TL to handle

This is a straight Rolls Royce subsidy - on to their added costs.

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Secretary of State for Industry

30 August 1979

Prime Minister

You asked for further information on the titanium project. The key point - not very clearly brought out here - is that RR are hooked on titanium alloys produced by sodium reduction - the so-called 'Hunter process'. No plant elsewhere - current or in prospect - produces this type of alloy. TL 31/8

Mike Pattison Esq
Private Secretary to the
Prime Minister
10 Downing Street
London SW1

Dear Mike

Thank you for your letter of 28 August recording the Prime Minister's comments on my letter of 24 August about the NEB's involvement in a titanium project at Hartlepool.

Rolls Royce need to obtain a permanent and assured new source of supply of titanium for the alloys for their engines; their need is in no sense temporary.

Most engine makers make some use of titanium alloys in some of the most highly stressed parts of their engines, though Rolls make more extensive use of it than their competitors, and in particular rely much more heavily on the most advanced titanium alloys. The US engine manufacturers for the most part use titanium alloys derived from titanium sponge refined by magnesium reduction by the so-called Kroll process, the most common process for titanium production. The main sources of supply of Kroll sponge are the USA, Japan and Russia. The latter is the largest producer in the world, and dumping from Russia has been an important factor in discouraging further investment by Western producers. Rolls Royce have designed their engines to use IMI titanium alloys based on titanium granules refined by ICI by a sodium reduction process. This process yields titanium with different characteristics from Kroll sponge and the substitution of Kroll sponge for sodium reduced titanium in the manufacture of alloys changes the alloys' performance unacceptably for Rolls' needs. Indeed Rolls Royce consider it important that their supplies should be produced by essentially the same process as used by ICI, since they are concerned that even sponge produced by sodium reduction will not have identical characteristics if a different sodium reduction process is used. The proposed new plant is designed with this in mind. To satisfy themselves about the performance of a new material takes several years for the advanced alloys and ICI's decision to close their sponge plant does not allow Rolls Royce time for this.

As US practice shows, it is quite possible to design aero-engines so as to make less use of titanium than do Rolls if this is done from the start. However Rolls have designed all their recent engines increasingly to exploit what they consider to be the advantages of

/titanium....

titanium alloys. To alter these engines now so as to substitute other alloys or other metals would take a number of years and be extremely costly if it proved practicable at all, which cannot be guaranteed. Thus the view of Rolls Royce, which is endorsed by expert advice of MoD, is that a continued and dependable alternative source of sodium-reduced sponge made by the ICI process is imperative to enable the continued production of these engines and for spares for such engines already in service.

The French and German aero-engine producers also make some use of IMI alloys derived from sodium-reduce sponge and thus face the same problem as Rolls Royce, though to a much smaller degree.

There are only two sources in the world outside Russia of sodium-reduced sponge apart from ICI: one in the United States, the other, in Japan, which was put into mothballs soon after it was first commissioned some years ago. While the owners of the Japanese plant have said that they are considering re-opening it there do not seem to be prospects of securing the assured supply needed by Rolls Royce from either of these sources. As I have explained, even if supplies from the US and Japan were available, these alternative materials would have to be fully proved for use in Rolls Royce engines and they cannot be relied on.

The French have a similar, though smaller, problem to Rolls Royce. French officials have said that their government is considering establishing a new facility for the same reasons. Since they have not advanced with the planning of their project to the same extent as the NEB it is less likely that they could have it ready at the time necessary to meet Rolls' need. There would be commercial disadvantage for Rolls Royce in being totally dependent for a critical material on a plant which would probably be substantially financed by the French government who also own their French aero-engine competitor, and if a new plant is needed in Europe of which Rolls Royce would be the major customer it seems greatly preferable that it should be in the UK rather than in France. Efforts have therefore been made to bring the French in as investors in the British project. It is hoped by the NEB that a substantial part of the money for the project - perhaps £9 million - can be obtained from the EEC on favourable terms.

Your letter also mentioned reports that RTZ have refused to participate in the project and have expressed doubts about its viability. RTZ have expressed interest in participating on several occasions in the last six months, only subsequently to lose interest again, but we understand that discussions are still active. These vacillations on RTZ's part may reflect the uncertainty of the commercial prospects in view of the mothballing of the Japanese plant and the ever present threat of Russian dumping on the Western market, but they do not necessarily indicate a fundamental unviability. There are in any case a number of other companies with which the NEB are exploring the possibilities of involvement.

/I am...

I am sending a copy of this letter to Roger Facer in the Ministry of Defence.

Yours sincerely

Peter Mason

PETER MASON
Private Secretary

P.S. The free market price of titanium has quadrupled since 1977 - an indication of the current shortage position. Despite RT 2's doubts, the commercial prospects ought to be reasonable.

R.