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Prime Minister

Ref. A083/2162

PRIME MINISTER

To note at this stage (decision)

Yes not at end-sept/October?

Power Station Endurance in the Medium Term

MCS 22/7

At an informal meeting of Ministers which you held on 27 January 1983 to consider the strategy for the National Coal Board (NCB) it was agreed that, when Ministers discussed this later in the year, they should have available a report by the Official Group on Coal (MISC 57) on the scope for extending power station endurance in the medium and longer term, ie from late 1984 onwards.

Mr Walker's office tell me he says intends to bring the Corporate Plan to you in late Sept/early Oct when Ian Macgregor has taken stock.

2. I now attach a report by MISC 57 in fulfilment of this remit. Ministers will not wish to take decisions on the options identified in the report until they are in a position to discuss the strategy for the NCB and the implications this may have for industrial relations in the industry. Ministers may nevertheless find it useful to have the report for information at this stage and to take note of the main points in it which I summarise in the remainder of this minute.

3. Section I of the report summarises the measures already taken to improve endurance of a miners strike. From November 1983 the expected level of power station endurance is six months.

4. Section II explains that, on the basis of unchanged coal stocks, power station endurance is likely to increase to between 7½ and 9 months by 1986/87 mainly as a result of an increase in the proportion of the CEEB's demand met by nuclear power from 14 per cent to 22 per cent. By 1991/92 the proportion would range from 16 per cent to 24 per cent depending on whether the Magnox stations turn out to have a life of 25 or 30 years.

5. Section III examines the options for increasing power station endurance above the level provided by existing coal stocks. These are summarised in paragraphs 3.18 and 3.19 of the Report and Table 2. The most straightforward approach to

increasing endurance yet further would be to increase CEGB coal stocks to a level close to the utilisable physical maximum. This might give a further 3 to 4 months endurance at a capital cost of £70 million, making total endurance of around 12 months. The other ways of increasing endurance involve increased oilburn. All but one method increase endurance by only a matter of weeks. The option which might increase endurance very considerably - by about a year - would involve the conversion to dual firing of around 8 large coal fired stations. This would take about 5 years and during this period vulnerability to industrial action would be increased. The capital cost, including the additional system operating costs while conversion was taking place, would be in the range £2-3½ billion.

6. When Ministers are ready to consider these options they will wish to consider at the same time an earlier report by MISC 57 on the options for increasing stocks of ancillary materials, including stocks of carbon dioxide at nuclear power stations, by November 1984, which was attached to the Secretary of State for Energy's minute to you of 23 June.

7. I am sending copies of this minute and of the report to the Home Secretary, the Chancellor of the Exchequer, and the Secretaries of State for Energy, Defence, Scotland, Employment and Trade and Industry with the request that it should be seen only by those within their Departments who have already participated in the work of the Official Group (MISC 57) or who are specifically authorised by their Minister to see it for the purpose of giving essential advice.

RTA

ROBERT ARMSTRONG

21 July 1983

SECTION I : THE PRESENT POSITION

1.1 In this section we summarise power station endurance for 1983 and the decisions which Ministers have now taken on the other aspects of increasing endurance in the event of a miners' strike i.e. relating to ancillary materials and coal-burning industry.

1.2 Power station coal stocks are currently sufficient for at least 26 weeks' endurance, on the basis of maximum oil burn, and will remain at around that level through to November and beyond. The question of the desirable level of power station coal stocks by November 1984 and in subsequent years now needs to be addressed.

1.3 Work is urgently in hand to provide 20 weeks' stocks of ancillaries at the power stations by November 1983. The Electricity Boards expect this to be achieved and are confident that in the event of a miners' strike this Autumn stocks could be made to last for 26 weeks. The only exception to this is carbon dioxide, stocks of which at nuclear power stations are currently sufficient for only 3 weeks normal use. Further consideration of carbon dioxide stocks will be necessary in the light of the level of endurance which Ministers decide they wish to achieve in the medium term. Ministers have decided that no immediate action should be taken to increase stocks of other ancillaries yet further.

1.4 Ministers have decided that discounts should be offered with a view to increasing levels of coal stocks held by industry.

- (i) Present arrangements for the cement industry provide for their coal stocks in October 1983 to be sufficient for about 18 weeks' expected consumption by one company and 10-12 weeks by the other two. Attempts are being made to bring the stocks of all three companies up by October 1983 to 16-18 weeks at a cost of £1-1.2 million. This level of stocks would provide for a total endurance of 20-24 weeks for cement supplies.
- (ii) Present stocks of smaller industrial companies are unlikely to provide for endurance of more than 3 or 4 weeks. Attempts are being made to increase this endurance to 5 or 6 weeks by October 1983 at

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a cost of £1.5 million.

- (iii) Present arrangements with most large industrial coal consumers should provide for average endurance of about 10 weeks by October 1983. Attempts are being made to increase the endurance of some major NCB customers (mainly in the chemical and textiles industries) to perhaps 15-20 weeks or longer at a cost of £2.2 million.

These measures will need to be financed by increases in the NCB's deficit grant limit and EFL. The Official Group on Coal has also been asked to examine further the possibilities for a scheme to help certain customers who normally draw coal direct from the pits. It will be necessary in due course to decide whether further measures should be taken to maintain or improve the endurance of coal-burning industry by November 1984.

Costs

1.5 The costs of the various measures to increase endurance which have been taken since February 1981 are broadly ^{as} set out below. The expenditure to increase coal stocks has been financed by the Exchequer via the NCB's deficit grant. That for the build up of ancillary materials has been found by the CEGB and SSEB from within their own resources.

	£m (Great Britain)
Increased coal stocks at power stations	55
Ancillary materials	90
Incentives to industry to increase coal stocks	5
TOTAL	150

1.6 In the event of a strike net additional costs of about £20 million per week would be incurred through maximising power station oil burn which would be required to achieve endurance of 26 weeks.

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SECTION II : POWER STATION ENDURANCE OVER THE NEXT DECADE

2.1 At present about 14 per cent of electricity demand in England and Wales is met by nuclear power. (In Scotland the figure is 26 per cent). This proportion will tend to increase as nuclear stations are commissioned. Power station endurance in the event of a miners' strike will tend to increase correspondingly, because a smaller proportion of electricity demand will be met by coal and a given level of power station coal stocks will therefore last longer. Two factors working the other way, however, are the phasing-out of the first generation of nuclear stations and any increase in the demand for electricity. The following considerations have therefore been taken into account:

- a. The Advanced Gas-cooled Reactors (AGRs) at Dungeness, Hartlepool and Heysham are beginning to generate power this year and should be fully operational by 1985/86. The second AGR at Heysham, and that at Torness, should first be available in 1987/88.
- b. The existing Magnox stations are approaching the end of their working lives. Although the planned lifetime is generally 25 years, extension to 30 years may be possible if experience continues to be favourable and the licensing authority can be satisfied. A 25 year lifetime would involve initial phasing out in 1987 and their withdrawal would reach a peak in 1990/91.
- c. As a central case we consider electricity demand corresponding to GDP growth averaging about $1\frac{1}{2}$ per cent per annum. For a high case it is assumed that GDP grows by 3 per cent per annum and for a low case that electricity demand remains unchanged.

2.2 On the basis of the planned AGR programme and the central case for demand growth, the proportion of electricity demand met by nuclear power should increase to about 22 per cent by 1986/87 for the CEGB system. By 1991/92 the proportion would be 16-24 per cent depending whether the Magnox stations turn out to have a life of 25 or 30 years.

2.3 Another factor that will influence power station endurance in the medium term is interconnection with other systems. A new 2000MW interconnector with France is under construction and should be fully operational by 1986/87. The

intention would be to use it to its full capacity during a miners' strike on a one way basis, from France to England. It would, in effect, substitute for one large coal-fired station.

2.4 The interconnector between England and Scotland is of 1000MW capacity. In theory, there is sufficient oil-fired capacity in Scotland to render the Scottish system virtually independent of coal in an emergency and also (under normal weather conditions) to supply the CEGB at almost full capacity of the interconnector. In practice, however, because of the over-capacity of the Scottish system, the SSEB has never considered it justifiable to man its oil-fired stations fully. To secure further savings it has recently reduced its manning levels (see Annex A). Exports of more than 500MW for the duration of a 26 week strike now seem unlikely on present arrangements if endurance in Scotland is not to be prejudiced. The SSEB judge that until Torness comes on line in 1987/88 it would be unable to make significant exports to the CEGB if it were required to endure for more than 9 months on the basis of usable oil-fired plant without increasing coal stocks or introducing lighting-up oil burning at coal-fired stations.

2.5 The combined effect of new nuclear power stations, nuclear retirements and demand growth and interconnection is summarised in Table 1. The present 6 months endurance of the CEGB system with respect to fuel supplies should increase to $7\frac{1}{2}$ to 9 months in 1986/87 with unchanged power station coal stocks (30mt), depending on how electricity demand grows. At these levels of endurance, for reasons given in paragraph 2.4, no imports to England and Wales from Scotland via the interconnector are assumed in the table. Twelve months endurance in England and Wales would need 38-43mt of coal at power stations. Some additional coal stocking at power stations is likely to be possible though the CEGB would need to explore the practicalities in detail.

2.6 Looking further ahead to 1991/92 the main uncertainties are electricity demand and the lifetime of the Magnox stations. For a 25 year Magnox lifetime the position should be no worse than at present - 30 mt giving about 6 months endurance - unless electricity demand grows rapidly (Table 1).

2.7 The discussion thus far has dealt with power station endurance over the next decade in terms of fuel supplies. Power stations are, however, dependent

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on a wide range of ancillary materials. Stocks this Autumn will stand at 20 weeks normal usage. There is a risk that endurance could be limited by the availability of ancillaries unless stocks are further increased. The question of stocks of ancillaries will need to be reviewed in the light of any further decisions on coal supplies and oil-burn, options for which are set out below in Section III.

2.8 There is also a risk that endurance would be limited by industrial action by power station staff responding to an appeal from the NUM. For instance the miners might ask that ESI employees refuse to undertake "abnormal work". This could include operations designed to achieve enhanced levels of oil-burn. Subject to this proviso, CEGB senior management believe that maximum oil-burn should be achievable this winter. Looking further ahead a number of influences may be significant, including the general political climate, the reasonableness of the NUM position and the ESI unions' own pay or privatisation concerns.

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SECTION III : THE OPTIONS FOR FURTHER EXTENDING POWER STATION ENDURANCE
BY THE MID-1980S

3.1 We consider in this section the measures that might be taken to increase power station endurance in the medium term beyond that which the maintenance of current levels of coal stocks seems likely to provide. The measures considered are as follows:-

- (i) a further increase in the level of coal stocks;
- (ii) the retention of existing oil-fired capacity which would otherwise be closed or kept in reserve on commercial grounds;
- (iii) using the lighting-up oil burners to burn oil in coal-fired stations;
- (iv) dual-firing.

(i) increasing power station coal stocks

3.2 By November 1983 power station coal stocks in England and Wales will be 30 million tonnes. It is difficult to judge how far it would be physically possible to increase coal stocking capacity. At some stage it will be difficult to find new land for stocking which is contiguous with power station sites and is thus safe from picketing. The physical limit is unlikely to be greater than 40 million tonnes and could be significantly less. Subject to this limit it should be possible to build coal stocks to the 40 million tonnes or so needed to provide by the mid-1980s power station endurance of around 12 months. To achieve this some power stations would have to acquire new land and all would have to lay down extra storage capacity; the cost of this could be perhaps £70 million. The timing of site acquisition and preparation, and of coal build-up would need further examination by the CEGB if Ministers decide to take this course. Possibly stocks might be increased at the rate of 2-3 mt a year.

3.3 As Table 1 shows, this level of coal stocks could not be guaranteed to continue to provide 12 months endurance in the period after the mid-1980s. If electricity demand were to increase at a high rate and Magnox stations were found to have useful lives of only 25 years, the endurance provided by 40mt would only be around 8 months.

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(ii) retaining existing oil-fired capacity in operation

3.4 Last autumn the CEGB had some 9000MW of oil-fired capacity available (including 900MW of dual coal-oil fired plant which would be used to burn oil in an emergency). A further 3000MW has since been commissioned or is under construction but planned to be available early next year. The CEGB plan to put 3500MW of modern oil-fired plant into reserve; this would be available for recall at three weeks' notice in an emergency. The Board expects to close some 1700MW of older oil-fired units over the next 3-4 years on commercial grounds. This would still leave oil-fired capacity above last autumn's level.

3.5 The position in Scotland is different and is described in detail at Annex A. Briefly, five modern oil-fired sets could in theory be made available, three at Inverkip and two at Peterhead power stations. However at present only one of the sets at Inverkip is partially manned; one is in rotating storage; one is inoperable and could take some months to repair if required for use; and only one set at Peterhead is fully manned. On the basis of this level of manning the Scottish Boards could export at the rate of 500MW (half the capacity of the interconnector) for 26 weeks for a strike lasting no longer than that period. But were the SSEB required to meet an endurance target of 9 months or more, no exports would be possible since all available oil-fired plant would be needed to supplement coal stocks in Scotland.

3.6 The questions therefore arise whether this oil-fired capacity should be retained or brought back into use so as further to conserve power station coal stocks during a strike.

3.7 The costs of retention and the likely impact on endurance are as follows:

	costs of retention	net costs of extra oilburn in a strike (per week)	increase in CEGB endurance (weeks)	
			<u>now</u>	<u>1986/87</u>
England and Wales (retention of 1700MW of old plant)	£10m p.a.	£3m	n.a.	1-1½
Scotland (manning all modern plant)	£10-15m p.a.	£6m	1	4-6

3.8 Retaining this capacity could raise some difficult industrial relations problems. Neither the CEGB nor the SSEB considers that the trade unions would be prepared to co-operate in the transfer of staff between power stations during a miners' strike. The CEGB therefore proposes to man the 3500MW of excess modern oil-fired capacity which it proposes to put into reserve at a level which would enable this to be brought into use at short notice during a miners' strike. The Board does not, however, think that the extra endurance of 1-1½ weeks which would be gained by retaining 1700MW of old oil-fired plant which it currently proposes to close down would justify the £10 million per annum cost of continuing to man that at about the same level. In Scotland, where oil-fired capacity is not normally utilised, the SSEB thinks that the only way that oil-fired capacity could be brought into use during a miners' strike would be for it to be manned throughout the year. In practice, this would mean that the staff concerned would have virtually nothing to do except during a miners' strike. Requesting the Scottish Boards to operate their power stations in this way would run counter to the pressure being put on them by the Government for maximum economy and efficiency; and it would also increase electricity prices by 2 per cent to all consumers unless the Government covered the full additional cost.

3.9 Options which would be open to Ministers would therefore be to ask

- a. the CEGB to keep open 1700MW of older oil-fired stations which it would otherwise expect to close over the next few years;
- b. the Scottish Board to arrange for all their modern oil-fired plant to be manned for use in an emergency.

(iii) burning lighting-up oil

3.10 At coal-fired power stations the lighting-up burners could be used to burn oil continuously in an emergency. This could be used to conserve power station coal stocks provided that an assured means of delivery were available. Under normal circumstances deliveries of lighting-up oil to CEGB power stations take place as follows: rail, 55 per cent; road, 30 per cent; barge/coaster, 15 per cent. Rail- and road- borne deliveries could not be relied upon in a miners' strike. The most certain alternative would be by pipeline. Laying new pipelines to power stations would be a major task. One possibility, however,

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would be to use the existing Government strategic pipeline system which runs close to a number of inland coal-fired power stations. In the first instance some 6 large power stations (total capacity 8000MW) might be connected at a capital cost of £4 million over a two year period. This would extend a 26 week period of endurance by some 4 weeks, and pro rata for longer periods, at a net cost of some £10 million per week.

3.11 The Government pipeline system is used both for commercial and defence purposes. The Ministry of Defence see no difficulty in meeting the needs of Service Establishments in an emergency affecting the CEGB by a combination of the use of alternative routes on the pipeline system and other means of delivery. However, the relevant parts of the pipeline system are predominantly used by the oil companies who would need to be consulted before a judgement could be reached as to the feasibility of CEGB use in an emergency. There would also be the need for the power station workers to co-operate in the abnormal activity of burning lighting-up oil on a continuous basis.

3.12 Similar problems exist in Scotland, where lighting-up oil is delivered to the two coal-fired power stations by coastal tankers. Preliminary discussions with the SSEB have shown that this option could be limited by the availability of coastal tankers of the right size. If Ministers wanted to follow this option further studies would have to take place, including one of the possibility of laying a pipeline to Longannet from Grangemouth.

(iv) dual firing

3.13 At present only 900MW of generating capacity is dual-fired in England and Wales. To enable power stations to operate independently of coal (ie indefinite endurance in the event of a miners' strike) would require the conversion of perhaps 27000MW capacity, equivalent to about 14 large coal-fired stations. However, the time involved for each conversion (3 years) and the fact that during that period the power station has to be withdrawn from operation (which means that only a limited number of conversions could prudently be undertaken simultaneously while still meeting peak winter demand) would impose major limits on the rate at which conversion programmes could be undertaken. In practice the best that could probably be achieved, on the basis of optimistic assumptions about other factors, is the conversion of around 15000MW by 1988-89 and 19000MW by 1991-92.

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3.14 The conversion of 15000MW would cost perhaps £800 million in direct capital costs and possibly as much as £1½-2½ billion in increased operating costs of the remainder of the electricity system during the conversion programme (when base load coal-fired stations would need to be replaced by oil burn). In the event of a strike, burning oil in the converted stations and in the main oil-fired stations would mean that the present level of power station coal stocks would last for perhaps 2 years; the net cost of this level of oilburn would be around £50 million per week.

3.15 An extensive programme of dual-firing of this nature carries a number of potentially serious industrial relations risks, viz:-

- (a) it would be impossible for the programme to be carried out unobtrusively or for its real purpose to be concealed. The costs involved would almost certainly have to be met by grant, which would require Parliamentary authority; moreover the engineering work involved would be plainly visible. There would therefore be the risk of provoking industrial action immediately the programme became public knowledge; particularly in the coal industry;
- (b) even if the conversion work were to be completed without serious trouble, the power station workers might not be prepared to co-operate in operating dual-fired plant during a strike on the grounds that this involved abnormal working. It is difficult to assess in the abstract how serious a risk this is.

3.16 A further area of potential difficulty lies in the substantial additional volumes of oil that would be needed. The 6-9 months endurance provided by the current level of coal stocks should allow time for oil supplies to be organised. Nevertheless, the extra demand on the refineries would be significant and consultations with the oil industry would be needed to assess the implications.

Summary of options

3.17 Maintaining the level of power station coal stocks that will be attained this autumn should lead to an increase in endurance from the present 6 months to 7½-9 months over the next 3-4 years as new nuclear capacity and the

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interconnector is commissioned. But endurance based on current coal stocks could fall again by the end of the decade, depending on the growth of electricity demand and the lifetime of the Magnox stations (Table 1).

3.18 The most straightforward approach to increasing endurance yet further would be to build CEGB power station coal stocks to a level close to the utilisable physical maximum. This might give endurance in the mid-eighties of approaching 12 months. Since this would be an extension of present policy which has not so far met serious resistance, there seems no reason to believe that the unions concerned would not co-operate in its execution. There may also be scope for increasing power station coal stocks in Scotland yet further to increase exports via the interconnector.

3.19 The other means of boosting endurance all involve increased oil burn, which is significantly more expensive than burning coal and may also involve additional capital and operating costs. The possibilities discussed earlier are summarised in Table 2. In brief

- a. retaining old CEGB oil-fired plant that is due to be phased out would entail modest extra operating costs (£10 million a year) for a small gain in endurance (1-1½ weeks). The CEGB would not welcome such a suggestion which would be at odds with their desire to cut costs;
- b. fully manning Scottish modern oil-fired plant would cost £10-15 million a year and would be resisted by the SSEB on commercial, efficiency and staff morale grounds. This measure would give a useful increase in endurance (4-6 weeks), though it might be possible, subject to further studies by SSEB, to achieve the same result at lower cost;
- c. supplying lighting-up oil by pipeline to certain CEGB power stations to supplement coal burn would not be costly (£4 million) and would extend endurance by 4-6 weeks. But the feasibility of using the Government pipeline system for this purpose would need further investigation. There is also scope in Scotland for burning oil at coal-fired stations but further studies would be needed to establish the effect on endurance.

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- d. Rendering the CEGB independent of coal supplies by converting the main coal-fired power stations to dual coal/oil firing would be exceedingly expensive and would in any event take more than a decade. Even increasing endurance to about 2 years by partial conversion to dual firing would cost over £2 billion and would take at least 5 years.

3.20 There must always be some doubt about the willingness of the power station workers to co-operate in achieving abnormal levels of oil burn during a miners' strike. The more obvious the measure, and the larger the scale, the greater would be the risk. This argues against a major programme of dual firing and, to a lesser extent, against keeping available oil-fired plant which would not be used except in emergencies.

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SECTION IV : ISSUES FOR MINISTERS

Ministers will wish to decide, in the light of the strategic decisions on the coal industry which they will be taking shortly, whether they wish to achieve power station endurance greater than the 6 months available next winter; and if so, what should be the objective. The Official Group would provide further advice on how best any required level of endurance might be met. In setting objectives, however, Ministers will wish to consider whether they would wish to proceed solely by increasing power station coal stocks to the maximum physical limit; or whether they would be prepared to contemplate additional oil burn beyond that which would be attainable on the Electricity Boards' present plans. In deciding how far they were prepared to consider additional oil burn, Ministers would need to bear in mind the cost and other implications of:

- a. keeping available for use in an emergency all existing oil-fired plant;
- b. burning lighting-up oil at coal-fired power stations, supplied by the Government pipeline system or other suitable means; and
- c. an extensive programme of conversion of coal-fired power stations to dual-firing.

Cabinet Office

20 July 1983

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SCOTLAND

1. In present circumstances coal together with maximum nuclear, gas-fired and hydro-electric power are sufficient to meet the winter peak demand for electricity; no oil-fired power stations are used. This is likely to remain the position for the foreseeable future until the Torness AGR comes fully on stream in 1989, when the proportion of electricity demand met by nuclear power will increase from approximately 26 per cent to approximately 43 per cent.

2. There are five 660 MW oil-fired sets in Scotland, which are utilised as follows:-

Inverkip: 3 sets, of which one is partially manned;
one is rotating storage;
one is currently inoperable because the stator has been removed to supply another turbine.

Peterhead: 2 sets, of which one is fully used and burns gas liquids;
one is partially manned (and is currently earmarked for burning surplus gas liquids) to provide 30 days' running during the winter period.

The SSEB have recently announced that the partially-manned set at Inverkip will be capable of operating for twelve hours per day from Monday to Friday. By commencing oilburn as soon as a miners' strike begins the current position is that SSEB could export an average of 500 MW to CEGB through the interconnector for 26 weeks. This would be made up of 1000 MW, twelve hours per day, Monday to Friday and about 300 MW through the night and at weekends. If longer endurance is required in Scotland then similar oil-burn could extend the coal stocks to provide over 39 weeks' endurance but without using the interconnector on a regular basis.

3. If the interconnector were required for a longer period than 26 weeks or if overall endurance of more than 39 weeks is required then there are four options:-

(a) reliance on the transfer of workers from coal-burning stations to oil-burning stations when stocks at the former run out;

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- (b) increase the manning levels of the partially-manned sets at Peterhead and Inverkip and manning the remaining two sets at Inverkip;
- (c) increase coal stocks at coal-burning stations;
- (d) increased burning of oil in coal-fired stations.

On option (a), Scotland's main coal-burning stations are located in coal-fields and, in past disputes, there have been considerable tensions between the power station workers and the local miners. Quite apart from trade union opposition, it would not be safe to rely on the required co-operation of the power station workers at the height of a dispute; the SSEB share this view. The cost of option (b) would be £10-15 million per annum. The workers at the oil-burning sets, which would only be used during miners' strikes, would have virtually nothing to do at other times and this, the SSEB judge, would create industrial relations problems with the very group of workers on whom they would have to rely during a miners' strike. The SSEB are strongly opposed to this option also on financial grounds. Options (c) and (d) are both technically feasible and the implementation of either could increase the endurance of the Scottish system from 39 to 52 weeks by the end of 1986. Option (d) would require consultation with SSEB to determine the cost of providing increased oil storage facilities at the coal-fired power stations. Once Ministers have reached a view on the desired endurance for the electricity system in Great Britain as a whole, further work will be undertaken by the Scottish Office to establish how this can best be achieved in Scotland.

4. The issue for Ministers would be whether, despite the opposition of the SSEB and the visibility of the measures involved, additional oil-fired generating capacity should be manned to enable the use of the interconnector throughout a miners' strike, although this would have only a modest effect on CEGB's endurance; or whether endurance in Scotland should be increased by increasing coal stocks and planning to burn oil in coal-fired stations.

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TABLE 1

millions of tonnes coal equivalent
England and Wales

	1986/7			1991/92 (25 year Magnox life)			1991/92 (30 year Magnox life)		
	Low	Central	High	Low	Central	High	Low	Central	High
Electricity demand (annual)	95	97	100	95	102	109	95	102	109
Nuclear supply (annual)	21½			16½			24½		
Measures to conserve coal during a strike (mtce per year)									
- maximum oil burn		29½			29½			29½	
- French interconnector		6			6			6	
- Scottish interconnector*									
Shortfall (annual) to be met from power station coal stocks	38	40	43	43	50	57	35	42	49
Endurance based on present power station coal stocks (30 mt) (months)	9	8	7½	7½	6	5	10	7½	6½
Stocks (mt) required for endurance of									
9 months	30	32	34	34	40	46	28	34	39
12 months	38	40	43	43	50	57	35	42	49

* Assumed to be zero (see paras 2.4-2.5)

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*Net Ind
Coal P+8*
TABLE 2

Options for extending endurance beyond
expected level of 7½-9 months in 1986/87

	Capital cost	Net weekly cost of oilburn	Additional endurance
Increase coal stocks to maximum physical limits	£70m	-	3 to 4 months
Retain the CEGB oil-fired plant	£10m	£3m	1-1½ weeks
Man SSEB modern oil-fired plant	£10-£15m	£6m	4-6 weeks
Burn lighting-up oil supplied in extended Government pipeline system	£4m	£10m	4-6 weeks
Dual firing of 15000 mW of coal-fired plant	£2-£3½ billion*	£50m	1 year

* The capital cost of dual firing includes the additional system operating costs while conversion is taking place.