Energy

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P.0871

PRIME MINISTER

Fast Reactor Policy:
E(82)66,67,69 and 70.

BACKGROUND

In December 1980 the Committee considered a recommendation from the then Secretary of State for Energy that he should try to reach an agreement with the French and Germans on the development of a fast breeder reactor. The Committee decided that the time was not ripe for this and asked for a full evaluation of the main policy options (E(80)46th Meeting, Item 1).

FLAG A

FLAG B

2. The memorandum by the Secretary of State for Energy (E(82)67) examines a range of policy options. It suggests that options based on a large scale independent or collaborative fast breeder programme and involving an early move towards construction of a commercial demonstration fast reactor (CDFR) should be ruled out. It asks for authority to put a proposition to the Atomic Energy Authority (AEA) on the following lines:

(a) The cost of the fast breeder programme (operation of the prototype fast reactor (PFR) at Dounreay in Caithness, plus research and development) should be reduced to £60 million a year by the late 1980s, compared with the present £100 to £110 million a year. The programme would be directed mainly towards improving current design concepts, reducing capital costs, and improving operating economics.

(b) There would be no intention of proceeding to a CDFR in the foreseeable future.

The AEA would be asked to advise what could be bought with the money, plus any contribution from the electricity supply industry or the nuclear plant

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industry; and what scope it would provide for international collaboration. On the basis of the advice, the Secretary of State for Energy would come forward with definitive recommendations: he implies that if the programme did not seem cost-effective he would recommend more drastic reductions in expenditure which would effectively remove the United Kingdom from the independent development of fast breeder technology. He proposes to make an early public statement of the Government's policy.

FLAG C
FLAG D

3. The recommendations in E(82)67 are broadly endorsed in the note by the Central Policy Review Staff (E(82)66). They are also supported in the minute by the Chief Scientist, CPRS, circulated with E(82)70; but this suggests a statement putting less emphasis on cost reduction and more on our desire to seek international collaboration.

FLAG E

4. The note by the Secretary of State for Scotland (E(82)69) also agrees with the main line of argument in E(82)67, but has two reservations. First he suggests that to reduce the size of the programme to £60 million a year may be to go too far and that it might have serious effects on the economy of Caithness. He argues that it is important to be sure that the money spent on the fast breeder programme is enough to achieve worthwhile results and to ensure that we are taken seriously by other countries as possible collaborative partners. He therefore indicates that he would prefer a programme of £70 million to £80 million which the AEA Chairman has said is the minimum practical level. He also thinks it undesirable to say that there is no intention to build a CDFR in the near future. His preferred formulation is that it would be premature to set any date for building a CDFR.

MAIN ISSUES

5. The papers before the Committee are voluminous; and it will hardly be practical to go into the details of the seven or more options discussed in them. Nor is the Secretary of State for Energy inviting the Committee to do so: he is asking only for authority to put a proposition to the AEA and to announce that he is doing so. It would probably be most useful for the Committee to discuss the following questions:

i. whether the United Kingdom's policy on fast breeder reactors should be aimed at:

a. eventually buying in at least the bulk of the technology from overseas, or

b. developing at least a large part of it ourselves, or

c. keeping our options open so far as possible;

ii. whether the course recommended by the Secretary of State for Energy seems likely to achieve the desired aim;

iii. whether the Government should make an early statement of its intentions and, if so, what it should say.

Technology: under licence or home-grown?

6. In favour of the UK's continuing to develop fast breeder technology, it can be argued that the fast breeder process is intrinsically far more efficient than the thermal nuclear cycle; that it will provide considerable economic benefits and security of fuel supplies; that the UK will, sooner or later, need the technology; and that it is unsafe to rely on being able to acquire the technology from abroad at an acceptable price - or at all.

7. Against this, it can be said that the fast breeder process is unlikely to be commercial for at least 30 years, and quite possibly a lot longer; the UK might therefore find itself investing huge sums for very little return. As for the prospects of licensing, there are very likely to be at least two competing suppliers (the USA and France); and there is no more reason to suppose that it will be impossible to license fast breeder technology than it has been to license PWRs.

8. The Secretary of State describes four main options:

Option I

Run-down of fast reactor research and development; closure of PFR. This is a 'minimum cost' option which would take the UK out of the development of fast breeder technology.

Option II

Maintenance of PFR in operation, but cut of 50 per cent in the associated R & D programme. This would also take the UK out of

developing independent technology; but if and when the time came to buy technology from overseas, the UK would be an 'informed customer'.

Option III

Proceeding towards CDFR in collaboration with other countries.

Option IV

Proceeding independently to a CDFR.

9. The estimated costs of these options, as set out in E(82)67, are summarised in the Annex to this minute. In fact however the strategic choice cannot sensibly be arrived at by studying the figures. Essentially a judgement has to be made about the time when a fast reactor will be more economic than a PWR (this depends on a wide range of assumptions about the capital costs of fast reactors and the price of uranium) and about whether, when that time comes, it will prove to have been cheaper to have been participating in developing the new technology rather than to buy it in. It is very difficult to make such a judgement at this stage. The Committee may therefore feel that the right broad approach is to keep the UK's options open for as long as possible, so far as this can be done at tolerable cost. If this is the general view it should provide a basis for assessing the Secretary of State for Energy's proposals and any alternative proposals which are put forward.

Assessment of the Secretary of State's proposals

10. In practice the Secretary of State for Energy is putting forward none of the main Options I to IV. He argues that there is no basis for proceeding with III or IV because they both involve the expense of building a CDFR. He is also reluctant to contemplate Option I at this stage because of the risk which would be involved. He is therefore putting off making firm proposals until he has sought further advice from industry. The basis on which he intends to seek this advice is to put a limit on the resources available of £60 million a year in the late 1980s. This is a smaller sum than would be required for Option II which is said to have only the limited objective of enabling the UK to be an "informed purchaser" of

licensed technology when the time comes. He implies however that he hopes that, following his consultations with industry, expenditure of this magnitude, together with contributions from the Generating Boards, NNC and BNFL should give the UK some worthwhile participation in the development of fast reactor technology and should provide the basis for some international cooperation. If such a limited programme does not seem worthwhile, he is likely to propose instead a minimum cost approach on the lines of Option I.

11. Most members of the Committee are likely to agree that the right course is not to adopt any of the Options I to IV at this stage but to defer a decision until there has been further discussion with the industry. Dispute is likely to arise on the precise basis for the consultation, and in particular:

i. whether the Government should commit itself finally to expenditure of no more than £60 million a year or should be willing to contemplate a somewhat higher figure (£70 million or £80 million) as the Secretary of State for Scotland would prefer, if this is necessary to achieve worthwhile results.

ii. whether the Government should make it clear that it is ruling out the construction of a CDFR for the foreseeable future.

iii. whether the assumption should be that, if expenditure of £60 million a year is unlikely to achieve worthwhile results, the alternative would be to pull out of fast reactor technology altogether (Option I).

The Committee's view will depend on how far they want to go in trying to keep options open.

12. We understand that Treasury Ministers are likely to argue that the figure of £60 million a year in the late 1980s should be regarded as a firm limit; and that if the AEA advise that it is not possible to mount a programme within that sum which will achieve the ends outlined by the Secretary of State for Energy, the Government should decide in favour of

Option I. This is logical, if the Committee is willing to agree now that the country should spend no more than £60 million a year in order to keep open the option of playing a significant role in the development of fast breeder technology. If the Committee is not disposed to fix an arbitrary limit of this kind, it would be better to agree to review the position when the Secretary of State for Energy has carried out his consultations with the AEA.

Statement of Government intentions

13. Any statement will need to be consistent with the basis on which it is agreed that the Secretary of State for Energy should enter into consultations with the industry. If his proposals are approved as they stand, it would be appropriate to authorise him to make a statement on the lines proposed in paragraph 19 of E(82)67 that the Government is slowing down the fast reactor programme with no intention to build a CDFR in the near future, but that detailed decisions on the programme will be taken in the light of further advice from the industry and further discussions with potential partners. If however the Committee want to enter into the consultations with the options left more open than the Secretary of State for Energy envisages, this would point to a holding statement about a continuing review of fast reactor policy, with more emphasis, as the Chief Scientist CPRS, would prefer, on the possible scope for international cooperation and omitting references to any firm decision to run down the programme and to ruling out the construction of a CDFR in the near future. It would be necessary however to avoid arousing expectations since the Government might eventually have to adopt a minimum cost approach.

14. There is in any case a particular point about timing. The Anglo-French Summit is due to take place on 4 and 5 November. If the Committee considers that there should be a statement to the effect that we do not intend to build a CDFR for some time, the French may take this as a rejection of collaboration with them. There may be a case for deferring an announcement of this kind until after the Summit.

15. You will no doubt wish to invite the Secretary of State for Energy to circulate a draft of any statement to the Committee.

HANDLING

16. You will wish to ask the Secretary of State for Energy, the Secretary of State for Scotland and Mr Sparrow to introduce their memoranda. The Chief Secretary, Treasury will wish to comment on the public expenditure aspects. The Foreign and Commonwealth Secretary will be able to advise on the international aspects, and particularly on relations with the French. The Secretary of State for Industry may have comments on the wider industrial implications.

CONCLUSIONS

17. You will wish the Committee to reach conclusions on the following:

i. whether it is clear at this stage that the United Kingdom's fast reactor policy should be to rely eventually on bought-in technology, to develop at least part of the technology ourselves, or to try and keep our options open for the time being;

ii. in the light of i., whether the Secretary of State for Energy should be authorised to enter into consultations with the industry on the basis outlined in paragraph 17 of E(82)67 or on some different basis;

iii. whether, when, and in what terms an announcement should be made of the Government's intentions.

PLG

P L GREGSON

13 October 1982

ANNEX

Costs of Options I-IV

£ million at September 1981 prices

	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-93	1993-98	1999-2003	TOTAL
Option I (excluding redundancy costs)	108	70	53	36	29	31	53	25	25	430
Redundancy costs		17	44	19	18	20	63	20	2	203
Option II (excluding redundancy costs)	108	84	72	66	68	69	305(a)	220(a)	78(a)	1070(a)
Redundancy costs		8	9	10	9	7	25			68
Option IV (net of credit for PWR operations) (b)	108	103	102	105	143	155	518	163	103	1500
Option III	As Option IV but reduced by total of 300 for assumed credit from collaborative partner.									

Notes

(a) Depending on programme decisions.

(b) The figures for Option III and IV exclude the net cost of the CDFR ; this is estimated at 520-1820, the range reflecting the possibility that the Electricity Boards might buy the electricity generated and be able to postpone construction of a thermal station.

Ref: A09752

Prime Minister

MLS 13/10

PERSONAL AND CONFIDENTIAL

PRIME MINISTER

Fast Reactor Policy

You may like to know that Sir Walter Marshall takes the view (as I understand it) that the course of action recommended by the Secretary of State for Energy would be viable and sensible on the basis of a cost of £60 million a year by the late 1980's; that any figure less than that would not make much sense, in terms of keeping international options and possibilities open, and that it would therefore be preferable to discontinue the programme rather than continue it on the basis of a smaller figure; and that it is important that the Government should now take a decision rather than let uncertainty run on.

Approved by
Robert Armstrong
and signed in his absence.

13th October 1982

PERSONAL AND CONFIDENTIAL

10 DOWNING STREET

Prime Minister

To note Bernard's view on presentation.

MCS 12/10

Ian Lobban

Jane Reading

I would like you to reflect my view that the DTI's proposed presentation is too negative and that I support Lord Sainsbury's amendment.

File

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10 DOWNING STREET

From the Private Secretary

11 October 1982

FAST BREEDER REACTOR POLICY

The Prime Minister was grateful for your note of 7 October.

You suggested that it might be useful if this was circulated to the Members of E Committee. The Prime Minister agrees, and I would be grateful if you would make the necessary arrangements.

I am sending a copy of this letter to Richard Hatfield (Cabinet Office) and Gerry Spence (CPRS).

M. C. SCHOLAR

Dr. R.B. Nicholson,
Cabinet Office.

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Prime Minister

Would it not be helpful if E colleagues, too, had this note before the discussion at E on Thursday (Mr Nicholson thinks so)?

W.0621

PRIME MINISTER

FAST BREEDER REACTOR POLICY

The discussions of the Working Group on Technology, Growth and Employment set up by Heads of State at the Versailles Summit have included material which is relevant to the policy decision on the United Kingdom Fast Breeder Reactor programme to be discussed at "E" on 14 October. MCS 8/10

2. There is substantial international disagreement on the likely relative costs of FBR electricity to PWR electricity at current uranium prices. The French claim that the ratio is already down to 1.3 so that a small increase in uranium prices would make FBR electricity the cheaper. The Americans claim that the ratio is about 3. Differences in the assumed capital cost of an FBR station probably account for much of this variation but the extrapolated cost of PWR electricity, the accounting treatment of the power station capital cost, and the allocation of future FBR R & D expenditure also contribute.

3. The American position is that the unexpectedly low uranium price means that the commercial switch from PWR to FBR is further away than had been anticipated. The additional time available, coupled with the high capital cost of present FBR designs, suggest that a new engineering R & D programme aimed at a fundamental improvement in the reactor core design is desirable.

4. The Americans are therefore proposing an international collaborative project on FBR core design to the Versailles Working Group. They seem confident of getting the Japanese in and are pushing hard to have our support as well. They believe that

USA/UK/Japan collaboration would subsequently bring Germany in as well, leaving the French with an expensive programme in obsolescent technology which they will be too proud to drop.

5. Whether or not the American prognosis is right, the Versailles Working Group (which has to report by 31 December) will almost certainly influence the pattern of international collaboration on Fast Reactors. Thus the Secretary of State's proposal to ask UKAEA to re-examine the scope for international collaboration as a means of making the best possible use of the proposed reduced level of funding is very timely.

6. However it is important not to prejudice the UKAEA's negotiating position over the next few months by making too negative a statement in Parliament. Rather than concentrating on cost reduction, I suggest that the statement has the following components:

(a) The UK's "indigenous reserves" of uranium from the thermal reactor programme are comparable with our fossil fuel reserves if we use FBR technology, hence FBR is an attractive future source of power.

(b) FBR costs will not be lower than thermal reactor costs until the next century - therefore it makes sense to stretch out our R & D programme and not build a CDFR at present.

(c) Our FBR technology is highly regarded abroad and we propose to seek R & D partnerships with one or more other countries as a means of getting maximum benefit from our continuing R & D programme.

RBN.

ROBIN B NICHOLSON
Chief Scientist

cc: Sir R Armstrong
Mr Sparrow

Cabinet Office
7 October 1982

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Energy

DEPARTMENT OF THE ENVIRONMENT
2 MARSHAM STREET
LONDON SW1P 3EB
01-212 3434

MINISTER FOR LOCAL GOVERNMENT
AND ENVIRONMENTAL SERVICES

30 JUL 82

Dear Nigel

FAST REACTOR POLICY

I have seen your letter of 16 July to the Chief Secretary, his reply of 23 July and also John Sparrow's letter of 22 July.

I have no objection to the timetable you propose. As you say, this is a major issue, and we need to be sure that the various options have been rigorously evaluated.

There are, of course, important environmental implications to be taken into account, and I would propose to seek the advice of the Radioactive Waste Management Advisory Committee on these aspects.

I am copying this letter to members of E Committee, Sir Robert Armstrong and John Sparrow.

Yours

TOM KING

The Rt Hon Nigel Lawson MP

RESTRICTED

Prime Minister (2)

Mrs 23/7

Treasury Chambers, Parliament Street, SW1P 3AG

J D West Esq
Principal Private Secretary to
Rt Hon Nigel Lawson MP
Secretary of State
Department of Energy
Thames House South
Millbank
London SW1P 4QJ

23 July 1982

Dear Julian,

FAST REACTOR POLICY OPTIONS

The Chief Secretary is content to postpone collective discussion of the Fast Reactor policy options for a few weeks but he considers it essential that the discussion should take place not later than 10 September so that the policy decisions can be taken into account in the public expenditure bilaterals later that month.

I am sending copies of this letter to the Private Secretaries to Members of E Committee, Sir Robert Armstrong and John Sparrow.

Yours sincerely
Terry Mathews

T F MATHEWS
Private Secretary

RESTRICTED

CABINET OFFICE

Central Policy Review Staff

With the compliments of
John Sparrow

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Energy

NSPM

Mrs 24/7

CABINET OFFICE

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From: John Sparrow

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Qa 05990

22 July 1982

The Rt Hon Nigel Lawson MP
Secretary of State for Energy
THAMES HOUSE SOUTH
S W 1

Dear Nigel,

Fast Reactor Policy Options

I have seen your letter of 16 July to the Chief Secretary proposing postponement of the E Committee discussion on Fast Reactor Policy until the second week in September. I fully support this proposal.

As you know, the CPRS is being consulted in the preparation of this paper, in line with the original remit from E(80)46th Meeting. It is important that the full implications of the various options are clearly identified, for what will be a major policy decision.

I am sending copies of this letter to the other members of E Committee and to Sir Robert Armstrong.

Yours sincerely,

John.

John Sparrow

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Prime Minister (2)

MLS 16/7

01 211 6402

The Rt Hon Leon Britton QC MP
Chief Secretary to the Treasury
HM Treasury
Parliament St
London SW1

16 July 1982

Dear Chief Secretary,

FAST REACTOR POLICY OPTIONS

As you know I had planned to put my paper examining the options for future fast reactor policy to E Committee before the summer recess. My predecessor's remit (E(80)46th meeting), was to provide an evaluation of the main options including collaboration with either the Europeans or the US, and scaling down the UK effort to a core team to act as informed purchasers of fast reactor technology when the UK needed it.

We have already achieved a good understanding with France and the US on the principles which might underlie a collaborative agreement with either country. We have also made preliminary evaluations of the economics of the various options. However I would like to refine these before putting a paper to E; I would therefore prefer to postpone collective discussion until the second week in September. This will enable our officials to undertake a more rigorous economic evaluation, which I regard as essential for an issue of this importance; it will also allow the new Chairman of the CEGB time to reach a view on the Generating Board's readiness to participate in any further development of the fast reactor, while still ensuring that we have time to consider the policy issues before the Public Expenditure bilaterals.

I would be grateful for confirmation that you are content with this timetable.

I am sending copies of this letter to members of E Committee, Sir Robert Armstrong and John Sparrow.

Yours sincerely

J.L. Clyde

NIGEL LAWSON

(Approved by Secretary of State, and signed in his absence)