CONFIDENTIAL

cc Press

Prime Minister

I understand the D of Environment may query whether a robust statement in support of our nuclear policy and the PWR is wise in the run up to the PWR Inquiry. But the nuclear industry, especially in its present state, needs a firm lead. The Treasury is content subject to one small point (attached). Agree our Howell's statement?

v Flag A

Yes subject to Treasury point. MT

PRIME MINISTER

SELECT COMMITTEE REPORT ON NUCLEAR POWER

As you know, earlier this year the Select Committee on Energy published its report on the nuclear power programme. A summary of the main points is attached. My Department has been considering the report, in consultation with relevant bodies, including the Scottish Office and the CEGB. I now attach my proposed response, which subject to the views of colleagues I propose we should publish as a White Paper before the Summer Recess.

The response is divided into two sections. The first takes the form of a policy statement which re-affirms our belief that a nuclear ordering programme of sensible proportions is vital if the nation's longer term energy needs are to be met with confidence. The second section, which includes a number of specific undertakings on the Government's part (where action is, in all cases, already in hand), deals in detail with the main issues raised by the Committee. I believe this to be the right approach and that a robust statement is necessary in the light of recent criticisms of our policy.

At the same time, the response stresses the flexibility of our position, in particular our commitment to authorise orders for future nuclear power stations only as and when we are satisfied that a genuine need exists.

The Select Committee report was wide-ranging, and the response does not set out to deal with every point raised. However, I believe our response demonstrates that nuclear orders of the scale we envisaged in 1979 (up to an additional 15 GW by the end of the century) remain a reasonable prospect. The response makes

clear that we shall keep electricity demand forecasts under continuous review, taking account of the scope for energy conservation; that we are committed to safe nuclear power, fully compatible with the environment; and that an absolutely vital factor will be the industry's ability to build future nuclear power stations to time and within cost.

The response also takes account of the criticisms of the CEGB made independently by the Monopolies and Mergers Commission after the Select Committee had reported. However, it does not pre-empt full consideration by the CEGB of the MMC's findings - particularly the Commission's criticism of the CEGB's methods of economic appraisal. I will be dealing seperately with these points at an appropriate stage.

I hope this response will commend itself to my colleagues. As you know, replies to Select Committees are normally expected within six months at latest. Ian Lloyd is pressing us to publish this response before the summer recess, and I have told the House that we shall be so doing. I would hope we could find time for a Parliamentary debate in due course.

Officials in other Departments have been consulted in preparation of the draft. To enable the timetable to be met I would welcome my colleagues clearance of the draft by no later than Tuesday 14 July.

I am copying this minute to members of E Committee, the Secretary of State for Scotland, Sir Robert Armstrong and Robin Ibbs.

DG.

Secretary of State for Energy
6 July 1981

CONFIDENTIAL

Foreign and Commonwealth Office

London SW1A 2AH

15 July 1981

WW 17/7

Dear Julian,

SELECT COMMITTEE REPORT ON NUCLEAR POWER

The Lord Privy Seal has seen a copy of your Secretary of State's minute of 6 July to the Prime Minister, seeking agreement to the draft of a White Paper giving the Government's response to the Select Committee on Energy's report on the nuclear power programme.

We are generally content with the draft of the White Paper. This will be an important statement of the Government's policy, and of interest to a number of countries abroad. We would therefore be grateful if your officials would liaise with the FCO Joint Nuclear Unit, before the White Paper is published, about the preparation of appropriate guidance for overseas posts.

Yours ever
Stephen Gomersall.

S J Gomersall
Private Secretary to
The Lord Privy Seal

Julian West Esq
PS/Secretary of State for Energy
Thames House South
Millbank
London SW1P 4QP

cc: PS/Members of E Committee
Secretary of State for Scotland
Sir Robert Armstrong KCB
Mr R Ibbs

CONFIDENTIAL

CONFIDENTIAL

R H

FILE

13 July, 1981

Select Committee Report on Nuclear Power

The Prime Minister was grateful for your Secretary of State's minute of 6 July. She has also seen the Chief Secretary's letter of 10 July.

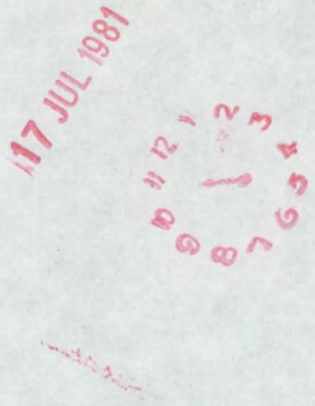
Subject to the comment made by the Chief Secretary, the Prime Minister is content with your Secretary of State's proposed draft reply to the Report of the Select Committee on the Nuclear Power Programme.

I am copying this letter to the Private Secretaries to the members of E Committee, the Secretary of State for Scotland, David Wright and Robin Ibbs.

W.F.S. RICKETT

J West, Esq
Department of Energy

CONFIDENTIAL


17 JUL 1981

Energy

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WHITEHALL LONDON SW1A 2ER
Tel. 01-233 3000 (Switsfwrdd)
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Oddi wrth Ysgrifennydd Gwladol Cymru

The Rt Hon Nicholas Edwards MP

WELSH OFFICE
GWYDYR HOUSE
WHITEHALL LONDON SW1A 2ER
Tel. 01-233 3000 (Switchboard)
01-233 6106 (Direct Line)

From The Secretary of State for Wales

15 July 1981

Dear David

WM 16/7

I have seen your minute of 6 July to the Prime Minister enclosing your proposed response to the Select Committee Report on Nuclear Power.

I do not have any substantive comments to make but in view of the recent criticisms of the Government's policy on nuclear power, I agree that a firm response is called for, along the lines drafted, and that it should be published as a White Paper before the recess.

/ Copies of this letter go to the recipients of yours.

Yours ever

Nick

The Rt Hon David Howell MP
Secretary of State for Energy
Department of Energy
Thames House South
Millbank
LONDON
SW1P 4QJ

CONFIDENTIAL

1 mr Lightfoot 2 Drawing mr Howell's response

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

MINISTER FOR LOCAL GOVERNMENT AND ENVIRONMENTAL SERVICES

My Ref: H/PSO/16059/81

15 July 1981

Dear David,

SELECT COMMITTEE REPORT ON NUCLEAR POWER

You sent Michael Heseltine a copy of your submission of 6 July to the Prime Minister about the proposed White Paper responding to the Select Committee's Report.

I am content with the course of action you propose, and in general with the White Paper itself. There are, however, a few points I should like to raise.

In Michael's letter to you of 3 July about the Sizewell PWR inquiry he welcomed the proposal for a White Paper which would provide an opportunity in advance of the inquiry for a debate at the national level on issues of nuclear power policy. For this reason, he suggested that the White Paper should have "green edges", and should invite interested bodies and individuals to put their views on policy to the Government. While I recognise that the White Paper says that the Government's position is flexible, I also feel that more should be done to stress this fact. I feel that it is very important for the credibility of the inquiry and of the inquiry system generally. It would also be better if paragraph 10.03 of the White Paper accepted quite specifically the Committee's wish that certain key issues should not be excluded from discussion at the inquiry.

Apart from these points, I have only two comments on the text of the White Paper. First, while agreeing with your general approach of not dealing with every point raised by the Select Committee, I think that something ought to be said in response to their conclusion on the pollution aspects of fossil-fuel electricity generation, particularly as this has been the subject of a study by the Commission on Energy and the Environment.

CONFIDENTIAL

If you agree, officials can work out a suitable form of words. Secondly, the first sentence of Chapter 9 should include a reference to the Secretary of State for Wales, who also shares responsibility for policy on the management of radioactive waste.

I am copying my letter to the Prime Minister and the other recipients of your submission.

TOM KING

The Rt Hon David Howell MP

1 Mrs Lankester ca Press
2 Prime Minister 2

WR 14/7

Mr Howells in Planning to announce by written answer the terms of reference of the SWB PWR Inquiry.

~~Dear Alan~~

01 211 6402

The Rt Hon Michael Heseltine MP
Secretary of State for the Environment
Department of the Environment
2 Marsham Street
London SW1

14 July 1981

MS 14/7

Dear Michael

SIZEWELL B PWR INQUIRY

Thank you for your letter of 3 July. It crossed my letter of 6 July to the Prime Minister about the draft White Paper in answer to the report of the Energy Select Committee on nuclear power policy. My letter stressed the flexibility of the Government's position, in particular the commitment only to authorise orders for further nuclear power stations as and when the Government were satisfied that a genuine need existed, and the draft White Paper itself refers to the Select Committee's contribution to public debate on the appropriate level of nuclear ordering, and on reactor choice. There is a lively public debate about nuclear energy; the subject receives a lot of media attention, and my Department deals with a steady flow of letters on it.

It is however important to distinguish between the Government's policy of continuing the development of nuclear power, and commitment to a specific project such as the Sizewell B PWR. I have of course emphasised the very great importance I attach to the Sizewell B public inquiry; I think it is clear that, while the Government has a general policy stance in favour of nuclear energy, there is no question of my going into the Sizewell B inquiry with my mind already made up.

Your suggestions about the timing of pre-inquiry meetings will be put to Sir Frank Layfield. My own feeling is that the end of this year might be too early for the first meeting.

I am grateful for your comments on my draft of a "Rule 6" statement, and am happy to accept your redraft. Although officials are still consulting the Council on Tribunals about the proposed Rules of Procedure for Electricity Acts inquiries, I think it would be right now to go ahead with a statement, even if it has to be formally repeated later under the Rules when they come into force. Parties considering their approach to the inquiry, as I believe the relevant local authorities are, would I am sure find an early statement helpful.

I agree with you that there is likely to be increasing pressure for Government financial aid to objectors at the inquiry, and that our response should be concerted. Our officials are of course in touch about the line to be taken in dealing with correspondence on the subject.

I enclose a draft of an arranged PQ and answer, which I intend to issue as soon as possible. You will see that I intend to combine the statement on terms of reference with the announcement of my appointment of Sir Frank Layfield as Inspector.

I am copying this letter to the Prime Minister, the Lord Chancellor, the Secretaries of State for Scotland and Wales, and the Secretary of State for Transport.

Yours ever

David

D A R HOWELL

DRAFT

Q. To ask the Secretary of State for Energy, if he is able to make a statement about the terms of reference for the Sizewell B PWR inquiry.

A. In considering whether the proposed power station should proceed, I will take into account theeconomic, environmental and safety aspects which would be involved, as well as planning aspects. On the information so far available to me it appears that the following points will be relevant:

a) the Central Electricity Generating Board's requirement for the power station in terms of the need for secure and economic electricity supply and having regard to the Government's long-term energy policy;

b) the safety features relevant to the design, construction and operation of the station and in particular the views of the Nuclear Installations Inspectorate on its licensability;

c) the arrangements for waste management, in the light of the views of the authorising Departments;

d) the implications of the proposed development (including both construction and operation) for:

1) agriculture and fisheries
2) local employment
3) water supply and disposal
4) transport requirements
5) coast protection
6) housing and public services generally
7) local amenities and in particular areas of special landscape value or nature conservation interest

I am pleased to announce that I am appointing Sir Frank Layfield QC to act as Inspector at the inquiry.

B/F

NEW ST. ANDREWS HOUSE
ST. JAMES CENTRE
EDINBURGH EH1 3SX

CONFIDENTIAL

14 July 1981

Rt Hon David Howell MP
Secretary of State for Energy
Department of Energy
Thames House South
Millbank
LONDON
SW1

Dear David,

SELECT COMMITTEE REPORT ON NUCLEAR POWER

Thank you for copying to me your minute of 6 July and the attached draft response to the Select Committee on Energy's report on nuclear power. I have no comments to offer on the draft.

I am copying this to the Prime Minister, the other Members of E Committee, Sir Robert Armstrong and Robin Ibbs.

Yours ever,

George.

PA WR 14/7

Energy

Civil Service Department
Whitehall London SW1A 2AZ
01-273 4400

From the Private Secretary

Julian West Esq
PS/Secretary of State for Energy
Department of Energy
Thames House South
Millbank
LONDON SW1P 4QJ

14 July 1981

Dear Julian

SELECT COMMITTEE REPORT ON NUCLEAR POWER

The Lord President has seen a copy of your Secretary of State's minute of 6 July and the draft White Paper giving the Government's response to the Select Committee on Energy's report on the nuclear power programme.

The Lord President is generally content with the draft of the White Paper, subject to one small point. The reference in paragraph 9.03 to relocation expenses for the Nuclear Installation Inspectorate implies that no assistance is provided. In fact, we are considering the possibility of raising the existing ceiling. We suggest that lines 14 to 16 should be amended as follows to make this clear:

> "The Government is therefore reviewing the Inspectorate's current salary levels and the ceiling on the reimbursement of expenses incurred by new recruits to the NII and other shortage grades on first appointment."

Copies of this letter go to Private Secretaries to members of E Committee, the Secretary of State for Scotland, Sir Robert Armstrong and Robin Ibbs.

Yours ever,

Edward Chaplin.

E G M CHAPLIN

CHIEF SECRETARY TO THE TREASURY

Treasury Chambers, Parliament Street, SW1P 3AG

Julian West Esq
Private Secretary to
Rt Hon David Howell MP
Secretary of State
Department of Energy
Thames House South
Millbank
London SW1

10 July 1981

Dear Julian,

SELECT COMMITTEE REPORT ON NUCLEAR POWER

The Chief Secretary has seen a copy of your Secretary of State's minute of 6 July in which he seeks agreement to the draft of a White Paper giving the Government's response to the Select Committee on Energy's report on the nuclear power programme.

The Chief Secretary is generally content with the draft of the White Paper, subject to one small point. This is that paragraph 3.08 should be revised so as to omit the commitment to publish new energy projections during 1981-82. The Chief Secretary suggests this because there is always difficulty in deciding the assumptions (eg on GDP growth) which have to underlie such projections. He would therefore prefer that the Government was not committed to their publication, particularly before a specified time.

I am sending a copy of this letter to the Private Secretaries of the members of E Committee, the Secretary of State for Scotland, Sir Robert Armstrong and Robin Ibbs.

Yours ever

Terry Mathews

T F MATHEWS
Private Secretary

CC PUS
Mr Manley
Mr Lamont
Mr Kelly
Mr Henderson -
on File

01 211 6402

WM 23/7

The Rt Hon Tom King MP
Minister for Local Government
& Environmental Services
Department of the Environment
2 Marsham Street
London
SW1P 3EB

22 July 1981

Dear Tom

15/7/81

Thank you for your comments on our draft response to the Select Committee report. I am glad you are generally content with what we propose.

To take the points you made in order, I have considered your suggestion that the document should be more consultative in tone, and stress flexibility. This is in fact an aspect which the paper already stresses and I feel that any further emphasis in this direction would invite questions as to whether the Government was really serious about any sort of long term nuclear policy.

You also say you would like to see a sentence on the pollution aspects of fossil fuelled stations. While we recognise the problem, it is very much aside from the main thrust of the argument presented in the paper, and my view is that this would not be the right place to make a statement on it.

You rightly point out that the Secretary of State for Wales should be referred to in 9.01 in respect of disposal of nuclear waste; this has been corrected.

Finally, you suggest direct endorsement of the Committee's recommendation (paragraph 167) on issues to be covered at the inquiry. The context in which this recommendation is made suggests that the Committee would like it to be accepted that the NII's findings could be challenged at the inquiry. This is a misapprehension since the Nuclear Inspectors' grant of site licence will follow the inquiry rather than precede it. I think therefore, that direct endorsement should be avoided, but to meet your point I propose to add at the end of paragraph 10.03:

> "and for it to deal with safety issues, while preserving the statutory responsibility of the NII for licensing under the Nuclear Installations Act 1965".

This has the advantage of making it clear that the licensing of the PWR is a separate matter from the Public Inquiry process.

Yours ever

D A R HOWELL

David

SELECT COMMITTEE REPORT ON THE NUCLEAR PROGRAMME - SUMMARY OF CONCLUSIONS

1 The report broadly endorsed the need for continuing nuclear power station orders, and specifically for the proposed PWR, on which a public inquiry is to be held next year. However the Report repeatedly questions the need for a 15GW nuclear programme, and calls for each proposed new nuclear station to be considered on its merits. The tone of much of the report and its 91 recommendations is critical of the Government and the Generating Boards. The report is concerned with policy on thermal reactors and not with the fast reactor.

2 Main points in the report are as follows:

a) Nuclear Programme

The Committee accept that a modest investment in nuclear power can probably be justified and recommend that the Government should adopt a programme of a single thermal reactor type as soon as the uncertainties have been clarified. But they are not convinced of the need for the full 15 GW programme, and argue that the case for each successive station should be evaluated on its merits.

b) Electricity Demand

The Committee conclude that the Department and the electricity boards are over-estimating future electricity demand. They recommend that the Government should review the 28% planning margin, that the Department should give more thought to the economics of conservation as compared to nuclear power, that the case for converting oil fired plant to coal should be examined, and that the CEGB and SSEB should integrate their planning.

c) Economics of Nuclear Power

The Committee recognise that nuclear plants built ahead of need could be economically attractive. But they stress the very large resources involved and the costs if things go wrong. They criticise the CEGB's attitudes on costs and their acceptance of higher costs in the UK than abroad and they point out that even if the PWR is the right choice for the UK we could still be at a disadvantage internationally unless the CEGB are able to reduce their costs. They recommend that the CEGB should publish objective appraisals of the economic case for each proposed nuclear station and that none should be ordered simply because they form part of the 15 GW programme.

d) Reactor Choice

The Committee accept that the Government are right to establish an alternative option to the AGR. But they say they have been struck by some of the evidence on the technical difficulty of analysing PWR safety. They criticise what they see as a failure to examine CANDU seriously or to give proper consideration to the possibility that the PWR will fail to gain acceptance and they recommend that Candu should now be assessed urgently. In view of Candu's uranium economy they also recommend a study of the implications for thermal and fast reactor policy of future uranium supply.

The Committee conclude that there was a case for not ordering both AGRs and criticise the Government for not making available the CPRS study.

They argue that at present both the AGR and PWR designs must be regarded as prototypes only and that the CEGB will not be able to make a reliable estimate of PWR costs until the first station is within sight of completion. They recommend that the CEGB should publish a detailed appraisal of the AGR and PWR construction programmes before the next station after the first PWR is ordered.

However the report also says that there should as soon as possible be a clear commitment to one reactor system for indigenous development so that the industry can focus its efforts in a single direction with a guarantee of continuity of work.

e) Uranium Supplies

The report comments that it would be inexcusable if a failure to examine in depth now the implications for thermal and fast reactor policy of future uranium supplies were to lead to the need for the UK to "change horses" to another type of thermal reactor in 10-15 years' time. The Committee therefore recommended that a thorough study of these issues should be made by the Chief Scientist at the Department of Energy, and published.

f) Power Plant Industry

The Committee casts doubt on the future economic viability of the fragmented UK power plant industry (given the likely level of future nuclear orders); suggests that this and the accompanying "Buggins turn next" in the placing of orders may add to the cost of plant; and by implication questions whether we should afford to maintain an independent domestic nuclear plant industry, or whether we should go for truly competitive tendering

on an international basis.

g) Isle of Grain

The Report comments on the Isle of Grain dispute, citing it as an example of the bad performance of British large site construction industry, and laying a large measure of the blame on CEGB. It expresses concern that similar problems might render future nuclear power station projects uneconomic, and strongly supports the implementation of the recommendations of earlier studies of this problem (Wilson 1969, NEDO 1980, and NEDO 1976) - in particular with regard to industrial relations and project management.

k) Environment

The Report refers to the pollution effects of coal fired electricity generation and remarks that anti-pollution measures will affect the relative costs of coal-fired plant. However it also endorses the view of the Flowers Report that there should be no commitment to a substantial programme of nuclear power until waste disposal (and transport - which Flowers does not mention) problems can be managed safely.

l) Public Inquiry /Parliamentary Debate

The Report makes various suggestions about the conduct and scope of the Sizewell Inquiry including the need for an interval of 4 months between publication of the NII Report and the start of the Inquiry. It calls for an early Parliamentary debate on the December 1979 statement and suggests a further debate after publication of the Sizewell Inspector's report.

Department of Energy

2 July 1981

THE GOVERNMENT'S RESPONSE TO THE SELECT COMMITTEE ON ENERGY'S REPORT ON THE NUCLEAR POWER PROGRAMME

Introduction

The Government welcomes the Select Committee's report on the nuclear power programme as a valuable contribution to the public debate on the appropriate level of nuclear ordering and on reactor choice.

The Select Committee's report is wide-ranging; its recommendations cover many issues. This response is divided into two sections. The first deals with the Government's strategic approach to nuclear energy and comments on the main issues raised by the Committee. More detailed observations are in the second section.

SECTION 1

THE GOVERNMENT'S NUCLEAR ENERGY STRATEGY

Background

1.01 The starting point for the Committee's investigations was the statement by the Secretary of State for Energy on 18 December 1979. That set out the Government's view that a sizeable contribution by a nuclear power would be necessary to meet Britain's long-term energy needs.

The Government's Nuclear Strategy

1.02 The Government has a duty to ensure as far as possible that both now and in the future Britain has available at a competitive and economic price secure supplies of energy sufficient to sustain economic activity, to accommodate growth, and to provide for our people's personal welfare. At present this security comes from dependence on oil, gas and coal (largely our own in each case), and to a far lesser extent on nuclear power. A supply of energy from one source is subject to interruptions from time to time, so that it is prudent to establish as wide a range of options as possible. Furthermore, although as a nation we do not know exactly what reserves of oil and gas we may yet find or how demand will develop, we do know that our oil and gas resources are finite. We must therefore provide for the period when supplies begin to decline and extraction costs escalate. This may entail marked shifts in this country's pattern of energy consumption. For example, the Government would expect energy conservation to have a bigger impact on

the level of total demand, and would also expect that, in the longer term, coal will play a larger role than at present. But taking account of these changes, the Government still sees an important and necessary role for nuclear power, which will develop in years ahead as older electricity generating plants are retired. It would be dangerously short-sighted to ignore this reality now, especially after a quarter of a century of the safe development of nuclear power in this country.

1.03 The Government therefore welcomes the Select Committee's recognition of the need for continuing orders for nuclear power stations.

1.04 The Government is anxious that the country should have a reliable and cost-effective reactor system available for ordering as necessary. It also recognises that large industrial electricity consumers are concerned about the price of supplies in Britain compared with prices elsewhere in Europe. Nuclear power has the potential to produce electricity more cheaply than fossil fuels provided that new power stations can be built to time and cost. It will be difficult for the industries which supply nuclear power stations to keep their costs down unless they have reasonable prospects of future orders and achieve good performance. The orders placed in 1980 for the two Advanced Gas-Cooled Reactors (AGR) to be built at Heysham and Torness were the first domestic nuclear power orders for a decade, and the industry therefore faces a major challenge in securing their successful and timely completion.

The Existing Framework

1.05 The Secretary of State's 1979 statement recognised this need for a long term framework within which future nuclear orders could be planned. The electricity supply industry (esi) had advised that, even on cautious assumptions they foresaw a need to order at least one new nuclear power station a year in the decade from 1982 or some 15 gigawatts (GW) over 10 years, and the Government accepted that orders of this magnitude represented a reasonable prospect for planning purposes.

1.06 But, as the Select Committee observes, the statement did not represent a commitment to any fixed programme of nuclear orders. It pointed out that "the precise level of future ordering will depend upon the development of electricity demand and the performance of the industry". The Government keeps under review all the factors which were taken into account in assessing the likely need for orders. However, at the present time it does not believe that developments since 1979 justify any major policy reappraisal, subject as before to flexibility over the precise timing of individual orders.

1.07 The December 1979 Statement also recognised the need to develop the option of an alternative reactor to the AGR. The Government welcomes the Select Committee's agreement that it is right to establish an alternative for future orders.

Reactor Choice

1.08 The Government believes that this alternative should be Pressurised Water Reactor (PWR) and that the next nuclear station ordered should, subject to necessary consents and safety clearances, be a PWR. The world has more experience of operating the PWR than any other reactor type. Work is proceeding on the design and preparation of the safety case with a view to a public .nquiry in 1982.

1.09 In arriving at the choice of the PWR, the Government carefully considered other possibilities including the Canadian designed system. The starting point for considering the options was the Thermal Reactor Assessment (TRA) carried out by the National Nuclear Corporation (NNC) and submitted to the Department in July 1977. This report concentrated on the AGR, the PWR and the Steam Generating Heavy Water Reactor (SGHWR) and recommended that the SGHWR should be dropped - on the grounds that operational experience of a commercial size reactor could not be available for 10 years; that it was the most costly and that it would require considerably larger expenditure on development than both the AGR and PWR together. CANDU was not included in the TRA because it was considered that it had much in common with the SGHWR and the latter (using enriched uranium) was potentially a cheaper source of electricity. However, in parallel with the TRA, NNC undertook a study of CANDU which confirmed that capital costs would be considerably higher than of any of the other reactor types under consideration. This, and the fact that substantial and costly development work would be needed to adapt CANDU for operation in UK conditions, led the Government to conclude that the PWR was a more promising option.

1.10 Since then the industry has been concentrating its efforts on developing the design of a PWR nuclear power station (based on the Westinghouse Nuclear Steam Supply System) suitable for UK conditions and requirements. The Government thinks that the key to a successful nuclear programme is to concentrate effort and considers that the Select Committee's call for the adoption of a realistic programme of a single reactor type supports this view. It therefore regards as misconceived the Committee's suggestion that a further in depth assessment of CANDU should be undertaken prior to any final commitment to building a PWR at Sizewell, given the time that would be required, to bring CANDU to the same stage of development in relation to adoption in the UK as the PWR has now reached, the diversion of effort and potential dislocation of the existing thermal reactor programme that this would involve, and the relatively higher capital costs of the CANDU system.

Conclusions

1.11 The prospect of a further series of nuclear power station orders represents a necessary step towards ensuring the security of the nation's energy supplies over the longer term. However even the modest level of ordering envisaged in the 1979 statement is unlikely by the year 2000, to result in more than 30% of total electricity generating capacity being nuclear. The nation will therefore still remain heavily dependent upon fossil fuels.

1.12 The Government rejects criticism that a potential nuclear commitment of this order is excessive. However the approach is flexible. The Government will keep its strategy under review and does not propose to authorise specific new nuclear power station orders until it is fully satisfied that each is justified.

1.13 The Government welcomes the Select Committee's recognition of the important contribution that nuclear power can make to meeting our energy needs. It will use its best endeavours to secure an early opportunity for Parliament to debate the Committee's report and this White Paper.

SECTION II

DETAILED OBSERVATIONS ON THE SELECT COMMITTEE REPORT

2.01 This section sets out some of the more important considerations that have influenced Government strategy towards nuclear energy, and comments on some of the detailed views expressed by the Committee. The Government will take careful account of all the observations made by the Committee - whether or not directly commented upon here - as its policy continues to develop; and in the wider context of its overall energy strategy.

Summary

2.02 For convenience, a summary of the main points in the succeeding chapters of this section is given below:

Electricity Demand Projections (Chapter 3)

As has always been recognised, there are many uncertainties about electricity demand over the longer term. The Government will keep the projections under review. If a modest degree of economic growth is assumed, and allowance made for a good deal of success with life extension of existing plant, around 20 GW of new generating capacity could be required by the end of the century. This makes allowance for savings resulting from the successful application of energy conservation policies.

To ensure that a realistic approach to forward planning is taken, the Government is taking the following steps:

- it has asked the Electricity Council to undertake a study of the generation security standard in England and Wales, consulting representatives of electricity consumers in so doing.

- it is seeking advice from the Central Electricity Generating Board (CEGB) and South of Scotland Electricity Board (SSEB) on whether the scope for closer co-operation and co-ordination of investment planning might be likely to lead to the achievement of worthwhile savings;

- the Department of Energy will carry out further research into the relative costs and benefits of investments in energy conservation and energy supply.

Economics of Nucear Power (Chapter 4)

The Government notes the criticisms of aspects of the CEGB's approach to investment appraisal made by the Select Committee and the Monopolies and Mergers Commission. The CEGB have been asked for urgent proposals for improvement in this area.

The Generating Boards will continue to prepare economic appraisals of each new station as it is put to the Government for approval of the proposed investment.

The Government agrees with the Select Committee that as much information as possible about the economics of proposed future power stations should be made available to the public.

Thermal Reactor Choice (Chapter 5)

The Government welcomes the Select Committee's support for the establishment of an alternative option to the AGR for future nuclear station orders. It remains the Government's view that, subject to the necessary consents and safety clearances being obtained, the PWR is the appropriate alternative.

Uranium Supplies (Chapter 6)

A recent study of future uranium supplies by the Government, and a separate study by the 60 nation International Nuclear Fuel Cycle Evaluation (INFCE) both concluded that uranium supply should be adequate to meet realistic projection of demand to 2025. On the basis of these studies there is no evidence that the price or availability of uranium will require the UK to change to another thermal reactor type in 10-15 years.

Power Station Construction Performance (Chapter 7)

It is vital that future power stations should be built to time and cost.

Nuclear Industry Organisation (Chapter 8)

The Government does not consider major organisational changes necessary. However, it does consider that the National Nuclear Corporation (NNC) should evolve into a strong and independent design construction company. It is currently reviewing with both the Corporation and the Generating Boards how the Corporation's role in relation to the major financial risks involved in nuclear power station construction could be strengthened.

Safety and the Nuclear Installation Inspectorate (Chapter 9)

The Government attaches overriding importance to the need for safe nuclear power, fully compatible with environmental considerations, both in regard to power generation, and also in regard to the transport of irradiated fuel and disposal of nuclear waste. It endorses the Select Committee's view that the role of the Nuclear Installations Inspectorate, and the proper allocation of responsibilities for different aspects of safety, are crucial.

Sizewell PWR (Chapter 10)

As already announced by the Secretary of State for Energy, the Government is committed to a full and thorough public inquiry into the CEGB's application for consent to build this station.

Electricity Demand Projections

Electricity Supply Industry Forecasts

3.01 The electricity supply industry (esi) and the Department of Energy keep their respective projections of electricity demand, and the need for new generating capacity, under constant review.

3.02 As the Select Committee recognises, any longer term planning guidelines for the construction of nuclear power stations must be determined, among other factors, from a view of the need for new capacity as far ahead as 2000. This view, in its turn, must depend on expectations of future demand for electricity, and the rate at which existing capacity becomes obsolete or uneconomic. There are major uncertainties in any such forecasting, and the projections made by the industry and the Government therefore cover a wide range of possible outcomes.

3.03 However, as far as England and Wales are concerned the CEGB have examined a reference case of economic development and electricity demand up to the year 2000 which is basically an extension of the demand estimates adopted by the esi in October 1980. In this GDP is assumed to grow by 1.3% per annum to the year 2000, with a consequential growth in electricity demand of 0.9% per annum. Potential higher and lower demand scenarios are also considered ranging on the one hand from no economic growth and no growth in electricity

demand to an economic growth of around 2.6% p.a. with a 1.7% p.a. growth in electricity demand. The need for new generation is assessed against the reference case, taking account of various outcomes for the life of existing and committed generating plant; these range from the decommissioning of all fossil-fired plant after 30 years to the achievement of a 40-year life by all existing coal-fired units of 60MW and above.

3.04 The CEGB analysis concludes that:

i. The plant to be retired between now and the year 2000 (including all the 3.4 GW Magnox capacity) would be in the range of 15-35 GW, dependent upon the achievement of a 40 or 30 year life respectively.

ii. On the higher assumption about life extension i.e. a 40-year life for coal plant, 20 GW of new capacity would be needed by the year 2000 on the demand estimates in the reference case; this would be reduced to a minimum of about 8 GW on the assumption of no electricity growth and rise to around 30 GW for a higher demand growth. If plant life were only about 30 years, these requirements for new plant would be increased by up to 20 GW.

iii. The technical and economic feasibility of achieving a 40-year life for most coal-fired plant is a critical factor.

3.05 These projections are now the best part of a year old and will be subject to a regular review in the course of the normal CEGB planning process. In particular, the CEGB's continuing review of the evidence for extending the lives of existing generating sets is giving increasing confidence that the majority of large modern coal-fired units (500 MW and above) could approach a life of 40 years. However, no 500 MW unit has as yet run for longer than 15 years and it would therefore be imprudent at this stage to plan on the basis that all existing conventional plant will certainly attain a life of 40 years. It would also be unsafe to assume that electricity demand in England and Wales will remain static to the end of the century. If a modest degree of growth is assumed, and allowance made for a good deal of success with life extension, the new capacity required in England and Wales would be around 20 GW by the end of the century.

3.06 Department of Energy forecasts. In 1979 the Department of Energy completed a main projection of electricity demand in England, Scotland and Wales up to the end of the century; and this has since been supplemented by a lower growth sensitivity case. This last case assumed an average annual growth rate for GDP of about 1% compared with the 2.0% and 2.7% growth rates assumed for the two variant cases in the main exercise. In the main exercise, assuming normal rates of plant retirement (coal and oil at 30 years, nuclear at 25 years), it was estimated that up to a total of 40 GW of nuclear generating

plant would be required by the year 2000. This decreased to a total of some 25 GW in the lower growth sensitivity case.

3.07 The Department's analysis allows for a reduction in energy demand through energy conservation of about 20% by the year 2000.

3.08 The Department keeps its energy projections under review and will publish revised projections during 1981/82.

3.09 Private Generation. The Goverment intends to remove the statutory prohibition of the supply of electricity as a main business when a suitable legislative opportunity arises. Under existing legislation it is possible for private concerns to generate and supply the bulk or even the whole of their output of electricity to others provided it is not their main business. At present some 15% of the electricity consumed by industry is privately generated and some 7% of overall electricity demand is met by the private sector.

3.10 The proposed legislative change is not expected to lead to large changes over the planning period in the level of demand for electricity from the esi. If, however, it becomes clear that private generation is expanding more than expected, forecasts will be adjusted accordingly.

3.11 Economic and market factors will be paramount in influencing future development. Small-scale generation is more likely to be competitive with public supply where both heat and electricity are produced in CHP plants. The availability of capital will also be an important factor.

3.12 Security standards and the Planning Margin. The Committee argue that, because of the high resource cost of retaining a 28% planning margin indefinitely, the Generating Boards should give higher priority to achieving improvements in plant reliability with a view to reducing the planning margin to a much lower level as soon as practicable. In addition, the Government should review the standard of electricity supply security.

3.13 The Monopolies and Mergers Commission commented on security of supply and the planning margin in their report on the CEGB, published in May 1981. The Commission believes that the issue of security standards required further study by the Electricity Council, and that any future review should involve consultation with representatives of consumers. The Commision welcomed the CEGB's intention to reconsider the margin before it again becomes relevant to plant orders.

3.14 The Government has asked the Electricity Council to undertake a study of the generating security standard in England and Wales, in consultation with representatives of electricity consumers.

3.15 Co-ordination of Planning between CEGB and SSEB. The planning of investment in new generating capacity is in the first instance a matter for the Generating Boards and it is their primary responsibility to provide electricity supplies within their own districts. The Government has, however, noted the Select Committee's recommendation in favour of "fully integrated planning" by the two Boards. The latter have been asked for their advice on the scope for closer co-operation and in particular whether closer coordination of investment planning, taking account of the plant and load position on both sides of the border, might to lead to the achievement of worthwhile savings.

3.16 Scope for Converting from oil to coal. The Select Committee, while recognising the technical difficulties, considered that the possibility of converting the esi's new oil-fired capacity to dual-firing should be thoroughly investigated in order to make economic use of this substantial investment.

3.17 The high price of heavy fuel oil means that the esi have a strong incentive to reduce their oil burn: and oil has declined, for example, from roughly 25% of the CEGB's fuel-burn in the early 1970's to less than 10% in 1980. No oil fired stations in Great Britain are currently being used for base-load generation.

3.18 The Government keep this matter under review with the Generating Boards and are, in particular, discussing it with the CEGB in the light of the view, expressed in paragraph 5.168 of the Monopolies and Mergers Commission report, that reconversion should be urgently studied. A significant though uncertain factor is the future trend in real oil prices.

3.19 Energy Conservation. Paragraph 32 of the Select Committee's Report stated that "the Department of Energy has no clear idea of whether investing around £1300 million in a single nuclear plant (or a smaller but still important amount in a fossil fuel station) is as cost effective as spending a similar sum to promote energy conservation". It went on to recommend that the Department of Energy should assess in future, as it should have done in the past, the economics of public expenditure to promote energy conservation with the same rigour as that required for the appraisal of new generating plant.

3.20 The evidence on which the Committee's conclusion and recommendation were based (Evidence p617) made clear that the Department has carried out a continuing analysis of the relative costs and benefits of investments in energy conservation and energy supply. The analysis has involved a combination of investment appraisals of individual conservation measures and surveys to discover the potential application of such measures.

3.21 The results indicate a large potential for investment in energy conservation some of which is more cost effective from a national point of view than investment to increase energy supply. However the implications of this potential for either the energy supply industries investment programmes or the resoerces which should be devoted to Government promotion of energy conservation are not straightforward.

3.22 For the fuel supplier, the actual reduction in fuel consumption resulting from conservation investment reduces current and future demands for the fuel. This reduces both the immediate and future operating costs of existing capacity and the need to invest in increased capacity, so saving further capital costs. However, the implications of reduced energy demand for the energy supply industries' investment programmes are not clear-cut. The impact of energy conservation on the individual fuel supply industries depends on the size and timing of the reductions in consumption of individual fuels which the measures bring about. This is particularly difficult to assess because:-

i. it is difficult to allocate the savings from most types of conservation measures to specific individual fuels. For example, domestic insulation (see below) will result in a saving of all the fuels currently used for space heating. Even if the fuels used in particular circumstances were to be indentified, fuel substitution could result in many of these being changed over the planning and construction period associated with energy supply investment;

ii. most calculations of the cost effectiveness of conservation measures relate to total annual savings and cannot identify savings made at peak periods of demand (which are crucial to assessment of the need for increased capacity) or the consequences for base-load generation.

iii. in many cases fuel consumers may choose to take part of the benefits of conservation measures in increased standards of service provided by fuels, so that the full potential fuel savings included in the analysis of cost effectiveness may not be achieved in practice.

3.23 In this context it is worth pointing out that domestic space heating accounts for only a small share of total electricity demand: in 1978 it was estimated that only 7% of domestic heating was by electricity, which represents around 9% of total electricity demand. Thus, even if every electrically heated household could save 20-25% of their consumption by installing loft and other cost effective forms of installation, total electricity demand would be reduced only by about 2%. A reduction in demand on this scale would have little effect on the economic justification for new nuclear power stations.

3.24 Decisions on energy consumption and energy conservation are taken by individual energy consumers on the basis of their own perceptions of their individual circumstances. The Government cannot take these decisions but only influence them, and the Government believes that the strongest incentive to cost effective investment in conservation is through the economic pricing of all fuels. It also recognises the need to reinforce pricing policy with information and advice as well as regulation and financial incentives where these are appropriate. The need for new measures to reinforce the price mechanism is kept continuously under review.

3.25 As stated above (3.20) the Department of Energy also carries out regular assessments of the cost-effectiveness of various conservation measures. However, as was made clear in the Department's evidence to the Committee, the analysis is complicated. The work is not yet sufficiently advanced for detailed conclusions to be drawn. In an attempt to reduce some of the uncertainties involved the Department is commissioning further research and is analysing data.

3.26 However, on the basis of existing evidence, the Department does not believe that the choice is simply between investment in conservation and investment in new electricity generating capacity. Not only are there risks in underestimating future electricity demand through the non-achievement of expected energy conservation but, as stated above, it is also difficult to

allocate energy savings to individual fuels. Therefore, in the long-term, the Goverment concludes that the country needs both to invest in electricity supply and to improve steadily the efficiency with which all forms of energy are used.

3.27 Need for additional capacity - the Government's view. Against the background described in this chapter the Government considers that it is reasonable for the electricity supply industry to plan on the basis of a need for new generating capacity in England, Scotland and Wales of around 20 GW by year 2000.

3.28 Meanwhile the Government wishes to emphasise that each decision on new generating plant will be taken on its merits taking into account the need for fuel diversity, the economic assessment of the generation costs of different fuels, the development of electricity demand, the performance of the industry, and the extent to which extensions to plant life can be regarded as feasible and economic.

Economics of Nuclear Power

4.01 Past Performance. The Select Committee commented on the use of generating cost figures calculated on a historic cost basic. the Department of Energy's memorandum to the Committee [Evidence p4] made clear the Department's view that a comparison of the costs of generation from existing modern power stations does not provide an appropriate basis for decisions on investment in new capacity. This remains true whether or not such calculations take account of the effects of inflation, and also whether they examine the costs in one particular year, or over the life of the assets as any full appraisal should.

4.02 The CEGB figures quoted by the Department of Energy showed the actual money costs incurred in generating electricity from particular stations in a particular year using defined accounting principles. These are of course the CEGB's own figures. But to undertake a full appraisal of generating costs it is necessary to revalue capital costs and to take into account the effect of inflation on interest payments and the repayment of borrowing. It might also be argued that a full analysis should examine the effect on fossil fuel prices of not going ahead with nuclear,and the need to provide alternative generating capacity. All methods of presenting the results of previous decisions are open to debate. But the issues in this debate are not necessarily those which are relevant to the consideration of future decisions.

4.03 The Committee suggested in paragraph 117 of its report that there was undoubtedly a case for not ordering the two AGR stations at Heysham and Torness. The decision to order these stations was taken by the previous Administration and following a review was endorsed by the Government in April 1980. The main justification for the orders was that the additional nuclear capacity provided by these stations is expected to reduce the Generating Boards' costs and thereby help to contain electricity prices. The success of the stations clearly depends on their being completed so far as possible on schedule and within budget. With construction work now well under way and the major contracts largely concluded there appear to be good prospects of achieving this.

4.04 Economic Appraisal of New Capacity. In making their proposals for new generating capacity, whether to meet incremental demand or to replace high cost plant with lower capacity, the Generating Boards assess the economics of alternative ways of meeting their requirements against the background of the likely components of the generating systems as a whole. The total costs of the proposed new station over its life-time are calculated together with the savings which that station brings in the operating costs of the total system as a whole. The difference between these costs and benefits is the "net effective cost" of the station to the total system. The Boards conclude, on the basis of an appraisal of this kind, that nuclear power is the most economical source of new generation. The outcome of such an appraisal is by its nature, heavily dependent on key input assumptions concerning, for example,

capital costs, construction times and performance of stations, whether coal or nuclear, and the future course of the prices of both nuclear and fossil fuel, and in particular coal;it is therefore subject to a wide range of uncertainty.

4.05 The Government accept that it is appropriate to evaluate power station investment on this basis. The Government and the Boards also consider whether new stations are needed on capacity grounds. However, the Government notes that the Monopolies and Mergers Commission in their report on the Board published in May 1981 severely criticized some aspects of CEGB investment appraisal and, in particular, some of the assumptions made by the CEGB. The Secretary of State for Energy has asked the CEGB for their proposals for improvement, and the Board has in hand a programme of work on the development of its investment analyses and their presentation. This takes into account points made by the Commission on assumptions about coal prices and availability, power station construction times and costs, gas-cooled reactor performance and sensitivity analysis.

4.06 The Department of Energy carried out independent work on the economics of new power station investment in 1977; this led to the publication of Energy Commission paper number 6. This was used as the basis for further continuing work within the Department showing that if nuclear power stations can be built within cost and on time and if they then achieve satisfactory standards of performance, nuclear plant should be able to reduce the overall costs of power generation by displacing the use of fossil fuel stations in the system. This is an issue to which the Government attaches special importance.

4.07 The Boards will continue to submit economic appraisals of each new station when seeking Government approval for the proposed investment. This is in line with the Committee's recommendation. In considering these appraisals the Government will have in mind the wide range of uncertainty which surrounds the appraisals. The Government shares the Committee's view that as much information as possible about the economics of proposed future power stations should be made available to the public.

Reactor Choice

5.01 In 1974 the Government of the day published the report of the Nuclear Power Advisory Board on "The Choice of Thermal Reactor Systems". That report said "All members conclude that if the UK wishes to follow the heavy water route it would be better to continue with SGHWR, preferably in close co-operation with the Canadians, than to adopt CANDU. CANDU uses natural rather than low enriched uranium and requires much more heavy water; it is therefore a more expensive system in capital costs and one that would conflict with the UK's established position as an enriched uranium producer". In their statement accompanying the report, the Government said that in the light of the situation as then reported they "have decided that the Electricity Boards should adopt the pressure tube steam generating heavy water reactor for their next nuclear power station orders".

5.02 In 1976, Sir John Hill, then Chairman of the Atomic Energy Authority reported to the Secretary of State that in the opinion of his Board, in view of the change in circumstances since 1974, the development and construction of the SGHWR programme was no longer justified.

5.03 Later that year the Secretary of State asked the National Nuclear Corporation to undertake a comparative assessment of three reactor types - AGR, PWR and SGHWR. The National Nuclear Corporation's (NNC) report - the Thermal Reactor Assessment - which was submitted to the Secretary of State in July 1977 concluded that there was no case for adoption of the SGHWR.

5.04 Any reconsideration of the suitability of CANDU for UK conditions would therefore need to take account of the reasons for the 1974 preference for SGHWR over CANDU, the reasons why the development of SGHWR was later terminated and any intrinsic change in the relative merits of CANDU and SGHWR.

5.05 Comparison of SGHWR and CANDU. Ever since World War II those responsible for atomic energy development in the UK have maintained close contacts with developments in Canada. During the period from the late 1950's until 1977, whilst the Authority were pursuing the development of the SGHWR, there was an obvious close technical interest in pressure tube reactors and the intrinsic points of similarity and difference between SGHWR and CANDU were well understood. It was recognised that the use of enriched fuel and light water coolant in the SGHWR gave a greater degree of design flexibility, particularly in the demands on materials and a much reduced requirement for heavy water. On the other hand the natural uranium fuel of CANDU, although only giving a relatively short burn-up, gave savings in fuel cycle costs. UK studies always indicated an overall power cost advantage to the SGHWR. These factors were all taken into account in reaching the 1974 decision to prefer SGHWR.

5.06 Following the 1974 Government decision to proceed with an SGHWR programme technical links with Canada were strengthend and contacts involved the Nuclear Power Company (NPC) British Nuclear Fuels Ltd (BNFL), the Nuclear Installations Inspectorate (NII) and the Generating Boards as well as the Authority. Detailed discussions on engineering aspects took place between NPC engineers and their opposite numbers in Atomic Energy Canada Limited (AECL) Power Projects at Toronto. A team of AECL engineers visited the NPC to discuss design aspects in detail and comment on NPC proposals. The object was to ensure that AECL experience on the engineering of pressure tube reactors was being fully taken

into account in the design of the SGHWR. When the SGHWR came under review during 1977 it appeared, amongst other things, to be unattractive on grounds of cost. There was therefore no reason to believe that the potentially more expensive CANDU would appear to advantage in the Thermal Reactor Assessment and it was not one of the three systems recommended to and approved by the then Secretary of State for inclusion in the Department of Energy sponsored contract covering the Assessment work to be undertaken by NNC.

5.07 The Thermal Reactor Assessment advised against adoption of the SGHWR on the following grounds.

i. There would be no operational experience of commercial sizes for a decade.

ii. It would provide no chance of exports in the foreseeable future.

iii. It was clearly more costly than the PWR or AGR.

iv. It would require expenditure on development in the next 7 years considerably larger than both the PWR and AGR together in that period.

v. The import of heavy water would be a significant load on the balance of payments.

5.08 At the end of the Thermal Reactor Assessment in 1977 and 1978 NPC made a further review of CANDU which re-inforced their belief that all the above disadvantages with the exception of the first, applied even more strongly to CANDU, and therefore that CANDU would not have shown to advantage. The UKAEA also reviewed the situation and came to a similar conclusion.

5.09 It is relevant that the UK approach to safety requires that the Nuclear Installations Inspectorate must be satisfied that the plant to be built and operated is satisfactory and safe before they can grant first a construction and then an operating licence. This requires that a comprehensive fund of knowledge of the reactor system should be available and that design and development work on the system can provide the reassurance required. An important element in the 1976 recommendation not to proceed with SGHWR was the small programme of new stations likely and the trend to higher standards in a number of areas relevant to plant and operator safety. It proved difficult to justify the scale of the design and development programme needed to adapt the existing designs of SGHWR to the higher safety standards required.

5.10 Similarly, in the case of CANDU, the designs of the mid 1970s had not fully caught up with world trends towards tighter safety standards. In particular the CANDU design did not have a high pressure emergency cooling system. There were doubts concerning the amount of additional work that would be required to adapt the CANDU design for operation in UK conditions and the impact this would have on the costs. There was also the difficulty of the time needed for the NII to familiarise themselves with the system. The Inspectorate had

become familiar with the UK systems AGR and SGHWR by keeping in touch with their evolution. Two years had been invested in making a generic safety study of the PWR; thiswhich had been facilitated by the extensive information available internationally. There was little published information on the details of CANDU safety aspects and a corresponding uncertainty in foreseeing how long the familiarisation process might take.

5.11 In these circumstances, it seems doubtful whether a new technical assessment of CANDU could affect the overall conclusion reached following the Authority's recommendation of 1976 and the Thermal Reactor Assessment of 1977. Moreover, a full assessment would be a major undertaking. To talk of an "in depth independent" assessment is a contradiction in terms. The Thermal Reactor Assessment of 1977 was conducted by substantial teams of expert engineers within the NPC with 60-90 engineers deployed on each system. CEGB and Atomic Energy Authority staff also contributed and the NII were kept fully in touch with developments. Effort on this scale could not be reassembled without jeopardising the present thermal reactor programme; anything less, especially if conducted by "independent experts" i.e. outside the Industry, would not compare in depth with the work already committed to thermal reactor assessment and could be misleading. A reappraisal of the situation would need to explore safety related matters in some depth since it is known that AECL have in recent years pursued an extensive programme of safety development and have been progressively and continuously improving safety provisions in plants in operation or under construction.

5.12 Moreover the Government wishes to see the uncertainties about the choice of reactor type for adoption in the UK minimised. It believes that further reconsideration of CANDU at this stage, as a third possibility, would divert resources within the industry at a time when every effort should be made to validate the existing PWR and AGR options, and would lead to a much extended period of uncertainty before adoption of a single thermal reactor type would be contemplated. The Committee's own call for adoption of a realistic programme of a single reactor type as soon as possible seems to support this view.

5.13 The Government therefore concludes that there is no case for an in depth independent assessment of CANDU at the present time, and re-affirms the view that, subject to the necessary consents and safety clearances being obtained the PWR is the appropriate alternative to the AGR.

Uranium Supplies

6.01 The Select Committee commented that it would be inexcusable if a failure to examine in depth now the implications for thermal and fast reactor policy of future uranium supplies were to lead to the need for the UK to "change horses" to another type of thermal reactor in 10-15 years' time. The Committee therefore recommended that a thorough study of these issues should be made by the Chief Scientist at the Department of Energy, and published.

6.02 In 1979 the Government undertook a thorough study of future uranium supplies in consultation with BNFL, the UKAEA, the CEGB, the SSEB and the Institute of Geological Sciences. Leading UK mining companies and the Uranium Institute were consulted in confidence, about the review's conclusions. The group first met in March 1979 and reported in November 1979. Its report was endorsed by the Government last year. The principal conclusions of the study were:-

i world uranium resources were probably adequate to meet the lifetime requirements of all reactors likely to be installed by the end of the century; although physical availability of supplies might be constrained for any of a variety of reasons.

ii the excess of supply over demand was expected to increase during the mid to late 1980's. Supplies would probably tighten during the 1990's.

iii there seemed no insuperable difficulties in the way of the UK's meeting its uranium requirements up to the turn of the century. Stocks were sufficient to enable any sudden interruption of deliveries to be weathered, but some diversification of sources of supply was desirable.

iv UK procurement policy was sound.

v the balance of uranium supply and demand should be kept under review.

6.03 Some of the information fundamental to the study's conclusions was provided on the strict understanding that its confidentiality would be preserved for commercial reasons. It was therefore decided that the report could not be published. This consideration still applies.

6.04 A thorough study of the world-wide balance of uranium supply and demand was also made by the 60-nation International Nuclear Fuel Cycle Evaluation (INFCE), whose report was published in February 1980. INFCE's conclusions were similar to those of the UK Uranium Review for the period up to the year 2000. The Evaluation's comparisons showed the need for new sources of uranium production before the end of the century as well as the importance of fuel efficient reactor strategies. The overall conclusion was that uranium supply should in technical terms be adequate to meet realistic projections of demand to 2025 although there is obviously great uncertainty about the longer term projections of demand and of uranium production. Since the UK Uranium Review and the INFCE Report, projections of world uranium demand have decreased owing to delays and

cutbacks in nuclear programmes in many countries, and the INFCE conclusion that with advanced reactor technologies supplies should be adequate to meet world demand to 2025 still holds good. Judgements about the political availability of uranium, and about the uncertainties affecting supply and demand, may however affect the choice of reactor type, and INFCE studied the different ways of reducing uranium requirements.

6.05 One of INFCE's conclusions, which bears specifically on the Committee's recommendation, was that there are ways of reducing the uranium consumption of all thermal reactor fuel cycles. Uranium consumption in AGR's and PWR's could be reduced by modifications to allow increased fuel burn-up in the reactor, by recycling plutonium in the reactor fuel, or by extracting a higher proportion of fissile uranium in the enrichment process. With further development thorium cycles could also be used in these reactors. All these improvements have their costs and would only be attractive options at higher uranium prices than at present. The risk of short term interruptions in supply can be reduced by stockpiling and by diversifying sources. The important point is that changing to another type of thermal reactor would not be the only or necessarily the most effective response to rising uranium prices or politically aggravated shortages.

6.06 In the longer term the fast reactor, with its outstanding fuel economy, promises to be a vital new energy resource, but the timing of its full scale commercialisation depends on future development in world uranium markets and is still uncertain.

6.07 There is therefore no evidence on the basis of these studies that rising uranium prices or uranium shortages in the period before the fast reactor becomes economic will require a change to another thermal reactor type in 10-15 years. For these reasons the Government does not accept the need to set in hand a further study of the implications for thermal and fast reactor policy of future uranium supplies.

Power Station Construction Performance

7.01 It is vital, if nuclear power is to generate electricity economically, that future nuclear stadions should be built to time and within budget. Experience in the UK in recent years with the building of power stations (whether nuclear or otherwise) has not been favourable. The Monopolies and Mergers Commission commended the CEGB's efforts to bring about improvements, whilst recognising that it will be some years before it can be seen whether these efforts have worked.

7.02 The performance of the Mechanical Engineering Construction Industry over many years has lefd much to be desired. Delays and cost escalation, such as those recounted for dhe Isle of Grain, are not due only to industrial relations difficulties. The Committee's report recognises this. However, all parties in the industry recognise that an improvement in industrial relations practices and procedurec on large sites could make a substantial contribution to performance. In this respect the Government welcomes the Committee's support for efforts to obtain a National Site Agreement for the Mechanical Engineering Construction Industry. The Secretary of State for Employment, at the request of the National Economic Development Council, has been keeping in touch with, and assisting these efforts which, at the moment, are progressing well.

Nuclear Industry Organisation

National Nuclear Corporation

8.01 The Government welcomes the Committee's view that the steps it has taken in re-structuring the National Nuclear Corporation (NNC) and Nuclear Power Company (NPC) into a single-tier organisation are sensible and right. It remains firmly of the view that, for a successful and efficient UK nuclear industry to be created, NNC should evolve into a strong and independent design and consdruction company. The Government recognises that the process of evolution will necessarily take some time to complete. It is currently considering with both the Corporation itself and the Generating Boards how the Corporation's role in relation to the major financial risk involved in nuclear power station construction could be strengthened.

Atomic Energy Authority

8.02 The Authority, through their Chairman, are one of the main sources of advice to the Secretary of State on nuclear power matters. Many of the Secretary of State's function in bespect of atomic energy in the 1946 Atomic Energy Act were transferred to the Authority by the 1954 Act, and the Chairman must necessarily report to the Secretary of State on the conclusions drawn from R & D work undertaken and from the Authority's knowledge of the industry. The Authority are effectively the principal (but not the sole) source of advice to the Secretary of State on scientific and technical questions linked to their own expertise and area of work. But, on the wider issues arising from nuclear power's

developing role in the economy, the Authority are one among many sources of advice to the Government. There is no statutory duty on the Authority to tender advice nor on the Secretary of State to seek it from the Authority.

8.03 The Government notes that the Committee's description of the Authority's specific duties in respect of the future nuclear programme is broadly in line with the current position.

8.04 The Government cannot, agree with the Committee's suggestion that all fast reactor work should revert from the NNC to the AEA. There has been a consistent trend in nuclear power developments, generally endorsed by the industry and independend observers, towards passing responsibility for reactor concepts approaching commercial design to the industry. The Government does not believe this trend should be reversed, and is satisfied that the resources currently deployed by the NNC on this work are not at the expense of work on the thermal reactor programme.

8.05 Neither can the Government accept the Committee's proposition that the Secretary of State should direct the transfer of staff qualified in applied ultrasonics from the Authority to the NII. It should be recognised that there is a significant difference between the roles of the NII and the Authority, and it might not be appropriate for NII to recruit their experts in this field solely from the Authority's R & D laboratories. Furthermore, the Government does not believe that the Secretary of State's power of direction is as extensive as the Committee suggested (See also 9.04).

The Department of Energy

8.06 As is noted above, the Secretary of State for Energy does not regard the Atomic Energy Authority as his sole principal source of advice on nuclear matters except where scientific or technical questions arise related to the Authority's own expertise and area of work. Advice is also received from the NNC, the Generating Boards, the NII, the nuclear power plant industry and from many independent observers. It is the role of the Department to ensure that the Secretary of State has access to advice covering the whole spectrum of the nuclear industry. Within the Department it is the function of the Atomic Energy Division to ensure that the various strands of advice are coordinated and related to other aspects of Government policy. In addition, the Department's Chief Scientist provides advice on nuclear matters. The Government believes that the recommendation of the Committee that the role of the Chief Scientist should be expanded to cover advice on nuclear matters is misconceived. The Chief Scientist already has responsibility to advise the Secretary of State on nuclear matters as part of his overall responsibilities for energy R and D, and does provide such advice. In order to strengthen the Chief Scientist's support in this field a technical expert on nuclear energy is being added to the Department's staff.

8.07 The Government considers therefore that in view of the undoubted quality of the technical advice available to the Secretary of State from the sources described above, it would not be appropriate for the Atomic Energy

Division to seek to make technical reassessments of its own; that any strengthening of the technical resources of the Division in order to do so would create unnecessary duplication at considerable cost, and have questionable benefits as regards the advice available to the Secretary of State.

Safety and the Nuclear Installations Inspectorate

9.01 The Government attaches over-riding importance to the need for safe nuclear power which is fully compatible with environmental considerations, both in regard to power generation and in regard both to the transport of irradiated fuel and to the disposal of nuclear waste for which the responsibility lies with the Secretary of State for Transport in the first case and with the Secretary of State for the Environment and the Secretary of State for Scotland in the latter. The Government endorses the Committee's view that public acceptability of nuclear power will be very largely based on confidence in the organisation of safety in the industry, in particular, in the role of the Nuclear Installations Inspectorate (NII) which is part of the Health and Safety Executive. It wholeheartedly agrees that the independence and effectiveness of a strong inspectorate must be maintained.

9.02 The Committee's report refers to the need for a high standard of inspection of PWR pressure vessels and other components, and to the importance of establishing an inspection organisation capable of meeting that standard at an early date. The Government agrees entirely that this is an area to which the most careful attention must be paid. The problems of assuring pressure vessel integrity have been carefully scrutinised by the international scientific community since they were identified as a matter of significant public concern, and these are now better understood. On the advice available to it the Government is confident they can be surmounted. In conjunction with the other organisations concerned the Atomic Energy Authority are considering the extent to which the arrangements for pressure vessel inspection should be supplemented by validation procedure.

9.03 The Committee draw attention to the NII's current recruitment difficulties, recommending that the Secretary of State review the Inspectorate's position particularly with regard to salary levels, age of retirement, dispersal to Merseyside and resources. The Government fully recognises the importance of recruiting to the HSE adequately qualified Nuclear Inspectors, and is exploring in consultation with the Health and Safety Executive (HSE) possible means of easing recruitment. The Executive are at present developing a new salary and grading structure for all their Inspectorates, one aim is to remove certain internal anomalies to which the Committee draw attention. A continuous NII recruitment campaign has also been under way for some time. This together with the three new inspectors recruited internally has so far led to a small net increase (when account is taken of 4 resignations last year) in the total number of inspectors and as at June 1981 94 were in post. This increase, though welcome, is however insufficient to meet the NII's longer term needs. The Government is therefore reviewing the Inspectorate's current salary levels and the extent to which expenditure incurred by staff on first appointment might be re-imbursed. The purpose of this review is to examine whether improvements in the conditions of service would be justified in order to attract recruits of the right calibre.

9.04 With regard to the need for specialists in disciplines such as ultrasonics, civil engineering, flow and heat transfer, the HSE's view is that the NII need some expertise in these and other fields and must have access to additional specialist resources from time to time. The Inspectorate would not expect to carry out ultrasonic testing itself and the employment of practical specialists in the way suggested by the Committee would be a misuse of the limited expertise available nationally.

9.05 The HSE also point out that Nuclear Inspectors are not normally required to retire at 60 but may choose to do so. The only exception is the Chief Inspector who, as an open-structure Under-Secretary, is subject to the retirement rules of the grade.

9.06 The Select Committee refer to the planned dispersal of the HSE's Inspectorates to Bootle. The Government has decided to disperse the major part of the HSE, including the Head Offices of all the Inspectorates with a minimum number of essential staff to be retained in London to deal with main policy issues. The Government gave careful consideration to the NII's position and concluded, after consultation with all the bodies concerned and in the light of advice from the Health and Safety Commission that retention of the NII in London was not essential. A major element of the NII is already based in Liverpool and there is some long-term advantage in the two parts of the Inspectorate being more closely associated. There is also an advantage in the NII being located alongside all the other HSE Inspectorates. The NII will not move to Bootle until 1985, thus allowing the time for the dispersal to take place in an orderly and planned fashion.

9.07 The Committee recommended that swift action should be taken to remove the NII from the HSE if this were necessary to resolve the staffing problems it had identified. The measures being taken by the Government have been outlined above. The Government does not consider that to remove the NII from the HSE would alleviate the Inspectorate's recruitment problems and believes that it would be wrong to do so.

9.08 It will be recalled that the HSC and the HSE were created by Parliament under the Health and Safety at Work etc., Act 1974 with responsibility for determining, enforcing and developing health and safety standards in work places throughout Britain. A number of specialist individual Inspectorates, including the NII, were brought together under the HSE to enable the objective of the 1974 Act to be fulfilled. The result is that the HSE and its Inspectorate are now recognised by all concerned to be impartial arbiters in safety matters and fully independent of commercial, operational and political pressures. Also scarce and valuable resources can be used more effectively and consistently than if they were distributed amongst separate organisations.

9.09 Because it would be undesirable to return to the Secretary of State for Energy responsibility for granting nuclear site licences and controlling the NII's activities, detachment of the Inspectorate would mean the creation of a separate, independent nuclear licensing and regulatory body. It would also separate the NII from the mainstream of developing safety policies as envisaged by Parliament in passing the 1974 Act, and deprive it of a valuable source of expertise and support in relation to non-nuclear safety matters. There is no reason to believe that any such move would assist the NII's recruitment position.

Sizewell Public Inquiry

10.01 The Committee have made a number of recommendations on the form and scope of the inquiry into the proposed PWR station at Sizewell, Suffolk.

10.02 In particular, the Committee expressed the wish that costs and electricity demand projections should not be excluded from discussion at the inquiry; and that issues should not be excluded which are genuinely new to this country and which lie at the heart of popular concern about safety.

10.03 The Secretary of State for Energy has made clear on a number of occasions his intention to have a full and wide-ranging inquiry. He intends to publish a statement of the issues which seem to him to be likely to be relevant to his consideration of the CEGB's application. This will serve as Guidance to the Inspector and will enable the very full debate which the Secretary of State thinks essential to be held.

10.04 The Committee further request the Government to ensure that the maximum amount of information and documentation relating to the licence application is made available by the CEGB and the NII well in advance of the opening of the inquiry -four months is suggested. The Committee recommend that a time limit should be imposed on the length of the inquiry, albeit a generous one.

10.05 It is the Government's intention that there should be extensive information and documentation and that there should be time for study of the documentation so that interested parties can prepare their case. The exact timing

of the start of the inquiry will depend largely on the publication of the relevant safety documentation. With regard to the suggestion for a time-limit for the inquiry, the Government, while concerned to avoid unnecessarily long drawn out proceedings, wish to give participants the opportunity fully to deploy their cases. They have come to the conclusion that a time limit on the inquiry set in advance would not be desirable: the conduct of the inquiry will of course be a matter for the Inspector.

10.06 The Government has taken note of the Committee's recommendations that if a PWR programme is adopted, future public inquiries should be site-specific and not re-open the wider issues of principle covered at this first inquiry.

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With the Compliments of

the

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Mr Ian Lloyd MP
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14 April 1981

Dear Ian

With the Easter recess approaching I thought I should write to assure you that the Government is pressing ahead with consideration of the Select Committee's recent report on the nuclear power programme. However, given the wide ranging and detailed nature of the report it will not be feasible for our response to be ready within the standard two month period.

I hope the Committee will appreciate the position. It is, of course, our intention to publish a full response as quickly as possible.

Yours ever

D A R HOWELL

Dave