**Interim response to PPARC allocation £2M for UKNF/MICE**

The recent proposal from the UKNF collaboration defined the first six years of a programme of accelerator R&D designed to:

- Establish UK capability in the key technologies that underpin the Neutrino Factory accelerator complex;
- Develop a complete conceptual design for the facility.

Last Friday the UKNF collaboration met to discuss options for the first three years (2004/05 – 2006/07) of this programme under the following assumptions:

1. £2M will be available from PPARC to provide funding for UKNF and MICE;
2. £1.5M will be available from CCLRC to provide funding for MICE. The allocation of £1.5M over three years for MICE assumes that CCLRC staff required for work packages 2 and 3 (Proton driver front end and Target studies respectively) are covered;
3. Additional resources may be available from CCLRC in view of the strong synergies between various parts of the proposed UKNF programme and the developments that are required to meet the future demands of the ISIS neutron-user community.

We therefore considered options for a programme funded at the level of £3.5M over three years.

The following interim response by the UKNF collaboration takes into account the relative priorities among the various UKNF work packages and MICE contained in the feedback from the PPRP and the priorities of the UKNF collaboration as presented to the PPRP on the 21st October 2003. Since we believe it to be essential that the foundations are laid for a sustained programme of hardware R&D, we shall review the interim allocations in the light of the questions raised in points 1 and 4 below.

1. The priority for near to medium term funding (2004/05 to 2008/09) is MICE. This reflects the recognised scientific excellence, the international importance of the MICE programme and the urgent need for investment in order that the project proceeds in a timely fashion. Hence, we propose that £1.5M over three years is allocated to MICE and that these funds be allocated through CCLRC. This allocation is to be taken as being in addition to funds to be secured from the Large Facilities Fund. It is already clear that the MICE programme exceeds the three-year horizon of the present exercise. CCLRC have indicated that an additional £1M will be available for MICE in financial years 2007/08 and 2008/09. Hence, assuming £7.5M from the OST Large Facilities Fund accessed through the Gateway Process, a total of £10M will be available for MICE over the next five years. When it reviewed MICE, the PPRP recommended baseline funding for the UK MICE contribution at the level of £12.5M. It would therefore be helpful, in the present exercise, for PPARC to indicate what its plans are for funding MICE in the years 2007/08 and 2008/09.
Memorandum

2. It is essential that the conceptual design for the Neutrino Factory be completed. This will allow the benefits of the hardware R&D programme (MICE and work packages 2 and 3 of the UKNF proposal) to be exploited to the full. It is also essential that funds be in place to allow the UK to host the World Design Study and to lead the EU Design Study bid that will be made under EU Framework 6. We therefore propose to allocate £550k to UKNF work package 1 and £250k to work package 4 in line with the priorities set out by the PPRP.

3. Lifetime tests of solid metal targets are essential before a final choice of target system can be made. We therefore propose to allocate £650k to in-beam and theoretical work on shock in solid targets.

4. We believe it to be extremely important that a viable proton driver front end programme and in particular a strong chopper-development programme be established. We note that the PPRP recommends funding the overall proton driver front-end design-work up to the level of £500k. Though a substantial contribution, investment at the level of £500k will not allow the key hardware questions to be addressed. We have therefore contacted Prof. K. Peach (Director, PPD) and Dr. A. Taylor (Deputy Chief Exec., CCLRC) to ask whether, in view of the strong synergy of the work proposed in UKNF work package 2 with the development of a new high-power proton driver for ISIS, additional resources might be available to fund this programme.

   It will be essential to have some information on the likely availability of the additional resources identified in point 4 above and desirable for an indication of PPARC funding for MICE in years 2007/08 and 2008/09 before the plan for the next three years of the UKNF R&D programme can be finalised. Note that the UKNF collaboration may need to modify the interim allocation of resources outlined above in the light of negotiation with CCLRC and PPARC over the coming weeks.

   K. Long on behalf of the UKNF collaboration
   20 November 2003