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CABINET

MINISTERIAL COMMITTEE ON ECONOMIC STRATEGY

BNFL LIABILITIES FOR PRE-1971 WASTES AND PLANT DECOMMISSIONING

Memorandum by the Secretary of State for Energy

Introduction

1. In 1971 British Nuclear Fuels Ltd was established as a commercial entity outside Government to trade in the processing of nuclear fuels. It was already contemplated in the 1971 Atomic Energy Authority Act that 49% of the shares might be sold to the private sector. Consistent with our policy on privatisation, I am very anxious to go at least this far with privatising BNFL in the next Parliament. But the whole commercial structure of BNFL has now been undermined by the emergence of liabilities in the range £600m - £1000m in respect of pre-1971 activities at Windscale. These are the costs, as now estimated, of treating and disposing of pre-1971 nuclear wastes and of decommissioning pre-1971 plant. Unfortunately, there was no proper settlement in 1971 for these liabilities, the extent of which was not then realised.

They are in fact mainly costs arising from the British nuclear deterrent, and from the recognition of what is involved in making nuclear wastes safe. The basic choice we now face in putting right what was not done properly in 1971 is whether to accept the great bulk of these liabilities as a charge on Government (whatever the arrangements made to deal with them within Government); or to attempt to load them, and the financial risks associated with them, on BNFL, thus undoing at least for many years the 1971 attempt to create a commercial organisation, and eliminating any prospect of privatisation. I am in no doubt that the second course would be quite wrong. It would be a particularly sad outcome at a time when BNFL is behaving commercially and achieving success in export markets.

BACKGROUND

2. The attached paper by officials examines the pre-1971 liabilities. Some of the decommissioning costs cannot yet be estimated with any precision, but these will not have to be met for at least 30 years. Treatment of the nuclear wastes is however a more urgent problem and new plant for this purpose is needed now. The Company believes that it should not be required to meet any of these pre-1971 liabilities and is unwilling to authorise capital expenditure on the plant until it is clear who is to pay for the pre-1971 share of the costs.

3. The official paper also describes the origin of the wastes and associated plant. Approximately 80% of the costs are attributable to the early defence programmes at Windscale. About 10% are attributable to AEA programmes, 5% to Home Generating Boards, and 5% to programmes which BNFL took over itself. Waste management and decommissioning costs at Windscale were not considered in any detail in 1971. Only £0.6m was transferred from the UKAEA for one particular piece of waste management. It is clear that if BNFL had not been formed nearly all the costs would in due course have fallen on the Government.

4. The short and medium term commitments up to 1992/93 for treatment of wastes are estimated at £300m. This includes the vitrification of high level active waste and treatment of plutonium contaminated wastes. These projects are regarded by the Department of Environment as necessary and urgent in the development of a comprehensive waste management programme.

5. A decision is also urgent because the Company needs to settle its accounts for 1982/83 by 30 April. It must now make provision for these costs in the 1982/83 accounts if they are left with the Company, but in that event it will become technically insolvent. The interim dividend for 1982/3 has already been passed and no final dividend would be paid for 1982/3. No dividends would in fact be payable to the Government for several years, and would then be on a low level until the 1990s when reserves had been built up. Although technically insolvent, BNFL could continue trading with a guarantee for all its creditors from the Government. In that situation it would be extremely difficult to say that the Company was any more than a general arm of Government in relation to its borrowing and trading. It is clear that if the liabilities remain with BNFL, privatisation of the Company would be impossible until the 1990s.

6. The Company has consistently made a profit since its formation in 1971. The management led by Sir John Hill and Mr Con Allday have done well in recent years to establish the Company internationally in reprocessing and uranium enrichment. Its industrial relations are good and its financial image in the City is now that of a sound and rapidly expanding company.

7. The main decision I seek from the Committee is that the Government should accept responsibility for the great bulk of these liabilities, so re-establishing the possibility of BNFL operating commercially and being prepared for privatisation. The decision on how the liabilities are handled within Government is a separate one, which is not mainly a matter for me, but paragraphs 11-13 below discuss inter alia the handling of the liabilities within Government in the light of the report by officials. Within a general settlement I would be prepared

to accept on behalf of AEA 10% of the liabilities, and I would hope to persuade the CEGB to accept a further 5%. BNFL are willing to accept the 5% of the liability attributed to them in the report by officials.

OPTIONS

8 The paper by officials describes a range of options. It has been agreed by officials of the Department of Energy, Treasury and DOE, and with BNFL and the UKAEA. MOD officials were not able to agree the paper. They maintain that a financial settlement reached between MOD and the UKAEA in 1964 exonerates them from any responsibility to contribute to the costs of waste management and decommissioning that have now emerged. The paper does not put forward any agreed recommendation because it was not possible for officials to reconcile the conflict of financial interest between Energy and Defence.

9. The Treasury Solicitor has examined the legal position and I attach a copy of his advice. There seems no doubt that no legal obligation in respect of these wastes rests on the Ministry of Defence, or indeed on the Government as a whole. However I do not believe that agreements made between parts of Government in 1964 can prevent fresh Government policy decisions about these liabilities in the totally changed circumstances of 1983 and that is also recognised in the Treasury Solicitor's opinion.

10. Three main options are examined in the paper by officials:

- (A) BNFL meets all liabilities from future profits;
- (B) BNFL meets liabilities from increased prices to existing customers;
- (C) Government Departments contribute towards the costs.

11. I regard Option A as unacceptable because:-

- (i) Privatisation would be ruled out until the 1990s;

- (ii) The Company's profits, made largely from services to the civil nuclear power industry, would be used for a decade largely to meet the past costs of the defence programme, instead of being ploughed back into the main business and thus helping to keep down the cost of nuclear power;
- (iii) The liabilities would overshadow the Company's whole business. They would make a profitable and well run company technically insolvent, ruin its international image and demoralise management.

12. Option B relieves the Company and the Government of almost all the costs but at the price of loading them onto electricity consumers. That is economically and politically unthinkable. We could not load electricity consumers with costs arising from the nuclear deterrent. It seems unavoidable therefore that the Government should accept most of the liability. Various ways of distributing the burden are examined in the paper under Option C.

13. If all costs were borne by the originators of the wastes (option C1) the Government's share is estimated at £261m up to 1992/93. Under option C(2), the costs would be divided equally between the Company and the originators. Under option C(3), the originators would meet the costs of waste management, and the Company would meet the costs of decommissioning. That would reduce the cost to Government to £243m. Under option C(4), the Company would in addition fund the originator's share of the capital cost but recover it under the waste management contracts. That would result in the cost to Government being slightly smaller (£200m) and would defer the bulk of MOD and AEA expenditure to after 1985/86.

14. I have considered these variations on Option C. I could accept the financing proposals in C(4) but I do not accept that the liabilities for decommissioning should be left with the Company. These too must be taken over by the Government in a new settlement. I do not believe that privatisation - or commercial operation - could be successful if those unquantified liabilities have to met by the Company. And there seems no basis in logic for leaving the

decommissioning costs with BNFL.

15. The Chief Secretary has asked me to include in this paper a statement by the Treasury on public expenditure implications, as follows. While the Treasury accepts that these wastes should be treated and the nuclear plant decommissioned in accordance with modern standards, it does not believe that decisions about responsibility for the liabilities can be separated from decisions on their financing. Indeed, the arrangements for financing the costs involved will clearly be an important factor in the Committee's decision on the Secretary of State's recommendation. In the Treasury's view it is important that, however the Committee concludes that liability should be allocated, there should be no additional public expenditure requirement. Apart from avoiding increases in the public expenditure totals, the need to find the funds from existing allocations will provide the best incentive to efficiency and tight cost control.

16. I conclude that the whole liability should be taken off the Company (as in Option C1) but would accept that the finance should be raised by BNFL (as in Option C4), and the costs be charged to the originators of the wastes. Funding of those costs may require further discussion interdepartmentally. The arguments in favour of this course are as follows:-

- (i) The liabilities will not stand in the way of privatisation in the next Parliament;
- (ii) It follows DOE's principle that "the polluter pays". The originators of the wastes will meet the treatment of disposal costs.
- (iii) No public expenditure is incurred until 1984/85, and the bulk of it not until after 1985/86. The immediate effect on PESC is thus small.

- (iv) It follows the normal financial pattern of BNFL's operations - to invest in plant and recover the costs under contracts from customers' throughput.
- (v) Option A or B would be politically controversial. Option C, as varied, would no doubt require some Parliamentary announcement, perhaps by way of an arranged PQ; but it would not require a supplementary estimate, would minimise the PESC implications and minimise also the risk of political controversy.

CONCLUSION

17. I recommend:-

- (a) that the Government accept liability for the pre-1971 wastes and plant left with BNFL, subject to the exceptions described at the end of paragraph 7.
- (b) that the arrangements for meeting these liabilities be as described in paragraph 14.

N.L.

Department of Energy

21 March 1983

TREATMENT OF NUCLEAR WASTE ARISING FROM PRE-1971 DEFENCE
CONTRACTS

NOTE BY THE TREASURY SOLICITOR

There is nothing in the 1963-64 Terminal Arrangements or subsequent correspondence which would in itself place any legal liability on MOD for future expenditure by British Nuclear Fuels Limited (BNFL) in respect of nuclear waste arising from the manufacturing arrangements with MOD prior to 1971.

Consequently, for there to be any such liability, it would have to be shown that:-

- (a) the original arrangements between the Atomic Energy Authority and the former Ministry of Supply were such as to impose this liability, and
- (b) nothing in the Terminal Arrangements or the lapse of time since the termination of those arrangements has affected that position.

It would appear extremely unlikely that there was any such liability as is mentioned at (a) above. The MOD papers relevant to the point have, it is understood, been destroyed. In any event, it is at least arguable that the terminal arrangements were designed to settle all outstanding liabilities.

The whole problem arises because BNFL do not consider that they have any legal redress in respect of the obligation which may be imposed on them under the terms of a nuclear site licence to process nuclear waste in their possession in a very expensive way. It is notable that in 1975 BNFL did approach the MOD with a view to persuading them to accept liability for this purpose. They were given a firm negative reply. The last letter from BNFL ends with the following passage:-

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"There is, however, one final point I must make clear. We do not feel able to conclude any contracts in future with MOD which involve a reprocessing element which do not contain an acceptance of liability to meet the appropriate costs and of such future waste treatment and/or disposal as may be required."

This would appear to show very clearly that BNFL do not regard MOD as under any legal liability in relation to treatment of existing waste. There is nothing to throw serious doubt on this view and Ministers' consideration of this question should be based on that assumption.

If, on policy grounds, Ministers do decide to reimburse BNFL in whole or part for this expenditure, which Department should be responsible for it again is a matter of policy.

17th March 1983

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BRITISH NUCLEAR FUELS LIMITED: LIABILITIES FOR PRE 1971 WASTES AND PLANT DECOMMISSIONING

INTRODUCTION

1 This paper examines the problems facing British Nuclear Fuels Ltd (BNFL) in meeting the liability for the cost of treating and disposing of nuclear wastes and of decommissioning plant which existed prior to the formation of the company from the UK Atomic Energy Authority (UKAEA) in 1971. The total costs of the liability will probably be in the range of £600 million to £1,000 million spread over the next 30 to 60 years. The Company believes that it should not be required to meet this liability which is much greater than foreseen at the time the Company was established in 1971.

2 This paper examines the origin of the wastes, the timescales within which liabilities will occur and various options for meeting the costs.

BACKGROUND

Origin of the wastes

3 The waste and associated plant arose primarily from the early defence programmes at Windscale. However, some is attributable to the research and development work undertaken by the UKAEA in support of the civil nuclear power programme, and some to the Boards' civil programme itself. The first of the programmes began in 1947 and at this time and until 1954 the operations were undertaken by the Ministry of Supply under the Atomic Energy Act 1946. In 1954 the UK Atomic Energy Authority was created and took over the operations. This remained the position until 1971 when BNFL was formed and took over the activities formerly conducted by the UKAEA Production Group.

Financial Responsibility

4 Prior to the creation of the UKAEA the costs of the programmes were met directly from voted funds. From 1954 to 1971 the costs were passed by the UKAEA to its customers, mainly the Defence Departments. The charges made to the Defence Departments covered the recorded costs of their programmes including the recovery of capital on a historic cost basis and a notional sum for interest on capital employed. No provision was made in the charges for the treatment of waste.

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5 The arrangements between the UKAEA and the Defence Departments prior to 1964 were made subject to a Terminal Settlement in that year. This settlement was necessary to enable the Authority to recover the capital cost of the services provided. Before 1964 capital costs arising from the defence programme were recovered by the UKAEA from throughput charges but the defence requirements did not reach the expected levels. Under the settlement the Ministry of Defence undertook to meet all outstanding capital costs in eight annual payments. MOD maintain that this Settlement discharged all liabilities of the Defence Departments prior to 1964. The Settlement does not, however, make reference to costs other than capital charges and there is doubt as to its scope. The Department of Energy's legal advice is that the Settlement was a concluded contract which has long since been discharged, but it is not clear that it had anything to do with the liability for wastes. The Department of Energy maintain that given the uncertainties that surround the nature of the contracts made prior to 1971, responsibility for meeting the liabilities should now be reviewed by Ministers.

6 At the time the company was formed final disposal options had not been considered. The cost of treating and disposing of the waste and decommissioning the associated plant is now much greater than then foreseen. A provision of £0.6m at 1969 prices was included in the 1971 Accounts to cover the costs of providing a highly active liquor storage tank. No provision was made for decommissioning plant or for other wastes. The liabilities are likely to spread over the next thirty to sixty years or beyond and therefore it is not possible to estimate the total costs accurately. In the short term to 1985/86 the programmes required can be planned with reasonable certainty and the costs have been estimated at about £80 million. For the succeeding years to 1992/93 there are greater uncertainties because not all the policy issues relating to waste management in that period have been fully resolved. The Company have estimated the total cost for the ten years to 1992/93 inclusive at some £290 million. For the period beyond 1992/93 it is even more difficult to estimate the size of the liability and the total costs can therefore only be put in the range £600-£1,000 million. These figures are in January 1982 prices. The full estimates for each year to 1992/93 and the allocation thereafter is given in Annex One. Annex Two shows the costs in cash terms to 1992/93.

Need for waste treatment

7 ENFL are now about to construct new plant at Windscale for the treatment of wastes arising both before and after 1971. Work for the next five years has been agreed with the Department of the Environment and is included in the Corporate plan. This will involve the construction of a vitrification plant to process the highly active waste into glass blocks; an improved plant to store new Magnox waste and other Magnox waste currently kept in obsolescent facilities; and new plant to treat plutonium contaminated material. The plant involved and an analysis of the reasons for construction is at Annex Three. The main reasons for undertaking the work now are:

- (i) Since ENFL was set up a great deal of work has been done on waste management, following the Report by the Royal Commission on Environment Pollution in 1976. The Environmental Departments now have the responsibility to ensure that waste management problems are dealt with before any large nuclear programme is undertaken. The various types of waste are being dealt with in an order of priority with the object of establishing eventually a comprehensive waste management programme.
- (ii) The vitrification plant will be the first major step in this programme which is itself an important factor contributing to the public acceptability of civil nuclear power. The alternative to the immediate construction of the vitrification plant is additional storage tanks for liquid waste. In the long term this would be more expensive.
- (iii) Under recent reprocessing contracts with foreign utilities, ENFL has the option to return waste to the country of origin after reprocessing. Given public sensitivity on the disposal of waste this may have to be done with minimum delay.

The Immediate Problem

8 The capital expenditure proposal for the vitrification project and certain of the other new plants for waste treatment and storage are ready for approval by the ENFL Board. The plants will deal with both pre and post 1971 wastes.

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However, the Board is unwilling to accept financial responsibility for the cost of processing the pre 1971 waste and therefore to give approval to the project until a solution is found. BNFL have accepted in the meantime the responsibility for the continues storage of these pre 1971 wastes.

The Overall Problem

9 It does not seem sensible to deal with the funding of the immediate programme in isolation from the total question of pre-1971 wastes and decommissioning. Whatever decision is reached on the present proposals will become a precedent for the other liabilities to be met in later years. This uncertainty needs to be solved if private capital is to be attracted into the Company sometime during the next Parliament; Government Departments also need to know whether the liabilities will fall on them. It therefore seems essential to tackle the whole question of pre-1971 liabilities and allocate the responsibility once and for all.

10 As stated above, the phasing of expenditure after 1992/93 is impossible to predict with accuracy. However the estimates of the liabilities to 1993 are as follows:

TABLE ONE

£ million
Jan 1982 money values

	To 1982/3	1983/4	1984/5	1985/6	Total to 1985/6	Total to 1992/93
Waste Treatment	11	18	20	28	77	270
Decommissioning	-	1	1	1	3	20
	11	19	21	29	80	290

11 The phasing and level of expenditure after 1992/93 is much more uncertain. However the broad estimates have been included in Table Two. This table also indicates the net present values of the expenditure totals assuming a discount rate of five per cent.

TABLE TWO (See also Annex One)

£ million

	Jan 1982 Money Values	Net Present Value
Up to 1993	290	210
1993-2000	90 to 150	60
2000-2025	60 to 160	35
2025 onwards	160 to 400	15
Total	600 to 1000	320

12 There are three broad options to solve the problem: either the Company should pay from the profits on its existing and future business; or the Company should pay and recover the costs from its present customers or the originators of the wastes (mainly Government Departments), either wholly or in part, should meet the cost. However the costs are allocated, they are in national resource terms essentially the same; all the organisations concerned are controlled by the Government, although BNFL is classified to the private sector and its borrowing falls outside the PSBR. The effect on public expenditure and on the company would, however, vary considerably according to the arrangements chosen. The three main options are examined below.

Option A: BNFL meets all liabilities from profits

13 If no assistance is given BNFL would have to meet the broadly estimated provisions of £800 million (ie the mid-point of the range in table two) from profits and reserves, beginning with £370 million in the period to 1992/93. BNFL's projected profits over the next eleven years, as set out in the 1982 Corporate Plan, show sufficient profit to provide for the whole of these estimated liabilities by making provisions as set out in Annex 4.

14 In BNFL's view, the immediate effect of leaving them the responsibility would be that the Company would have to make some provision in its accounts for 1982/83 for the expected costs. BNFL believe (and their auditors support them) that as the Directors begin to approval capital expenditure for the waste management programme they would have to make formal provision in their balance

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sheet for the total programme then approved. On this basis, if expenditure is approved by the end of the Financial Year, the Company's liabilities would exceed its assets; and it would become technically insolvent until 1985/86.

15 Once BNFL became technically insolvent, further trading would be at the risk of creditors. The directors would have to decide formally whether the Company should continue trading. The Company would not, however, become legally insolvent unless it was unable to pay its debts as and when they became due. It could therefore continue to operate, although it would probably become necessary to provide a Government guarantee for the Company's debts to protect the creditors who might otherwise lose confidence in the Company. This would be an extension to the present Government guarantees on the Company's borrowing.

16 The advantages of pursuing this option and providing a Government guarantee to meet the problem of technical insolvency are:

- (i) the Government would avoid having to meet the cost of the liabilities directly, although the dividend it receives from the Company would be suspended for several years and would in the longer term be much reduced.
- (ii) the Company would have an additional incentive to minimise costs and an incentive to maximise its revenue and profit.

17 The disadvantages would be:

- (i) privatisation would be impossible until adequate reserves had been built up. This would not be until the liability could be clarified with reasonable precision and even then the net proceeds from a sale of shares are likely to be reduced.
- (ii) the Company would not legally be in a position to pay a dividend until the shareholders' interest exceeded the issued share capital of £33m (see Annex Four). On current estimates Dividends and ACT would not be payable at all for a few years from 1983/84 and would be reduced overall by

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around £70m in the period to 1993. The Company might return to insolvency later, and it would therefore not be prudent for the Company to declare any dividend until it had accumulated a reasonable level of reserves. Dividends paid after this would be reduced to reflect the full additional expenditure.

- (iii) the liabilities would overshadow the Company's whole business. It would affect management morale and would be counterproductive to their efforts to improve efficiency and performance.
- (iv) the Company's profits, made largely from the services it provides to the Home Generating Boards (HGBs), would be used to meet liabilities from defence work instead of being ploughed back into the main business. This could have political implications in the light of attempts by the opponents of nuclear power to link the civil and military programmes.
- (v) BNFL's commercial reputation with overseas customers and industrial partners would be damaged.

18 The Company argue, with some justification, that it was set up by Government in 1971 with a financial structure which did not and could not take account of the great changes in costs, policy and technology which have since arisen; and therefore the Government should fund these liabilities, and not let the Company become technically insolvent.

Option B: BNFL meets liabilities from increased prices to existing customers

19 This option would effectively require increased prices for the reprocessing part of the Company's business. Enrichment pricing is controlled by URENCO; fuel fabrication is relatively small. The price increases which would be of the order of $7\frac{1}{2}\%$ to 10% would be borne by BNFL's UK cost-plus customers. This would affect the HGBs, MOD, UKAEA and would also include the Company's own electricity generation operation. BNFL's overseas customers for the new THORP reprocessing plant could not under the terms of their contract

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be required to accept any part of the cost of the pre-1971 liabilities, whether charged directly or indirectly as an increase in overheads. As nuclear power station costs are not marginal and not the main determinant of electricity prices (which reflect marginal costs) the increase in costs might not be passed on fully to electricity prices. To the extent that they were not passed on the HGB's profitability would be affected.

20 The advantage of this option, as in option A, is that the Government would avoid the cost of the bulk of the liabilities. It would, however, lead to a number of other difficulties:

- (i) the cost would be shifted largely to the HGBs. The Boards would certainly resist the additional charges. If the Government were to insist that they accepted them the Boards might seek to recover these costs from Government through an increase in their external funding requirements. There is also the risk that BNFL's competitiveness internationally would be eroded.
- (ii) passing costs on to the HGBs would violate the principle that the originators of the waste should pay. The anti nuclear lobby in particular would object that costs incurred largely by the military programme were being met by the civil nuclear and non-nuclear power programme.
- (iii) a small part of the costs would be carried by the new MoD programmes for special nuclear materials. BNFL's competitive position vis-a-vis the US Department of Energy would be worsened undermining the basis of recent Ministerial decisions that BNFL's prices to the MoD should be comparable to US DoE costs.
- (iv) a large part of the expenditure on pre 1971 wastes and decommissioning will not occur until after the year 2000. No reprocessing contracts exist yet for that period and the Company's revenues in that period are uncertain. If the dry storage system is adopted by the Boards for spent fuel, it is possible that there will be no further reprocessing for twenty years or more. The dry storage system would be operated by the Boards themselves and would not incur the increase in prices from BNFL. Implementation of this option would therefore encourage

the Boards to abandon reprocessing. The Boards would also be more likely to close their Magnox power stations earlier; the reprocessing costs are already heavy and the case for keeping them running into the 1990s becomes marginal. There would then be even less revenue to cover that period. Moreover unless BNFL's domestic reprocessing customers accepted revised contracts which included responsibility for the liabilities, the Company would still need to make provision for the part of the costs not so covered and so could still run into technical insolvency.

Option C: Originators of the Waste (mainly Government Departments) contribute to the costs

21 Under this option the costs would be met in part from public expenditure. Various methods of dividing the costs between Government Departments, the Company and the HGBs have been considered. The costs for each would be calculated in accordance with the "polluter pays" principle, as set out in the White Paper on Radioactive Waste Management, under which the originators of waste bear the cost of waste management. The bulk of the share attributed to Government under each of the variants considered falls to the MoD defence programmes, although a small part is also attributable to the Atomic Energy Authority. BNFL and the HGBs would also pay their share as originators of a small part of the waste. The various methods considered are:

- (i) that all costs of waste management and decommissioning are allocated to the originators of the waste pro rata as they fall due;
- (ii) that the costs are divided arbitrarily (for instance half and half) between BNFL and the originators;
- (iii) that the costs of waste management are met pro rata by the originators as they fall due but that the decommissioning costs are met by BNFL;
- (iv) that the costs are divided as in (iii) but the research and development and capital costs of waste management are funded in

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the first instance by BNFL and recovered in charges to the originators together with operating costs as and when the wastes are processed.

22 The costs and merits of these variants are considered below. The main advantage of the Government funding a greater part of the liabilities is that the size of the Company's liabilities and the problems associated with them would be reduced. The company would also be free from the difficulties of technical insolvency, although these could be overcome by Government guarantee. On the other hand there are implications for public expenditure. The sum involved within the PESC period has been estimated to be between £10m to 72 million in January 1982 prices depending on the variant chosen. The Ministry of Defence and the UKAEA argue that these costs could not be met in the PESC period from their existing budgets: new funds might therefore be sought. The UKAEA also point out that as the Atomic Energy Authority Act 1971 provided that BNFL should take overall the assets and liabilities and obligations of the Authority's production group, legislation might be required to allow them to enter into contracts to reimburse this expenditure by BNFL. The total cost over the full 30-60 years period could be up to £1000 million but because of the long timescale this would have a net present value of some £320 million. (See table two).

Option C1: Costs met by the originators of the wastes pro rata as they fall due

23 Under this option the originators of the waste and users of the pre 1971 plant would meet the costs of each operation pro rata as and when it took place. The originators would place contracts accordingly with BNFL. Expenditure would fall as follows:

TABLE THREE

£ million

Jan 1982 money values

DEPARTMENT	SHARE	To 1982/83	1983/4	1984/5	1985/6	Total to 1985/86	Total to 1992/93
MOD	80%	9	15	17	23	64	232
AEA	10%	1	2	2	3	8	29
Government Share	90%	10	17	19	26	72	261
HGB's	5%	0.5	1	1	1.5	4	14.5
BNFL	5%	0.5	1	1	1.5	4	14.5
TOTAL	100%	11	19	21	29	80	290

Notes to table overleaf

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Notes:
to table 3

- (i) The allocation between the originators of these costs is only a broad guideline.
- (ii) These figures beyond 1992/93 are in the range £300-£700 million. These figures should be taken as illustrative only.

24 The advantages of this option are:

- (i) the allocation of costs to originators up to 1992/93 can be reasonably accurately determined and is not in dispute;
- (ii) it follows the accepted principle that the "polluter pays";
- (iii) as the expenditure is phased over the next thirty to sixty years the impact on public expenditure in any one year is relatively small. Once the policy has been approved by Ministers and the commitment made in PESC the funds would be approved to meet annual contractual commitments without further consideration.
- (iv) the MoD and the UKAEA have the technical expertise to monitor BNFL's operations, if necessary, to keep down costs.

25 The disadvantages are:

- (i) the MoD and the UKAEA would either have to absorb the costs within their existing budgets, or there would have to be an increase in their votes. Both believe that an increase in their vote would be required. The Treasury would resist this. The UKAEA also believe that payments to BNFL, as described, could be ultra vires to their powers (see para 22).
- (ii) if the Government pays, the Company would have less incentive to keep costs down.

Option C2: Costs divided equally between BNFL and the originators of the waste

26 To reduce the effect on public expenditure BNFL could be required to meet part of the costs in addition to their share as an originator of the wastes.

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Various arbitrary divisions are possible ; for illustrative purposes a half and half division is considered, ENFL would meet half the costs including their own share, as originators, and the HGBs would meet their own small share. The costs would fall as follows:

TABLE FOUR

£ million

January 1982 money values

	To 1982/83	1983/84	1984/85	1985/85	Total to 1985/86	Total to 1992/93
MOD	4	8	9	12	33	122
AEA	1	1	1	1	4	15
Government Share	5	9	10	13	37	137
HGBs	0	1	1	1	3	8
ENFL	6	9	10	15	40	145
TOTAL	11	19	21	29	80	290

Note: The figures beyond 1992/93 are in the range £300-£700 million.

27 The advantages of this option are:

(i) that public expenditure would be reduced compared with option C1 and departments more likely to be able to meet the costs from existing budgets.

(ii) that the Company should avoid technical insolvency.

28 The disadvantages are:

(i) that the reduction in public expenditure would be offset by a reduction in the Company's dividend payment to Government. This could be reduced by some £25 million in the PESC period and some £15 million thereafter up to 1992/93.

(ii) the Company would still need to build reserves to meet their liability and privatisation would be delayed.

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(iii) the problems identified in paragraph 17 (iii), (iv) and (v) would also apply but to a lesser extent.

Option C3: BNFL would pay for the decommissioning of Pre-1971 plant but the originators would pay the full costs of waste treatment and disposal as they arose

29 An alternative split would be for BNFL to meet the decommissioning costs of their pre-1971 plant and buildings and for the originators of the waste to meet the costs of waste treatment and disposal, including the decommissioning of the new plant to be built for those operations as and when it arose. The effect can be illustrated as follows:

TABLE FIVE

£ million

January 1982 money values

	1982/83	1983/84	1984/85	1985/86	Total to 1985/86	Total to 1992/93
MOD	9	14	16	23	62	216
AEA	1	2	2	3	8	27
Total Government Share	10	16	18	26	70	243
HGBs	0.5	1	1	1	3.5	13.5
BNFL	0.5	2	2	2	6.5	33.5
Total	11	19	21	29	80	290

Note: The figures beyond 1992/93 are in the range £300-£700 million.

30 This option places responsibility for the waste itself on the originator, while BNFL would have the responsibility of decommissioning their pre-1971 plant and buildings. These, unlike the waste, can be clearly identified as company property and therefore their responsibility. One could also argue that the company should be asked to shoulder some of the liabilities, and not expect the originators to accept them all. It could also be said that the Terminal Settlement in discharging MoD's responsibilities for capital costs removes any obligation for the cost of plant decommissioning from the Defence Departments.

31 Under this option BNFL would have to provide in its accounts immediately for up to £70 million in respect of a five per cent share of initial waste treatment and decommissioning to Stage II. The Company would then build the necessary reserves to meet the longer term liabilities, particularly for Stage decommissioning under which the sites would be returned to a "green field" state. The public might, of course, be less willing to invest than if the Government had accepted the full responsibility and potential investors might also be concerned about the long term nature of the liabilities and the uncertainties in the estimates. Even if privatisation proceeded the net proceeds from a sale of shares might therefore be reduced.

32 The option, like option C1, does, however, require considerable public expenditure in the early years on the construction of waste treatment plant, and dividends from BNFL might also have to be kept low in the 1980s to build reserves to cover future provisions for decommissioning.

Option C4: As in option C3, but BNFL would fund R & D and capital costs and recover them, together with operating costs, from the originators

33 Under this option, public expenditure on plant construction would be deferred as BNFL would fund the costs from loan capital as in its normal operations on behalf of the Home Boards. The Company would recover the costs including interest through depreciation charges in the contracts placed by the originators.

34 The effect of this option on the phasing of public expenditure would be as follows:

TABLE SIX

£ 'millions
January 1982 money values

	1984/85	1985/86	Total to 1985/86	Total to 1992/93
MOD	2	7	9	178
AEA	0.5	0.5	1	22
Total Government Share	2.5	7.5	10	200
HGBs	0.5	0.5	1	10
BNFL	2	2	4	32
TOTAL	5	10	15	242

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The figures for BNFL include the cost of meeting the Company's share of waste management costs as an originator of the wastes, and the company's share of interests. The table assumes for illustrative purposes interest charges at 10 per cent. Figures for post 1992/93 cannot be reliably calculated in the absence of an annual allocation of expenditure and the relevant interest charges. However, the estimated costs before interest charges after 1992/93 (as in table two) would be divided as follows:

TABLE SEVEN

£ million
January 1982 Prices

MoD	150 - 350
AEA	20 - 40
HGB	10 - 20
BNFL	130 - 300
Total	<u>310 - 710</u>

The advantages of this option are that:

- (i) No public expenditure is incurred until 1984/85, and the bulk of it not until after 1985/86.
- (ii) It follows the normal financial pattern of BNFL's operations - ie to invest in plant and recover the costs from customers' throughput.
- (iii) It follows the established principle that "the polluter pays".
- (iv) The very long term liabilities for decommissioning remaining with the company are manageable and thus have a minimal effect on privatisation.

The disadvantages are that:-

- (i) Public Expenditure, though deferred, is still heavy.

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- (ii) The cost of loan capital to BNFL would be higher by up to 1% than direct funding by Government, thus leading to slightly higher public expenditure..
- (iii) BNFL's additional borrowing compared to Option C3 would further increase their debt equity ratio which might require an additional injection of equity before privatisation.

Effect of options on PESC and PSBR dividends and privatisation

35 The effect of the various options is summarised in Table eight

36 If Option C1, 2, 3 or 4 is adopted, the PESC contributions would be met from MOD and Department of Energy (Nuclear Energy) Votes. Annex Five shows the costs to Departments under Options C1-4.

HGB's Responsibility

37 If the Home Boards were to be required to contribute under the various options on the same basis as other operators, their commitments would be as shown in Annex Six. The Boards would obviously prefer option A, but of the other options C2 and C4 would be the least costly to them.

Conclusion

38 A Ministerial decision is needed urgently on BNFL's pre-1971 liabilities. The first in a series of capital projects to deal with the pre-1971 wastes is due to be authorised by the Company before the end of the financial year. No further dividends can be paid by the Company until responsibility for the liabilities is resolved. Privatisation would not be possible before the 1990s if the responsibility remains with the Company. A range of options has been examined in this paper, which has been agreed by officials of the Department of Energy, HM Treasury and the Department of the Environment, with the help of BNFL and the UKAEA. No unanimous recommendation is possible because of the conflict of financial interest between Department of Energy and Ministry of Defence. The Ministry of Defence have participated in the Working Party but are unable to accept the paper as a fair statement of their case. They do not accept responsibility for any of the liability.

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39 The UKAEA and CEGB would prefer option A. Option B has no supporters. The Company is asking that it should be relieved of the liability and of the options set out in the paper it prefers Option C. The Treasury's primary aim is to find a solution which does not increase public expenditure overall.

40 The Department of Energy has devised option C4 as a manageable solution, and one with least disadvantages overall to the Government interests involved, including those of MOD. Ministers are invited to consider the options set out in this paper and to decide how BNFL's pre 1971 liabilities are to be resolved.

TABLE EIGHT

Options	Public Expenditure Commitment				£ million 1982 Money Values	Increase in PSBR due Decrease in Dividends	Privatisation	Comment
	Total to 1985/86	Total to 1992/93	After 1992/93	Total				
A	Nil	Nil	Nil	Nil	At least £70 million up to 1992/93 due to loss of dividends and a larger amount thereafter.	Ruled out until after 1990.	Company technically insolvent until 1985/86.	
B	Marginal	Marginal	Nil	Marginal	Marginal effect on dividends.	Unless liabilities covered by contracts no better than A.	Probably not acceptable for reasons of nuclear power policy but cheapest overall.	
C1	72	260	460	720	Marginal effect on dividends.	Prospects not significantly affected by liabilities.	Public expenditure problems acute.	
C2	37	140	260	400	£40 million up to 1992/93 and a larger amount thereafter.	Prospects doubtful for 1985/86. Improving thereafter	Short-term public expenditure problem more manageable.	
C3	70	240	280	520	Small effect before 1992/93. Some long term effects.	Prospects poorer but not ruled out for 1985/86.	Public expenditure problems acute.	
C4	10	200	*Not available	*Not Available	As for C3	As for C3 but could affect equity injection required	Short term public expenditure manageable.	

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ESTIMATED COSTS OF TREATMENT AND DISPOSAL OF PRE-1972 WASTES AND DECOMMISSIONING OF PRE-1971 PLANT AT JANUARY 1982 PRICES

	1982/ 83	1983/ 84	1984/ 85	1985/ 86	Total to 1985/86	1986/ 87	1987/ 88	1988/ 89	1989/ 90	1990/ 91	1991/ 92	1992/ 93	Total to 1992/93	Post 1992/93	Total
WASTE TREATMENT	11	18	20	28	77	21	17	16	26	37	38	38	270	190 to 430	460 to 700
DECOMMISS- SIONING		1	1	1	3	1	1	3	3	3	3	3	20	120 to 280	140 to 300
TOTAL	11	19	21	29	80	22	18	19	29	40	41	41	290	310 to 710	600 to 1000

*NOTES:

(1) The sums assumed for decommissioning include provision for a requirement to proceed to Stage III decommissioning, ie to return the sites to a "green field" state. This aspect of decommissioning policy has not, however, been finalised. A commitment to Stage II decommissioning only (making plant safe) would be cheaper. Estimated total decommissioning costs to Stage Two are some £50-70 million.

(11) Due to the uncertainties of long term planning the figures for later years, especially beyond 1992/93 are broad estimates showing the range within which expenditure is expected to fall.

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ESTIMATED COSTS OF TREATMENT AND DISPOSAL OF PRE-1971 WASTES AND DECOMMISSIONING OF PRE-1971 PLANT
AT CASH PRICES TO 1992/93

	TO 1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	Total to 1992/93
Waste Treatment	13	20	25	34	27	22	23	38	58	63	62	386
Decommissioning	NIL	1	1	1	1	1	4	5	5	5	5	29
TOTAL	13	21	26	35	28	23	27	43	63	68	67	415

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NOTES:

(i) Inflation factors used in revaluing from January 1982 prices are as follows:

- 7½% for 1982/83
- 5% per year thereafter.

(ii) Individual figures adjusted for rounding.

TREATMENT OF WASTES AT BNFL SELLAFIELD

NOTES BY DOE ON THE JUSTIFICATION FOR PARTICULAR BNFL PROJECTS AT SELLAFIELD

Vitrification plant

The reprocessing of spent nuclear fuel creates as a by-product a relatively small volume of highly-active heat-generating liquid waste. This waste is currently stored in complex and expensive water-cooled tanks which have to be constructed to a high degree of integrity and carefully monitored. Processing of this waste into solid glass blocks would make it safer and more manageable and further reduce any risk of leakage to the environment. These arguments are well-known and were referred to in the recent White Paper.

At present there is approximately 1000m^3 of liquid waste in store with a further 75m^3 arising annually from the reprocessing of Magnox fuel. In addition by the early 1990s it is envisaged that 110m^3 will result annually from the reprocessing of oxide fuel. Apart from safety and management aspects, commissioning of a vitrification plant at an early date would avoid the need for additional water-cooled storage tanks to cope with new arisings.

Retrieval of waste from B38 silo

In 1976 a leak was discovered in the B38 silo in which Magnox cladding is stored under water. However so far the radioactivity is confined to the immediate vicinity of the silo. Apart from this problem, the Magnox cladding reacts in the silo with the water to produce hydrogen. Periodically the rate of this reaction increases, which could result in additional radioactivity being released to the atmosphere or in extreme cases fire or explosion.

The Nuclear Installations Inspectorate published a report (agreed with DOE) in February 1980 recommending that it was essential to remove the Magnox cladding from water storage as soon as practicable.

Treatment of Magnox waste

Since storage of Magnox waste has proved unsatisfactory, BNFL have been required by the regulatory authorities to examine other options for its safe management. This will result in a new plant being required for current arisings and this will

have capacity to deal with retrieved Magnox waste. The figures provided by BNFL are indicative of the current assessment of the least-cost option.

Plutonium Contaminated Material (PCM) Waste Treatment Complex

The existing arrangements for PCM are considered unsatisfactory by the regulatory authorities. As a result, BNFL will need to construct a sorting plant to separate waste suitable for sea disposal, which can then be suitably packaged in another new plant. Wastes which cannot be disposed of at sea will be stored in a safer form pending consideration of the options for the longer term.

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ANNEX FOUR

EFFECT OF LIABILITIES ON BNFL'S PROFIT FORECAST

		£ million					
		1982/83	83/84	84/85	85/86	86/87	87/93
1	Shareholders interest brought forward	115	(57)	(86)	(38)	22	74
2	Profits	48	40	46	56	65	778
3	Additional interest receivable	-	1	2	4	6	32
		163	(16)	(38)	22	93	884
LESS:							
4	Provisions (approx)	220	70	-	-	-	80
5	Dividend/ACT	-	-	-	-	19	253
6	Profits (losses) as adjusted (Line 2 - Line 4)	(172)	(29)	48	60	52	472
7	Shareholders Interest (Line 1 + Line 6)	(57)	(86)	(38)	22	74	551
Period of Technical Insolvency							

NOTE: This table assumes that provision has to be made in the balance sheet for those liabilities for which the company has a development programme in the 10 year Corporate Plan.

Further provisions of £420m, together with interest will need to be made after 1992. The timing of the provisions could be advanced by changes in DOE requirements.

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ANNEX FIVE

ALLOCATION OF COSTS TO DEPARTMENTS UNDER OPTION C

£ million

January 1982 money values

Option	Department	1982/3	1983/4	1984/5	1985/6	Total to 1985/86	Total to 1992/93	Post 1992/93	Total
C1	D Energy (without HGB's share) MOD	1	2	2	3	8	29	51	80
		9	15	17	23	64	232	408	640
C2	D Energy (without HGB's share) MOD	1	1	1	1	4	15	27	42
		4	8	9	12	33	122	215	337
C3	D Energy (without HGB's share) MOD	1	2	2	3	8	27	31	58
		9	14	16	23	62	216	248	464
C4	D Energy (without HGB's share) MOD	-	-	0.5	0.5	1	22	31	53
		-	-	2	7	9	178	248	426

NOTES

The Department of Energy's share of the costs would fall on the Nuclear Energy Votes.

The Post 1992/93 figure is taken to be the midpoint of the expenditure set out as a range in Table 2.

Figures in option C4. for post 1992/93 are calculated before interest charges (see table seven) this is reflected in the total.

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ANNEX SIX

COSTS TO WGBs UNDER OPTIONS A-C

£ million
January 1982 money values

OPTION

A	No financial commitment	
B	The bulk of the £800 million liabilities would fall on the WGBs	
C1	Up to 1985/86	4
	1986/87 to 1992/93	10.5
	After 1992/93	25.5
	Total	Approx 40
C2	Up to 1985/86	3
	1986/87 to 1992/93	'
	After 1992/93	13
	Total	Approx 2
C3	Up to 1985/86	4
	1986/87 to 1992/93	10
	After 1992/93	15
	Total	Approx 29
C4	Up to 1985/86	1
	1986/87 to 1992/93	9
	After 1992/93	15 (before interest charges)
	Total	Approx 25