

UPDATE

Electronic Aerial Reconnaissance Systems (EARS) & Operation Firewatch United States Forest Service (USFS) - October 2009.

Introduction

Originally the USFS Firewatch Program (Program) was established utilising two Bell 209 helicopters, owned by the U.S. Forest Service, equipped with specialized equipment for intelligence gathering and mapping.



Firewatch Bell 209/AH-1F Cobra USA.

For the 2009 fire season the USFS engaged an additional helicopter, a Sikorsky S76B (Firewatch 76) to supplement the Program and focus on large airtanker operations and performance.



Firewatch 76 Sikorsky S76B Lake Elsinore USA.

Background

The USFS implemented the Program with an aim of providing for a single-

-source database to enhance real-time intelligence. The Program has been functional for the past three years with a reported high degree of success.

The Bell 209 helicopters were fitted with a suite of avionics and associated equipment to perform aerial supervisory missions and intelligence gathering purposes.

They were fitted with numerous communications devices, radios and GPS and included a Traffic Collision Avoidance Display. They also had a FLIR system equipped with multiple infrared sensors, integrated to work with a computerised mapping program that can display topographic maps.

The aircraft were also equipped with a multi-channel microwave transmitter capable of down linking real time colour or infrared sensor images to microwave receiver in a land based Data Recovery Van.

The microwave transmitting capability was limited to a short distance and line of sight. This vehicle accompanied the helicopter and served as the remote receptor of data for the Incident Management Team.

The initial aircraft were not Instrument Flight Rules (IFR) equipped and are limited to conduct operations within the requirements of Visual Flight Rules (VFR).

The inclusion of the Firewatch 76 into the Program has introduced faster aircraft, 150 knots, upgraded and new technology packages and IFR capability.

The Firewatch 76's data collection capabilities are very similar to the original aircraft; however it does not have the microwave downlink capability. It relied on transferring near real time data using the telephone telemetry network with a latent data transfer capability.

Some of the products being produced were current screen shots of colour or IR Image, fire perimeters, fire weather and GIS shape files. The Firewatch 76 has been fitted with a range of internal viewing systems additional to the high definition video and infrared cameras.



Image shows the interior of the S76B.

“Downunder download”.

Following on closely from the recent successful operational evaluation of the SAU’s airborne digital image capture and transfer project, a discussion was held with the USFS and Coulson Airplane Ltd. a current Victorian Type 1 helicopter and USFS large airtanker service provider about the real time download capabilities and applications.

As a result of the discussion and evidence produced by the SAU’s program the helicopter operator purchased and installed a similar “processing unit” into Firewatch 76 with the aim of achieving “real time” data transfer.

With the “processing unit” installed initial flight tests were conducted Friday 16th. Oct 2009 (AEDST) in a joint operational exercise with the USFS, SAU and participants from the California Department of Forestry and Fire Protection using the Martin MARS Airtanker and the Firewatch 76.

The Firewatch 76 provided high definition video and infra red imagery of several drops delivered by the Martin MARS for broadcast over a period of two hours.

Trials are continuing with both the USFS and the SAU undertaking

different components for the program, with the SAU testing the newest hardware and software features shortly.

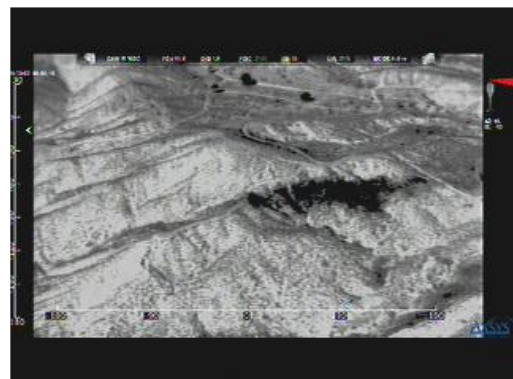
Snapshots from the trial have been included for information.



Snapshot: Travelling at 150 knots the S76B “chases” the Martin MARS Airtanker.



Snapshot” High definition image of salvo drop from Martin MARS fire bomber using Gel, mix ratio 1.6 %.



Snapshot: Infrared image (White shows hot, black shows cold.) of salvo drop from Martin MARS fire bomber using Gel, mix ratio 1.6 %.

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