



**United States Department of Agriculture
Forest Service
Pacific Southwest Region**

FireWatch

Aerial Supervision/Remote Sensing Aviation Management Plan

June 2009



FireWatch Aviation Management Plan

FOREWORD

This document supplements the USDA-Forest Service (FS), *National Aviation Management Plan*. Information presented in this document is a critical component of the Pacific Southwest (R5) Region Aviation Program.

Questions regarding this plan should be directed to the FireWatch Program Coordinator. The FireWatch Program Coordinator retains the original signature copy and electronic version of this plan.

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FireWatch Aviation Management Plan

September 25, 2008

Subject: Revision 1 to the Firewatch Aviation Management Plan
dated June 2008

To: All Firewatch program personnel

The Firewatch Aviation Management Plan is revised with the attached page.

Remove the original page 20 and replace with Revision 1 page 20. The arrow (s) in the margin points to the area (s) that is/are revised.

Background:

1. Due to misinterpretations of the meaning of "maintenance test flight" (MTF) and the personnel authorized to perform the MTF, the affected paragraphs have been amplified to differentiate between the purpose of the MTF and functional checks (limited test flights) following minor repairs, and the personnel authorized to perform the flight or operational check actions required.
2. Retirement of the SZ Regional Aviation Maintenance Inspector required removal of the position designation and replaces it with Regional Aviation Maintenance Inspector designation.
3. Replacement of Firewatch Instructor Pilot Jim Ramage with John Blumm in Appendix 15.
4. Addition of Appendix 16 – 18.

/John Liston/
JOHN LISTON
Firewatch Program Coordinator

FireWatch Aviation Management Plan

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Chapter 1

FireWatch Program - General

- 1) **PURPOSE:** The purpose of the plan is to identify FireWatch program management goals, objectives, and activities, and to provide strategic and operational guidance to each organizational level as appropriate. This plan is supplemental to the *National Aviation Management Plan* (FSM 5704.3 and 5711) and the *Pacific Southwest Region Aviation Management Plan*.

USDA Forest Service contract AG-91S8-C-06-0040 dated 03/28/2006 with associated modifications is the binding contract between the government and DynCorp International. The contract includes the scope, personnel qualifications, equipment specifications, performance requirements, and many of the standards required for successful operation of the FireWatch program. A copy of the contract should be available to all employees associated with the performance of the FireWatch program.

- 2) **OBJECTIVES:**

- a) To provide emphasis on aviation safety.
- b) To provide an expansion for program guidance, but not a replacement for aviation management directives.
- c) To describe FireWatch aerial supervision and remote sensing programs and activities.
- d) To provide strategic and operational direction for FireWatch activities.

- 3) **MISSION STATEMENT:** The FireWatch Program is dedicated to coordinating and supervising aerial activities over incidents while enhancing firefighter safety, efficiency, and effectiveness of incident operations.

- 4) **PROGRAM OVERVIEW:**

- a) The Fire Watch Program utilizes two Bell 209 helicopters, owned by the U.S. Forest Service, equipped with specialized equipment for intelligence-gathering, mapping, command, and control. The aircraft is equipped with avionics to perform aerial supervisory missions equal to, or above the National Standard Type 1 Air Tactical Group Supervisor (ATGS) platform as recognized in the National ATGS Platform typing in the National Mobilization Guide.

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- b) This is a developmental application of an aircraft and associated equipment for aerial supervisory and intelligence gathering purposes. Not all applications for use of this aircraft are discovered. Approval for uses not addressed in this document must be obtained from the Pacific Southwest Regional Aviation Officer. Operations over foreign airspace will require State Department approval. Evaluations of the aircraft's suitability for each mission will be documented on the FireWatch Mission Report Form (Appendix #3), in the comments section.
- c) The aircraft has a total communications capability of seven radios including; three VHF AM radios, of which one is integrated into a Garmin model 530 GPS, three VHF FM radios within an NAT model TH-450 transceiver, and an integrated auxiliary FM radio provision. The aircraft has a Traffic Collision Avoidance Display (TCAD) to enhance situational awareness in congested airspace. The TCAD information can be displayed on the integrated Avalex map and the Garmin 530.
- d) The FLIR Systems Star Safire III Turret is equipped with multiple infrared sensors, 3CCD color camera, laser range finder, laser illuminator, and spotter scope. The FLIR Turret is integrated to work with a computerized mapping program (Avalex system) that can display street, topographic and aeronautical maps. Maps can be edited to show points of interest and calculate distances and area. On top of the aircraft is a second fixed infrared sensor (Max-Viz) that recovers images in the 8-12 micron wavelength range vs. the 3-5 micron mid-wave range of the turret mount.
- e) The aircraft is equipped with a multi-channel microwave transmitter capable of down linking real time color or infrared sensor images and cockpit audio to a portable microwave receiver. A portable microwave receiver will be carried on the aircraft, for delivery to personnel on an incident. This will supplement the Data Recovery Van when in route to an incident.
- f) The Data Recovery Van is equipped with a microwave receiver and directional antennae, flat screen video display, VCR recorder, and DVD recorder. This vehicle will accompany the helicopter and serve as the remote receptor of data to an incident command organization.
- g) There are currently two FireWatch units operating within the USFS Pacific Southwest Region designated as:
 - i) Helicopter/Air Attack 507 based at Redding, CA
 - ii) Helicopter/Air Attack 509 based at Lancaster, CA

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- 5) ORGANIZATION AND STAFFING: (consult the FireWatch Organizational Chart in appendix #1 and the FireWatch Master Contact List in appendix #7 for listing of staff)
- a) Regional Aviation Officer (RAO): Responsible for the leadership, management, and direction of the FireWatch program, including coordination of aviation activities with other staffs, agencies, and groups within the USFS. The RAO communicates institutional values and level of acceptable risk to those managing FireWatch aviation operations. The activities of the RAO are meant to unify the efforts of FireWatch aviation experts and develop a team approach in achieving safety goals and objectives while providing aviation support to the Forests and Cooperators. RAO responsibilities include:
- i) Monitor the FireWatch program planning and qualifications of both USFS and contractor personnel involved in FireWatch operations.
 - ii) Ensure specialized aviation training is provided to FireWatch personnel.
 - iii) Ensure the FireWatch program is accomplished within Departmental, Agency, and Unit directives and guidelines.
 - iv) Conduct periodic evaluations and site visits of FireWatch activities to ensure goals and standardization are attained.
 - v) Represent FireWatch program issues and products at Regional and National assemblies and relay feedback to the program coordinator.
 - vi) Ensure funding and personnel support is provided to cover requirements outside of Working Capital Fund programs.
- b) USFS FireWatch Program Coordinator: Responsible for the direction, leadership, and oversight of the FireWatch program at the unit level. Program Coordinator responsibilities include:
- i) Coordinate personnel, maintenance, parts, and logistics requirements with the USFS and DynCorp FireWatch Program Managers.
 - ii) Ensure adequate space and equipment is available to support the FireWatch program.
 - iii) Complete and accomplish required updates to the FireWatch Aviation Management Plan.

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- iv) Review, approve, and distribute FireWatch program Service Information Letters.
 - v) Coordinate FEPP and DODAAC system parts acquisition with the DynCorp FireWatch Program Manager.
 - vi) Ensure follow-up actions on recommendations from safety and operational evaluations are addressed and accomplished.
- c) USFS FireWatch Program Manager: Responsible as the Contracting Officer's Representative (COR) for all aspects of the FireWatch contract as directed in the COR Letter of Authorization. The USFS FireWatch Program Manager directs the daily operations of all ATGS and contractor field personnel within the program. Program Manager Responsibilities include:
- i) Accomplish program budget formulation, tracking, and reporting.
 - ii) Ensure adequate and proper training of FireWatch personnel.
 - iii) Coordinate the activities and schedules of FireWatch field personnel.
 - iv) Coordinate the activities of the DynCorp FireWatch Program Manager within the scope of the FireWatch contract and the COR delegated responsibilities.
 - v) Monitor the flow of maintenance, parts, and personnel within the program to ensure operational readiness.
 - vi) Monitor program to ensure aviation and occupational safety and health systems are adequate for the operations.
- d) DynCorp FireWatch Program Manager: Responsible for providing aircraft, personnel, and support in accordance with the FireWatch contract. The DynCorp FireWatch Program Manager is the key link between the contractor and the Forest Service in the accomplishment of the contract. Program Manager Responsibilities include:
- i) Accomplish internal DynCorp company procedures as directed.
 - ii) Provide and supervise competent qualified personnel to meet the specifications of the contract.
 - iii) Ensure proper maintenance records, airworthiness, and oversight of USFS contract aircraft.

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- iv) Maintain proper accounting of parts, supplies, and equipment associated with the FireWatch program.
- v) Report all maintenance issues, resolution, and return to service with the FireWatch Maintenance Inspector.
- vi) Coordinate parts acquisition, storage, refurbishment, and disposal with DynCorp personnel and the FireWatch Maintenance Inspector.
- e) USFS FireWatch Maintenance Inspector: Responsible for providing safety and quality assurance oversight for aircraft and aviation maintenance, parts, and support facilities. The Maintenance Inspector is designated a contract project inspector and works directly with the USFS and DynCorp FireWatch Program Managers to interpret, oversee, and resolve all associated aircraft issues and is responsible for:
 - i) Approving aircraft repairs and return to service conditions.
 - ii) Oversight and approval of aircraft record keeping systems.
 - iii) Coordinate with the DynCorp Program Manager and Acquisition Management (AQM) for parts ordering, payment, control, and storage.
 - iv) Coordinate and accomplish a maintenance and crew training stand down week prior to FireWatch aircraft dispatch annually.
 - v) Maintain currency on all airworthiness directives (AD's), FAA regulations, and other maintenance safety information pertaining to FireWatch aircraft.
 - vi) Maintain a weekly aircraft status report of Firewatch aircraft and email to the personnel listed in Appendix #11 on each Thursday by 9 a.m. See Appendix #13 for an example report format.
 - (1) The weekly aircraft status report will list the following:
 - (a) Current aircraft time in operation.
 - (b) Time to next maintenance action required.
 - (c) When any component is within 50 hours of any TBO, or life limited time remaining, and the time remaining.
 - (d) All deferred maintenance items.

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- (e) Any safety-of-flight condition completed since the previous status report and any not fulfilled.
- (f) Any inoperative mapping and remote sensing equipment, and the projected repair date.
- f) USFS FireWatch Pilot Inspector: Responsible for ensuring the experience, quality, and readiness of flight crewmembers assigned to FireWatch pilot duties. Pilot Inspector responsibilities include:
 - i) Conduct of annual FireWatch pilot standardization, qualification, and recurrent training.
 - ii) Certification of FireWatch pilot's mission readiness.
 - iii) Pilot crew scheduling for FireWatch missions.
 - iv) Content and approval of the FireWatch Pilot Aircraft Checklist
- g) Firewatch Instructor Pilots: Responsible for qualification and recurrent training IAW with Chapter 4 requirements. Instructor pilot standards and a list of authorized Firewatch Instructor Pilots are maintained in Appendix 15.
- h) FireWatch Pilot: Responsible for the safe, efficient, and cost effective use of the aircraft. FireWatch pilot responsibilities include:
 - i) All normal duties of the pilot in command (PIC) in accordance with FAA and USFS regulations, policies, and procedures.
 - ii) Capable of operating all functions of the avionics systems installed in the aircraft and ability to instruct the ATGS in how to perform basic programming and operations of installed avionics systems.
 - iii) Accomplish a pre-flight crew briefing to include:
 - (1) Familiarization with the forward pilot station controls, systems, and ingress/egress procedures.
 - (2) Radio communication responsibilities.
 - (3) Duties, responsibilities, and expectations between the pilot and ATGS.
 - (4) Emergency and abnormal operations procedures.

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(NOTE): Flight crew checklists are located in both pilot and ATGS compartments, and should be reviewed as part of the pre-flight crew briefing and used throughout the flight.

- i) FireWatch Mechanic/Fuel Truck Driver: Responsible for the routine condition, airworthiness, servicing, and resolution of maintenance discrepancies during FireWatch field operations. FireWatch mechanic responsibilities include:
 - i) Accomplishment of a daily aircraft inspection prior to commencement of flight operations.
 - ii) Communication of all maintenance discrepancies to the pilot, USFS FireWatch Maintenance Inspector, and DynCorp FireWatch Program Manager upon discovery.
 - iii) Resolution of all maintenance discrepancies prior to further flight. Resolution may include; repair, replacement, or deferral.
 - iv) Accomplishment of aircraft fueling and servicing requirements through coordination with the FireWatch pilot.
 - v) Ensure the equipment contained in Appendix #6 is included in the mechanic truck and operational for all field dispatches.

- j) Air Tactical Group Supervisor (ATGS): Responsible for the coordination of all fixed and rotary wing aircraft operating in incident airspace and the field supervision and direction of the FireWatch crew assigned to their respective aircraft. ATGS responsibilities include:
 - i) All normal functions of the ATGS as indicated in mobilization guides, aerial supervision guides, and the incident command structure.
 - ii) Mission coordination with the pilot, dispatch and incident organizations.
 - iii) Coordinating the logistics of the FireWatch field crews.
 - iv) Completion of records and reports contained the appendices of this plan.
 - v) Notification of FireWatch module status to the USFS FireWatch Program Manager.
 - vi) Operation of all surveillance systems installed on the FireWatch aircraft.

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- k) GIS Van Operator: Responsible for the transportation to field locations and operation of the equipment contained in the GIS Van. The GIS Van operator is a GIS qualified technician that interfaces with ICS personnel at incident locations. GIS Van Operator responsibilities include:
 - i) Ensure the equipment contained in Appendix #5 is included in the van and operational for all field dispatches.
 - ii) Transportation, staging, setup, and operation of the ground based FireWatch systems contained in the GIS Van.
 - iii) Assimilation and distribution of data collected by the FireWatch aircraft
 - iv) Produce GIS maps compatible with incident needs.
 - v) Coordinate the delivery of FireWatch products with incident personnel.

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Chapter 2

Aviation Procedures and Information

- 1) GENERAL: The FireWatch aircraft are Federal Excess Property Program (FEPP) acquired Bell 209/AH-1F Cobra helicopters converted for use as an aerial supervisory platform. Several mission-enhancing technologies are installed to determine their applicability to USFS operations. The aircraft and crew will be assigned to a variety of missions to determine its suitability in the ATGS role, real-time infrared imagery projection, and air-to-ground video down-linking. Other missions may be identified and assumed as appropriate applications become apparent.

The FireWatch helicopter will be utilized in a way that supports safety first, and increases real-time intelligence gathering second. In some instances the intelligence-gathering capabilities may be of more value to the incident personnel than the ATGS/ASM capabilities. In these cases another aerial supervisory platform may be ordered and a traditional “handoff” would occur before the FireWatch aircraft becomes dedicated to the remote sensing mission.

The aircraft can make landings in areas that can accommodate a Type 2 helicopter. It is possible for the ATGS to perform intelligence-gathering duties, land and have a face-to-face meeting with the Incident Commander (IC) or other incident staff. Delivery of current intelligence in the form of a GIS compatible map can be hand delivered by physical delivery of a “jump drive” or via email through a Global Star satellite phone in flight. The shape files created by the aircraft can be reprocessed in the GIS Van to suit the user unit.

Live video down linking can be delivered to a portable microwave receiver that is normally carried in the aircraft. The portable microwave receiver range is approximately 2 miles. The GIS Van has microwave receiving capability of 20 mile line of sight range.

The GIS Van is the processor of map data received from a FireWatch helicopter and projector of the live video data. The duties of the data van operator may include: Defining the correct ICS personnel to deliver the data and information, locating a suitable site for data recovery at or near an incident command post, and processing shape files for a GIS specialist attached to the incident.

✓

Note: It is imperative when operating strictly in the “Intelligence Gathering” mode, that the call sign be changed to “FireWatch” from “Air

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Attack". This is essential to alleviate any confusion if another aerial supervisory aircraft is responsible for the aerial supervisory duties.

2) DISPATCHING: Effective communications between the controlling dispatch office, the FireWatch helicopter, and the helicopter support vehicles is key to the efficient use and operational effectiveness of the FireWatch program.

a) Call-signs:

- i) North Zone (Redding) based helicopter (N107Z) is "Air Attack 507" unless operating in the intelligence gathering mode only, then "FireWatch 507".
- ii) South Zone (Lancaster) based helicopter (N109Z) is "Air Attack 509" unless operating in the intelligence gathering mode only, then "FireWatch 509".

b) Procedures:

- i) Dispatching and flight following procedures for air attack or infrared reconnaissance aircraft listed in the California Mobilization Guide will be adhered to in the FireWatch program.
- ii) FireWatch aircraft are equipped with Automated Flight Following (AFF) equipment and will normally request this mode of flight following.
- iii) The initial fuel-meeting site should be established prior to aircraft and support vehicle departure from base. Communication must be maintained enroute to facilitate diversion or mission cancellation. Known airports may be considered as primary fueling sites until incident heli-bases are established and support vehicles have arrived.
- iv) The FireWatch helicopter fuel endurance is approximately 3 flight hours.

3) OPERATIONS:

a) Pilots:

- i) Pilots will be approved for the FireWatch mission by the FireWatch Program Inspector Pilot or his representative. Pilots may be either USFS or DynCorp employee personnel.
- ii) Pilots will accomplish pre-flight, planning, operations, and post-flight activities in accordance with the provisions of FAA and USFS regulations and the Interagency Helicopter Operations Guide (IHOG).

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- iii) Prior to takeoff the pilot shall determine that the front seat occupant is familiar with:
 - (1) The forward pilot station controls, switches, and equipment.
 - (2) Radio communication equipment, operation, and responsibilities.
 - (3) Crewmember duties and expectations.
 - (4) Actions in the event of an emergency.
 - (5) Emergency egress from the aircraft.
 - (6) Pilot/ATGS Mission Briefing complete (see appendix #2).
- b) Air Tactical Group Supervisor (ATGS):
 - i) The ATGS is the government Contracting Officer's Representative (COR) or Project Inspector (PI) and is responsible for acceptance of and direction to proceed with all FireWatch missions that are requested through an appropriate dispatch authority.
 - ii) The ATGS is the mission coordinator/flight manager for the flight crew, mechanic/fuel truck driver, GIS Van operator, and customer.
 - iii) The ATGS will keep the USFS FireWatch Program Manager apprised of all missions, maintenance issues, personnel issues, and operational developments.
 - iv) Complete the FireWatch Mission Report Form (App. #3) and Daily Flight Report Form FS 6500-122 following each FireWatch mission and submit completed forms weekly to the USFS FireWatch Program Manager.
 - v) Ensure the completion of all required forms and data included in appendix #4 by the appropriate individual.
 - vi) Monitor contract and employee pilot performance and provide feedback to the USFS FireWatch Program Manager.
- c) Tactics: FireWatch tactics are governed by the same considerations encountered by all mission aircraft and accomplished within the guidelines of USFS policy, procedures, and guides. Specific consideration should be given to:

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- i) Complexity of the situation and mission.
 - (1) Order additional resources and divide duties as workload dictates.
 - (2) Determine the most effective use of the FireWatch systems and relay those considerations to the Incident Commander (IC).
- ii) High-Level reconnaissance (above 500' AGL)
 - (1) Observe the Fire Traffic Area and all associated operating procedures.
 - (2) Communicate your intentions to all aircraft in the area.
 - (3) Account for all aircraft over the incident including media and non-participating aircraft.
 - (4) Analyze the terrain. Identify potential approach and departure paths while noting prominent terrain features. Fly the patterns at an altitude to detect hazards. Study the area to establish safe exit paths considering the performance of all participating aircraft.
- iii) Low-Level reconnaissance (below 500' AGL)
 - (1) Both crewmembers must maintain situational awareness and assume responsibility for terrain and obstacle clearance while confirming the observations gained during the high reconnaissance.
 - (2) Coordinate changes of altitude and aircraft position with all participating aircraft.
 - (3) Check for turbulence and hazards to low-level flight while identifying potential targets.
 - (4) Fly potential emergency exit paths to locate hazards not identified during the high-level reconnaissance.
 - (5) Limit the duration of low-level flights to only the time necessary for completion of the mission.
- iv) Target Identification.
 - (1) Normally, target identification will be accomplished with a verbal explanation of the intended drop location.

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- (2) In lieu of a verbal explanation, the ATGS may request the pilot to position the helicopter so that the drop aircraft can observe the start point and target line. It is critical that the pilot maintain situational awareness of other aircraft at all times while low-level in the drop area. Upon acknowledgement that the drop aircraft has the target and line, the FireWatch aircraft will return to an altitude suitable for aerial supervision and resume the assigned mission profile.

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Chapter 3

Aircraft Maintenance

- 1) GENERAL: All maintenance on FireWatch aircraft will be performed by a contractor or facility that complies with Forest Service policy, appropriate contracts, and 14 CFR Parts 91, 135, and 145 standards, as appropriate. The DynCorp FireWatch Program Manager and USFS FireWatch Maintenance Inspector will coordinate all maintenance and parts activities associated with the FireWatch program.
- 2) AIRCRAFT DISCREPANCIES:
 - a) All discrepancies will be numerically logged on FS Form 5700-E, USDA Forest Service Aircraft Maintenance Log. Aircraft times will be updated daily by the pilot. Pilots that complete a page shall total the page times, including cycles, and carry them forward to the next log page. All daily entries will include total start and landing cycles for that day. When carrying cycles forward to the next page they shall be accounted and totaled in the upper right section of the Form 5700-E by counting one full cycle for each complete engine start and 0.1 (one-tenth) cycle for each landing.
 - b) Pilots shall enter all airworthiness and operational equipment discrepancies at the end of each flight. Entries should be concise, descriptive, and include parameters that will aid maintenance personnel in trouble shooting the issue. Pilots will enter only one discrepancy per numbered entry, separate entries with a blank line, and include the pilots name and date with each entry. Pilots should review each entry with the FireWatch mechanic and/or USFS FireWatch Maintenance Inspector.
 - c) The pilot, mechanic, and USFS FireWatch Maintenance Inspector will jointly determine if the discrepancy should be immediately corrected or deferred, or places the aircraft "out of service". Deferred maintenance issues will be transferred to the Delayed Discrepancy List on the cover of FS Form 5700-E. When the discrepancy is corrected or deferred the mechanic will enter the action with the same numerical designation as the original entry and include the corrective action, mechanic signature, and date. If a maintenance discrepancy is not corrected, upon completion of the associated Form 5700-E page, the DynCorp mechanic will transfer the "open write-up" forward to the current discrepancy page in use.
 - d) Whenever a FireWatch aircraft is grounded for a maintenance deficiency the DynCorp mechanic will call the USFS FireWatch Maintenance

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Inspector and notify him of the grounding condition. They will agree on the course of action and the mechanic will proceed with the repairs. If, for some reason, the mechanic cannot contact the USFS FireWatch Maintenance Inspector they will call the R5 South Zone Regional Aviation Maintenance Inspector (SZ RAMI) and determine the course of action. Other than internal DynCorp policy, that should be all the notification that's required of the mechanic until the repairs are completed or additional circumstances are known that should be communicated to the USFS FireWatch Maintenance Inspector. The SZ RAMI will contact the USFS FireWatch Maintenance Inspector as soon as possible to notify him of the circumstances after he makes the initial contact with the mechanic.

- e) The USFS FireWatch Maintenance Inspector will send a short Email message to the notification list (Appendix #11) indicating why the aircraft is down and the expected "Return to Service" time and date. Nothing fancy, a one liner should do. If anybody has questions, they can give the USFS FireWatch Maintenance Inspector a call and discuss it.
 - f) The Air Attack assigned to the aircraft is responsible for contacting the appropriate dispatch/operations section to notify them of the aircraft status and expected time for "Return to Service".
 - g) Upon completion of repairs the mechanic will contact the USFS FireWatch Maintenance Inspector and the inspector will return the aircraft to service when he is satisfied that the aircraft is airworthy and the aircraft logs are in order. The USFS FireWatch Maintenance Inspector will send another "one-liner" to the same Email list indicating the "Return to Service" date and time. Again, the SZ RAMI can accomplish this task if the USFS FireWatch Maintenance Inspector is not available with follow-up notification to the USFS FireWatch Maintenance Inspector ASAP.
 - h) The assigned Air Attack will notify dispatch/operations of the "Return to Service".
 - i) If there are any pilot scheduling issues due to maintenance "down time" the FireWatch Inspector Pilot will coordinate changes with the affected pilots.
 - j) If there are any DynCorp employee scheduling issues due to maintenance "down time" the assigned Air Attack will coordinate changes with the affected employees.
- 3) MAINTENANCE SCHEDULING:
- a) The FireWatch mechanic will schedule all periods of routine maintenance with the concurrence of the assigned ATGS. The ATGS is responsible for

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keeping the USFS FireWatch Program Manager and Maintenance Inspector informed of required routine maintenance actions.

- b) During occurrences of unscheduled maintenance, away from the assigned FireWatch mechanic, the pilot will consult with the DynCorp Program Manager prior to arranging required repairs. The ATGS will make normal contacts with USFS personnel.

4) MAINTENANCE FLIGHTS:

- a) Maintenance flights are accomplished in accordance with the direction contained in U.S. Army Maintenance Manuals for the AH-1F helicopter. Generally there are two different types of maintenance flights.
 - i) Maintenance Operational Checks (MOC), functional checks following minor repairs (limited test flights), and rotor system tracking flights may be accomplished by any pilot qualified to fly the USFS Bell model 209 helicopter.
 - ii) Maintenance Test Flights (MTF) are required prior to or after performance of phase maintenance or after major repairs, and may only be accomplished by pilots approved to perform MTF's by the Firewatch Program Coordinator and the DynCorp Program Manager.

(1) The following pilots are approved for MTF:

- (a) Greg Helsel USFS
- (b) Morgan Mills DYN-CORP
- (c) John Liston USFS
- (d) John Blumm USFS
- (e) Mark Voelker DYN-CORP

5) MAINTENANCE RETURNS TO SERVICE:

- a) The FireWatch Maintenance Inspector is normally the only individual authorized to return FireWatch aircraft to service. In the absence of the FireWatch Maintenance Inspector, a Region 5 Maintenance Inspector (RAMI) may authorize return to service for FireWatch aircraft following correction of maintenance deficiencies. The RAMI will keep the USFS FireWatch Maintenance Inspector informed of all such actions ASAP.

6) MAINTENANCE LOGBOOKS:

- a) The Maintenance File Copy (white page) of the Form FS 5700-E shall remain in the logbook until removed by the USFS FireWatch Maintenance Inspector, after all discrepancies are specifically addressed in the

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corrective action column. Upon removal, this copy will be retained by the USFS Inspector for 24 months.

b) The Aircraft Copy (yellow page) will remain in the logbook and kept with the aircraft until the entire book is completed. Completed logbooks will be removed and replaced by the USFS FireWatch Maintenance Inspector, as needed.

c) *RESERVED (LONG TERM LOGBOOK STRATEGY) ATP, etc*

7) PARTS:

a) DynCorp shall maintain an inventory of all aircraft parts in a database format (*specify*) approved by the Government. Management of parts inventory shall include, but is not limited to, the purchasing of parts, refurbishment of parts, the inventory, tracking and reporting of purchased or Government furnished parts, the storage of those parts, and the preservation and management of those parts.

b) The USFS FireWatch Maintenance Inspector will provide Government oversight of the parts program in coordination with the DynCorp FireWatch Program Manager. This oversight will include approval to obtain, purchase, repair, or overhaul parts as needed.

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Chapter 4

Training

- 1) GENERAL: Training is the key method to ensure the FireWatch staff is knowledgeable of current procedures and techniques thus enhancing a safe operation. It is essential that pilots, mechanics, supervisors, aviation users, and other operations staff be familiar with the inherent hazards of aviation operations. Forest Service management is dedicated to providing for professional and technical training of employees and contract personnel at all levels of the FireWatch organization that use or influence use of aviation resources.

CURRICULUM: The following training curriculum is developed to standardize Firewatch crewmember qualification:

- a) Operations (All employees):
 - i) Team concept
 - ii) Contract administration/delegation of Authority
 - iii) Payment documentation
 - iv) Operations plan
 - v) Dispatching/Demob procedures
 - vi) Intercrew communications
 - vii) Relief crew coordination
 - viii) Contract lead personnel
 - ix) Operational Policies
 - x) Firewatch operation w/o GIS van
 - xi) Driving limitations
 - xii) Fire line safety refresher and fire shelter training
- b) Pilot: Before participating in the Firewatch pilot training curriculum pilots will meet the minimum requirements of FSH 5709.16, 11.22, Contract Pilot Qualifications and 11.22b - Experience Standards - Contract Helicopter Pilots, or, 12.12a - Minimum Flight Time Requirements - GS-12, and, 12.24a – Pilots – GS-12 Qualifications, as appropriate for either contract or employee pilots.
 - i) Academic subjects for initial qualification or recurrent Bell 209 training
 - (1) USDA Forest Service Policies and Regulatory Requirements
 - (a) FSM 5700 & FSH 5709.16
 - (i) Pilot Qualification Cards
 - (ii) Fuel and maintenance log books
 - (iii) Flight and duty limitations

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- (iv) Flight plans
- (v) Flight following

(2) Bell 209 (AH-1F) Aircraft Systems Review

- (a) Helicopter and systems description and operation
- (b) Structure
- (c) Power plant and related systems
- (d) Transmission and drive systems
- (e) Rotor systems
- (f) Electrical systems
- (g) Flight controls
- (h) Hydraulic systems
- (i) Aircraft limitations and performance planning
- (j) Avionics
- (k) Mission equipment
- (l) Operating limits and restrictions
- (m) Weight/balance and loading
- (n) Performance data
- (o) Normal procedures
- (p) Emergency procedures
- (q) Operators manual written examination

- (3) National Airspace System and Fire Fighting Operations Within
- (4) Classes of Airspace
- (5) Fire Traffic Area
- (6) Temporary Flight Restrictions Operations

ii) Pilot Front Seat Pinch-Hitter Systems Operation

- (1) NATS radios Operation and Programming
- (2) Avalex Mapping System
- (3) FLIR Star SAFIRE III
- (4) Laser rangefinder and integration with Avalex
- (5) Hand control unit
- (6) Computer file generation
 - (a) Maps
 - (b) Video and Infrared imagery
 - (c) USB and CD storage
- (7) BMS operation and GIS Van linking
- (8) Sat phone data usage

iii) Flight Tasks per paragraph 4) below

Hours¹

- | | | |
|----------------------------------|-----|---|
| (1) Flight planning ² | (2) | |
| (2) Takeoff | | 1 |
| (3) Basic Flight | | 2 |

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(4)	Approach and landing	1	
(5)	Emergency ³		2
(6)	Instrument flight ³	1	
(7)	Tactical Missions ³		2
		Total hours	9 ⁴

Notes:

¹One hour will be at night and include all night basic flight tasks shown in paragraph 5) below.

²Although these tasks apply to flight instruction they are not considered as part of the total flight time.

³A maximum of 50 percent may be accomplished in a suitable simulator.

⁴Hours may be reduced upon demonstrated proficiency.

iv) Basic flight tasks.

- (1) Conduct crew mission briefing.
- (2) Plan a VFR flight.
- (3) Prepare a weight and balance form.
- (4) Conduct performance planning.
- (5) Perform preflight inspection.
- (6) Perform engine-start through after-landing checks.
- (7) Perform hover power check.
- (8) Perform hovering flight.
- (9) Perform normal takeoff.
- (10) Perform simulated maximum performance takeoff.
- (11) Perform deceleration/acceleration.
- (12) Perform traffic pattern flight.
- (13) Perform fuel management procedures.
- (14) Navigate by pilotage and dead reckoning.
- (15) Perform GPS navigation.
- (16) Perform VMC approach.
- (17) Perform a shallow approach to a running landing.
- (18) Perform confined area operations.
- (19) Perform slope operations.
- (20) Perform terrain flight mission planning.
- (21) Perform terrain flight takeoff.
- (22) Perform terrain flight.
- (23) Perform hover OGE check.
- (24) Perform NOE deceleration.
- (25) Perform terrain flight approach.
- (26) Negotiate wire obstacles.
- (27) Perform high-speed flight.
- (28) Perform hovering autorotation.
- (29) Perform simulated engine failure at a hover.

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- (30) Perform simulated engine failure at altitude.
- (31) Perform simulated engine failure, high speed, at altitude.
- (32) Perform manual throttle operation, emergency governor mode.
- (33) Perform flight with SCAS disengaged.
- (34) Perform unusual attitude recovery.
- (35) Perform radio communication procedures.
- (36) Operate transponder.
- (37) Perform or describe inadvertent IMC recovery procedures.

v) Basic night flight tasks.

- (1) Conduct crew mission briefing.
- (2) Plan a VFR flight.
- (3) Conduct performance planning.
- (4) Perform preflight inspection.
- (5) Perform engine-start through after-landing checks.
- (6) Perform hover power check.
- (7) Perform hovering flight.
- (8) Perform normal takeoff.
- (9) Perform fuel management procedures.
- (10) Navigate by pilotage and dead reckoning.
- (11) Perform VMC approach.
- (12) Perform a shallow approach to a running landing.
- (13) Perform confined area operations.
- (14) Perform slope operations.

c) Front Seat Systems (ATGS):

- i) Front seat checklist
- ii) Aircraft operations checklist, normal and emergency procedures
- iii) Mapping system
- iv) FLIR system
- v) BMS microwave system
- vi) Fuel management
- vii) Contract daily diary
- viii) Radios and audio panel
- ix) Flight instrument orientation
- x) Garmin 496 operation
- xi) Front seat systems proficiency exam
- xii) Load calculations
- xiii) Emergency procedures
- xiv) Emergency Locator Transmitter (ELT) operation

Note: See appendix 16 -18 for expanded Front Seat Systems training items.

d) Firewatch Pilot, ATGS and GIS mission equipment specialist personnel:

- i) Aircrew coordination procedures adopted from US Army Publication TC-1-213, AH-1 Aircrew Training Manual, will also be included in Firewatch, ATGS and GIS mission

FireWatch Aviation Management Plan

equipment specialist training. The Firewatch Inspector Pilot will maintain this program of instruction.

e) GIS Van Operator

- i) GIS ARC View 9.1/9.2
- ii) BMS microwave system operation
- iii) Video processing
- iv) Firewatch helicopter front seat systems operation
- v) Radios
- vi) Auxiliary power systems
- vii) Data transmission
- viii) ICS structure and contacts
- ix) Globalstar Satellite Phone

f) Helicopter Mechanic

- i) Maintenance vehicle operation
- ii) Aircraft forms and records; log book entries
- iii) Daily duty responsibilities
- iv) Fueling procedures and fuel resupply management
- v) Maintenance notifications

3) Pilot-in-Command experience requirements

a) References:

- i) FSH 5709.16, paragraph 11.22b - Experience Standards - Contract Helicopter Pilots
- ii) FSH 5709.16, paragraph 12.12 - Experience Standards - Employee Helicopter Pilots

b) Flight hour requirements for make and model may be reduced by 50%:

i) If the pilot submits evidence of satisfactory completion of

- (1) A US Military AH-1 Series Qualification Course

or

- (2) Bell Helicopter's approved Model 209 pilot ground and flight procedures training.

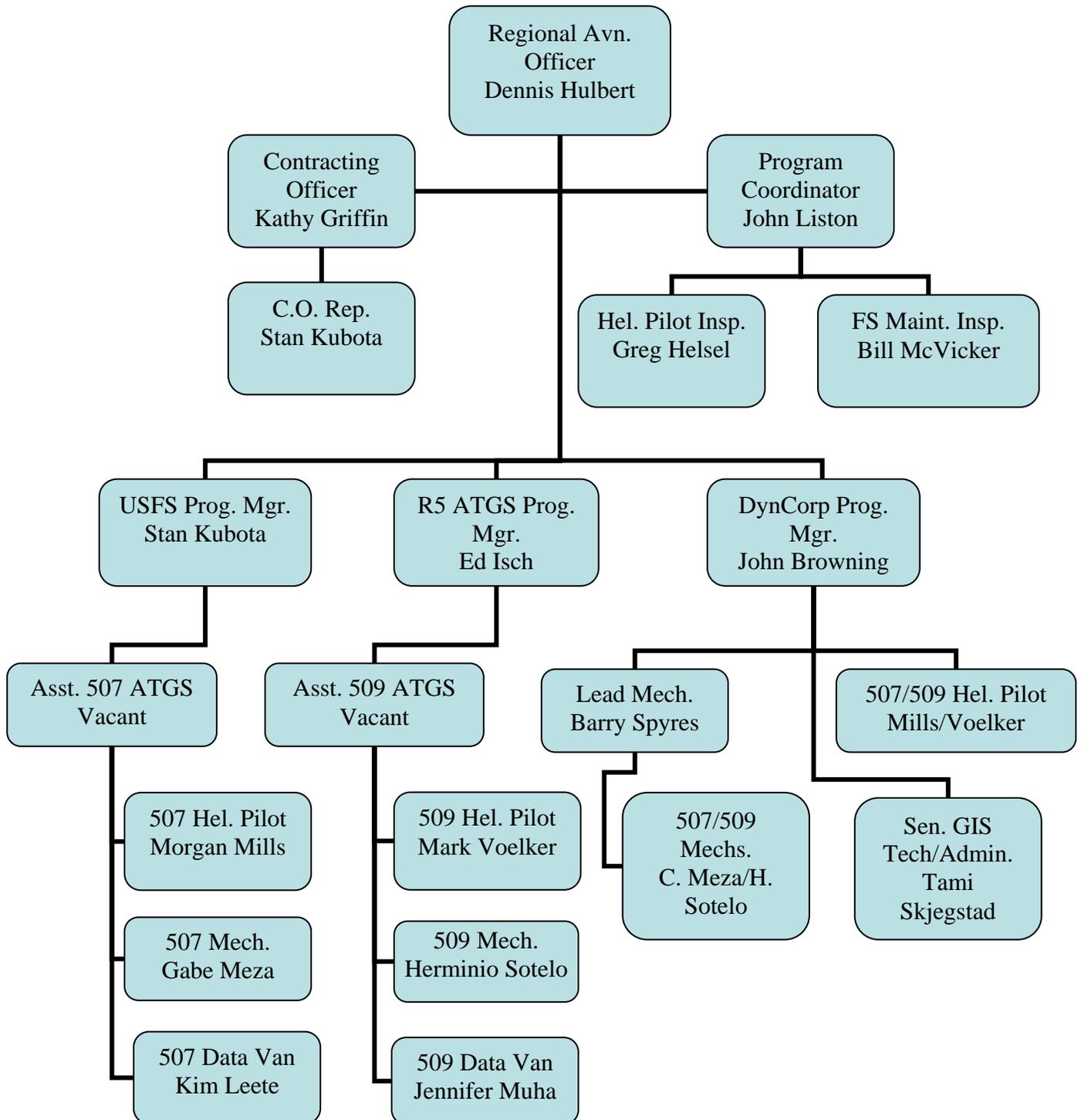
or

- (3) If the pilot has completed the USDA Forest Service Region 5 Firewatch Bell 209 Pilot Training Curriculum.

FireWatch Aviation Management Plan

Appendix #1

FireWatch Organization Chart



FireWatch Aviation Management Plan

Appendix #2

Pilot/ATGS Mission Briefing

- Aircraft Data Card
- Pilot Qualification Card
- Ramp Procedures
- Aircraft Passenger Briefing/Flight Crew Checklist
- Mission Description
- Chief of Party
- Sterile Cockpit
- Radio Discipline/Radio Monitoring
- Dispatching Procedures
- Fire Traffic Area
- NOTAM Review
- Weather Briefing
- Local Area Orientation
- Aerial hazard Map
- Temporary Flight Restrictions
- General Housekeeping

FireWatch Aviation Management Plan

Appendix #3

Pilot/ATGS Mission Debriefing

Mission Date	Mission Duration: (Flight hours)	Mission Type: Air Attack Recon IR Recon Mapping Other
ASM Tactics	Used	Not Used
Low level recon		
Target Hover ID		
High level flight only		
Equipment	Used	Not Used
TCAD		
Avalex mapping system Topo map Street map VFR chart IFR chart		
Star FLIR Turret IR only TV only IR and TV		
Fixed 8-12nm FLIR		
Microwave downlink		
DVD recorder		
Mission Procedures	Yes	No
Were there delays in Launching the aircraft?		
Were sterile cockpit procedures followed?		
Was satisfactory comms Maintained between pilot and ATGS?		
Was satisfactory comms maintained with other resources?		
Were FTA rules followed?		

Comments and Concerns: (on back of sheet)

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Comments and Concerns:

FireWatch Aviation Management Plan

Appendix #4

Required Forms and Data

Required as per IHOG	Responsible Individual	Frequency
Aircraft Contract Daily Diary	ATGS	**Daily
Aircraft Cost Summary (ATGS)		**Daily
Helicopter and Fuel Truck Inspection Form	Mech	Prior to use
Aircraft Fuel Facility Log	Mech	as per contract
Engine Health Indication Test (Pilot	10 Hours
HIT Trend Graph	Pilot	Altair Sys.
Helicopter Load Calculation	Pilot	Daily
Helicopter Passenger Cargo Manifest	Pilot	*Load Calc
Pilot, Driver, Mechanic Duty Day Cumulative Log	Ea.	**Daily
Flight Payment Document (FS-122)	ATGS	Daily
Incident Aircraft Cost Summary	ATGS	**Per Incident
Pilot/ATGS Mission Debriefing Form	Ea.	**Per Sortie
Other Requirements		Frequency
ABS Data Entry	ATGS	Daily
Aircraft Fuel Log	Mech	***Each Fueling

*Manifest can be included on Helicopter Load Calculation Form. Both Pilot and ATGS are considered crewmembers.

**When assigned to an incident, time permitting.

***Note incident number and override code on each receipt

FireWatch Aviation Management Plan

Appendix #5

GIS Van Inventory List

SUPPLIES	EQUIPMENT
2 Sets Canon Ink Cartridges	Docking Station
Thumb Tacks	Keyboard
Paperclips	Computer Monitor
Binder Clips	BMS Microwave Receiver
Small Scissors	Canon !960 Printer
3 Scotch Tapes	2 Maxtors
Staple remover	1 "My Book" External Hard Drive
Small Stapler	Program Software case
Staples	Software in Van Computers
Dry Erase Pens	2 Reams Copy Paper
Colored Highlighters	Jumper Cables
White-Out Tape	Extra Power Strip
Calculator	Sony DVD Burner
Small Sticky Note Pads	DVD Player/Recorder
100 DVD Envelopes	1 Ear Protector Head Set
100 DVD +R DVD's	2 Remotes (DVD Player/Back TV
1 DVD Lens Cleaner	Fan
1 Can of Canned Aire	USFS Verizon AirCard
4 pks AA batteries	Short BMS Coax Cable For Antennae
100 FireWatch Business Cards	Speakers and Woofer
2 Hole Punch	Hitch Stand for Mast
3 Hole Punch	2 Full Sets of CEP's
Pencil Cup w/ Pens	1 pkg standard ear piece covers
1 Grease Board	SkyBound Jeppesen

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1 Roll Pink Safety Tape	AMS 7000 USB 2.0 Buslink Acc. Kit
Sleeping Bag	GTA-24 microwave Antenna
Tent	Extendable Mast
IHOG Manual	Dell Laptop Computer
2007 BLM Flight Ref. Guide	2 - ESRI Sentinel Keys (52,53)
File case with Manuals	Honda Generator
10 copies of each demo video	10 gal Gas Jug
2 - 122 books	2 extension cords
Sunshade	Tool Box w/Various video/computer adapters
Camp Chair	VHF AM Handheld Radio
Name Tag Stickers	VHF FM Handheld Radio
1 pkg AAAA batteries	Sat Phone
Various Bungee Cords	Roller Stool
Incident Pocket Guide	ICOM Handheld Radio
Pkg CD Labels	Garmin Street Pilot
Clip Board	Power Strip
2 Fire Shelters	Shovel
1 Pair Leather Gloves	TV Briefcase
3 - 8 1/2 X 11" Tablets	52" Panasonic Flat Screen TV w/power adapter
Archived DVD Incidents	Remote for TV
	TX/RX Wireless Devices w/power adapter
	2 RCA Cables
	Small Extension Connector
	DVD Player w/Remote
	Tire Gauge
	Atlas
	Car Jack
	Fire Extinguisher

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	Lug Wrench
	First Aid Kit/Survival Kit
	Verizon Cell Phone w/ Charger Cradle

FireWatch Aviation Management Plan

Appendix #6

Mechanic Truck Equipment Compliment

- *6' Ladder
- *Extension Cord
- *Lights
- *Generator
- *Ground Handling Wheels
- *One Case of Jet II Oil
- *One Case Hydraulic Fluid
- *Compressor Wash Cans
- *Compressor Wash Soap
- *Grease Gun -w/Grease
- Tools
- Bucket
- A/C Soap
- FLIR Shipping Boxes- w/Dummy Weights
- Hand Towels
- 1 Set Maintenance Manuals
- Contract fuel supply

Parts

- Assortment of O rings
- *Phase Kit
- Starter/Generator
- Igniters
- Fuel Nozzles
- T/R PC Link Rod Ends
- M/R PC Link Rod Ends
- Assortment of Light Bulbs
- Circuit Breakers/Fuses

* **Indicates Government furnished Property**

FireWatch Aviation Management Plan

Appendix #7

FireWatch Master Contact List

Name	Position	Phone #	Email
Stan Kubota	COR/ATGS (RDD)	(530) 949-9466 cell (530) 226-2735 office	skubota@fs.fed.us
Ed Isch	ATGS (WJF)	(661) 723-2587 office (661) 369-6224 cell	<u>Ed.isch@fs.fed.us</u>
Kathy Griffin	CO	(916) 640-1064 office (530) 320-9300 cell	kgriffin@fs.fed.us
N109Z	FireWatch	(254) 460-9547	airtac509@yahoo.com
GIS Van Sat	Sat Phone (WJF)2811	(254) 460-9674	dvn109z@yahoo.com
N107Z	FireWatch	(254) 460-9540	airtac507@yahoo.com
GIS Van Sat	Sat Phone (RDD)4616	(254) 460-9614	dvn107z@yahoo.com
GIS Van Cell	GIS Van 4616 WJF	(530) 205-6452	
GIS Van Cell	GIS Van 2811 RDD	(530) 205- 6451	
Dennis Hulbert	RAO	(916) 640-1033	dhulbert@fs.fed.us
Hank Yancey	DynCorp Program Director DAOS	(817) 224-1646 work	Hank.Yancey@dyn-intl.com
Dennis Brown	RASM/ATGS	(916) 712-8768	dwbrown@fs.fed.us
Pete Koerber	ATGS	(530)277-9261	pkoerber@fs.fed.us
Tony Duprey	ATGS	(805)450-2676	lptd@cox.net
Boyd Turner	R. ATGS	(530) 949-8230	bturner@fs.fed.us
Dennis Knight	ATGS	(530) 547-6145	
Tami Skjegstad	GIS Manager (RDD)	(530) 961-2289 wrk cell (530) 226-9576 office	tamara.skjegstad@dyn-intl.com
Kim Leete	GIS Van Operator (RDD)	(530) 205-6451 van	Kim.leete@dyn-intl.com
Jennifer Muha	GIS Van Operator (WJF)	(530) 205-6452 van	Jennifer.muha@dyn-intl.com
Morgan Mills	Pilot (RDD)	(530) 327-8022	morgan.mills@dyn-intl.com

FireWatch Aviation Management Plan

Mark Voelker	Pilot (WJF)	(530)339-6003	mark.voelker@dyn-intl.com
Barry Spyres	Lead Mechanic (RDD)	(530) 961-2307 wk cell	barry.spyres@dyn-intl.com
Gabe Meza	Mechanic (WJF)	(530) 339-6003 wrk cell	gabe.meza@dyn-intl.com
Herminio Sotelo	Mechanic (RDD)	(530) 327-8022 wrk cell	Herminio.sotelo@dyn-intl.com
John Blumm	FS Pilot	(530) 226-2740	jblumm@fs.fed.us
Greg Helsel	Relief Pilot	(916) 996-6120	ghelsel@fs.fed.us
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Larry Roberts	Relief Pilot	(404) 909-0245	larryroberts@fs.fed.us
Boyce Bingham	Relief Pilot	(907) 723-7270	boycebingham@fs.fed.us
Paul Markowitz	Tech Spec	(208) 850-9962	pmarkowitz@fs.fed.us
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Sue Gethen	NZ Dispatch	(530) 226-2801	sgethen@fs.fed.us
Ron Rusten	SZ Dispatch	(951) 276-6721	rrusten@fs.fed.us
Shaun Crawford	Leer-Seigler	(315) 772-3561	
Tad Ihns	Avalex	(850) 470-8464	tihns@avalex.com
Ben Kaiser	Avalex	(850) 470-8464	yayameen@yahoo.com
Julia Schmitt	Max Viz	(503) 968-3036	jscmitt@max-viz.com
Steve Bol	Van Builder	(530) 308-4656	
RDD ECC		(530) 226-2400	
Mike Lococo	NOPS Intelligence	(530) 226-2810	mlococo@fs.fed.us
Bruce Risher	SOPS Intelligence	(951) 276-6721	<u>brisher@fs.fed.us</u>
Mark Schug	GIS Contact	(209) 532-3671 ext 464	<u>mschug@fs.fed.us</u>
John Liston	USFS Prog. Coordinator	(530) 226-2715 Office (530) 356-0364	<u>jliston@fs.fed.us</u>

FireWatch Aviation Management Plan

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Bill McVicker	NZ AMI	(530)941-1742	bmcvicker@fs.fed.us

FireWatch Aviation Management Plan

Appendix # 8

Platform Development Test

File 5700

Date: September 26, 2003

Code:

Route

To:

Subject: N109Z Aerial Supervision Platform Development Test

To: Director, Fire and Aviation Management, Region 5

During the upcoming FY 2004, N109Z, a Bell Helicopter Model 209 (Cobra) will be tested in an aerial supervision module (ASM) role with a Forest Service pilot and air tactical group supervisor (ATGS). The helicopter will be equipped with state of the art avionics, downlink, mapping, and infrared (IR) capabilities.

While testing this helicopter as an ASM platform, the following deviations to policy are approved:

1. **Closed Circuit Refueling.** Flights may be extended to four hours (time between engine shut down) when conducting closed circuit refueling in the ASM mode. This time frame is consistent with the ATGS requirements in airplane platforms.
2. **Helicopter Managers.** A helicopter manager is not required when the helicopter is operated by government employees. Similar to the airplane ASM platform, there are no passengers, cargo, or contract responsibilities associated with this test.
3. **Night Flight.** Night flight is approved provided landings can be accomplished at the local incident helibase or at an FAA approved airport. Night flight is necessary for ferry flights and to cover airtanker drops, occurring as late as 30 minutes past official sunset.

We also want to clarify that when conducting extended closed circuit refueling operations, pilot rest and preventative maintenance time between flights shall be two hours. This requirement should not be confused with the three-hour fire line operations rule in the Interagency Helicopter Operators Guide (IHOG).

FireWatch Aviation Management Plan

Contact Morgan H. Mills, National Standardization Pilot, at 208-387-5615, for more information.

/s/ Joel D. Holtrop

JOEL D. HOLTROP
Deputy Chief
State and Private Forestry

FireWatch Aviation Management Plan

Appendix #9

Helicopter Closed Circuit Refueling Plan

All personnel involved in closed circuit fueling shall have been approved to conduct this operation by the proper authority. Proper PPE for the fueler includes all natural fiber clothing(cotton), long pants and long sleeve shirt, SPH 4 helmet with communication capability with goggle or visor and leather gloves. Aircraft crewmembers shall be in their normal PPE including helmet visors down.

Closed Circuit (engine running)

1. Throttle-Idle
2. FORCE TRIM Switch-FORCE TRIM
3. During RAPID refueling operations, a crewmember shall observe the refueling operation (performed by authorized refueling personnel) and stand fireguard as required. The pilot shall remain in the cockpit to monitor controls. Only emergency radio transmission should be made during RAPID refueling. Infrared (Flir and Max Vis) shall be placed in the OFF position.
4. Assure fire guard is in position with fire extinguisher near the fuel truck emergency cut-off switch.
5. Ground servicing unit to aircraft (bonding).
6. Fueler attaches communication cord from helmet to aircraft.
7. Ground fuel nozzle to aircraft.
8. Remove fuel filler cap and assure that the refueling module is in locked position.
9. Remove nozzle cap and insert nozzle into fuel receptacle and lock into place.
10. Activate flow control handle to ON or FLOW position. Fuel flow will automatically shut off when fuel cell is full. Just prior to normal shut off, fuel flow may cycle several times, as maximum fuel level is reached. Pin at base of nozzle will indicate when fuel flow stops.
11. Assure that flow control handle is in OFF or NO FLOW position and remove nozzle.

FireWatch Aviation Management Plan

12. Replace fuel nozzle cap.
13. Replace fuel filler cap.
14. Disconnect fuel nozzle ground.
15. Disconnect the ground from the helicopter to the servicing unit.
16. After refueling. The pilot shall be advised by the refueling crew that refueling is complete and the following items are checked:
 - a. Fuel cap secured
 - b. Grounding cables removed
 - c. Fuel hoses clear of aircraft

Aircraft mission can continue once the fueling crew is clear and the ATGS is secured in the aircraft. The aircraft crew shall record the fueling in the aircraft fuel log and receipt the amount according to the procedures outlined previously in this operation plan.

FireWatch Aviation Management Plan

Appendix #10

Security Plan for FireWatch Helicopters

This plan describes how helicopters N107Z and N109Z will be secured based on conditions of Homeland Security Advisory System threat level, and while in assigned status.

Threat Condition Levels Green, Blue, Yellow and Orange. When 107Z and/or 109Z are at their home bases the aircraft will be secured in the Air Unit Hangars. The security of Zone Air Unit Hangars is referenced under the Zone Geographic Coordination Center Security Plans.

Threat Condition Level Red. In addition to the above precautions law enforcement will be requested to perform random security checks. If warranted a security guard, equipped with a cell phone and a USFS 2-way HT radio, will be maintained.

When the helicopters are in travel status during Condition Levels Green, Blue, Yellow and Orange, these security measures will be implemented:

1. Portable microwave receiver and antennae will be placed in the front cockpit.
2. Flight control lock will be placed in rear cockpit.
3. Front and rear cockpit doors will be locked.
4. Aircraft will be kept at a secured airport or incident helibase when within reasonable distance to an incident.

During Threat Condition Level Red, while in a travel status, in addition to the above precautions, law enforcement will be requested to perform random security checks. If warranted a security guard, equipped with a cell phone and a USFS 2-way HT radio, will be maintained.

Additional Equipment:

The fuel truck and GIS recovery van will be placed at an incident helibase, incident command post, within the confines of a secure airport or agency airbase during Threat Condition Levels Green, Blue, Yellow, and Orange. During Threat Condition Level Red, law enforcement will be requested to perform random security checks. If warranted a security guard, equipped with a cell phone and a USFS 2-way HT radio, will be maintained.

FireWatch Aviation Management Plan

Appendix #11

Mailing lists

#1 Program Notification Email:

DWBrown@fs.fed.us

John.browning@dyn-intl.com

kgriffin@fs.fed.us

ghelsel@fs.fed.us

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skubota@fs.fed.us

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crtaylor@fs.fed.us

tamara.skjegstad@dyn-intl.com

FireWatch Aviation Management Plan

Appendix #12

Survival Kit Aeronautical

The contents shall include the following minimum items:

Item	Item
Knife	Signal Mirror
Aviation Signal Flares (6-each)	Matches (2-small boxes in waterproof containers)
Food (2-days emergency rations per occupant)	Water (1-quart per occupant) (not required when operating over areas with adequate drinking water)
Space Blanket (1-per occupant)	Candles
Collapsible Water Bag	Whistle
Magnesium Fire Starter	Nylon Rope or Parachute Cord (50-feet)
Water Purification Tablets	

Suggested Survival Kit Items Dependent Upon Terrain and Climate:

Item	Item
Container w/carrying Handle or Straps	Individual First Aid Kit
Large Plastic Bags	Signal Panels
Flashlight with Spare Batteries	Hand Saw or Wire Saw
Collapsible Shovel	Sleeping Bag (1-per two occupants)
Survival Manual (Arctic/Desert)	Snowshoes
Insect Repellant	Axe or Hatchet
Insect Head net (1-per occupant)	Gill Net/Assorted Fishing Tackle
Personal ELT	Sunscreen

Note: A hand-held 760 channel VHF transceiver radio is recommended. It should be attached, or immediately accessible, to a crewmember rather than placed in the aircraft survival kit.

FireWatch Aviation Management Plan

Appendix #13

Firewatch Helicopter Weekly Status Report

N107Z

USDA - FOREST SERVICE
Form 101

REGIONAL AIR GROUP REG-5
6101 Airport Road
Redding Ca
(530) 226-9576
FAX (530) 226-9776

Date: 05/21/08
Hobbs Time: 832.7
Aircraft Time: 2127.0
Engine Total Time: 1487.8
Engine Cycles: 465

FOR REPORT PERIOD:	05/29/08	05/27/08	8	05/28/08	SERIAL NUMBER:	83-24194
MAIL THIS CARD BETWEEN					REG NO:	N107Z
Enter Current Hobbs Time:					Enter Engine Total Time:	
Enter Current Aircraft Time:					Enter Engine Cycles:	
Add <input type="checkbox"/> 1294.3	ACTT	To Current Hobbs Time For Aircraft Total Time:			SIGNATURE	DATE
DATE OF LAST LOG ENTRY ON FILE	05/14/08				FAX PAGE	of
NOTE: IF A LOG ENTRY HAS BEEN MADE AFTER THE ABOVE DATE. PLEASE MAIL A PHOTOCOPY OF EACH ENTRY (INCLUDE COPIES OF YELLOW TAGS OF ALL COMPONENT CHANGES) AND THIS CARD.						
NOTE: Speed up your report FAX your info (530) 226-9776						

1. This form will be on the front of the aircraft logbook to aid the pilot in determining the airworthiness of the aircraft.

2. The pilot must check this prior to each flight.

See Computerized Maintenance Program For Complete Listings, Inspection & Other Due Items	Next Due	Time Remaining	Constraint
Fill-Desiccant	05/31/08	10 Days	REPLACE:Every 30 Days
Fill-Nitrogen Purge	05/31/08	10 Days	PURGE:Every 30 Days
Clean Aircraft	06/13/08	23 Days	CLEAN:Every 30 Days
212 Tail Rotor Blade (AD 2008-10-03)	06/15/08	25 Days	INSPECT: Every 30 days.
100Hour Phase 1	07/07/08	47 Days	INSPECT:Every 24 cal. month
125Hour Phase 1	07/16/08	56 Days	INSPECT:Every 24 cal. month

See Computerized Maintenance Program For Complete Listings, Inspection & Other Due Items	Next Due	Time Remaining	Constraint
212 Tail Rotor Blade (AD 2008-10-03)	2142.5 TAT	15.5 Hours	INSPECT: Every 25 hrs.
212 Tail Rotor Yoke Assy. (AD 98-11-15)	2142.5 TAT	15.5 Hours	INSPECT: Every 25 hrs.
75Hour Phase 3	2150.3 TAT	23.3 Hours	INSPECT:Every 600 Hours
212 T/R CPC Coating (AD 2001-13-01)(C2)	2167.2 TAT	40.2 Hours	INSPECT: Every 100 hrs.
205 Loss of Tail Boom (AD 76-10-01)	2173.0 TAT	46.0 Hours	INSPECT: Every 50 hrs.
100Hour Phase 3	2175.3 TAT	48.3 Hours	INSPECT: Every 600 Hours

New AD / SB

New AD / SB

FireWatch Aviation Management Plan

Appendix #14

FireWatch Helicopter Minimum Equipment List

References: FSH 5709.16, Paragraph 46, Minimum Equipment Lists
FAR 91.205

Purpose: To establish the appropriate minimum aircraft equipment for VFR flight.

Applicability: All personnel performing duties with the Firewatch Program.

1. For VFR flight during the day the following equipment are required:
 - a. For the pilot station (Back Seat):
 - i. Airspeed indicator
 - ii. Altimeter
 - iii. Magnetic direction indicator.
 - iv. Engine N¹ gas producer tachometer
 - v. Engine N² power turbine tachometer
 - vi. Engine torque gauge
 - vii. Rotor tachometer
 - viii. Engine turbine gas temperature gauge
 - ix. Engine oil pressure gauge
 - x. Engine oil temperature gauge
 - xi. Main transmission oil pressure gauge
 - xii. Main transmission oil temperature gauge
 - xiii. Fuel gauge
 - b. An aviation red or white anti-collision light
 - c. Seat belt with metal-to-metal latching device for each occupant
 - d. Shoulder harness for each occupant
 - e. Emergency Locator Transmitter (ELT)
2. For VFR flight during the night
 - a. Equipment and instruments specified in paragraph 1, above.
 - b. Aviation position lights
 - c. One electric landing light
 - d. Adequate instrument lighting to observe instruments listed in paragraph 1, above.
 - e. Functional electrical generator, inverter and aircraft battery
 - f. Functional electrical circuit breakers for any electrical powered device required in paragraph 1, above.

FireWatch Aviation Management Plan

Appendix #15

FireWatch Instructor Pilots

- 1) Purpose: To establish Firewatch Instructor Pilot standards and identify personnel authorized to perform those duties.
- 2) Applicability: To all personnel performing duties with the Firewatch Program.
- 3) Firewatch Instructor Pilot Standards:
 - a) Will meet FSH 5709.16 Employee Pilot or Contract Pilot-in-Command minimum requirements.
 - b) Will be qualified in the Firewatch helicopter by attendance at the USFS pilot qualification course, or a US military, or civilian qualification course of equivalency.
 - c) Will be a FAA Certified Flight Instructor or have a US military equivalency qualification.
 - d) Will be recommended by the Helicopter Inspector Pilot and approved by the Regional Aviation Officer.
- 4) Personnel authorized to perform Firewatch Instructor Pilot duties:

<u>Name</u>	<u>Employer</u>
Greg Helsel	USDA Forest Service, Region 5
John Blumm	USDA Forest Service, Region 5
Morgan Mills	DynCorp International
John Liston	USDA Forest Service, Region 5

FireWatch Aviation Management Plan

Appendix #16

Front Seat Training Outline

Phase 1 – FireWatch Program Orientation / ATGS Role

Objective:

1. Be able to function as an ATGS in the Firewatch Cobra Platform.
2. Understand the output products, module staffing, interactions & responsibilities.
 - Orientation – Classroom / Hangar
 - Module staffing / interactions
 - Objectives / uses / responsibilities
 - Products / Missions
 - ATGS Duties
 - Cockpit Orientation
 - Pilot & ATGS safety / operations briefing
 - Radio / audio panel configuration / use
 - Avalex Screen / mouse/ keyboard orientation
 - Utilize Avalex mapping to: Enter and go to a Lat / Long
 - “Drop” a marker
 - Go to a marker
 - Go to an airport
 - Avalex mapping mission orientation

Phase 2 – 6 WIZ BANG MISSIONS

Phase 2 – Mapping Missions

Objective:

1. Be able to produce the raw data for a shape file utilizing the Avalex mapping systems
 2. Understand the role of the Firewatch Data Tech related to perimeter final products
 3. Work with the Firewatch Data Tech to produce a final perimeter product
- Ground Mapping Orientation (Hangar using “mouse”)
 - Perimeter mapping flight exercise
 - Integration with Data Tech to provide “final” product

Phase 3 – FLIR Controller / IR Orientation

Objective:

1. Utilize the Sapphire Flir Controller to operate the Sapphire Flir Ball.

FireWatch Aviation Management Plan

2. Be able to use the flir controls to distinguish between hot rocks and fire heat in the IR mode.
 3. Be able to set up the Controller for seamless transition between IR and Color Video mode.
 4. Be able to track, zoom and hold steady on an object.
- FLIR Ball controller use (ground w/ GPU)
 - Watch training / IR / Color video DVD's with trainer
 - Color Video operation
 - IR operation (ground.. sterno cans or MRE heaters on the hot ramp / asphalt)
 -

Phase 4 – Live Link Mission

Objective:

1. Setup a live link mission with module
 2. Reinforce Camera Controller training / use
- Van and Portable BMS viewer setup orientation (ground)
 - Mission Brief with module
 - Live Link flight exercise / Instructor at van for controller mission training.
 - IR / color video/ zooming/ transitions/ focus / gain. Etc...

Phase 5 – Digital Recorder (DR) Operation

Objective:

1. Use the DR control panel to build, transfer and delete digital recordings
 2. Understand DR mission objectives
- Watch completed mission specific Digital Recordings
 - DR Control Panel orientation (Ground hooked to GPU)
 - Build an operational usable Digital Recording (Ground) 3-5 minute “clips”.

Phase 6 – All Mission Exercise for Operational Signoff

Objective:

1. Incorporate all missions into a flight for final operational sign off.

Flight Exercise – final sign off – may be accomplished on incidents.

FireWatch Aviation Management Plan

Appendix #17

FireWatch Cobra Training Documentation

Date _____

Trainee / Position _____

Pilot _____ Location _____

❖ **Training Objectives:**

❖ **AAR / Debrief**

❖ **Left to accomplish:**

❖ **Training Completion Dates for left to accomplish list:**

Trainee _____

Trainer _____

Pilot _____

FireWatch Aviation Management Plan

Appendix #18

FireWatch Cobra ATGS Mission Checklist

Before Start – Co Pilot / Observer (ATGS) Station

COMPLETE WALK AROUND VISUAL PREFLIGHT
FROM COCKPIT, VISUALLY CHECK LEFT AMMO BAY DOOR LATCH'S TO
INSURE THE TWO ARE IN THE CLOSED POSITION (FLUSH)

- ELEC PWR EMERG switch – ON
- IDLE STOP RELEASE – OFF.
- EMERGENCY HYDR PUMP SWITCH – OFF
- LIGHT SWITCH – OFF
- ENGINE DE-ICE switch – OFF
- GOV switch-AUTO
- Avionics – off
- System flight instruments – Check
- Standby compass – full of fluid and deviation card current
- Seat belt and shoulder harness – Check
- 11. Map Light - OFF
- 12. Flir system Control Unit – **Power OFF**

CAUTION

Starting of aircraft engines while the Star SAFIRE III FLIR Unit is turned on can damage the system power input filters. Insure that the system is OFF prior to starting engines.

WARNING

The Laser Illuminator / Pointer is not eye safe from the aperture. It produces invisible laser radiation that can cause permanent loss of eyesight. Do not illuminate a living target. The use of optical instruments with this product will increase eye hazard. Do not illuminate a living target that may be using binoculars regardless of how far the target is from you. Infrared illumination produced by this laser will produce radiant energy that exceeds U.S. safety standards set by the Food and Drug Administration in 21CFR1040.10 and in ANSI Z136.1-1993

FireWatch Aviation Management Plan

General Preflight Front Seat

Avalex Moving Map

- Scandisk storage – available (4 minimum free of data)
- Mouse / Wire - stowed
- Keyboard in place – locked in or out
- Avalex Quick Key shortcut card – on board
- Mission Checklist on board

ATGS Startup Checklist

- Complete Before Start Co Pilot / Observer Checklist
- Cyclic – clear / SCAS release when prompted by pilot
- Flir Control Unit – stowed away from cyclic
- Pedals - free and clear

Pilot brief checklist – response

- Switch panel
- Radios off for startup
- Map Screen _ mission equipment – off for startup
- Altimeter – set

Sat Phone

- On shutdown – off

Radios

- PTT
 - Floor button
 - Cyclic
- Isolation Switch – Transmit Mode
- FM Radio toggles – normal position
- Quick Key Pad – Data position

Radios and Mission Equipment on Line

- When prompted by pilot (amperage)

FireWatch Aviation Management Plan

Map Startup

Jump Drive – Available

Power to Screen

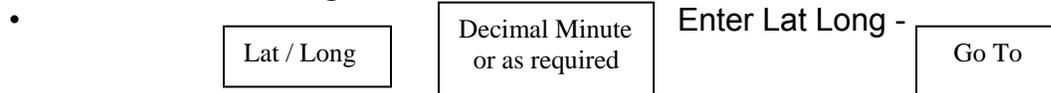
Map Key – push

Mouse or Tab key to Navigate screen

Go to =

Waypoints = variety of selections, **airports**, waypoints, etc

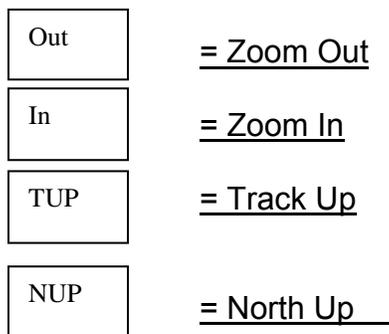
To enter **new Lat Long** select:



Lower right screen = Present position info

Lower left screen = Target position info

Left Lower Green Buttons =



Arrow keys on keyboard ←↑↓→ to move map to view a desired location

“8” key to return to moving map from stationary map

“9” key to go to target location

Dropping Markers

Select **“Mark”** with mouse from bottom map screen toolbar

Place cursor on desired location. Click mouse

Name marker (if desired)

Select marker icon type

Go to Marker

Select **“Marker”** with mouse from bottom map screen toolbar

Select **“Dynamic”** (this step 1st time only)

Highlight the desired marker & select **“GO TO”** to set as destination

Follow the blue line to destination

Mapping / Video – Flir Mission

Video / Flir first (1000' above ATGS) for fuel burn & FTA, Fire & other aircraft orientation

FireWatch Aviation Management Plan

MAPPING

“R” key on keyboard = start mapping feature / opens Perimeter Menu pop up
Select

Trail

Select obvious start point on the ground

At start point select

Create

Leave Perimeter Box /Menu open

Just prior to start point on straight line select

End
Perimeter

Save on Jump drive

Save

Name File (fire name) in pop up window
Note / write down acreage

Highlight file

OK

Close Perimeter Menu

Done

Center Fire perimeter on screen = Arrow keys on keyboard

Zoom in or out to desired = keyboard + or - keys

Save as jpg on jump drive =

Capture

Function / Alt / 4 = Close Map, Start for checking data on thumb drive
Start – Programs – Map Shortcut = Restart (Double Click) Avalex Map

To Erase perimeter from hard drive

“R” key for mapping feature / perimeter pop up menu
Highlight perimeter that you want to delete

Click on

Unload

Jump drive to GIS data technician for projection

FireWatch Aviation Management Plan

Data Video Recorder Operation

Display to Video 1

To Record:

- Turn knob to RECORD mode
 - Push play ► to start recording
 - Push pause ⏸ to interrupt recording
 - Push pause ⏸ to resume recording
- This mode records to the hard drive

End Recording

Turn knob to STOP

To Restart

- Use 'To Record' steps
 - Turn knob to REC
 - Push play ►
- This is the mode to create a separate recording/file

Transfer to DVD

In STOP Mode

- Push pause ⏸ for menu
 - Dbl arrow keys to navigate up or down ►► or ◀◀
- Select :

XFR / DELETE

Select:

Recordings

Will be listed by date

(File to record)

Transfer

- Wait till done
- Multiple files to transfer select

OK

Finalize DVD

- Select Pause ⏸ for menu
- Select

Finalize DVD

Menu top right

Accept

DVD will be in Finalize Mode

Data Video Recorder Operation (contd)

On Ground

- Screwdriver in right armrest box
- Unfasten DVD panel Zeus screws
- Eject DVD ▲
- Remove DVD

Replace w/ Blank DVD / close DVD

Close / RE- Zeus panel

FireWatch Aviation Management Plan

Key Controls IR/VIDEO Control Unit

Left to Right

FOV

Roll forward / back to Zoom
Push to Auto focus

Camera Selection

Roll to select camera
IR / Video

Gain / Contrast Control

Contrast - roll side to side
Gain – up / down
Auto Mode – push
Auto Enhanced Mode - push
Manual Mode – side to side after auto

Power Detent switch

On /Off

Slew (Turret (sp) Control)

Pan View ↔↕

Laser Rangefinder

Inhibitor key – Pilot Controlled (“Arm Laser Rangefinder”)

Focus

Manual Focus roll ↔

Inertial Point Heading Hold (IP/HT)

Push to Hold camera on heading
Push again to release

Aux Keys current settings

1 = Passive Geo Point
2 = Rate Aid
3 = NUC

Shutdown

Cage = 0-0
Stow = return camera to travel position (give
Power detent off

FireWatch Aviation Management Plan

IMAGE / MAP .JPG MISSION

Laser target heat or point of interest
Enter lat/long in Avalex Map screen
Drop marker target in Avelex map screen
Be sure map screen and video screen are in sync
Shift V in Map screen to display map [video split screen
In Video screen, Laser lock or geo point lock camera on target
Select  to save map and video image to jump drive

Switch camera to either IR or TV and repeat capture procedure
End product
 "Marked" map .jpg
 IR & Color image(s)

PRODUCT OUTPUT / NAMING DATA

Close Mapping Program
 Fn / Alt/ 4
Select
 My Computer
Open "E" drive (Jump Drive)
Create new folder
Name folder with "Firewatch Cobra" and Incident name with date
 Firewatch 507 or 509_ Ranch Incident_9_12_07
Open folder
Create as many new folders as required for each geographic area or point
of interest, naming folders for each geographic area or point of interest
 Hopper Mtn
 Bluff Camp Cabin
 Etc....
Drag or move map .jpg to the corresponding folder
Drag or move IR & Color jpg's to the corresponding folder
Each geographic or point of interest folder should contain 1 map jpg to
and as many corresponding color TV and IR images (.vjpg's) as required

FireWatch Aviation Management Plan

Perimeter Mapping w/ IR Camera (Morgan's Etch a Sketch)

Orient / adjust color / IR camera
Select perimeter start point on the ground
Geo point or Laser Lock start point
Set up Map Screen
Split Screen w/ video input (shift v)
Mouse Left Hand
Bring up Mapping Menu (R key)
Select

Camera

Break Geo point lock with Mode Slide switch
Hold Camera on Start Point
Select

Create Perimeter

Follow Perimeter with Camera Crosshairs
At end point of perimeter select

End Perimeter

Select

Save

Name File (fire name) in pop up window
Note / write down acreage

Highlight file

OK

Close Perimeter Menu

Done

Center Fire perimeter on screen = Arrow keys on keyboard
Zoom in or out to desired = keyboard + or - keys
Save as jpg on jump drive =

Capture

Center aircraft / return to moving display = " 8 " key on keyboard
Jump drive to data van technician for projection