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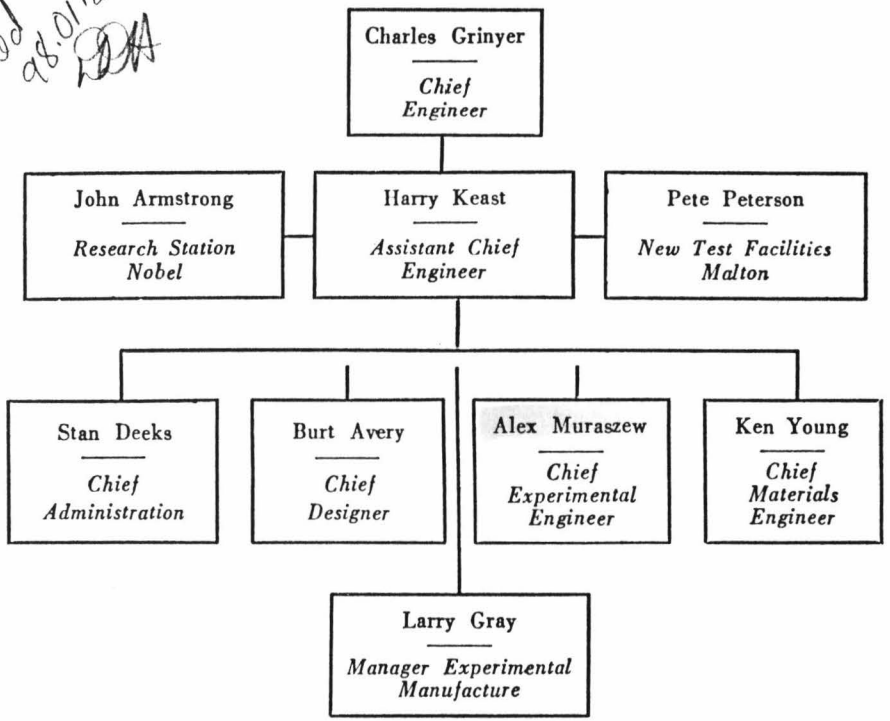
NOTE: Many of the technical and design details of the *Arrow* given in this book are based on material drawn from a variety of sources: (1) A.V. Roe (Canada) Ltd. material now in the archives of the Air and Space Division of the National Museum of Science and Technology at Ottawa; (2) the definitive paper entitled "The Canadian Approach to All-Weather Interceptor Development" presented by Mr. J. C. Floyd before the Royal Aeronautical Society in London on October 9th, 1958, and recorded in the December, 1958 issue of the Journal of the Royal Aeronautical Society (Vol. 62, No. 576); (3) a large number of articles in then current issues of such magazines as "Aircraft", "Canadian Aviation" and "Avro Newsmagazine".

aircraft program prompted serious consideration of what would be the best Engineering Organization to ensure success. Prior to the PS 13 project, and from the time when Orenda Ltd. had its early beginnings as 'Turbo Research', a very capable design engineering team had been established with experience gained from the 'Chinook' engine and from the early units of the Orenda series of engines. This team had been under the direction of Paul Dilworth as Chief Engineer, and Winnet Boyd as Chief Design Engineer. In early 1952, Val Cronstedt, an engineer from Pratt & Whitney, became Vice-President of Engineering, and it was from this time onwards that serious thoughts on future engines received much attention, leading to PS 13.

It was realized at the outset that the new organization must be able to deal with the specializations involved and would have to have full authority over all matters from the design concept through to procurement, manufacture, assembly, test and disassembly of the engines — everything right through to a successful Type Test. This was not achieved in one step; but very quickly an organization was established which gave confidence to the company, to Avro Canada, and to the various government departments involved with the *Arrow* program.

The following chart shows the basic arrangement of the senior divisions of the Engineering Department of Orenda Ltd.

ORENDA ENGINEERING ORGANIZATION CHART



At the peak of the program there were about 1,650 people involved at Orenda; about half of these were on the Engineering payroll; the other half were involved in procurement, manufacture, and assembly of experimental components and engines. There were about 320 professional engineers engaged on this work, of whom about half were Canadians. The other half came from such countries as France, Holland, Poland, Sweden, and Great Britain.

In addition to the senior people named on the organization chart, there were 1,650 people engaged on the program all of whom, at one time or another, played important roles in the success of the program. Help was also obtained from the production side of the company and the Service Department, so that almost every employee may have been involved at some time. In trying to acknowledge this involvement, Charles Grinyer has suggested that we print the names of the last list of the members joining the company's "Ten-Year Club." Even this amounts to only a small fraction of those involved. Nevertheless, the publication of these names indicates that the success was due to more than just a few senior people.