



10 DOWNING STREET

Prime Minister

Brian Vunich's note

summarises the key issues; you may also wish to look at Robin Nicholson's (Play A) which raises the important question of how far CERN can be pruned without going in for arbitrary and "irrational" cuts. Policy Unit advice is at Play C, which goes along with Sir Keith's recommendation it DES really think negotiations can be completed by Christmas.

A summary of the report, and the report itself, is at Play B, if you wish to glance at it.
MEN 15/11

MR NORRGROVE

15 November 1985

CERN

CERN swallows up an eighth of the total SERC budget, rather more if related UK work is included. There is wide-spread agreement that this is too much and the money could be better spent on more deserving projects. Any change is likely to cause a major row and will not be worth having unless a substantial cutback is actually achieved.

Keith Joseph's proposal is to try and persuade our European partners to cut CERN's budget by 25% with the overt possibility of withdrawal if this fails. This risks the worst of all worlds: the science community will treat it as a decision to withdraw, whilst our European partners will not relish another bout of British penny-pinching. Worse, if after protracted rows only a minimal cut is offered we may still find it virtually impossible to carry through the threat to withdraw.

If we have a guarantee that these consultations will be concluded by Christmas then the risk may be worth taking. If not then UNESCO tactics would be better: announce complete withdrawal immediately but agree to consult European partners to see if this can be avoided. (As consultation should be completed before actual withdrawal at the end of 1986, this arguably falls within the letter, if not the spirit, of Keith's commitment to consult European partners). If consultations lead to a satisfactory agreement then we can graciously be persuaded, if not all the money will be saved and at least the row will have been worthwhile.

Presentation is of the essence. From the start DES must list the specific projects that will receive the transferred CERN funds, preferably in a pecking order such that the

only should a scientific lobby in favour of cutting CERN be
created but the damaging allegation of just more Government
cuts will be avoided.

We recommend:

- either DES commits to complete negotiations by
Christmas
- or UNESCO type tactics be adopted
- in either case the recipients of the transferred
funds should be clearly identified.

Peter Warry

PETER WARRY

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PRIME MINISTER

Spending on High Energy Particle Physics with Reference to UK
Involvement in CERN
E(A)(85)63

BACKGROUND

1. In 1983 the Advisory Board for the Research Councils (ABRC) recommended a study of the case for redeploying UK expenditure on high energy particle physics (HEPP) to fund more promising science of greater relevance for the UK economy. This study has been carried out, with Government approval, by a Committee established by the ABRC and the SERC (Science and Engineering Research Council) and chaired by Sir John Kendrew. The Kendrew Committee's report, completed in June of this year, confirmed the research as of the highest quality, but recommended reductions of 25 per cent in UK expenditure on HEPP - both domestic and at CERN (European Council for Nuclear Research) - to be achieved by 1991 for redeployment elsewhere; failing this, the UK should withdraw from CERN. (CERN comprises 13 Member States: Austria, Belgium, Denmark, France, West Germany, Greece, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and the UK; Portugal will join shortly. Reductions in CERN's budget require the support of 10 members (two-thirds majority) The host countries are France and Switzerland). The Kendrew report has been considered by a group of officials from interested Departments (Education and Science, Foreign and Commonwealth Office, Trade and Industry, Energy, Cabinet Office, Treasury and from the SERC). E(A)(85)63 is a Memorandum by the Secretary of State for Education and Science, covering the agreed interdepartmental report by officials.

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Proposals

2. Sir Keith Joseph agrees with the conclusions of the Kendrew report that "the proportion (of the SERC budget) now taken up by particle physics is too high". He proposes:

(a) deferring a decision on withdrawal from CERN, and embarking on consultations and negotiations with other Member States aimed at the Kendrew reductions, making it clear that we have in mind the possibility of withdrawing if what can be achieved falls significantly short of 25 per cent;

(b) a rapid approach by the Parliamentary Under Secretary of State for Education and Science, Mr Brooke, to Research Ministers of France, West Germany, Italy, Switzerland, the Netherlands, and Sweden to explore in bilateral discussions the extent of reining back on CERN they might accept and the prospects of developing a two-thirds majority support for major reductions.

MAIN ISSUES

3. The main issues are:

(a) the Kendrew report;

(b) the questions (whether to decide now to withdraw from CERN, how to handle negotiations, etc) raised by carrying out the Kendrew recommendations.

The Kendrew Report

4. In 1985/86 UK expenditure on HEPP (financed by the SERC from funds from the Science Budget) will be £57 million, of which £38 million is the UK contribution to CERN. The Kendrew report



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concluded that despite the excellence of the science this level of expenditure on HEPP could not be justified and recommended a progressive reduction in the UK's contribution to CERN of 25 per cent by 1991; and that UK membership of CERN after 1989 should be continued "only if this can be achieved at a significantly lower cost". At the moment, so the Kendrew report argued, first-class research possibilities in other areas of science are not being funded, and these could benefit significantly from a redeployment of funds from HEPP and CERN. The Kendrew report also drew attention to the difficulties encountered in managing the costs of international subscriptions to CERN from changing exchange rates and from different inflation rates in Member Countries. The position has improved since 1983, but the Kendrew report regarded the improvements as insufficient. The Kendrew report has been endorsed by the SERC and by the ABRC.

5. The interdepartmental report by officials agrees with Kendrew: it believes it would not be credible for the Government to reject Kendrew on scientific grounds. They recommend that the Government should aim at a 25 per cent reduction in spending on CERN by 1991 and that the Government should enter into negotiations with other countries to achieve this objective. Sir Keith Joseph agrees. In addition, he is not prepared for the increased provision of £15 million per annum to the Science budget, agreed in this year's Survey, which he wishes to be spent selectively on high quality research of economic relevance, to be used to offset shortfalls on Kendrew. Sir Keith Joseph is seeking increased funding for research in the context of MISC 119, the Ministerial Group on R&D Priorities, under the chairmanship of the Lord President of the Council.

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6. Withdrawal from CERN would have some commercial consequences. The average annual income from CERN contracts to UK firms over 1980/83 was £5.5 million. CERN gives priority to purchasing from Member States and withdrawal would mean loss of preferred status. However, the official report and the Kendrew report agree that commercial benefits do not, in themselves, justify UK membership. Whereas our subscription is 16 per cent of the cost of CERN, we only get 7 per cent of the business.

7. It might be argued that withdrawal from CERN would call into question our reliability as a partner in international collaborative activity. International collaboration in science and technology is increasingly important, and negotiations are underway on the Europeanisation of SERC's Spallation Neutron Source (SNS), which you opened recently, and on the proposed European Synchrotron Radiation Facility (ESRF). Looking beyond SNS and ESRF, the UK might put at risk its reputation in Europe if it is thought to be an unreliable partner in international scientific collaboration. There is no precedent known to us of withdrawal from an international collaborative programme established under a treaty. But it is difficult to believe that our partners (eg France) would let such scruples deter them in a similar situation if they believed it to be in their national interest.

8. The Kendrew report is an appraisal by the scientific community of priorities for research; we are strongly encouraging the scientific community to assess priorities on a rigorous basis. The Kendrew Committee would not have taken lightly a decision to recommend a reduction in the UK contribution to CERN which is the leading particle physics laboratory in the world. If the savings proposed in the Kendrew report are not found acceptable by Ministers, we are told that the SERC may bid for extra resources to compensate for the lost savings on CERN; and ultimately the Secretary of State for Education and Science might have to direct the SERC to maintain this expenditure.



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Options

9. The official report identifies four options. These are:

(i) deciding now to remain in CERN (provided that a review is undertaken) even if the economies fall well short of Kendrew; and making our intention known when it is tactically most opportune;

(ii) deferring a decision to withdraw, and seeking by consultation and negotiation with the other member states the maximum reductions in the CERN budget that can be achieved, without at this stage making overt use of a threat to withdraw;

(iii) deferring a decision on withdrawal, and embarking on consultations and negotiations aimed at the Kendrew reductions, making it clear that we have in mind the possibility of withdrawing if what can be achieved falls significantly short of 25 per cent;

(iv) withdrawing from CERN as soon as possible, that is, on 1 January 1987.

10. The first choice is to decide whether to withdraw now from CERN or whether to begin negotiations with other Member States aimed at securing the cost reductions we wish. The arguments in favour of withdrawal as soon as possible are:

(i) it would release £38 million per annum for redeployment within the Science Budget (offset by a one-off payment of £40 million for pension commitments). With the cessation of domestic work on experimental particle physics (which would follow) a total of some £50-60 million per annum would eventually be released to areas of science more relevant to the UK economy (eg low dimensional structures (semi-conductors); protein engineering; specific biological and chemical sensors; molecular electronics; supercomputing; etc).



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(ii) the later the withdrawal, the larger the nugatory expenditure on CERN.

11. The arguments in favour of negotiation are:

(i) in announcing the review of HEPP and CERN, the Secretary of State for Education and Science wrote to Science Ministers in other Member Countries that any change in the UK's relationship with CERN would follow due consultation with fellow-members;

(ii) we should find out whether Kendrew's aim (reduction of 25 per cent in UK CERN contribution by 1991) can be achieved, before deciding to withdraw;

(iii) immediate withdrawal would mean that experimental particle physics in the UK would cease, and UK physicists would cease to benefit from CERN; UK withdrawal before the end of the construction of LEP (Large Electron Positron machine, which enables theories of matter to be tested), Phase 1 of which is due to be completed by January 1990, would put the LEP project at risk.

12. Negotiations would initially take the form of bilateral exchanges between the Parliamentary Under-Secretary of State for Education and Science, Mr Brooke, and Research Ministers of France, West Germany, Italy, Switzerland, the Netherlands, and Sweden. The official report is not optimistic about the prospects of total success. It believes reductions of up to about 10 per cent might be fairly readily agreed ("more certainly if withdrawal remains open") saving £4 million per annum on our CERN subscription; but a reduction of 20-25 per cent (saving £8-10 million per annum) would be difficult, and perhaps impossible. Sir Robin Nicholson has also separately advised you that a 15 per cent cut is probably the maximum retainable. To the figures for CERN itself must be added whatever savings are achieved in domestic HEPP expenditure.



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13. Option (ii) of the official report recommends negotiations without making overt use at this stage of a threat to withdraw. Option (iii) recommends making it clear that we have in mind the possibility of withdrawing from CERN if the savings achieved from negotiation amount to significantly less than 25 per cent. Sir Keith and the interdepartmental report favour option (iii) on the grounds that this is likely to prove the most effective way to achieve the reductions in our contribution we want. Foreign and Commonwealth Office officials favour option (ii); they believe it would be premature to threaten withdrawal at the outset of discussions, before we know if our partners will agree to the reduction in the UK's subscription we are seeking. This would, however, deprive Mr Brooke of an important negotiating weapon; the UK could be accused of bad faith if it raised the question of withdrawal halfway through negotiations.

14. There are arguments against beginning bilaterals before 2-3 December (the date of the European Council); but it would be essential for Mr Brooke to complete his bilateral discussions rapidly (so that Sir Keith could inform E(A) colleagues before Christmas) if we are to keep open the possibility of withdrawal as soon as possible from CERN (ie January 1987) (option (iv) in the final report). Notification of withdrawal from January 1987 would have to be given before the end of this year. Sir Keith will need to be able to portray Mr Brooke's bilateral talks as constituting due consultation with Member States colleagues.

HANDLING

15. You will wish to invite the Secretary of State for Education and Science to introduce his Memorandum. After that, you may wish to direct discussion to:



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(i) the Kendrew Report;

(ii) the four options set out in the official report;

16. In addition to the Secretary of State for Education and Science, the Secretaries of State for Trade and Industry and Energy and the Chief Secretary, Treasury will have views on both (i) and (ii). The Lord President of the Council will have views on CERN, in the light of the MISC 119 discussions on R&D Priorities. The Minister of State, Foreign and Commonwealth Office will have views on foreign policy aspects. The Chief Scientific Adviser will also have views.

CONCLUSIONS

17. You will wish the Sub-Committee to reach conclusions on which of the four options set out in the official report the Sub-Committee accepts; or whether it prefers an alternative option.

J B UNWIN

Cabinet Office

15 November 1985

W0775

MR ADDISON

14 November 1985

CERN

FLAP PT 3
I enclose my brief for the Prime Minister for the CERN discussion in E(A) on Monday, 18 November. A summary of the Kendrew report was sent to the Prime Minister with Sir Keith Joseph's minute to her of 18 June. I added to that in my minute to the Prime Minister, also of 18 June.

RBN

SIR ROBIN NICHOLSON
Chief Scientific Adviser

WO774

PRIME MINISTER

14 November 1985

E(A) 18 NOVEMBER - HIGH ENERGY PARTICLE PHYSICS (CERN).

The Kendrew committee was set up jointly by ABRC and SERC to review UK participation in the study of high energy particle physics (HEPP). Current expenditure by SERC is £57m of which £19m is domestic (virtually all associated with CERN) and £38m is the CERN subscription itself where the UK contributes 16% to the CERN budget of SFr725m (calculated on a GNP basis).

2. Kendrew concluded that "at any realistic level of the SERC budget, the proportion now taken up by particle physics is too high" and recommended that the UK should seek a reduction in its subscription to CERN of 25% by 1991 and should concurrently reduce domestic HEPP expenditure by 25%. This would lead to total annual savings of £14m. Kendrew recommended that if the UK could not obtain this reduction, it should withdraw from CERN. After certain one-off expenditures and assuming that domestic HEPP activity ceases this would lead to annual savings of £57m by about the end of the decade.

3. Although Kendrew recommends a reduction of 25% in the UK subscription, the CERN treaty fixes subscriptions as a proportion of GNP so the effective recommendation is a 25% cut in that part of the CERN budget falling to the existing member states. The short term prospect for new member states is poor (although the medium term is brighter) so this in turn means a 25% cut in the overall CERN budget itself.

4. Kendrew concludes that "CERN is at present the leading particle physics laboratory in the world". I would concur with this. CERN has enabled Europe to overtake the USA in HEPP and two of its scientists have recently won Nobel prizes. Kendrew also concludes that HEPP is at an "exciting stage of development" and that "the subject is well worth pursuing in the long term".

5. CERN is a well managed laboratory especially by the standards of international laboratories. It has an enviable reputation for completing complex projects to time and to cost - most to the credit of a former Director, the late Sir John Adams. It reduced its budget by 20% in the 1970's and is currently constructing the pioneering LEP facility within a constant real term budget. This has been done (see Annex 1) by closing one facility (ISR), postponing some expenditures on another facility (SPS) and cutting right back on recurrent expenditure. Significantly the maximum rate of spend on LEP construction is only 19% of the total budget and future LEP operating costs will be about half this figure.

6. Kendrew has been criticised, rightly in my view, for not indicating how a 25% cut could be made. He simply describes the cut as "difficult" and "painful"; others have called it "impossible". I have therefore made a short study of CERN costs and talked with the Director, Professor Schopper (at his request). Based on this and my own experience of laboratory management in industry, I believe that the maximum savings which could be achieved by harsh but rational decisions would be about 15% by 1992/93. Larger savings could only be achieved by irrational (but possible) measures such as shutting down recently completed machines and sending home employees on full pay - the redundancy costs make firing a significant number of employees an unattractive alternative.

7. Thus a 25% cut (£14m savings) is in my view unattainable but a 15% cut (£10m savings) is attainable through a critical review of CERN - privately Professor Schoppe even hinted he would welcome such a review which would help him implement economies he wants to make.

8. In summary I think there are only two questions which need to be answered:

- a. If £14m savings are acceptable to DES/SERC, ^{and} one £10m savings (the likely outcome) also acceptable?
- b. Are the needs of the science budget such that only £57m savings (ie withdrawal) is acceptable?

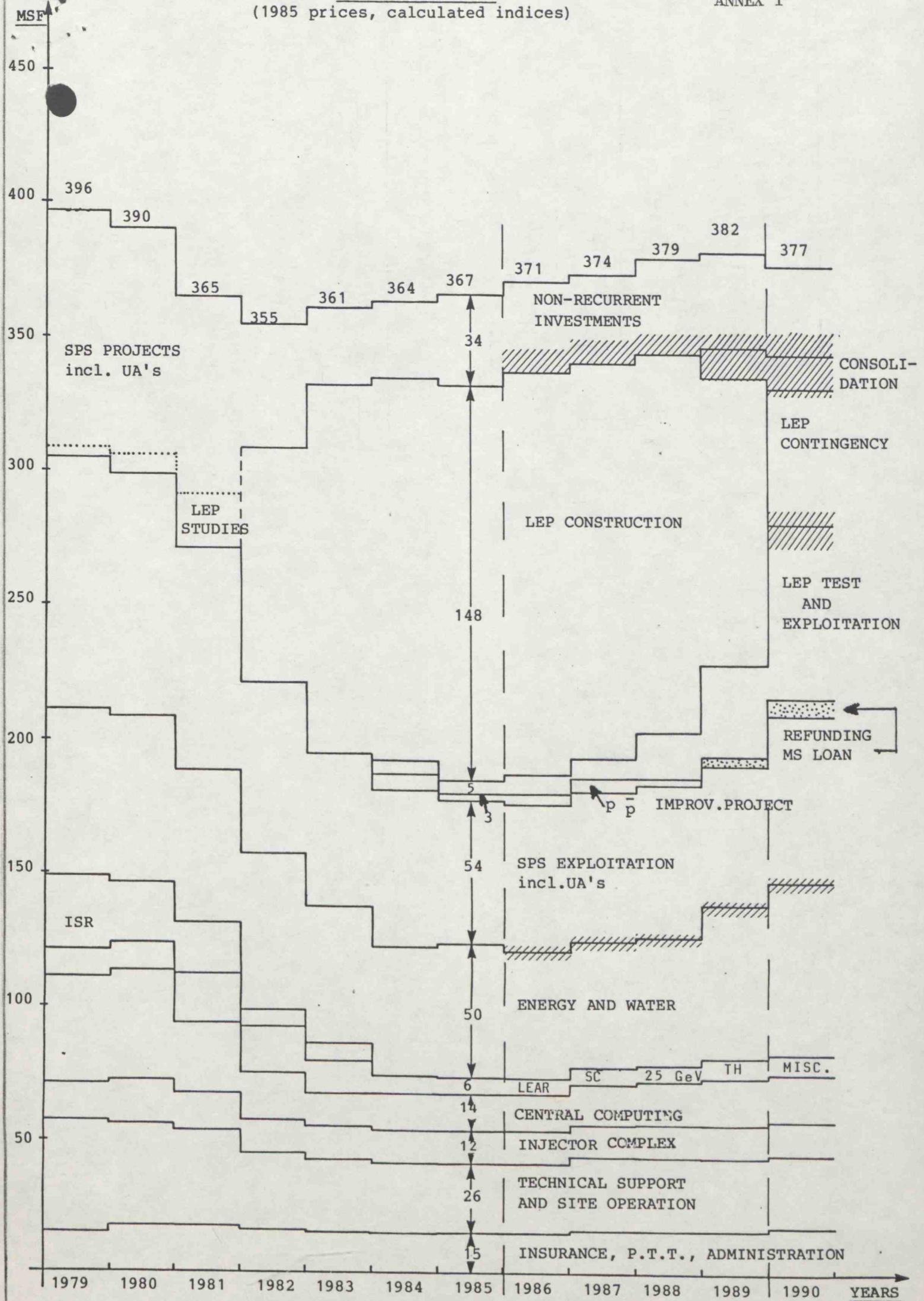
9. On question (a), I presume the answer would be yes, in which case I support Sir Keith Joseph's proposal that Mr Brooke should seek informal approval from other countries for a review of CERN costs with the aim of getting a saving of about 15% (clearly he would start from the 25% negotiating point which Kendrew has offered). But I suggest he must do this within a calendar month so a final decision on whether or not to withdraw can be taken before Christmas. At all costs we must avoid this issue dragging on through 1986 - our one year notification of withdrawal must be given before 31 December 1985.

10. On question (b), this must be put to Sir Keith Joseph for answer at the same time as Mr Brooke's report is given. In his paper Sir Keith says "... even with these (PES 1985) additions and assuming that the Kendrew reductions can be made, the needs of the science base will not be met. I intend to return to this matter in MISC 119". The results of MISC 119 will be known in December. If Sir Keith still feels the needs of the science base have not been met, I presume he will need the larger savings from CERN withdrawal regardless of the outcome of Mr Brooke's visit.

11. I am copying this minute to Sir Robert Armstrong.

WNN.

SIR ROBIN NICHOLSON
Chief Scientific Adviser



SCIENCE + TECH

SCIENCE BUDGET

PTY