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PRIME MINISTER

SELLAFIELD

The Sellafield nuclear fuel re-processing plant is a critical link in our nuclear power programme. Nothing less than a first-class performance by the plant will suffice if the programme is to be sustained. Such a performance requires excellent technology to reduce the level of radioactive discharges from the plant and excellent management to make the best use of the technology and avoid accidental high-level discharge.

Technology

2. The Secretary of State for the Environment offers four options for reducing the level of routine discharges of liquid radioactive wastes. The options differ in cost, time-scale and the extent of reduction of the radioactivity.

3. The cost/benefit analysis presented in the paper is too simplistic since the benefits are calculated only from the notional monetary values of deaths from cancer foregone. If one takes the view that the viability of the nuclear power programme is at stake, then the benefits are very substantial and the costs of options, 1, 2 and 3, at least, are modest.

4. Table 1 of the paper shows that a major reduction in both  $\alpha$  and  $\beta/\gamma$  discharges will be achieved when the SIXEP ion exchange plant comes into operation over the next two years. This plant treats the effluent of the cooling and storage ponds which is presently discharged to sea.

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5. However, the current plans would still leave Sellafield discharging about 200 Ci/annum of  $\alpha$  compared with about 14 from the French plant at Cap de La Hague. To do better the effluent from the re-processing plant itself must be tackled.

6. The Secretary of State's options 1 and 2 are technically identical - both would reduce discharges to about 17 Ci/annum by incorporating a floc precipitation plant in the effluent from the re-processing plant.

7. The outcome of either option 1 or 2 would be a plant emitting 17 Ci/annum of  $\alpha$  and 8,000 Ci/annum of  $\beta/\gamma$ . Comparable Cap de La Hague figures are 14 and 30,000. Thus, for either option, it would be true to say that both the technology and discharge levels of Sellafield would be as good as, or better than, the comparable French plant.

8. The choice between options 1 and 2 depends on one's assessment of BNFL's criticism of the accelerated option 2. Some other part of their investment programme would slip, they claim, and this could have safety and/or economic consequences.

9. Option 3 differs from options 1/2 only in so far as the whole of the effluent from the re-processing plant is treated for  $\beta/\gamma$  radiation as well as for  $\alpha$  radiation, whereas in options 1/2 the mainly  $\alpha$  stream is not treated for  $\beta/\gamma$  reduction. The outcome is a barely changed  $\alpha$  discharge of about 15 and a  $\beta/\gamma$  discharge reduced from 8,000 to 3,500 Ci/annum.

10. The reduction in liquid wastes necessarily means some increase in solid wastes but the effect is marginal compared with other solid wastes arising at the Sellafield plant. However, while the additional solid wastes arising from options 1/2 can be accommodated in the current plan for the solid waste encapsulation plant, the greater wastes of option 3 would require an increased capacity, hence part of the additional cost.

11. The only arguments in favour of the much more expensive option 3 are:

(i) it provides an additional margin of safety for  $\beta/\delta$  which while apparently unnecessary in our present state of understanding could, possibly, be an insurance policy against future changed requirements;

(ii) it might be regarded as what is 'reasonably practicable' by the Radiochemical Inspectorate in advising the Secretary of State concerning his statutory obligation under the Radioactive Substances Act 1960 to give consent to waste disposals and discharges. The recent report of the Radioactive Waste Management Advisory Committee hints at this.

12. These arguments seem insufficient to justify the substantial additional expense of option 3, and my advice is to adopt option 2 since I believe the accelerated programme is justified by current public concern, especially as a robust response to the recommendations of the Black Report. The Secretary of State for the Environment will, however, wish to assure himself that by going for option 2, rather than option 1, any damage to the remainder of BNFL's investment programme is acceptable, particularly in so far as it affects investment for improved safety.

#### Management

13. I have recently visited the Sellafield plant and feel that the statement in the Secretary of State's paper that 'steps have been taken to improve management' is unduly complacent. The management task for this critical plant on a huge site with 6,000 employees and ample opportunity (even with new technology) for human error should not be underestimated. No private sector company, such as ICI or BP, would be content with the present management. I recommend that the Secretary of State for Energy be asked to strengthen the non-Executive Director membership of the Board and,

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through them, assure himself that the quality of management is brought up to the standard of best private sector practice.

14. I am copying this minute to Sir Robert Armstrong.

*RBN*

ROBIN B NICHOLSON  
Chief Scientific Adviser

Cabinet Office  
20 July 1984

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