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TITLE
RESEARCH AIRCRAFT R&D INTO AUTONOMOUS GUIDANCE, CONTROL AND NAVIGATION
TECHNOLOGIES

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**Research Aircraft R&D into Autonomous
Guidance, Control and Navigation
Technologies**

SUBMITTED TO:

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PREPARED BY:

AERO Consulting Services Ltd.

AUGUST 1995

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REPORT 992999

(FINAL REPORT)

**RESEARCH AIRCRAFT R&D
INTO
AUTONOMOUS GUIDANCE,
CONTROL AND NAVIGATION
TECHNOLOGIES**

Contract: W7702-1-R245/01-XSG

Prepared by

S. Wales

Prepared for

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PREPARED		REPORT NO.
S. Wales		992999
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1.0 INTRODUCTION

This document is the final report describing the effort and services provided by Aero Consulting Services Ltd. (ACS) to the Defence Research Establishment Suffield (DRES) under contract W7702-2-R245/01-XSG.

2.0 BACKGROUND AND OBJECTIVES

Under a previous contract (*Contract Number W7702-9-R102/01-XSG*), ACS developed and provided a highly modified twin engine aircraft for airborne testing of avionics subsystems. The current contract continued the provision of this aircraft and its upgrading.

3.0 MINOR MODIFICATIONS

As part of the on-going requirements to upgrade and modify the Research Aircraft in support of DRES R&D into autonomous guidance, control and navigation technologies, modifications were made to the aircraft as required. The majority of such modifications were performed under the previous contract (*Contract Number W7702-9-R102/01-XSG*); for this contract the main modifications were the procurement and installation of an Apollo IIMorrow GPS, and the design and installation of a modified rear cabin bulkhead to facilitate access to antennas and equipment mounted on the rear fuselage.

4.0 AIRCRAFT OPERATIONS

For the duration of this Contract, DRES was provided with the use of a Piper Seneca II aircraft based in Medicine Hat, Alberta. Arrangements were made with Bar XH Air Inc. of Medicine Hat for the provision of fuel and service necessary to maintain the safe operation of the aircraft. Such maintenance and repair that was beyond the local capability was sub-contracted to other agencies.

The aircraft was provided to DRES from October 1991 to March 1995. Over that period, the aircraft accumulated 171.2 hours of flight time and used 11,692 litres of fuel.

5.0 FOLLOW-ON RECOMMENDATIONS

As part of the contractual requirement to present and evaluate data on possible aircraft to replace the Piper Seneca II aircraft in the future, a report entitled "Comparison Study of Third Generation Test Bed Aircraft" (*DRES Contract Report 39-92*) was prepared for and accepted by the Scientific Authority. However, in view of the cancellation at DRES of future work in the area of autonomous guidance, control and navigation technologies for airborne applications, it is not clear whether or when the proposed options will be acted upon.

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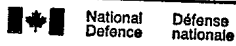
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