geometric centres is 50 microns.
7. The quotes have been received for the power supplies. ETPS do not have good reviews and Glassman and TDK Lambda are used by ISIS thus proving design. It was decided to use TDK Lambda as they have more options to modify at a later date.
8. The estimate costs for the quads take up half of the original overall estimated costs. It was suggested the extra cost incurred with purchasing the power supplies could be offset to next year's budget.
9. A decision was made to order the power supplies in now to be included in this year's budget.

Cavity (P. Savage)

1. Cavity simulations have been done with regards to vacuum loading and thermal expansion using a 1/8 scaled model.
2. Questions were raised regarding the plating including:
   - Is it possible machine the plating as a secondary operation?
   - Can the plating affect / leech into the water cooling circuit?
   - How well attached is the copper plating to the nickel plating. It is thought the nickel layer would aid adhesion.
   - Where does the plating stop in relation to the radius of the cavity nose?
   - If masked off, a step may be the result which will have to be polished / feathered out.
3. These questions will be presented during a visit to NITEC on the 25th October.
4. P. Savage has modelled circular cooling channels as gun drilling could result in sharp corners which could affect flow.

5. A decision will need to be made whether the cavity manufacture is outsourced or kept in house. J. Pozimski referred to the importance of the tolerance, radius and form and expressed a wish to keep it in house and outsource less complex components like the chopper vacuum vessel.

RFQ (P. Savage)

1. RFQ Section is in inspection at RAL with inspection due to start week commencing 4th November.
2. J. Pozimski gave a quick presentation to the group showing the pictures of the RFQ's arrival at RAL on the 26th September 2013.

Ion Source and LEBT (S. Lawrie)

1. Update to be given at the next meeting.

RF / Amplifiers

1. The position and quantity of coaxial components in the system was discussed. It has transpired that the tuners are expensive so the four off tuners will be reduced to one off. Three standard coaxial pieces of same length as the tuner will replace them.
2. The order of the components should be changed. From the elbow at the coupler the next component will be reflectometer then the tuner and then the transmission line. M. Dudman to forward the modified drawings reflecting these changes to S. Alsari.
3. The three quotes obtained for the amplifiers will be forwarded to A. Letchford who will create the purchase order. RF cable has been offered free of charge with the order. The length of cable is to be confirmed.

Beam Diagnostic

Laser (S. Gibson)

1. Preparing for CERN Linac 4 visit.
2. G. Boorman and R. Darcy are going to CERN week commencing the 28th October. A. Bosco and S. Gibson will arrange a visit to complete set up of laser. Another trip to test laser will be organised in late December 2013.
3. Loan agreement must be completed prior to laser being transported / used. A. Letchford and S. Gibson will organise this and ensure insurance is arranged.
4. Laser is currently at RHUL following repair. Test will confirm repair before shipment to CERN. There are concerns over the interpretation of peak power between manufacturer and RHUL.
5. Laser coupling is improved and is now 75% to 80%.
6. The enclosure box has been made with interlocks in place.
7. The Return date of the laser from CERN should be monitored as test dates have slipped slightly.

RF / Shielding (M. Dudman)

1. M. Dudman gave a presentation showing the latest layouts of the proposed shielding.
2. It was suggested to lengthen the shielding by one block (1830mm) to ensure maximum internal space for laser diagnostics and dumps.
3. It was thought a layout, taped on the floor of R8 would be a good visual representation of the shielding footprint.

Actions:

1. Everybody should consider their spending requests.
2. M. Dudman / P. Savage to arrange / oversee inspection of the RFQ at RAL.
3. S. Lawrie to progress Quad quotes / order.
4. A. Letchford and S. Gibson to look at loan agreement and insurance for the laser.
5. S. Alsari to forward details of RF amplifier order for A. Letchford to progress.
6. M. Dudman to model other configurations of the shielding.