

IN CONFIDENCE
19 January 1972

(13)
SRC 2 - 72
(P/GC/01)

SCIENCE RESEARCH COUNCIL

HIGH FLUX NEUTRON BEAMS
Memorandum by the Chairman

I am sorry to have to tell the Council that the proposal which they endorsed at their November meeting (SRC 68-71) for a collaborative Franco/German/British Neutron Beam Programme based on a partnership for the operation of the Grenoble reactor and the construction of the HFBR has been rejected by the French and German representatives. In addition to their doubts about the need to start building a new high flux reactor immediately, they are opposed on commercial and technical grounds to providing irradiation facilities in the same reactor as high flux neutron beams. Since the AEA also had doubts about the desirability of making the HFBR an International facility we must regard that proposal as dead.

2 France and Germany remain determined that we should join the ILL Grenoble as full partners. If we did join ILL they would :

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78*
- (a) agree for a number of years to be determined to undertake high flux neutron beam research only in co-operation with the UK. If, during that period it were decided to build a ~~second reactor~~ *further facility* jointly, that reactor would be in the UK;
 - (b) accept a reduced British contribution to the capital cost of the Grenoble reactor. At present they propose that we should *have assessment of* pay about 72% of our full assessed share. On this basis the capital payments, spread over 10 years would be about £1M a year and the total cost to the SRC for a one third share of Grenoble would be about the £2½M a year assumed in the original submission (SRC 19-71) which Council considered in April 1971; and
 - (c) if, as well as joining ILL we wished to carry out the HFBR design study, France and Germany might be willing to adjust the rate of payment of our capital contribution to suit us but they would insist on some capital payment each year - probably not less than £½M making the minimum total subscription in any year about £2M.

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3 Neither the French nor German representatives are at present *naturally* willing to discuss with us the possibility of British access to the Grenoble reactor on any other basis than a full one third share. They have however indicated

that if eventually they agreed to our having a smaller access to the Grenoble reactor, the unit cost would be ~~considerably~~ higher.

4 Since our discussions on the basis of a tripartite collaboration had reached an impasse, we also, on the initiative of the present Director of the ILL, explored the possibility of making ILL into a fully European institute on the lines of CERN. For the UK this could have had the advantage of reducing our share of the total cost. In the light of the development reported in the next paragraph such an arrangement could have given us about a one fifth share of Grenoble coupled with the building of the HFBR within the cost of the programme approved by Council in April. However, both the French and German representatives firmly rejected the possibility of widening the partnership in ILL beyond themselves and the UK.

5 The only other development to report is that the AEA are extremely worried by the possibility of ~~our not proceeding with the HFBR~~ ^{that HFBR may not be built} and now propose to seek authority to make a 22% contribution - about £5M - towards its capital cost. This represents the minimum share of the facility which they require for their own purposes. Their position is set out in the memorandum at Annex I.

6 We have now explored the possibilities of collaboration with the French and Germans as far as is feasible until we have a Government decision on whether to ~~give priority to the building of the HFBR~~ ^{either}, as the Council originally proposed, or to join the ILL.

7 In April 1971, when the Council approved the proposal to build the HFBR and seek about 10% access to the Grenoble reactor during the construction period (programme B1 of SRC 19-71) rather than the alternative of joining the ILL (programme C of SRC 19-71), the respective estimated costs at end 1970 prices, slightly adjusted for 1972/3 and 1973/4 to take account of subsequent developments were :

not exact but fairly close

	1972/3	1973/4	1974/5	1975/6	1976/7	1977/8	1978/9	1979/80
Programme B1	2.25	3.0	4.0	5.0	6.0	5.9	5.9	5.2
Programme C	1.6	3.7	3.7	3.7	3.7	3.7	3.7	3.7
		<i>-0.5</i>	<i>-1.5</i>	<i>-2.0</i>				
		<i>2.5</i>	<i>2.5</i>	<i>3.0</i>				

8 Since then:

(a) We have learnt that our funds for 1973/4 are likely to be about £1½M less than we sought in the forward look and our funds for 1974/5 £1½M less. For the subsequent years our realistic prospects are for an annual budget about £2-2½M less than we sought in last year's forward look;

9C) In this line:

On the reduced expectation (SRC 65-71) NP Division would have got £2.0M less in 1975/6 & this is equivalent to surplus manpower of ~ 250

If the NPDB is run down in order to provide ^{funds} capital to build HEBR we shall still have a surplus in 1975/6 of 150-200.

I haven't got SRC 65-71 with me to check the figures but surely if our expectation is 2-2.5M less & if we carry on with the same capital construction programme we must save on recurrent expenditure & this means on salaries.

HEBR would be a help over the next 5 years say but not all that much. It may be a greater help from 1980 onwards

$\frac{1}{3}$ the possible 2.5M

(b) The French and Germans have made it clear that the unit cost of access to the Grenoble Reactor on any other basis than full partnership will be higher than we had assumed in equating the £.8M available under programme B1 for collaboration with the ILL to a 10% access; but

(c) If the AEA did contribute 22% towards the capital cost of the HFBR the annual cost to the SRC during the construction period would be reduced by up to about £1M a year. - assumes no contribution during Phase 1.

9 The factors which have remained unchanged since the April decision are:

(a) The neutron beam community's view that priority should be given to the construction of the HFBR despite the lack of firm assurance on the access to the Grenoble Reactor which they could obtain during the building period;

(b) The small but significant industrial interest in using a domestic HFBR on repayment - about £250K a year;

(c) The need to redeploy SRC staff as the Nuclear Physics programme runs down. If anything, the need to redeploy now seems greater than it was in April; and HFBR will not make substantial contribution to latter part of decade for next few years

(d) The prospects of the UK joining the EEC and the move towards closer collaboration with France and Germany.

10 In making its decision on the Neutron Beam programme the Government will have to take into account wider considerations than those with which SRC is concerned. We cannot therefore be as confident as is usual in the case of specific programmes that they will be able to accept our advice. Nonetheless, the SRC view will be a most important factor in the Government decision.

11 I ask Council to consider whether they wish to maintain their recommendation that priority should continue to be given to the construction of the HFBR (provided that the AEA make an appropriate contribution towards capital costs) or whether, having regard to developments since April, they now wish to give priority to full partnership in the ILL.