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CABINET
MINISTERIAL COMMITTEE ON ECONOMIC STRATEGY

AGR'S AND THE GOVERNMENT'S NUCLEAR POLICY
Note by the Central Policy Review Staff

1. Following an announcement by the Chairman of the Central Electricity Generating Board that the CEGB were reviewing capital expenditure to see what projects could be cut out or deferred, the Prime Minister asked the Central Policy Review Staff at the beginning of March to look into the need for the proposed Advanced Gas Cooled Reactor stations at Heysham II (CEGB) and Torness (SSEB) and to report back to her within three weeks. The CPRS has discussed the AGR issues with Departments, the Electricity Supply Industry, the nuclear industry, and with the leading power plant manufacturers. A list of those interviewed is attached as Annex A. Because of the tight reporting schedule, it has been possible only to summarise the CPRS' findings in this note. A fuller report by the CPRS study team could be prepared on specific points, if required.

2. The Secretary of State for Energy announced on 18 December that the Government had endorsed the electricity supply industry's intention to order at least one new nuclear power station a year in the decade from 1982 (the Basic Programme). Also included in the industry's investment programme are the two AGR stations, Heysham II and Torness, authorised by the previous Government in 1978. Preliminary site-work at both stations is in hand and design contracts were placed last year. Major hardware contracts are due to be placed, and construction started, later this year. The main option considered by the CPRS has been that of postponing these stations for at least two years so that effectively they would form part of the Basic Programme.

3. The Case for Postponement

(1) PSER. The Generating Boards are overinvested in capacity and do not need to order any new power stations for several years. The entire cost of

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building new stations falls on the PSBR. (None falls on tariffs because of an accounting practice agreed with the industry.) The saving on the PSBR between now and 1986/87 would be around £3 billion in aggregate. The immediate impact, however, would be relatively small, perhaps £100 million in 1980/81 and £250 million in 1981/82.

(ii) Investment Appraisal. The Generating Boards' main economic argument for investing in further nuclear stations is that fossil fuel savings in the 1990s and beyond will more than offset initial capital costs and financing charges. On the CEGB's planning assumptions, the net benefit of Heysham II would be £25 million a year annuitised over its life. Given the present demands on resources, and the fact that this is non-essential investment, it could be argued that stricter than normal investment criteria should apply. This would significantly weaken the case on economic grounds. For example, the net benefit falls to zero if a discount rate of 7% is used rather than 5% or if, from a national point of view, an allowance of 2% is made for capital rationing on non-essential investment.

(iii) Repeatability of the Heysham II/Torness Design. Repeatability is a much sought after objective in power station design. However, the Nuclear Installations Inspectorate (NII), although prepared to license one or two more AGRs of this Mark I design, has not yet been satisfied that the design would be acceptable for series ordering - see letters from the Chief Inspector at Annex B. Postponement of the stations could provide an opportunity for design changes to be incorporated so that there could be more certainty that all future AGRs would be close replicas of a single design.

4. The Case Against Postponement

(i) A Steady Ordering Programme. The most important plank of the Government's nuclear policy is the Basic Programme - the steady ordering of at least one nuclear station a year beginning in 1982. This stable pattern of ordering is essential if the nuclear and power plant industries are to recover from their troubles of the 1970s. Postponement of Heysham II and Torness would cast considerable doubt on the Government's intention to stick to the steady ordering policy.

(ii) Insurance Policy. If the two AGRs were postponed there is a real possibility that we would lose the ability to build gas-cooled reactors for a number of years. But we need the insurance of AGRs because

- procedural delays may prevent ordering of the PWR in the early years of the Basic Programme. (This is widely expected and is a view shared by the Chairman of the Electricity Council.)

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- at least initially, the PWR may be subject to more stringent siting requirements.

- the PWR may not gain acceptance at all.

(iii) Industrial Commitment. If Heysham II and Torness were postponed, the companies in the nuclear and power plant industries that specialise in the AGR would be disrupted to such an extent that their AGR teams and facilities could not be reassembled quickly, if indeed they could be reassembled at all. Many companies in the industry and their specialist suppliers have already committed scarce resources to this programme of AGRs (at the expense of other opportunities) on the understanding that design contracts would result in hardware contracts and that the apparently firm intentions of the Generating Boards, endorsed by the Government, would be honoured. There have been so many false dawns in the nuclear industry that it becomes increasingly difficult to persuade companies to enter into the same degree of commitment again.

(iv) Closures. Because of the current recession in the heavy engineering and allied industries, there are several key companies that are overly dependent on orders from Heysham II and Torness. This is particularly true of NEI-Clarke Chapman Power Engineering Ltd, part of the Northern Engineering Industries group, and of Whessoe Heavy Engineering Ltd, part of the Whessoe group.

- NEI-Clarke Chapman. This is one of the two companies manufacturing large power station boilers in the UK, and the only one previously to have manufactured boilers to the Heysham II/Torness design. They have 2,500 employees (800 in their works at Gateshead, 700 staff in support, and 1,000 on site). From our discussions with the company, it seems likely that the Gateshead works would have to close down in the next year or so if they are not awarded the hardware contracts for the boilers at both Heysham II and Torness worth £150 million. That would leave Babcock Power Ltd as the only UK manufacturer of large power station boilers. Although Babcocks have the necessary capacity and there would be some advantage in rationalising the industry to a single supplier, the effect of the closure of Clarke Chapman would be particularly serious for the North East.

- Whessoe Heavy Engineering. The company are responsible for fabricating practically the whole of the steelworks within the nuclear islands at Heysham and Torness. The contracts, awarded last year, are together worth about £85 million and represent at least one-half of the company's

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business up to mid-1983. The company have nearly 2,500 employees. Again from discussions with the company, it seems quite likely that they would not survive if these AGR contracts were cancelled. There is widespread overcapacity in the heavy engineering and process industries and the company would almost certainly be unable to find sufficient alternative business at this late stage to keep their Darlington works open. Other companies in the heavy engineering should be able to take on Whessoe's AGR work, but like Whessoe they would need to invest several million pounds to provide facilities to meet the standards required in the nuclear industry.

- (v) Other Companies Affected. Several other companies would be hurt by a postponement, though, to the best of our knowledge, none mortally. NEI Parsons, another member of the Northern Engineering Industries group, are expected to receive the £90 million hardware contract for the turbine generators at Heysham II. The seriousness of losing this contract can be measured by relating its value to the company's annual turnover of less than £100 million. NEI Parsons Generators Ltd, who would lose the Torness orders, have been more successful than NEI Parsons in the export market and would be relatively less affected. James Howden and Co Ltd would lose £80 million worth of contracts for gas circulators and would have the whole of its new factory that would have employed 400 staff lying idle. Strachan and Henshaw Ltd, part of the Dickinson Robinson Group, would lose the £30 million contract for fuel handling equipment; this contract represents 30 per cent of the company's forward workload. Because they have reserved the capacity in their workshops they have not been tendering for alternative work and could not expect to employ all their workers on for the immediate future. Finally, the impact of postponement on the morale of the employees at the National Nuclear Corporation was raised with us several times, but in our view this has more to do with organisational problems than with Heysham II/Torness projects.

Conclusions

5. There are three main arguments for postponement
- the saving in the PSBR would be £3 billion over the next 6-7 years if the stations were subsequently to form part of the Basic Programme. However, savings are relatively small in the early years.
 - the power stations are not needed to meet demand and the Generating Board's economic case in relation to future fuel savings is significantly weakened if capital rationing is taken into account.
 - postponement might result in some advantageous design changes being incorporated.

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6. Against this, there are very strong arguments against postponement. The Government announced only three months ago its intention to have a stable nuclear programme and were widely understood to have endorsed the AGRs at Heysham II and Torness. The announcement provided a major boost to morale throughout the nuclear industry. Any reversal of the AGR policy so soon after its announcement would destroy the Government's credibility with the AGR side of the industry. Effectively, it could shut off the option of an AGR programme for a number of years and could also make a PWR programme more difficult to launch. There would be a serious loss of jobs, many of them highly skilled, in quality engineering. Many of these job losses would be in places of high unemployment, particularly the North East.

7. Given that the ordering programme for these stations is so advanced, and that so many companies are committed to it, the PSBR argument would have to be weighted very heavily to tip the balance in favour of postponement. But since the bulk of the PSBR savings would not arise until the mid-eighties, the CPRS does not believe that the case for postponement is made out.

8. The Case for Postponing only one of the AGRs. This is examined in Annex C. It would be an expensive exercise, carrying many of the disadvantages of postponing both, for a much smaller benefit. Again, we do not recommend it.

Recommendations

9. The CPRS recommends that the two AGRs at Heysham II and Torness should go ahead as planned. In support of this:-

- (1) The Government should consider making an early announcement of its commitment to AGRs. This would be welcomed by the nuclear and power plant industries who have been troubled at all levels from Boardroom to the shop floor by recent speculation about the intentions of the Government and the Generating Boards;
- (2) The Generating Boards should be asked to treat their AGR programme as priority calls on funds available for capital investment. This would eliminate the uncertainty that any cash squeeze on the Electricity Supply Industry might interfere with the AGR programme.
- (3) The Secretary of State for Energy should be invited to clarify for colleagues the attached letters from the Chief Inspector and to report progress towards advantageous design changes.

Cabinet Office
20 March 1980

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UK Atomic Energy Authority

W Marshall

Deputy Chairman (also Member, NNC)

Whesoe Limited

W Smart
R F Bishop

Group Chief Executive
Managing Director, Whesoe Heavy Engineering

2. The CPRS also received letters from British Nuclear Fuels Limited, and Strachan and Henshaw Limited.

3. We also acknowledge the help and co-operation from the Departments of Energy and of Industry, the Treasury, and the Scottish Office. Meetings with the Electricity Council and the CEEB were held jointly with the Department of Energy. The SSEB meeting was jointly with the Scottish Office.

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Health & Safety Executive

Thames House North
Millbank
London SW1P 4QL
Telephone 01-211 4498
Telex Energy London 918777

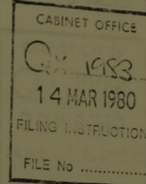
HM
From, Chief Inspector of Nuclear Installations

Mr P Kind
Central Policy Review Staff
70 Whitehall
London SW1A 2AS

Your reference

Our reference NUC 450

Date 13 March 1980



Dear Mr Kind

DESIGN CHANGES FOR FUTURE AGR SYSTEMS

I now enclose copies of extracts from various documents and minutes of meetings relating to the gas baffle in the current AGR designs.

You will see that there was initial discussion of two phases with mention of a number of AGRs but later discussion centred around the Government's decision in January 1978 to build two more twin reactor stations at Heysham and Torness. All future orders beyond these four reactors were to be a matter for decision at the appropriate time and hence we have regarded these stations as the last of that particular design. (The so-called Mark I based on the Hinkley Point 'B' design). Para. 25 of Annex 3 and para. 38 of Annex 4 set the scene for reconsideration of the design and possible elimination of the gas baffle for any second phase of AGRs.

If the CEEB now wish to include a substantial number of new AGR stations in their forward programme, then we move to what I term the Mark II design. Though improvements over earlier stations have been made in the design of the gas baffle for the AGRs at Heysham Stage II and Torness, I regard it as being in the best interests of safety that a further programme of AGRs is not accepted with this feature unless a satisfactory case is forthcoming to show that a gas baffle remains the best practicable design solution.

I also enclose a copy of the Health and Safety in Nuclear Establishments 1977-78 as requested.

Yours sincerely

R GAUSDEN

cc Mr R Wilson, Dept of Energy
Mr P B Woods NII

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Health & Safety Executive

ANNEX B

Thames House North
Millbank
London SW1P 4QL
Telephone 01-211 4498
Telex Energy London 918777

HM
From Chief Inspector of Nuclear Installations

Mr R T J Wilson
AE Division
Department of Energy
Thames House South
London SW1P 4QL

Your reference

Our reference

Date 19 March 1980

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See Richard

DESIGN CHANGES FOR FUTURE AGR SYSTEMS

Thank you for your letter dated 17 March. As you rightly say, it is in everyone's interest that our position on the AGR is clarified and properly understood by all.

Turning then to the three points raised in your letter, I would reply as follows:-

- (1) I see no difficulty in licensing one or two more AGRs similar to the Heysham II design within a substantial FWR programme, I would emphasise however that I would not expect this to apply if a larger number of AGRs were proposed. (But see para 3 below).
- (2) Similarly I obviously could not object to say 2 AGRs of the Heysham II design as an extension to the 1978 programme, and prior to a further substantial programme of AGRs. I should however point out that if a MK II design was shown to have safety advantages, I would prefer such AGRs to be incorporated in the programme as quickly as possible and to any extension of the present programme if that were practicable.
- (3) A design study on the particular change we have suggested, that is the elimination of the gas baffle, has not as far as I am aware, so far been carried out. After such work has been completed it is of course open to the Generating Boards to argue that such major design changes are not reasonably practicable. It is however my judgement that a marked improvement in overall safety would result but this is of course subject to the results of the design study.

That is not to say that the Heysham II design is unsafe. We expect to be in a position to issue the licence and approve the start of construction for the first station within a month or two. It follows that should it be shown that a MK II design (ie without the gas baffle) is not practicable, then I can see no reason why the Heysham II design could not be used as the basis for a further programme of AGRs.

Yours sincerely
R. GARDNER

R. Gardner

cc Mr P Kind
Mr P B Woods

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ANNEX C

THE CASE AGAINST DEFERRING ONLY ONE STATION

1. The present programme of work is based on the assumption that work would start on the first reactor on the Heysham II site in August 1980 and that the second reactor on that site would follow at an interval of 12 months. The Torness programme is scheduled six months later than Heysham II, thus creating a four-reactor programme with intervals of six months between each reactor. Thus the programmes are closely interleaved and with each of the four nuclear islands being replicas, the component manufacturers have geared themselves up to producing a run of components for four reactors. The manufacturers have each, to a greater or lesser extent, invested in specialised facilities and based their work schedules on the basis of this throughput. Deferment of one of the stations would disrupt this close interdependence of the programmes and cause the component suppliers to recover their front-end investment in both capital and manpower over half the number of units. As a result the unit cost of constructing just one of these stations would be an estimated 15% or more higher, thereby weakening the economic case for proceeding. Also NPC believe that some companies which have at present indicated their support for the AGR programme might not wish to commit their resources at all if the prospect of business was halved.

2. Obviously as far as suppliers who have already committed their resources are concerned, one station would be better than none. However, the deferment of one station would not prevent the rekindling within the industry of the lack of confidence that the government could make a firm declaration of nuclear policy and then stick to it. The importance of this factor has been discussed elsewhere.

3. It seems clear from the CPRS's discussions that if only one station proceeded then it would have to be Heysham II in the CEGB's system. The SSEB would not be prepared to go it alone with Torness with the prospect of it being the last of the line of AGR's. The deferment of Torness would be interpreted by the anti-nuclear lobby as a victory and it might become difficult to resist pressures for another public enquiry before Torness could be used again as a site for a nuclear station (the present site approval dates back to an enquiry that took place in 1974). Of the total cost of Torness it is estimated that some £400-500 million would be expended in Scotland, which would equally result in criticism.

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