1955 CSC Arrow.jpg

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Reference ... PA

OCT 3 1955

Clg d to ... 1038CF105-80

MEMORANDUM TO THE CABINET DEFENCE COMMITTEE

CF 105 Development Programme

1 The Committee will recall that at the 104th Meeting on 3 March, 1955, consideration was given to a preproduction programme and the development of a power plant for the supersonic all-weather fighter aircraft (CF105). At that time it was pointed out that, to meet the threat of Russian bombers as then envisaged, the Cabinet Defence Committee, at its 97th Meeting of 2 December, 1953, had approved a development programme for the CF105 and the building of two prototype aircraft as the first phase of this programme. In the interval, the unexpectedly early emergence of the Russian long-range jet bombers and nuclear weapons had greatly accentuated the threat to North America, both in point of time and scale of attack.

2 It was further pointed out that from the commencement of the CF105 programme, the Defence Department had carefully scrutinized all aircraft and guided missile projects under development in the United States and the United Kingdom, with the object of modifying or discontinuing the CF105 programme if such action appeared justified by virtue of the project being overtaken or duplicated by the efforts of our Allies. Because of the accentuated threat, adoption of new procedures which would accelerate the entire project was recommended. The new plan envisaged the fabrication of 40 preproduction aircraft for testing purposes in the early stages of the programme, resulting in a very much earlier entry of the aircraft into operational service to counter the threat. By this method the development and testing time of the aircraft could be reduced from 8½ years to roughly 2½ years. While this would entail higher initial expenditures the overall cost would be reduced. The plan called for an initial order of 11 preproduction aircraft and a second order at a later date for an additional 29 preproduction aircraft. The total expenditure for the 40 CF105 preproduction aircraft including engines, spares for aircraft and engines, and the necessary tooling, would be approximately $191,000,000. At the same time consideration was given to the proposal to develop a power plant for the CF105 supersonic aircraft by the Orenda Engines, Limited, of Toronto, and the estimated cost of the engine development programme (14 engines), plus production tooling to be $69,933,879; the production costs of the engine to be somewhere in the vicinity of $200,000 each.

261 million in 1954 dollars. The program cost roughly that up to the budget year mentioned, Astra and Sparrow not being included in either estimate. Avro's "enormous cost over-runs" are largely myth, due to what happened to the budget estimates when ASTRA-Sparrow spun out of control, -which were not Avro products.

3 The Committee agreed to recommend:

(a) that a preproduction programme for 40 CF105 aircraft in controlled phases be approved, at a total estimated cost of $191 million, the expenditure to be allocated as submitted, from 1954-1960, and to be met from defence estimates presently contemplated for the next few years; and

(b) that a development and tooling programme for the PS13 engine amounting to 14 units at a cost of $70 million, to be spread over 1954-58, be approved; the cost also to be met from defence estimates presently contemplated for the next few years;

it being understood that the programme for both the air frame and the engine could be halted or abandoned at appropriate stages if this was found to be expedient or necessary.

Discussed at Cab. Def. Cttee 27 Sep 55

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4 Subsequent to the 104th meeting of Cabinet Defence Committee, certain developments have occurred which I wish to bring to the Committee's attention.

Increased Costs

5 Cabinet approval for the forty CF105 aircraft provided 191 million dollars additional to that which had already been provided for the development and production of two prototypes. The presently approved programme totals 211 million. The Company has now submitted a reassessment involving an additional 59 million dollars, related in the main to increased labour and raw material costs, additional engineering hours to provide for the installation of the Canadian PS 13 engine which was approved subsequent to the original estimate, and in part to an under-estimation in the original estimate for the engineering and test programmes required to produce such an advanced type of aircraft as the CF105.

6 A detailed examination is now being carried out between the Departments of Defence Production and National Defence and the Company to determine the possibility that some reduction may be achieved in the new total cost without seriously affecting the programme.

Comparable U.S. and British Aircraft

7 Close attention continues to be paid to achievements and intentions of the U.S. and Britain in comparable types of fighter aircraft, with the object of determining whether changes to the Canadian program would appear to be justified. The U.S. has made appreciable progress with its F102 all-weather fighter and a close study of it as compared to the Canadian CF105 is under way.

Both rejected, they were, literally, half the aircraft in terms of range, concept and performance.

8 A recent decision of the USAF to modify and adapt its F101 long range escort fighter to the all-weather role as a stop gap measure is also being closely studied, particularly a comparison of our aircraft with it.

9 It is significant that, four years after our concentration on this particular type of aircraft to meet our future requirements, the U.S. and Britain have both recently drawn up requirements for a supersonic all-weather 2 seater fighter closely similar to the Canadian CF105. This would appear to substantiate the wisdom of our course of action. We now propose to further investigate with the U.S. and British authorities what steps might usefully be taken to avoid unnecessary duplication of effort and cost and to determine in what way our Canadian programme could be fitted in.

Improvements planned for the CF100 aircraft

10 Certain improvements in altitude performance and guided missile weapon capability for our existing CF100 sub-sonic fighter are under urgent study, with the object of giving it some capability against the future Russian bomber threat. The degree of success of these measures may have some influence on our future decisions with respect to the CF105 programme.

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Documents show that a RAF and Ministry of Supply investigation of the Arrow stunned British designers and resulted in the abandonment of many projects, and the hurried conception of many more. One of these was the Fairey Delta III, eventually selected, albeit briefly, to become the RAF's new high performance interceptor. It, like the American F-108 Rapier, were virtual copies of the Arrow. Both were used to justify, by interested parties in both nations, decisions by those nations not to buy the Avro Arrow.

4