



USDA Forest Service Fire and Aviation Management Technical Briefing



Date: September 29, 2020

Topic: 24 hour Intelligence Awareness and Assessment (IAA) Aerial Supervision Platform;
“NightWatch”/ “FireWatch51”

Technical Brief: 2013-2015 a CWN light fixed wing was used to beta test aerial supervision during night flying missions. This tool proved successful in aerial supervision and demonstrated a higher need for nighttime intelligence to aid ground based firefighters in engagement methods strategies and tactics of incidents. In 2015 a solicitation for an exclusive use contract was advertised and contract awarded to Dynamic Aviation with Special Operations Solutions offering the systems package for a base year of 2016 with options to extend through November 2019. Now in 2020 with a brand new contract awarded to Dynamic Aviation and AEVEX (formerly S.O.S.), the upgraded IAA platform provides satellite communications and is used in the following mission profiles during a two 12-hour shift basis; *Aerial Supervision, Enhanced Situational Awareness, Inflight Information Sharing and dissemination.*



Aircraft:

- Beechcraft, King Air 200/C-12
- Capable of carrying crew (Pilot, ATGS and Sensor Operator) plus 3 passengers
- Three 760 Channel VHF-AM Radios
- Three VHF-FM Radios
- Separate audio controls for each of the 3 crewmember locations.
- TCAS-Traffic Collision Avoidance System
- TAWS-B Terrain Awareness and Avoidance System
- Max Fuel 5 HRS+
- Max Speed 250+

GeoFOCIS: (Attached SOP) Integrated Moving Map system in 3D

- Displays aircraft position on map
- Displays FLIR view location on map
- Allows user to view maps in 2D or 3D
- Allows users to create fire perimeters
- Records measurements
- Stores information in ESRI SHP format, geographic metadata transferable via USB device



FLIR 380HDc:

- (HDIR) Infrared Imager 1280 FPA; Best used at night during low light conditions



- (SWIR) Short Wave Infrared Camera w/ Long-Range 5-FOV Spotter Optics (15 μ): **Best used in daylight conditions with intense energy release.**



- (HDEO Color Camera) High-Def 1080p w/ 40x zoom: **Used in day**
- (EMCCD) Low-Light Electron Multiplying Device Shared w/ 40x Zoom: **Used early morning or late evening when shadows are present**
- (ESLRF) Eye-Safe Laser Rangefinder: **Used to identify distance, elevation and latitude/longitude of targets.** (LP) Laser Pointer, Near-IR (150mW)
- (AT) Automatic Video Tracker
- (IMU) GeoPoint Package



Beyond-line-of site communications

- Viasat GAT-5518 system in Ka-band frequency, beyond line-of-site communications.
- Enables near real-time data dissemination during incidents to Agency and participating personnel at multiple ground locations.



Video Recorder:

- Records HD video (2 color options, 2 IR options) integrated with digital voice as obtained from FLIR and ICS/Radio
- Share information as MPEG-2 TS file via USB device



Standard Configuration and Deliverables;

- Tactical/Strategic Intelligence through interactions with onboard ATGS and ground based resources
- 3 JPEGs overlaid on: HD satellite imagery, USGS topo, USFS Admin layers
- 3 Hi-res GeoTiffs with qr code link to incident products, overlaid on; HD satellite imagery, USGS topo, USFS Admin layers, uses:
 - Can be printed as large as 3' x 2'
 - GeoTiff can be used by aviators in the Avenza and ForeFlight apps
 - GeoTiff can be used in ATAK software
- KMZ of shape file to be used in Google Earth
- Folder containing shape files to be used in Arc-GIS by incident personnel
- FMV with audio and metadata which can be used in Arc-GIS FMV overlay for analysis
- Contracted Sensor Operator
- Daytime Use on intelligence gathering missions

Operational Control.

Operations Southern California has operational control of the aircraft with ATGS staffing provided by the Pacific Southwest Aviation Group. The standard response area is 240 NM from host base in Lancaster CA.