SAU INV 2009/003

Inno word

STATE AIRCRAFT UNIT
VICTORIA

Electronic Aerial Reconnaissance Systems (EARS) October 2009.

Introduction

The State Aircraft Unit (SAU) has been exploring the opportunities to provide cost effective products for application in Agency air operations to gather reconnaissance information and to value add and enhance the current use of light fixed wing aircraft for preparedness and suppression activities.

The SAU is continuing to trial an airborne digital image capture project, using fixed cameras and digital video recording devices to record and review flight and mission data using a Call When Needed (CWN) aircraft.

Left side of image shows two cameras attached to the underwing of Firespotter 395.

Background

From an increase in the utilisation and reliance on CWN light fixed wing aircraft for preparedness and suppression activities including the impact of recent wildfire events there has been a developing need for airborne reconnaissance information to enhance and provide additional intelligence for Incident Management Teams.

Currently, there is a variety of equipment and technology combinations available that provide a number of products which are known and can offer valued information but unfortunately at a higher degree of cost.

Current operations produce a range of information and in a variety of media, hard copy maps, mobile phone images and real time voice transmissions.

The EARS project (project) has been developed to provide an enhancement that will assist the current Agency processes by providing a product that can be reviewed at the conclusion of the mission or depending on the commitment and investment in the project equipment the ability to live feed the captured imagery.

Comments

The project has been developed for installation and operation in a general class of current regional CWN aircraft, a high wing single engine aircraft. The installation is not limited to this class of aircraft. For the project the SAU has been using a Cessna C182 RG.

The primary aim of the project is to investigate and develop a airborne image capture package which will provide a guide and assistance for Agencies allowing them to apply the technology to a approved CWN aircraft resources, reducing the potential reliance and competition to access an expensive single state wide aircraft resource with similar data collection capabilities.

The project has been designed to accommodate several levels of operational performance with various capabilities relative to expenditure.

The minimum commitment for the project incorporates a single remote security surveillance type camera, strategically and legally attached to the underwing of an aircraft with

appropriate cabling, which includes power and a recording device located inside the aircraft which, can be achieved by using a digital movie camera.

Security surveillance camera engineered for attachment to underwing inspection cover.

The advanced level of operation, with further commitment is similar but allows for the operation of two cameras with additional features. Capabilities incorporating pan, tilt & zoom capacity on one or both cameras can be achieved.

The advanced level of operation also includes a "processing unit" which has the capacity to compress any captured video imagery data including infra-red from two inputs and transmit via the Telstra G™ Network to be hosted by a third party web based server facility.

Hosting the captured video on an external web site allows for remote and independent access for project participants.

The "processing unit" enables "real time" video feed with interactive functionality, high quality image capture, archiving and the capacity for geo-tagging. The processing unit and software has been optimised for Telstra G[®] Network with low latency.

The location and field of view for the cameras using either one or two has been evaluated and adjusted with a considerable amount of flight testing and operational input to produce a number of standard configurations. The calculations and testing also incorporated airflow and wing spar movement in various stages of flight.

In addition to the data capture a very important outcome and key feature is the ability to analyse the information collected to develop and implement new learning techniques from the review processes to incorporate into future training programs.

Snapshot image captured during flight test broadcast, 1000 feet AGL.

Snapshot image captured during flight test broadcast, 2000 feet AGL.

The initial trials conducted indicated a high success rate with both levels of operation. Recently a Single Engine Air Tanker was fitted with cameras and a "processing unit" which provided "real time" video feed of suppressant drops during flight.

Snapshot image captured during suppressant drop Bomber 360.

Further Information

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