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PRIME MINISTER

TECHNOLOGICAL ASPECTS OF THE A320 AND V2500 DECISIONS

At the British Aerospace and Rolls Royce presentations last November, you indicated that the technological aspects of the Airbus A320 and IAE V2500 decisions were important. I have therefore taken steps to inform myself better on the technology of these, including visiting appropriate BAe and Rolls Royce facilities. I summarise my views below. I have also found that the location of the proposed European Transonic Wind Tunnel is relevant to the A320 decision and comment on this as well.

A320 - wing

2. The wing of a modern large civil aircraft is the part of the airframe which is most critical in determining the aircraft's performance in terms of range, speed and fuel consumption - and hence its saleability. Wing performance is improving on average by about 1 per cent per year and an advantage of a few per cent over a competitive aircraft can be conclusive.

3. The design and manufacture of a wing involves complex and sophisticated techniques of stress analysis, computer-aided design, structure damage tolerance and failure analysis, metal machining and forming, composite materials, and assembly technology. British Aerospace's capability in these technologies is first rate. It is comfortably ahead of the rest of Europe (although Germany is making a strenuous effort to catch up) and fully competitive with American companies such as Boeing. There is therefore no question that the British Aerospace wing is high technology of world class.

4. There is also some spin-off from this technology but it is limited to small sectors of industry and British Aerospace is not the only source. I do not believe that technology spin-off is a significant part of the case for going ahead with the A320.

A320 - European Transonic Wind Tunnel

5. If British Aerospace is given the go-ahead on the A320 wing, it will be essential that it maintains its competitive position in the future by appropriate R & D. A key facility for this will be the proposed European Transonic Wind Tunnel which is being considered by the UK, Germany, France and Holland. So far the UK has not made a strong bid for the facility to be located in this country, partly because of valid but parochial objections from MoD (the obvious location would be the MoD establishments at Farnborough or Bedford) and partly because of uncertainty about the A320 programme.

6. If we do go ahead with the A320, we must try to safeguard the benefits for the medium and long term future. I therefore recommend that DTI be asked to make a further attempt to locate the European Transonic Wind Tunnel in the UK or, if that proves impossible, on "neutral" ground in Holland. And that MoD be asked to override their own objections in the interests of the strength of the UK's aerospace industry as a whole.

V2500 engine

7. Rolls Royce have traditionally had a major technological capability - larger, for the size of the company than any of their competitors. They are world leaders in several critical technologies in aeroengine design and manufacture: blade aerodynamics, metal fabrication techniques (especially cooled blades), high temperature materials, non-destructive testing of components and noise reduction. The quality of Rolls Royce's technology has undoubtedly helped them to bargain an equal share with Pratt and Whitney for the V2500 engine.

8. The nature of Rolls Royce's technology is such that there is substantial spin-off to other parts of UK industry in areas such as new materials (especially for use at high temperatures), turbo-machinery, high speed lubrication, non-destructive testing techniques and advanced manufacturing technology. Rolls Royce has plans for better and more profitable spin-off for its technology.

9. Thus I believe that both Rolls Royce's technology and its spin-off contribute substantially to the case for going ahead with the V2500.

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

RBN

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Chief Scientific Adviser

Cabinet Office
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