FETS Meeting: 17th December 2014

RAL, CR12, R68

Present: A. Letchford, J. Pozimski, M. Dudman, S. Lawrie, M. Aslaninejad, S. Gibson, A. Kurup, M. Clarke-Gayther, D. Faircloth R. Edgecock, C. Plostinar S. Alsari, S. Jolly,

Apologies: P. Savage, J. Back, P. Posocco, G. Boorman, J. Taylor, K. Kruchinin, T. Davenne, A. Bosco

Circulation: FETS Webpage

Next meeting date: 14th January 2015 – Imperial College

Administration

Status of Proposal

1. ASTeCS contribution to the proton network is being discussed. This includes the four staff years cost that has been promised and is very significant.

OsC

1. Good progress was reported with VESPA, the MEBT and laser wire. Every requirement was achieved but the admin side needs updating in the form of risk management. The extension proposal should be submitted on the 27th February 2015 but may be brought forward depending on the outcome of the FETS meeting in January 2015.
2. Funding scenarios at 70%, 50% and 30% should be thought of as alternatives along with their possible effects on the project. Funding necessity and justification should be noted. An example would be, a reduction of funding would result in less staff, increasing the time to finish the project.

Finances

1. Virtually all the funding this financial year is committed and an over spend may be incurred, depending on the roof block quote.
2. There was a request for 6K from RHUL for equipment. M.C.Gayther asked for £1200 to spend on a power supply. A. Letchford said he would review the current financial situation and inform the group at the next meeting.

FETS Schedule (S. Gibson)

1. There was no update since the last meeting. Points of discussion in the near future are the RFQ update and roof shielding block order. The schedule will be updated to take this into account.

RFQ (A. Letchford on behalf of P. Savage)

1. P. Savage is at NAB to discuss possible reasons for latest machining errors in the minor vanes, highlighted in the RAL inspection report. The vanes are 'bowed' by 150 microns.
2. Errors will be modelled to see if re machining is required or if it can be tuned out.
3. S. Alsari will circulate the bead pull results to see if this error was seen in the results.
4. The four metre bead pull parts are being manufactured. It may be possible to carry out a bead pull test of section one at NAB using the RHUL kit and compare to the original RAL/imperial tests. Section one may have been stripped down which could cause issues. The shape and volume of the bead was discussed with regards to being able to source a small round bead. Other options may include a tube shape.

Shielding / Infrastructure / RF (M. Dudman, A. Letchford, S. Alsari)

1. One of the Klystron cables has failed during tests. A. Letchford is looking into repairing or replacing it. A fuse also failed and will be replaced.
2. Before the cable failed good test results were seen. These were shown by J. Pozimski.
3. M. Dudman can now progress the waveguide run through to the blockhouse roof.
4. A. Letchford is now the laser responsible officer in R8.
5. M. Dudman informed the group of the progress of the shielding. The main block house walls are built and awaiting a positional survey.
6. The shielding has been erected as far as possible, before the removal of various tangs. This is to enable roof block placement.
7. D. Zakhar has progressed the design of the roof for quotation purposes. This must satisfy both P. Wright and ESSO in terms of shielding and cable requirements. Extra shielding has been asked for by P. Wright inside the blockhouse. This takes the form of 500mm x 500mm concrete blocks situated below the roof blocks.
8. The ion source cage has been modified to create a second exit route. M. Dudman will discuss the design of the ion source door with the ion source group.
9. The RF coupler position has been relocated to section three, port three, to enable entry through one complete roof section.
10. ESSO are currently working with M. Perkins to look at the wiring requirements of FETS. It has also been suggested that a false floor be installed under which the cables will run. This will enable the cable to take the shortest available path and will not require the whole wall to be taken up by cable trays.

MEBT

Cavity, Manifold and Dump (J. Pozimski)

1. The cavity order has been placed.
2. Detailed drawings are complete a request for quote is being compiled.
3. Beam data has been forwarded to C. Denshams group. The Technology group and T. Davenne will start simulations to confirm and compare power and heat simulations completed at RAL.
4. There will be trade-off between material stress/fatigue failures against induced radiation.

MQP

1. Some copper coils have oxidised but the voltage is not affected.
2. First magnet assembly is complete and S. Lawrie gave a presentation showing the test results. They are better than spec and the data will be fed into simulations.
3. Delivery is expected December 2014.

Chopper (M.C. Gayther)

1. A meeting was held on 19TH November with G. Boorman to discuss specifications.
2. An auxiliary power supply is required at a cost of £1200.
3. It was questioned if the feed throughs are to vacuum specification. Ceramtec can provide the correct fittings.

Beam Diagnostics

BPM (S. Gibson)

1. Five RAL designed BPM's will be tested at RHUL. A student, available until February 2015, is testing the existing BPM.
2. It has been noted that the cable position affects the results and placing the RF source further from the test rig improves things.
3. It was suggested that a section of beam pipe be attached to the rig to give realistic boundary conditions.
4. All BPM's have been vacuum tested to $10x10^{-6}$ Mbar Lts/sec.
5. The CERN strip line is at RHUL waiting to be tested. CERN are willing to make FETS one more if required to have as a spare.
6. A vacuum valve positioned after the torroid at the end of the MEBT will allow for the changing of a strip line without compromising the MEBT vacuum.
7. The latest MEBT lattice is shown on the FETS webpage.

Laser Diagnostic CERN (S. Gibson)

1. Element 6 could be considered for manufacture of a diamond detector. A sub group should be set up in the future to look at the options for FETS.
2. 12 MeV tests have progressed with more scans taken. Some scans were better than others. The plots are looking good.
3. There have been at CERN. The diamond detector was left inserted and damaged by the beam. Currently they are running with low power and emittance scans are difficult to take.
4. A. Bosco will be at CERN during the week before Christmas.

Laser Diagnostic Simulation (A. Kurup)

1. Set up for variable start position.
2. The map 3D issues are now fixed.
3. A quick comparison has been made of the previous field maps. There is a slight difference due to the elliptical / round nose.

4. The next steps are:
    - Update location of rotated screen.
    - Dipole field - update new field map and verify fringe field.
    - Power density on beam dumps.
    - Investigate options for laser outside of dipole.
    - Include residual gas.

Ion Source and LEBT (S. Lawrie)

VESPA

1. Runs routinely at 100mA.
2. Statistical noise is down.
3. Tests have revealed lots of data which will be analysed.
4. Caesium detector being manufacture.
5. Sealed source design progressed which will be used for FETS. Prototype made to be tested on a test stand.

AOB

1. S. Jolly was updated on status of the proposed extension as he missed the morning's discussion.

Actions:

1. A. Letchford to look at FETS budget and report back on spending.
2. S. Gibson to update the schedule.
3. S. Alsari to investigate bead pull options at NAB.
4. S. Alsari to investigate bead shape/size options.
5. A. Letchford to investigate Klystron cable failure and obtain a replacement or repair.
6. RHUL to progress the BPM tests.