



DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

Airspace Coordination De-Confliction Procedures Guide

Recommend Annual Update Prior to March 1st

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PURPOSE AND OBJECTIVE

The purpose of this plan/guide is to promote aviation safety by documenting and utilizing air space coordination procedures and air space de-confliction procedures. The guide will serve as a reference to the procedures and tactics available to the Division. It is essential that all personnel involved in flight planning and operations read, understand and implement the procedures and tactics contained in this guide.

REVIEW

This guide will normally be revised and maintained annually (prior to March 1) by the MNCC Assistant Center Manager - Aviation and reviewed annually by the Division's Aviation Safety Advisor.

INTRODUCTION

The Division of Forestry employs a variety of tactics to help de-conflict incident airspace.

Tactics to include:

A. Education of Incident Personnel Including:

- 1) Agency Personnel
- 2) Cooperating Agencies
- 3) MNICS Aviation Partners
- 4) Others

B. Education of General Aviators via:

- 1) Airport mailings
- 2) Posters
- 3) Airport directory
- 4) Notification to towers & airports adjacent to incidents
- 5) Other

C. Training of Division Personnel in the Areas of:

- 1) Temporary Flight Restrictions (TFRs)
- 2) Special Use Areas (SUAs)
- 3) Military Training Routes (MTRs)
- 4) Incident Aviation Management
- 5) Fire Traffic Areas (FTAs)
- 6) Radio Communication
- 7) Border Crossing Issues
- 8) Other

D. Establishing Division Procedures for:

- 1) Temporary Flight Restrictions (TFRs)
- 2) Military Training Routes (MTRs)
- 3) Military Operating Areas (MOAs)
- 4) Operating in Incident Airspace
- 5) Radio Communications
- 6) Border Crossings
- 7) Other

E. Improve Aerial Detection - Deconfliction via:

- 1) Increased use of VHF-AM radios
- 2) Improved coordination between Forestry Area Offices
- 3) Establishing detection route procedures
- 4) Aircraft/Altitude separation near borders
- 5) Pilot/observer training
- 6) Cockpit resource management

F. Collaboration With:

- 1) MNICS partners, such as
 - a. National Guard
 - b. State Patrol
 - c. Emergency Medical Services
 - d. Media
 - e. Civil Air Patrol
 - f. Coast Guard
 - g. Border Patrol
 - h. DNR Enforcement
 - i. Others
- 2) Federal Aviation Administration (FAA)
 - a. Flight Standard District Office (FSDO)
 - b. Flight Service Station (FSS)
 - c. Air Route Traffic Control Center (ARTCC)
- 3) Border Patrol, Grand Forks, Sector Headquarters
- 4) Other Military
- 5) Others

G. Enforcement of:

- 1) Temporary Flight Restrictions (TFRs)
- 2) Safety Procedures
- 3) Other

H. Analysis, Advisories and Modifications via:

- 1) Reporting (SAFECOMs)
- 2) Briefings
- 3) Alerts
- 4) Review of Policy/Procedures Guide
- 5) Guide Revisions
- 6) Other

BACKGROUND

Congress has charged the Federal Aviation Administration (FAA) with administering and managing the airspace, in the public interest, to ensure the safety of aircraft and the efficient utilization of airspace. Airspace is a limited natural resource with numerous potential conflicting demands. The primary focus in airspace coordination is mid-air collision avoidance. In the past several years, we have seen a marked increase in incident airspace conflicts; near mid-air collisions, intrusions into temporary flight restriction areas, etc. (See appendix B for documentation).

Airspace coordination is a shared responsibility of pilots, dispatchers, Air Tactical Group Supervisors, aviation personnel and management. It is the pilot's responsibility to be familiar with the airspace of the intended flight and to comply with all rules and regulations for flight through each type of airspace. Thorough understanding of the procedures in this guide can aid in the reduction of airspace conflict and can improve aviation safety within the National Airspace System (NAS).

CHAPTER I: SEE AND AVOID –

INCIDENT PERSONNEL SHOULD FOLLOW “SEE AND AVOID TECHNIQUES.”

Pilots, aviation managers, aircraft chiefs of party and flight crewmembers must understand that even with the implementation of procedures (TFRs, NOTAMs, etc.) in this guide, the ultimate assurance of collision avoidance rests with the pilot in command (PIC) maintaining the vigilance necessary to spot other aircraft and take necessary action. Flight crewmembers should remember they are not merely passengers, but observers as well, and should keep a constant watch for other aircraft whenever in flight. They should never assume the pilot sees another aircraft or aerial hazard.

CHAPTER II: COMMUNICATION PROCEDURES

INCIDENT PERSONNEL SHOULD KNOW, UNDERSTAND AND FOLLOW INCIDENT AIRSPACE COMMUNICATION PROCEDURES.

- **INITIAL RESPONSE TO AN INCIDENT-**

While enroute, all fixed wing and federal aircraft will flight follow with the MNCC Aviation Dispatch. MN DNR helicopters will flight follow with assigned tanker base until contact is made with the incident or other local dispatch center.

Do not assume you are the first or only aircraft in the vicinity of an incident. All aircraft, when within 12 miles of an incident should announce “in the blind”: aircraft identification, current altitude, location, and direction of travel. These are typically made on VHF-AM (Victor). The primary natural resource AM frequency is 122.925MHz and is utilized in the State of Minnesota for wildfire response involving helicopters and detection. All aircraft should monitor 122.925 while in the vicinity unless in controlled airspace or another frequency has been assigned—whether in-bound to that particular fire or not. Detection planes or “Air Attack” may or may not be over a fire before suppression aircraft arrive. Aircraft responding to a non-fire, “all-risk” emergency should announce “in the blind” on 123.100 and monitor 123.100.

Detection planes should respond on the AM frequency; however, another option would be to attempt contact on the appropriate agency FM frequency.

If an Air Tactical Group Supervisor (ATGS) is over the incident, they have the responsibility and authority to manage the airspace for participating aircraft, assign appropriate radio frequencies and request alternate frequencies when necessary. Airspace management is facilitated by all aircraft maintaining radio discipline:

- Prior to entering incident airspace (12 miles out), contact ATGS and identify your type of aircraft, call sign, general location from the incident and E.T.A. Request status of other aircraft on the incident and adhere to the Fire Traffic Area (FTA), see Appendix E.

NOTE: *DO NOT ENTER* incident airspace without prior approval from the ATGS or controlling aircraft. If contact cannot be established on the assigned VHF AM frequency or an agency FM frequency, try the “Air Guard Frequency” 168.625, Tone Tx 110.9. Air Tactical Group Supervisor (ATGS) are commonly referred to as “Air Attack”. Their call sign on an incident is often “Air Attack” followed by a number, i.e., Air Attack 1 or Air Attack 2, etc.

When departing the incident, all aircraft should confirm their intended flight path with Air Attack or other aircraft.

- **TRANSITION PHASE OR EXTENDED RESPONSE –**

In this phase an Air Tactical Group Supervisor is usually in place providing airspace coordination over an incident. In addition, an Air Operations Branch within the Incident Command System (ICS) may be utilized as part of an incident management team, facilitating aviation operations, assigning radio frequencies and determining the need for a TFR.

- **PROCEDURE FOR VHF-AM FREQUENCY CHANGE ON WILDFIRES –**

The VHF-AM frequency will be assigned by the MNCC Aviation Dispatch at the time of the initial request for fixed wing aircraft.

If the Air Tactical Group Supervisor (Air Attack) recognizes the need for an AM (Victor) frequency change or addition, the procedure is as follows:

1. Air Attack recognizes the need for a change in the VHF-AM frequency and contacts the MNCC Aviation Dispatch who will assign a new frequency and relay it to the Air Attack.
2. Air Attack notifies all aircraft on scene of the frequency change or addition and confirms change by commo check with all aircraft.
3. MNCC Aviation Dispatch contacts all tanker bases and the applicable helibases and informs them of the fire name, location, and AM frequency assignment.
4. When it is determined by Air Attack that the frequency is no longer required, MNCC Aviation Dispatch will inform tanker bases, helibases and local area/agency of frequency status.

- **“ALL RISK COMMUNICATION EFFORTS”**

The “All Risk” Aviation Operation Plan is designed to provide guidance for coordinating aviation assets from various agencies (law enforcement, DNR, EMS, Forest Service, Army National Guard, CAP, contractors, media, etc.) responding to any emergency situation. These guidelines are recommended for use when two or more aircraft are functioning at an incident and are extremely important to initiate immediately. There are three phases of an incident: initial response, transition, and extended response.

INITIAL RESPONSE PHASE

The initial VHF AM frequency for “All Risk” incidents is 123.100. Any aircraft arriving on the scene should adhere to the following standards:

Monitor VHF AM

Announce “in the blind” 5 miles from incident:

Tail number

Altitude

Direction of entry

First aircraft assumes responsibility for coordination, separation and safety. If other aircraft are on the scene, do not enter incident airspace until contact has been made with the Air Tactical Group Supervisor or the controlling aircraft. Any aircraft departing the incident should announce their

intended flight path from the incident. The “Plan” encourages the use of the Air Tactical Group Supervisor position.

All-risk phases and information below are recommendations based on successful all-risk incidents. They are not part of a designated plan.

TRANSITION PHASE

The transition phase has the incident going beyond “normal” or “usual” response. Some of the indicators that you are in the transition phase may include:

- Activity is escalating
- Multiple agencies are responding Media involvement
- Airspace coordination is more complex

The aviation assets should begin to be organized and managed under the ICS system. It is critical that the Air Tactical Group Supervisor is identified.

EXTENDED RESPONSE PHASE

Some of the indicators of the extended response phase:

- The incident has grown in complexity
- The incident is beyond the first operational period Air Tactical Group Supervisor is assigned Incident management team assigned or on order

All risk MNICS aviation activities include both “civil” and “public” operations. All aircraft operations are expected to comply with applicable sections of 14CFR (control of air traffic, use of air space, and aircraft registration) as well as owner agency’s policy.

A ground-based Air Operations Branch Director (AOBD) will often coordinate the aviation aspects of an extended aviation operation. Aircraft entering or departing the incident will normally contact the Air Tactical Group Supervisor (ATGS) for an incident briefing or check-in / check-out. The Air Tactical Group Supervisor should inform the incoming aircraft of: other aircraft, whether a TFR is in effect, the current altimeter setting and the frequencies to monitor at all times while operating within 5 miles of the incident.

• UNSAFE CONDITIONS:

All personnel have the responsibility to initiate action to stop any unsafe aviation operation. Anyone may refuse or curtail a flight or operation when an unsafe condition exists. Federal employees and Division of Forestry employees will normally utilize a “SAFECOM” to document any deviations of normal operation or safety concerns through each agency’s channels.

Aircraft and Pilots: Agency personnel may only use aircraft and pilots that are approved for use by their agency. For Federal fire agency employees, only those aircraft with current aircraft data cards

or letters of authorization may be used. Pilots are required to have a current pilot qualification card or letter of authorization before taking Federal fire agency employees as passengers. For non-Federal employees, each agency is responsible for determining approval of aircraft and pilots.

- **FIRE MUTUAL AID**

FM RADIO:

Fire Mutual Aid – (VFIRE23) 154.295 Tone 156.7 narrow band is the primary VHF-FM frequency used for coordination between fire departments and other agency responding ground forces.

ARMER RADIO:

Most counties in Minnesota are utilizing the ARMER (800 MHz) radio system. Initial contact with the county dispatcher and the incident commander should be made on the assigned 800 MHz talk group (likely an S-Tac) or on the Primary IC Zone Talkgroup.

DNR ground personnel will normally coordinate priorities and assignments with the incident commander, either face to face, on Fire Mutual Aid or by using 800 MHz radio communications.

AIR-GROUND RADIO:

Air-ground communication for tactical operations with DNR aircraft will normally be communicated on a DNR VHF-FM air-ground frequency. Tactical aircraft managers are encouraged to use the MN DNR Forestry designated air-ground frequency “DNR A/G 1” 151.340 Tone 110.9.

If initial contact cannot be made with aircraft, try utilizing the Air Guard frequency, 168.625, Tone Tx 110.9. Return to an air-to-ground or a tactical frequency as soon as possible to “free-up” the Air Guard frequency.

Refer to MN Aircraft VHF Frequency lists for complete frequency listings. A subset of frequencies are listed below.

AM FREQUENCIES

123.100	MNICS – AIR-AIR – ALL RISK FREQUENCY (call in 10 minutes out)
122.925	AIR-AIR & AIR-GROUND designated natural resources frequency
As Assigned	AIR-AIR – Fixed Wing Initial Attack
122.675	AIR-GROUND – Air Tanker Base Air-Ground-Ramp
126.200	TOWER AIR-AIR – CAMP RIPLEY – Miller Field
121.500	DESIGNATED DISTRESS FREQUENCY
243 and 406MHz	EMERGENCY LOCATOR TRANSMITTER (ELT)

FM FREQUENCIES

154.295	Tone 156.7	VFIRE23 (FIRE MUTUAL AID)
155.340	Tone Tx 156.7	VMED28 (EMS)
155.475	Tone Tx 156.7	VLAW31 (MINSEF)
151.340	Tone 110.9	DNR AIR/GROUND 1

159.300	Tone 110.9	DNR AIR/GROUND 2
172.375		DNR AIR/GROUND 3
166.6125		AIR/GROUND 03
168.1250		AIR/GROUND 19
168.3125		AIR/GROUND 51
169.1500		AIR/GROUND 72
159.2400	Tone 100.0	MN HELIBASE/TANKERBASE DECK/RAMP

CHAPTER III: TEMPORARY FLIGHT RESTRICTIONS (TFRs)

WHEN REQUESTED AND WHERE POSSIBLE AND APPROPRIATE, TFR's SHOULD BE IMPLEMENTED OVER INCIDENT AIRSPACE. REQUEST TFR's THROUGH MNCC AVIATION DISPATCH.

- **AUTHORITY**

The FAA is the only authority that can implement a TFR. The authority for agency personnel to request a TFR is found in 91.137 (a) (2).

- **PROCEDURE**

1. Determine the need for a TFR and/or deconfliction. This determination would likely originate with an Incident Commander, the ATGS, an aviation manager, or a dispatcher. The criteria for establishing the need may include:

Lengthy air operation is anticipated: from several hours to several days. Operations are in congested areas or near an airport.

There is a high potential for sightseer and/or media aircraft. Military training route is involved.

Special use airspace is involved.

Other considerations such as UAS operations.

2. MNCC Aviation Dispatch will normally:

- a. Plot the incident location on a map and verify the size of the TFR.

The standard circular dimensions are 5 nautical miles laterally from the center of the incident and 3000' MSL. A large TFR may be advisable, but the FAA is not compelled to grant the dimensions requested. Factors that may affect TFR size include:

Type and number of participating aircraft, which might mandate a higher, safe altitude for the ATGS.

Size, shape and rate of increase in the area of the incident (a non-circular TFR may be required).

Location of helibases, helispots and water sources.

Location of airports.

Other customary aviation activity in the area, including MTR(s), MOA(s), etc.

Safe entry and exit points for participating aircraft including UAS and the launch-recovery zone of large CWN UAS aircraft.

b. MNCC Aviation Dispatch helps requesting party complete the “Interagency Request for Temporary Flight Restriction” form.

c. MNCC Coordinator is notified of the request.

d. The Watch Supervisor at ARTCC is called **to confirm request** at:
651-463-5580 (24/7 watch desk)
1-800-677-6466

e. Email the Farmington Air Route Traffic Control Center the completed TFR form. Ask who you speak with above for the email they prefer.

f. Call Military Operations Officer for the 148th Fighter Squadron if the TFR is on or within 10 nautical miles of a MTR or is within a MOA or a SUA. Phone number is: **218-788-7370.**

g. Notify requesting party that TFR is in effect.

h. Close the TFR as soon as it is no longer needed.

3. MNCC Aviation Dispatch also notifies of other TFR’s in the area through the Aircraft Status Report.

- **TFR ENFORCEMENT**

To enforce a TFR violation, MNCC should gather the appropriate information (utilizing available personnel – local DNR, Enforcement Pilots, etc.) and report the violations to the local Flight Standards District Office (FSDO).

FAA: FSDO (612) 253-4400

M-F (0730-1600)

Fax: 612-253-4401

Minneapolis Flight Standards District

Minneapolis MN 55450

Alternate: (612) 253-4494
M-TH (0600-1630)

Mr. Darryl Anderson

Penalties for violating TFR(s):

- 1. Certificate Suspension – 30 – 180 days and/or remedial training thru the program safety manager at the Flight Standards District Office (FSDO). Training may be ground school or flight instruction at pilot's expense. If pilot does not complete training, suspension will take place.**
- 2. Certificate Revocation – Normally due to record falsification (ultra-lights have no certificates).**
- 3. Fines – Up to \$1,000.00 per violation.**

(See Appendix D for TFR Enforcement Documentation Example)

• TYPES OF TFR(s) –

A TFR (also known as a FDC NOTAM) is an area delineated for flight restrictions by the FAA for use by the requesting agency. Intrusions into a TFR may carry a penalty such as suspension of license. There are three kinds of TFR's that fall under FAR 91.137.

1. 14 CFR Section 91.137 (a) (1)

Restrictions issued under this FAR prohibit all flight in the designated area except those participating in hazard relief activities. This is the most restrictive of the TFR(s) and is rarely issued for wild land fire incidents. It is more commonly used for the following:

Toxic Gas Leaks
Volcano Eruptions
Nuclear Accident or Incident
Hijacking Incidents
Aircraft Accident Sites at the discretion of the FAA

2. 14 CFR Section 91.137 (a) (2) – To provide a safe environment for the operation of disaster relief aircraft. This is the most common of the TFR(s) being utilized by land management agencies that deal with wildland fires.

Our TFR(s) over our fires will more than likely be issued under this paragraph. Some of the common uses of this TFR are:

Wildland fires utilizing air resources
Earthquakes, floods, tornadoes, hurricanes, etc.
Aircraft accident sites

3. 14 CFR Section 91.137 (a) (3) – Issued to prevent unsafe congestion of sightseeing aircraft above an incident or event which may generate a high degree of public interest. This TFR is rarely used, except for some sporting events or accident sites. Agencies have attempted to get this type of TFR for prescribed burning and other management activities, but are rarely, if

ever, issued by the FAA.

- **AUTHORITY TO FLY INSIDE A TFR –**

Regulations on who can fly within a TFR vary by the TFR(s). The following standards apply:

1. 91.137 (a) (1) – is the most restrictive of the 91.137 series of TFR(s). No aircraft can operate within the TFR unless they are participating in hazard relief activities and are under the direction of the official in charge.
2. 91.137 (a) (2) – most commonly used TFR for wildland fire. Certain aircraft are allowed to fly within the TFR. They are:

Participating aircraft – aircraft under the direction of the official in charge.

Law Enforcement – may show up without prior notification. We continue to share frequency information and procedures to law enforcement with aviation assets.

Media aircraft carrying properly accredited news representatives. They must file a flight plan with the appropriate FAA or ATC facility specified in the TFR NOTAM. They must stay above the altitude used by the disaster relief aircraft, unless authorized by the Air Tactical Group Supervisor. We continue to share frequency information and procedures to the media as well.

Airport Traffic – TFR(s) do not close airports. VFR traffic is allowed inside the TFR if the flight is conducted directly to or from an airport. TFR(s) in or near airports are a red flag, requiring a heightened sense of alertness.

IFR Traffic – ATC approved IFR flight plans could be routed through a TFR.

3. 91.137 (a) (3) - Under this type of TFR, entry for non-participating aircraft are very similar to 91.137 (a) (2) - media, law enforcement, airport traffic, etc.

CHAPTER IV. INFORMATION AND EDUCATION

DNR Aviation Managers take an active role in reducing mid-air collisions and near misses through information and education as follows:

1. **Airport Mailings** - MIFC aviation personnel periodically mail informational materials to public airports in the state of Minnesota, in the areas that commonly have wildfire. Mailings may include such things as: posters, letters or notices.
2. **News Releases** – MIFC aviation personnel work with MNCC and DNR information personnel to issue news releases or alerts on social media regarding airspace safety when timely and appropriate.
3. **DOT Notices** - MIFC aviation personnel work with the D.O.T. – Division of Aeronautics to include incident airspace safety in their materials and handouts, such as the MN Airport Directory.
4. **Airport Notifications** - When possible and capable - Division personnel often notify adjacent airports and air traffic personnel regarding large aviation activity incidents.
5. **Pilot School Education** - MIFC aviation personnel are encouraged to work with schools and universities that train pilots, to include wild land fire and all risk incident airspace. Examples of schools are: Ely, Mankato, Crookston, Fargo, Inver Grove Heights, etc.
6. **Utilize FAA safety personnel** to help deliver our message: Primary contact is:

Kevin Morris 612-253-4418
FAA Safety Team Program Managers

(See Appendix C for Examples.)

CHAPTER V. SPECIAL USE AIRSPACE (SUA)

MNCC aviation dispatch will continue to be pro-active in de-conflicting airspace in “Special Use Airspace.”

1. MIFC aviation generally conducts an annual meeting with local military contacts for coordination purposes.
2. MNCC aviation dispatch, during fire season, receives MTR and MOA activity for the day, via e-mail from Duluth ANG or by reviewing the NOTAMs on the FAA website
3. DNR forestry flight crews are normally advised of MTR and MOA activity via the daily Aircraft Status Report.
4. If an incident impacts an MTR or MOA, the MNCC aviation desk contacts the military directly (or via ARTCC) to advise the military of the situation and requests an appropriate modification of military activity in the area – (perhaps a continuation of military flights at a higher altitude as opposed to a cessation/ceasing of all activity.)

It’s important to note that military aircraft operate in full compliance with the FAR(s) whenever possible, and generally utilize SUA(s) when mission needs dictate deviation from civil flight rules. Contact the designated coordinating authority, listed in AP/1B, to de-conflict incident operations in or near SUA(s).

Special use airspace is established by the FAA – usually at the request of civilian agencies or military branch. It’s a special designation alerting users to military activity, hazards, national security needs, and to segregate that activity from other airspace users to enhance safety. There are six different categories of SUA(s).

They are:

- a. Prohibited Areas (PA)
- b. Military Operations Areas (MOA)
- c. Restricted Areas (RA)
- d. Alert Areas (AA)
- e. Warning Areas (WA)
- f. Controlled Firing Areas (CFA)

Within Minnesota we have three categories of SUA(s) –

- **Prohibited Areas (PA)** – The Boundary Waters Canoe Area Wilderness (BWCAW) falls into this category. The controlling agency is the U.S. Forest Service and their contact is MNCC Operations Dispatch at **218-327- 4175**. The use of the airspace below 4,000’ MSL is restricted to aircraft that do not fall under one of the conditions that are outlined in the Executive Order (E.O. 10092, Dec. 17, 1949; 3 CFR 1949 Supp.)

(b) Emergency landing and rescue operations. The pilot of any aircraft landing within any of said areas for reasons of emergency or for conducting rescue operations, shall inform the Forest Supervisor within seven days after the termination of the emergency or the completion of the rescue operation as to the date, place, and duration of landing, and the type and registration number of the aircraft.

(c) Low flights. Any person making a flight within said airspace reservation for reasons of safety or for

conducting rescue operations shall inform the Forest Supervisor within seven days after the completion of the flight or the rescue operation as to the date, place, and duration of flight, and the type and registration number of the aircraft.

(d) Official flights. The provisions of §§ 294.2(b) and 294.2(c) do not apply to flights made for conducting or assisting in the conduct of official business of the United States, of the State of Minnesota or of Cook, St. Louis, or Lake Counties, Minnesota.

For example, you're a Helicopter Manager working in support of a large fire. There is a request for a search and rescue mission by the Cook County Sheriff to use your helicopter in the BWCAW. You are authorized for this and all other missions that fall under (d) *Official flights* - when "conducting official business of the government".

Contact must be made with the MNCC Aviation Dispatch to inform them of your mission, including aircraft type, Make and Model, N#, flight path, destination and nature of the flight so they can coordinate any airspace issues. MNCC Aviation Dispatch will inform MNCC Operations Dispatch.

Prohibited areas are charted on sectionals. They are identified by the letter P, followed by a number. Three PA(s) identify the BWCAW:

- P204 - east of the Echo Trail and west of the Gunflint Trail
 - P205 - west of the Echo Trail
 - P206 - east of the Gunflint Trail
-
- **Restricted Areas (RA)** - We have one restricted area within the State of Minnesota. Camp Ripley, which is located in Central Minnesota. The controlling agency is the U.S. Army. Contact is Miller Operations at Miller Field: **320-616-2780**; direct line **320-616-2779** (Airfield). No specific ceiling restrictions – depends on current firing range activity. Pilots and/or aircraft managers can contact Miller Field on **126.200**. For traversing the camp, aircraft may be vectored higher or sent around, depending on type of ordnance in use. In a critical situation (structures in imminent danger of wildfire), the quickest way for our resources to arrive is to traverse the camp. If an incident is within the camp itself, contact Miller Field on **126.200** for clearance into the airspace.

Restricted areas are charted on sectionals. They are identified by the letter R, followed by a number. Camp Ripley is R- 4301.

- **Military Operations Areas (MOAs)** - were established to contain certain military activities within geographic boundaries. In Minnesota, we have 3 MOA(s) – Beaver, Snoopy and Snoopy East (over Lake Superior). Civilian VFR and IFR flights are allowed within a MOA, even when the area is in use by the military. Clearance is not required; however, pilots need to recognize when they are flying an active MOA and should take appropriate action. MOA(s) have a defined floor and ceiling, which can range up to the floor of Class A airspace (18,000').

MOA(s) are charted on the sectionals and identified by their respective name. Military pilots are exempt from the FAR(s) when conducting training within an active MOA. Speeds can be in excess of 250 knots below 10,000 MSL (i.e., Beaver MOA can be below 400 feet AGL).

CHAPTER VI. MILITARY TRAINING ROUTES (MTR)

The MNCC Aviation Dispatch will receive communications for deconflicting airspace as it relates to military training routes via e-mail from Duluth ANG or by reviewing the NOTAMs on the FAA website. These communications will be revised every morning by 0830. MNCC Aviation Dispatch will enter them on the "Aircraft Status Report"

The daily Aircraft Status Report will normally advise Agency personnel of military training route activity. The Aircraft Status Report will normally be distributed daily when tactical aircraft are available for fire suppression.

These routes are provided for military training at speeds of more than 250 knots and at altitudes that range from the surface to 18,000'. Most operations are conducted well below 10,000' MSL. MTR(s) are depicted on sectionals with a solid gray line with a letter/number identifier. The solid gray line on the chart depicts the center line of the MTR. This can be misleading since the width of the route may not be uniform in reference to the line. Department of Defense publishes the handbook AP/1B, which provides a complete description of the MTR's, including hours of operation, geographical points of each segment, altitude limitations for each segment, route width, flight service stations within 100 nautical miles and more. The routes are most often designed for low level terrain following training missions.

Minnesota Military Training Routes (MTRs)

IR 605 – East flights from Beaver MOA to Snoopy MOA

IR 606 – West Flights from Snoopy MOA to Beaver MOA

VR 604 – East flights from near Lutsen – Swan River/Palisade – Malmo - Bruno – Holyoke and into Wisconsin

VR 607 – West flights from Wisconsin – Holyoke – Bruno – Malmo – Palisade – Swan River - Lutsen

CHAPTER VII. FIRE SUPPRESSION AIRCRAFT AND AIR TRAFFIC CONTROL

If a wildfire occurs within or adjacent to class B, C, or D airspace, and aerial firefighting resources are being utilized to suppress the fire, the following radio frequency management plan should be followed. All operations within Class B, C, and D airspace must be in accordance with FAR(s) 91.129 and 91.131.

AM (VICTOR) RADIO:

- **WITHOUT AIR ATTACK -**

All tactical aircraft must maintain communications with either Approach Control or Tower as directed by Approach at all times while in class B, C, or D airspace (FAR 91.131).

- **WITH AIR ATTACK –**

If requested by Air Attack and approved by the ATC, FAR 91.129 (b) allows for a deviation, which could allow the following scenario:

1. Air Attack would monitor and maintain communications with either Approach or Tower as directed by ATC. Air Attack Pilot would communicate/coordinate with ATC and tactical firefighting aircraft.
2. Tactical firefighting aircraft would communicate/coordinate with Air Attack on assigned frequency.
3. If above deviation from FAR(s) 91.129 and 91.131 are not requested and approved, all aircraft operating in class B, C and D airspace must maintain direct communications with ATC at all times.

MSP – ATCT 612-713-4010 (8-4:30 M-F)
 612-713-4050 (24/7)

Air Traffic Control Tower Mpls. Center 651-463-5580 (24/7)

Airspace Definitions

Class G - (uncontrolled airspace) that airspace not designated as Class A, B, C, D, or E.

Controlled Airspace – An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification. Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace. Controlled airspace in the United States is designated as follows:

Class A - Generally, that airspace from 18,000 feet MSL up to and including FL600, including the airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska. Unless otherwise authorized, all persons must operate their aircraft under IFR.

Class B - Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of IFR operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspace areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds."

Class C - Generally that airspace from the surface to 4,000 feet above the airport elevation (charted in MSQ surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a surface area with a 5NM radius, and an outer circle with a 1 ONM radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace.

Class D - Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted in MSQ surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to VFR aircraft.

Class E - Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Also in this class are Federal airways, airspace beginning at either 700 or 1,200 feet AGIL used to transition to/from the terminal or enroute environment, enroute domestic, and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 MSL over the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska. Class E airspace does not include the airspace 18,000 MSL or above.

CHAPTER VIII. AERIAL DETECTION DECONFLICTION

Airspace conflicts can develop when smokes are detected near or adjacent to DNR Area forestry or adjacent agency boundaries.

Detection aircraft from two or more Areas or agencies may respond to a common smoke while monitoring and transmitting on separate FM radio frequencies and are a serious threat for mid-air collisions.

DNR Area, Airtanker base and MNCC dispatchers play a significant role in reducing airspace conflicts between detection and other suppression aircraft. Fire Program Team leaders, dispatchers, pilots, aerial observers, ATGS's and MIFC aviation staff also play a role.

Division personnel can reduce the threat of mid-air collisions by utilizing the following techniques:

1. **Increased utilization of the AM radio required in detection contracts.** Too often the AM radio is an underutilized tool in reducing airspace conflicts. The aircraft AM radio can be used to increase communication between aircraft. Too often the AM radio of detection aircraft are tuned to an airport Unicom or other frequency.

Unless another frequency is being utilized, 122.925 is the common designated AM frequency for natural resources. Under most circumstances, detection aircraft while flying their route should monitor 122.925.

NOTE: Exceptions may exist when at or near airports or large incident activity.

2. Follow **FTA (Fire Traffic Area)** procedures and have detection aircraft announce "In the Blind" 12 miles or 7 minutes out when approaching a wildfire on VHF AM 122.925. Detection aircraft should announce location, call sign, altitude and direction of travel. Departures from the airspace should also be announced.
3. **Detection Route Discipline:** DNR Areas and Federal agencies should train, brief and re-brief detection pilots and aerial observers about the importance of detection route procedures.

DNR Areas and Federal agencies should set high standards for detection procedures. Detection aircraft should remain on their route until given permission to check out a smoke.

4. **Training of Detection Pilots and Observers:** Initial training and subsequent briefings need to include boundary fire detection procedures. Dispatchers, pilots, observers, Team Leaders and aviation personnel need to remain vigilant in training all detection personnel of the potential hazards and deconfliction procedures relating to fires near an adjacent area boundary.
5. **Crew Resource Management procedures** and training can improve communications and see and avoid procedures. Knowing, understanding and establishing pilot and observer duties can improve efficiency and safety. When observers are used, splitting the workload can improve the pilot's ability to communicate air to air and maintain situational awareness.
6. **Provide Daily Briefings.** Brief, re-brief and de-brief are all procedures which are important to re-enforce the policy, procedures and expectations of aerial detection personnel.
7. **Increased Adjacent Area and Adjacent Agency Coordination** needs to occur when a smoke has been detected near an Area or Agency boundary.

- A. Telephone or radio call to adjacent Area/Agency
 - 1. Determine who has aircraft responding
 - 2. Identify aircraft and call signs
 - 3. Agree on a common VHF FM frequency (VHF-AM 122.925)
 - 4. Notify pilots of FM frequency
 - 5. Notify pilots of other aircraft en route
 - 6. Advise pilots and observers to maintain vigilance
- B. Monitor adjacent Area and Agency aerial detection activity via Automated Flight Following.
- C. Consider altitude separation for each detection aircraft responding.
- D. Establish boundary procedures, train boundary procedures and brief all detection personnel on boundary procedures. Proper briefings and clear standard operating procedures can significantly reduce the risk.

CHAPTER IX. TEMPORARY AIR TRAFFIC SERVICES

If the need for temporary FAA flight control is needed; i.e., at a large incident with significant air traffic, a temporary tower or other temporary air traffic services will normally be requested via MNCC aviation dispatch. MNCC aviation dispatchers and MIFC aviation staff should use the agreement as reference (see pages 28-44). **There is no current agreement with the State of MN or FAA currently in place for temporary towers.**

FEDERAL REIMBURSABLE AGREEMENT

BETWEEN

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

AND

BUREAU OF LAND MANAGEMENT (BLM)

BUREAU OF INDIAN AFFAIRS (BIA)

FISH AND WILDLIFE SERVICE (FWS)

**NATIONAL PARK SERVICE (NPS)
OF THE
UNITED STATES DEPARTMENT OF THE INTERIOR**

**THE FOREST SERVICE (FS)
OF THE
UNITED STATES DEPARTMENT OF AGRICULTURE (USDA)**

**BLM Agreement No. TBD
BIA Agreement No. TBD
FWS Agreement No. TBD
NPS Agreement No. TBD
FS Agreement No. 18-IA-11132543-024
FAA Agreement No. AJT-OM-WSA-18-001890
for
AIR TRAFFIC CONTROL (ATC) SERVICES AND
TEMPORARY MOBILE AIRPORT TRAFFIC CONTROL TOWER (MATCT)**

WHEREAS, the Federal Aviation Administration (FAA) can furnish directly or by contract, material, supplies, equipment, and services which the other agencies of the Federal government including; **Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), Fish and Wildlife Service (FWS), National Park Service (NPS) of the United States Department of the Interior, and the Forest Service (FS) of the United States Department of Agriculture (USDA)** (Sponsor) require, have funds available for, and have determined should be obtained from the FAA;

WHEREAS, it has been determined that competition with the private sector for provision of such material, supplies, equipment, and services is minimal; the proposed activity will advance the FAA's mission; and the FAA has a unique capability that will be of benefit to the Sponsor while helping to advance the FAA's mission;

NOW THEREFORE, the FAA and the Sponsor mutually agree as follows:

ARTICLE 1. Parties & Introduction

Parties:

The Parties to this Agreement are the FAA and:

- Bureau of Land Management (BLM)
- Bureau of Indian Affairs (BIA)
- Fish and Wildlife Service (FWS)
- National Park Service (NPS) of the United States Department of the Interior
- Forest Service (FS) of the United States Department of Agriculture (USDA)

These Parties with hereinafter be referred to collectively as the “Wildland Fire Agencies”.

Introduction:

Fire management and suppression in the Nation’s wildland is an on-going concern to State and Federal Agencies and the American public. Critical to the success of managing and suppressing wildland fires is the cooperation that exists between the Bureau of Land Management, the Bureau of Indian Affairs, the Fish and Wildlife Service, the National Park Service, the USDA Forest Service, and the Federal Aviation Administration (FAA), Western Service Area (WSA). The WSA includes the states of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming.

This agreement will herein after refer to the Federal Aviation Administration as the “FAA,” and the federal Wildland Fire Management agencies will hereinafter be referred to collectively as the “Wildland Fire Agencies.”

The Wildland Fire Agencies are responsible for the stewardship and protection of lands owned or held in trust by the United States or under the jurisdiction of state agencies. A major wildland fire frequently requires the use of a strategically situated uncontrolled airport or site to serve as the staging area for aerial support activities. Additionally, mass deployment of personnel, supplies, and equipment by large numbers of aircraft congests airspace at the airport in use. Due to the immediate increase of air traffic density at an uncontrolled airport, the Wildland Fire Agencies recognize the temporary need for Air Traffic Control (ATC) services provided by the FAA. The Wildland Fire Agencies agree to enter into an agreement with the FAA to provide a Mobile Airport Traffic Control Tower (MATCT) and air traffic control services on short notice.

The FAA is legally mandated to honor its commitment to keep the National Airspace System (NAS) operating safely and efficiently. In accordance with this mandate, the FAA will make a commitment to provide air traffic control services when requested by the Wildland Fire Agencies under the terms of this agreement. The Wildland Fire Agencies recognize this mandated function of the FAA and the critical importance of the agency’s role in wildland fire management.

ARTICLE 2. Type of Agreement

This Agreement is an Interagency Agreement authorized as specified in Article 13.

ARTICLE 3. Scope

- A. The purpose of this Agreement between the FAA and the Sponsor is to provide a Mobile Airport Traffic Control Tower (MATCT) and air traffic control services to support wildland fire management and suppression efforts.

The objectives of this Agreement are:

1. Identify those services to be exchanged between the FAA and Wildland Fire Agencies
2. Continue and maintain interagency relationships
3. Define roles, responsibilities and fiscal processes of the FAA and the Wildland Fire Agencies

Therefore, this agreement is titled:

FAA MATCT and ATC Services Supporting Wildland Firefighting

The following paragraphs list the responsibilities and activities associated with requesting and supporting FAA Mobile Airport Traffic Control Tower (MATCT) and air traffic control services. The list is not all-inclusive but is meant to provide the overall scope of products, services and activities exchanged or requested by the respective agencies. All services undertaken by the FAA and Wildland Fire Agencies under this agreement are subject to the availability of people, equipment and appropriated funds.

- B. The FAA will perform the following activities:

1. Provide air traffic control services to support the Wildland Fire Agencies' management efforts. Services are subject to the availability of qualified FAA personnel needed at the time of requested service.
2. Provide an FAA Mobile Airport Traffic Control Tower (MATCT) and/or other necessary equipment in support of the requested services. FAA personnel will transport, assemble, disassemble, and maintain the FAA MATCT. FAA equipment is subject to availability at the time of requested service.
3. Provide adequate staffing of certified air traffic control and airway transportation system specialists.
4. Provide air traffic control services for aircraft operating at the staging airport or heliport.
5. Provide radio frequencies for use in the service area.

6. Ensure the appropriate Notice to Airmen (NOTAMs) are issued and cancelled for the airport or heliport.
 7. Retain the prerogative to terminate all or any part of the temporary airport traffic control services provided to the Wildland Fire Agencies should the FAA determine a requirement of higher priority dictating the recall of all or a portion of its personnel and/or traffic control equipment.
 8. Provide a point of contact (POC) for requesting the services within this agreement. The FAA Northwest Mountain (ANM) Cornerstone Regional Operations Center (ROC) is the WSA POC for temporary tower deployment. Contact information is listed in Appendix A of this document. The ANM ROC is available 24 hours continuously and will be responsible for initiating internal FAA coordination for temporary tower deployment.
- C. The Sponsor will perform the following activities:
1. Submit the following to request the MATCT and air traffic control services:
 - a. A Resource Order to the Geographical Area Coordination Centers (GACC) to initiate and terminate temporary air traffic services. The GACC will notify the FAA ANM ROC. Procedures for on-site support of FAA air traffic control services can be viewed in the Interagency NWCG Standards for Airspace Coordination in Chapter 11 located at:
<https://www.nwcg.gov/publications>
 - b. A Temporary Tower Request form completed and forwarded to the FAA in addition to the Resource Order. The form is located in Chapter 11 of the NWCG Standards for Airspace Coordination.
 2. Provide the following operational support associated with on-site air traffic control support:
 - a. Provide support equipment: i.e. binoculars, anemometer, compass, weather equipment (wind/temperature/barometric pressure, etc.), wind sock, 24 hour clocks, and other equipment as necessary. The equipment checklist is available in Chapter 11 of the NWCG Standards for Airspace Coordination.
 - b. Provide utility hook-ups or engine generator (EG) fuel at Wildland Fire Agencies cost, or reimburse the FAA for the EG fuel costs for the temporary tower.
 3. Provide the following logistical support associated with on-site air traffic control support:
 - a. Restroom facilities for personnel on-duty at the temporary tower site.

- b. Shelter from the elements to reduce fatigue and improve safety conditions while the FAA personnel are working. Consider providing a heliport or airbase operations trailer when available.
 - c. On-site safety-related instruction and reasonable protection to FAA personnel assigned to temporary towers in fire areas.
 - d. Cellular service or wifi (if available)
 - e. Copy and scanning services either at the heliport, airport or incident base.
4. Reimburse the FAA for the following activities associated with on-site air traffic control support:
- a. Costs associated with responsibilities and activities the FAA provides in Article 3, paragraph B of this agreement.
 - b. Costs incurred by FAA duty locations related specifically to providing the requested services under this agreement.
 - c. Costs above base salary to include overtime incurred by the FAA personnel.
 - d. Costs for FAA Technical Operations logistical support equipment and service to ensure initial and sustained ATC operations for the duration of the request.
 - e. Costs for replacement equipment or equipment parts that become damaged or fail due to on-site incident conditions.
 - f. All travel costs and lodging expenses as consistent with the policies in the Interagency Incident Business Management Handbook for federal employees found at <https://www.nwccg.gov/publications>. Rental vehicles, or privately owned vehicle (POV) mileage are authorized for FAA personnel due to the requirement to transport a substantial amount of equipment in order to perform on-site duties.
 - g. Miscellaneous office supplies and equipment necessary to accomplish on-site support, as appropriate and identified in Chapter 11 of the NWCCG Standards for Airspace Coordination.

ARTICLE 4. Points of Contact – See Appendix A

ARTICLE 5. Non-Interference with Operations – Not Applicable

ARTICLE 6. Property Transfer – Not Applicable

ARTICLE 7. Estimated Costs

The estimated FAA costs associated with this Agreement are as follows:

FY 2020 – October 1, 2019 through September 30, 2020 \$1,200,000
FY 2021 – October 1, 2020 through September 30, 2021 \$1,200,000
FY 2022 – October 1, 2021 through September 30, 2022 \$1,200,000
FY 2023 – October 1, 2022 through September 30, 2023 \$1,200,000
FY 2024 – October 1, 2023 through September 30, 2024 \$1,200,000

Agreement Total – \$6,000,000

ARTICLE 8. Period of Agreement and Effective Date

Provided this agreement is signed prior to October 1, 2019, this agreement will become effective October 1, 2019. If the agreement is not signed prior to October 1, 2019, the effective date of this agreement is the date of the last signature. This Agreement is considered complete when the final invoice is provided to the Sponsor and a refund is sent or payment is received as provided for in Article 9, Section A of this Agreement. This agreement will not extend beyond September 30, 2024.

ARTICLE 9. Reimbursement and Accounting Arrangements

- A. Billing and collection procedures will follow the Intra-Governmental Payment and Collection (IPAC) system process.
- B. Wildland Fire Suppression Activities: Obligation of funds and reimbursement of expenditures under this subsection are under the Economy Act (31 U.S.C. 1501). Total reimbursable costs are estimated at \$1,200,000.00 per fiscal year. In the event this amount is insufficient for a particular fiscal year, this Agreement may be modified to increase the amount of funding, subject to the availability of funds. This Agreement is automatically implemented by reference into any Resource Order that is issued under it, constituting a binding obligation. The Wildland Fire Agencies will take appropriate steps to ensure the funds will be available when the obligations are recorded. The recording of the obligations will occur upon the receipt of the billing/expenditures invoice by the applicable Wildland Fire Agency from the FAA. The billing invoice, inclusive of copies of this Agreement or reference to its applicable document number(s), the Resource Order(s) copy, and expenditure documentation, will define the specific services, supplied goods and costs for each order, and subsequent obligation and payment by the applicable jurisdictional Wildland Fire Agency.
 - 1. The FAA will request reimbursement payments for suppression-related activities by submitting billing invoices, a copy of the Resource Orders that defined the requested services and goods, and the expenditure back-up documentation to the responsible jurisdictional Wildland Fire Agency. The FAA will charge an indirect/administrative overhead rate commensurate with their annual approved rate on all invoiced charges. The following information is required for payment requests:

- a. The fire name, jurisdictional unit, and incident number (this information is on the copy of the Resource Order).
 - b. Applicable support documentation requirements, e.g., copy of FAA's expense spreadsheet, and required agency data elements.
 - c. A copy of this Agreement complete with signatures, or the agency's agreement document number for subsequent billings.
 - d. Identification of FAA's financial contact (see Appendix A).
 - e. The FAA will submit Intra-government Payment and Collection (IPAC) billings, to the appropriate payment center, within ninety (90) days of completion of service.
2. It is the responsibility of the requesting agency/office to develop and process a unilaterally signed funding document (containing the necessary elements of a U.S. Government funding document), or as otherwise authorized through the individual agencies' policies, to obligate funds and provide a signed/executed original of the funding document to the FAA Contracting Officer. The funding document should list the following elements:
- a. Department
 - b. Agency
 - c. Office
 - d. Obligation number
 - e. Agency Locator Code (ALC)
 - f. Data Universal Numbering Sys. (DUNS)
 - g. Tax Identification number (TIN)
 - h. Treasury Appropriation Funding Symbol (TAFS)
 - i. Trading Partner Code
 - j. Accounting Classification
 - k. POC information for the Finance POC as well as the Program

Note: DOT form 2300 1a is an acceptable form to capture these elements.

It is also the responsibility of the requesting agency/office to:

- a. Conduct any required verification of costs, authorization of expenditures and reconciliation of payment.
- b. Provide the document number of the funding obligation, required agency data elements and billing instructions to the FAA office that provided the service.
- c. Provide information to FAA regarding which payment center will process the billings.

- C. The Reimbursable Receipt Team is identified by the FAA as the billing office for this Agreement. The preferred method of payment for this agreement is via Pay.Gov. The sponsor can use a check or credit card to provide funding in this manner and receipt-processing time is typically within 3 working days. Alternatively, the sponsor can email a funding document to the Contracting Officer or Administrative point of contact in Article 4 of this agreement or mail the payment to the address shown below. When submitting funding by mail, the Sponsor must include a copy of the executed Agreement and the full advance payment. All payments mailed to the FAA must include the Agreement number, Agreement name, Sponsor name, and project location. Payments submitted by mail are subject to receipt-processing delay of up to 10 working days.

FAA payment remittance address using USPS or overnight method is:

Federal Aviation Administration
Reimbursable Receipts Team
800 Independence Ave S.W.
Attn: Rm 612
Washington D.C. 20591
Telephone: (202) 267-1307

- D. The Project Sponsor Accounting Point of Contact identified in **Appendix A**; the financial office to which the FAA will render the final bill or refund for the project costs incurred.
- E. The cost estimates contained in Article 7 expect to be the maximum costs associated with this Agreement. The agreements estimated costs may be amended to recover the FAA's actual costs. If during the course of this Agreement actual costs expect to exceed the estimated costs, the FAA will notify the Sponsor immediately. The FAA will also provide the Sponsor an amendment to the Agreement, which will include the FAA's additional costs. Work identified in the amendment cannot start until receipt of a fully executed amended agreement and funding document. In addition, in the event that a contractor performing work pursuant to the scope of this Agreement brings a claim against the FAA and the FAA incurs additional costs, as a result of the claim, the Sponsor agrees to reimburse the FAA for the additional costs incurred whether or not a final bill or a refund has been sent.

ARTICLE 10. Changes and Amendments

Changes and/or amendments to this Agreement will be formalized by an appropriate written amendment that will outline in detail the exact nature of the change. Any amendment to this Agreement will be executed in writing and signed by the authorized representative of each party. The BLM is designated as the agency responsible for all administrative oversight and preparation of modifications to this agreement. The parties signing this Agreement and any subsequent amendment(s) represent that each has the authority to execute the same on behalf of their respective organizations. No oral statement by any person will be interpreted as an amendment or otherwise affecting the

terms of the Agreement. Any party to this Agreement may request that it be amended, whereupon the parties will consult to consider such amendments. The amendment(s) shall not take effect until documented and signed by authorized signatories for the agencies.

ARTICLE 11. Termination

Any signatory may terminate their participation in this Agreement by written notice to all other signatories at any time before the date of expiration upon thirty (30) days written notice of such termination. The remaining signatories may continue the provisions of this Agreement as long as the FAA remains a signatory.

Nothing herein is intended to conflict with current DOT, DOT/FAA, USDA or DOI directives. If the terms of this Agreement are inconsistent with existing directives of either of the agencies entering into this Agreement, then those portions of the Agreement that are determined to be inconsistent shall be invalid but the remaining terms and conditions not affected by the inconsistency shall remain in full force and effect. At the first opportunity for review of the Agreement, all necessary changes will be accomplished either by an amendment to this Agreement or by entering into a new agreement, whichever is deemed expedient to the interest of all Parties.

ARTICLE 12. Order of Precedence

If attachments are included in this Agreement and in the event of any inconsistency between the attachment and the terms of this Agreement, the inconsistency will be resolved by giving preference in the following order:

- A. This Agreement
- B. The attachments

ARTICLE 13. Legal Authority

This Agreement is entered into under the authority of;

- The Federal Aviation Act of 1958, 49 U.S.C. § 106(l) and 106(m), and 31 U.S.C. § 1535.
- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.),
- National Park Service Organic Act of August 1916 (16 U.S.C. 1)
- National Wildlife Refuge Administration Act of June 27, 1998 (16 U.S.C. 668ddd)
- National Indian Forest Resources Management Act of 1990 (25 U.S.C. 3101 et seq.)
- National Forest Management Act of 1976, as amended (16 U.S.C. 1600-1614) 49 U.S.C. 106 (l) and (m)

ARTICLE 14. Disputes

Should disagreements arise on the interpretation of the provisions of this agreement or amendments and/or revisions thereto, that cannot be resolved at the operating level, the area(s) of disagreement shall be stated in writing by each party and presented to the other party for consideration. If agreement or interpretation is not reached within 30 days, the parties shall forward the written presentation of the disagreement to respective higher officials for appropriate resolution.

If a dispute related to funding remains unresolved for more than 30 calendar days after the parties have engaged in an escalation of the dispute, disputes will be resolved in accordance with instructions provided in the Treasury Financial Manual (TFM) Volume I, Part 2, Chapter 4700, Appendix 10.

ARTICLE 15. Warranties

The FAA makes no express or implied warranties as to any matter arising under this Agreement, or as to the ownership, merchantability, or fitness for a particular purpose of any property, including any equipment, device, or software that may be provided under this Agreement.

ARTICLE 16. Availability of Appropriated Funds

The signatory agencies enter into this Agreement under the authority of the Economy Act (31 U.S.C.1535); and their respective organic and appropriation acts.

The ability of the parties to carry out their responsibilities under this Agreement is subject to their respective funding procedures and the availability of appropriated funds. Should any party encounter budgetary shortfalls that may affect the activities to be carried out under this Agreement, that party will provide timely notification to the other party in writing.

The signatory agencies recognize that, given the current administrative process for payments for fire suppression activities, it is not feasible to obligate the full amount of funds that may be required pursuant to this Agreement, because this Agreement does not constitute a binding obligation under 31 U.S.C. 1501 and since it cannot anticipate the specific goods or services for which payment will be requested, the individual payment amounts, or the responsible jurisdictional wildland fire management agency in each future case. This information can only be provided by Resource Orders executed when the goods or services are requested. At the same time, the signatory agencies recognize that Resource Orders are insufficient to constitute a binding obligation under the statute because there is no evidence of intent to be bound, no authorized signatures are present, and no legal authorities are cited, however, these requirements are satisfied by this Agreement. The two documents, when taken together, contain all the elements required for a contingent liability obligation under the statute. Hence, the signatory agencies agree that this Agreement shall automatically be incorporated by reference into any Resource Orders issued under it for air traffic control services and products, and that an obligation of funds will occur by the responsible agency at the time the FAA presents a

copy of this Agreement and the Resource Orders for payment.

ARTICLE 17. Reserved

ARTICLE 18. Reserved

ARTICLE 19. Protection of Information

The parties agree that they will take appropriate measures to identify and protect proprietary, privileged, or otherwise confidential information that may come into their possession as a result of this Agreement.

ARTICLE 20. Security

In the event that the security office determines that the security requirements under FAA Order 1600.72A applies to work under this Agreement, the FAA is responsible for ensuring that security requirements, including compliance with AMS clause 3.14-2, Contractor Personnel Suitability Requirements are met.

ARTICLE 21. Entire Agreement


This document is the entire Agreement of the parties, who accept the terms of this Agreement as shown by their signatures below. In the event the parties duly execute any amendment to this Agreement, the terms of such amendment will supersede the terms of this Agreement to the extent of any inconsistency. Each party acknowledges participation in the negotiations and drafting of this Agreement and any amendments thereto, and, accordingly that this Agreement will not be construed more stringently against one party than against the other. If this Agreement is not executed by the Sponsor within 120 calendar days after the FAA transmits it to the Sponsor, the terms contained and set forth in this Agreement shall be null and void

AGREED:

Clark Desing, Director	Date	Bradley K. Logan, Contracting Officer Acquisitions	Date
Western Service Center Department of Transportation, Federal Aviation Administration		Western Service Center Department of Transportation, Federal Aviation Administration	

Danielle Bohn, Agreements Specialist	Date	Shawna Legarza, Director	Date
Acquisition Management, Fire & Aviation Business Branch Department of Agriculture, Forest Service		Fire and Aviation Management Dept. of Agriculture, Forest Service	

DIANE BARKER

 Digitally signed by DIANE BARKER
Date: 2019.02.19 11:48:49 -07'00'

Diane Barker, Contracting Officer	Date	Robin White, Administrative Officer	Date
National Interagency Fire Center Dept. of Interior, Bureau of Land Management		Department of Interior, Bureau of Indian Affairs	


William Kaage, Division Chief

Date

Deborah Bidaburi,
Administrative Branch Chief,
acting
Fire and Aviation Management
Dept. of Interior, National Park
Service

Date

Fire and Aviation Management
Dept. of Interior, National Park
Service



3/29/19
Date

Chris Wilcox, Chief
Branch of Fire Management
Dept. of Interior, Fish and
Wildlife Service

APPENDIX A

The Points of Contact are responsible for coordinating the current year operations and determine necessary changes, an annual review of the currency and adequacy of this Agreement among the signatories. Changes to the Points of Contact can be made by written notification to the participating agencies.

Federal Aviation Administration (FAA)

Agreement/Contracting POC

Acquisitions (AAQ-520)
Attn: Brad Logan
10101 Hillwood Pkwy
Fort Worth, TX 76177
Telephone: (817) 222-4395
Email: brad.logan@faa.gov

Accounting POC

FAA Mike Monroney Aeronautical Center
AMK-322, Reimbursable Receipt Team
6500 S. MacArthur Blvd.
Oklahoma City, OK 76169
Telephone: (405) 954-3771

FAA Regional Operations Center

FAA Northwest Mountain
Regional Operations Center (ROC)
24 x 7 Contact Point
Telephone: (206) 231-2089
Email: 9-ANM-ROC@faa.gov

FAA Operations Support Group

Byron Chew, Team Manager
2200 S. 216th St
Des Moines, WA 98198
Telephone: (206) 231-2223
Email: byron.chew@faa.gov

FAA Reimbursable Agreement Planner

Andrew Edstrom, Lead Planner
WSC Planning & Requirements Group
2200 S. 216th St
Des Moines, WA 98198
Telephone: (206) 231-2841
Email: andrew.edstrom@faa.gov

Forest Service (FS)

Agreement/Contracting POC

USDA, Forest Service
Acquisition Management
Attn: Danielle Bohn
3833 S. Development Ave
Boise, ID 83705
Telephone: (208) 387-5616
Email: danielledbohn@fs.fed.us

Accounting POC

USDA, Forest Service
Albuquerque Service Center
Attn: Incident Finance Branch
5141 Masthead Street
Albuquerque, NM 87109
Telephone: (877) 372-7248
Email: asc_acct_ops@fs.fed.us

Bureau of Indian Affairs (BIA)

Agreement/Contracting POC
DOI, Bureau of Indian Affairs
Division of Forestry & Wildland
Fire Management
Attn: Robin White
3833 South Development Ave
Boise, ID 83705
Telephone: (208) 387-5463
Email: robin.white@bia.gov

Accounting POC
DOI, Bureau of Indian Affairs
Branch of Wildlife Fire
Management
Attn: Rachael Larson
3833 South Development Ave
Boise, ID 83705
Telephone: (208) 387-5696
Email: Rachael.larson@bia.gov

Bureau of Land Management (BLM)

Agreement/Contracting POC
DOI, Bureau of Land Management
National Interagency Fire Center
Attn: Mindi Paulson
3833 S. Development Ave
Boise, ID 83705
Telephone: (208) 387-5544
Email: mpaulson@blm.gov

Accounting POC
DOI, Bureau of Land Management
National Interagency Fire Center
Attn: Casey O'Connell
3833 S. Development Ave
Boise, ID 83705
Telephone: (208) 387-5588
Email: coconnel@blm.gov

Fish and Wildlife Service (FWS)

Agreement/Contracting POC
U.S. Fish and Wildlife Service
Branch of Fire Management
Attn: Chris Wilcox, Chief
3833 S. Development Ave
Boise, ID 83705
Telephone: (208) 387-5599
Email: chris_wilcox@fws.gov

Accounting POC
U.S. Fish and Wildlife Service
Administrative Officer
Attn: Reah Reedy
3833 S. Development Ave
Boise, ID 83705
Telephone: (208) 387-5736
Email: reah_reedy@fws.gov

National Park Service (NPS)

Agreement/Contracting POC
DOI, National Park Service
Fire and Aviation Management
Attn: William Kaage, Division Chief
Chief 3833 S. Development Ave
Boise, ID 83705
Telephone: (208) 387-5216
Email: william_kaage@nps.gov

Accounting POC
DOI, National Park Service
Administration Division
Attn: Deborah Bidaburu,
3833 S. Development Ave
Boise, ID 83705
Telephone: (208) 387-5203
Email: deborah_bidaburu@nps.gov

CHAPTER X. UTILITY / RIGHT OF WAY DECONFLICTION PROCEDURES

Gas and oil transmission lines, other utility ‘right of way’ lines all routinely do aerial surveillance of their respective lines.

Aerial recon consists of both rotor and fixed wing traffic as well as unmanned aerial systems. They operate at low level, do orbits over suspect areas, and can travel in any direction. Use due diligence in keeping a watchful eye while operating within these utility 'right of ways'. Contact appropriate utility companies for any information they may have in regards to flight activity, etc. Phone numbers are often times posted on mile markers within the 'right of ways'.

When conducting operations within Utility companies ‘right of way’ lines, the following procedures should be adhered to:

- When establishing a landing area or a base for operation, ownership of land should be determined and permission acquired prior to use of the property. The land could be USFS, State of Minnesota, County land, Industrial land or privately held.
- Appropriate utility companies should then be contacted for any flight information they may have on utility recons.
- Items to consider:
 - Where aircraft is based or flying out of.
 - Any appropriate frequency information.
 - Appropriate Unicom frequency.

On any visuals of aircraft, contact should be attempted utilizing the above information.

Enbridge Energy Company: 1-800-858-5253 (24/7 Emergency Line)

TransCanada / Great Lakes Gas Transmission Company: 1-800-447-8066 (24/7)

Superior WI office number: 715-394-1400 (Glenda)

CHAPTER XI. UNMANNED AIRCRAFT SYSTEMS (UAS) and MODEL AIRCRAFT OPERATIONS

UAS refers to the 3 elements that make up the operational system; the vehicle or aircraft, the payload (camera, sensor, etc.) and the ground control system (controller). Designations such as Remotely Operated Aircraft (ROA), Unmanned Aerial Vehicles (UAV), Remotely Piloted Aircraft (RPA), drones, etc. were used in the past. The actual flying aircraft may still be called UAV, ROA RPA, drone, etc. by the general public, operators and users.

UAS have several functions in Civilian Airspace throughout the Nation, some of the functions are: law enforcement, homeland security, firefighting, weather prediction, tracking missions, agriculture information gathering, insect/disease detection and observation. Commercial companies are exploring and implementing a wide variety of applications that were unimagined just a decade ago.

Public entities operating UAS in civilian airspace are required to operate under 14 CFR Part 107 regulations or have a Certificate of Authorization (COA) issued by the FAA. The COA requires the operator to detail through an operational plan including how they will de-conflict with civil aircraft. **The primary method for public entities of de-confliction is the requesting and granting of a Notice to Airman (Notam).**

Not all Law Enforcement or Military UAS operations are required to file a Notam and should de-conflict airspace with the following methods:

- | | |
|------------------------|---|
| 1. Altitude Separation | 4. Ground Control with on board cameras |
| 2. Notice via TFR | 5. Automated TCAS |
| 3. Chase Aircraft | 6. Or other |

UAS in Minnesota

Border Patrol

The primary UAS operating in the state originates in Grand Forks, ND from the Air Force Base and is operated by the US Customs and Border Protection Agencies. The function of this UAS is to patrol the U.S. border with Canada. The **operating altitude** for this aircraft is between **19,000** and **28,000 feet**. The operational effectiveness of this UAS is lost below 19,000 feet. So the only time that the UAS would be in our common altitude operating areas is upon takeoff and landing.

Contact Information:

US Customs and Border Protection Agencies

Christopher T. Bacon

701-747-8116 (primary number to use)

(701)330-9027 cell

(701)747-8114 office

Christopher.t.bacon@cbp.dhs.gov

Border Patrol Director

AJ Venson

701-330-9858 cell

Roseau County

Northland College in Thief River Falls also has a training program for UAS users. The program trains students to interpret digital information on agricultural and forest landscapes. This program is authorized to operate in Roseau County. The UAS crew will consist of a two person team (pilot and visual observer) and a hand launched UAS. In accordance with the Operational Plan, the Pilot will be within 1.5 miles of the UAS, while the visual observer should be within .5 miles of the UAS. The take-off and landing site will be near the site they are to fly, with a belly landing of the UAS most likely. The UAS is hand launched and is operates at 500 feet AGL or less. The cruise speed of the UAS is 30 knots and a maximum speed of 45 knots. Northland College will also give landowners a courtesy (not a requirement) call before flying over their property. The operational plan requires the UAS not to operate within 5 NM of an airport.

Contact Information:

Northland College

Jon Beck (O) 218-683-8831 office
(C) 320-291-5380 cell
Dave Grafstrom (C) 320-293-8722

Camp Ripley

On occasion Camp Ripley (restricted airspace) near Little Falls hosts military contractors to train their UAS pilots/ software and conduct DoD training events. While training, the **UAS stay within the restricted airspace of the Camp or the Class D airspace of Miller Field.**

Contact Information:

Camp Ripley

Miller Field 320-616-2779
Range Control 320-616-3137

Commercial Operations

Commercial UAS operators, including utility companies referenced in Chapter X, may also be utilizing the airspace. These operators may be conducting agriculture or forest sensing, photo or video flights, right-of-way monitoring, etc. **Commercial operators are not required to request a NOTAM. Any courtesy phone calls or contacts from commercial operators shall be referred to the MNCC Aviation Desk for notification dispersal.** Airspace briefings at airbases and dispatch offices should include airspace information and include known or suspected UAS activity.

What to do if UAS are encountered on a Wildfire

If a UAS is encountered or reported within the Fire Traffic Area follow the flow chart in Appendix H for all tactical firefighting aircraft (reference PMS 515, NWCG Standards for UAS Operations.) Specific actions are described below:

If a UAS is encountered or reported to be working within the Fire Traffic Area:

- All tactical firefighting aircraft are to disengage from their firefighting activities.
- If a pilot observes a UAS, they should notify all aircraft on the fire by announcing on the assigned frequency “There is a UAS operating within the FTA, disengage immediately.”
- The Incident Commander will be notified of the conflicted airspace and the IC will relay the information to the Area Dispatcher.

If there is an ATGS on the fire:

- Direct aircraft to a holding area with adequate separation.
- ATGS will contact the Fire Center for further instructions for disengagement and whether to remain airborne while the situation is mitigated or to return to the nearest base or helispot to hold on the ground.

If there is no ATGS on the fire:

- Pilots will communicate and coordinate their flight paths with one another for disengagement from the incident area.

Aircraft can re-engage with firefighting missions after the airspace is confirmed to be free of UAS. Before re-engaging:

- The ATGS or Helicopter Manager will contact the Fire Center to advise the FTA is confirmed safe and the intention is to re-engage.

Notifications:

- The Area Dispatcher will contact local law enforcement.
- The Air Desk will contact the FAA Hotline at 651-463-5580.
- The Air Desk will contact the appropriate military installation if within MOA/MTR, 218-788-7370.
- The Air Desk will contact the MNDNR Wildfire Aviation Supervisor or Assistant, along with the aviation supervisor of other affected agencies.
- A SAFECOM will be completed as soon as possible after the incident by the ATGS, helicopter or fixed wing manager, or pilot.
- Air Desk will call EACC to notify them of the UAS encounter.

Several UAS encounters have occurred over wildfire incidents in recent years (2015, 2018, 2019 and 2020.) The SAFECOMS from these are included in Appendix B Intrusion SAFECOMS.

Model Aircraft Operations

Private Citizens may fly model aircraft. According to the FAA model aircraft may be used if (1) the aircraft is flown strictly for hobby or recreational use; (2) the aircraft is operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization; (3) the aircraft is limited to not more than 55 pounds unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization; (4) the aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft; (5) when flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower with prior notice of the operation; and (6) the aircraft is flown within visual line sight of the operator.

Airspace issues may occur with (4) above as an operator may engage in flight profiles considered flying in a reckless manner or reckless endangerment of other aircraft. **Unsafe Model Aircraft Operations should be reported to local Law Enforcement or the FAA hotline at 1-866-835-5322.**

Model aircraft operations do not require a Notam.

APPENDIX A: DEFINITIONS/ACRONYMS

<u>Definitions</u>	<u>Acronyms</u>
Alert Areas	AA
Above Ground Level	AGL
Air Operations Branch Director	AOBD
Air Route Traffic Control Center	ARTCC
Air Tactical Group Supervisor	ATGS
Bureau of Indian Affairs	BIA
Bureau of Land Management	BLM
Civil Air Patrol	CAP
Controlled Firing Areas	CFA
Chippewa National Forest	CPF
Department of Natural Resources	DNR
Eastern Area Coordination Center	EACC
Emergency Medical Services	EMS
Estimated Time of Arrival	ETA
Estimated Time Enroute	ETE
Federal Aviation Administration	FAA
Flight Standard District Office	FSDO
Fire Traffic Area	FTA
Geographical Area Coordination Center	GACC
Incident Command System	ICS
Minnesota Interagency Coordination Center	MNCC
Military Operations Areas	MOA
Mean Sea Level	MSL
Military Training Routes	MTR
National Interagency Coordination Center	NICC
Notice to Air Missions	NOTAM
Prohibited Areas	PA
Pilot in Command	PIC
Restricted Areas	RA
Special Use Areas	SUA
Superior National Forest	SUF
Temporary Flight Restrictions	TFR
Unmanned Aerial System	UAS
United States Forest Service	USFS
United States Fish & Wildlife	USFW

APPENDIX B: INTRUSION SAFECOMS

<h1 style="margin: 0;">SAFECOM</h1> <p style="margin: 0;">AVIATION SAFETY COMMUNIQUE</p>		<p style="text-align: center; margin: 0;">Reported By (Optional)</p> <p style="margin: 0;">Name <u>Mark A Anderson</u> Phone <u>320-532-3137</u></p> <p style="margin: 0;">Organization <u>DNR Forestry</u> Date <u>04/07/15</u></p>	
EVENT	<p style="margin: 0;">Date <u>03</u> <u>28</u> <u>2015</u> Local Time _____ Injuries? <u>N</u> Damage <u>N</u></p> <p style="margin: 0; font-size: small;">Mo Day Year 24 Hour Clock Circle</p> <p style="margin: 0;">Location <u>Ostego swamp Fire #34 Little Falls Area</u> State <u>MN</u></p> <p style="margin: 0; font-size: x-small;">Airport, City, Lat./Long, or Fire Name</p>		
MISSION	<p style="margin: 0;">Type <u>IA - Fire</u> Procurement <u>Contract</u></p> <p style="margin: 0; font-size: x-small;">Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator,</p> <p style="margin: 0;">Number of Persons On board <u>4</u> Special Use? <u>N</u> Hazardous Materials Onboard? <u>N</u></p> <p style="margin: 0; font-size: x-small;">Circle</p> <p style="margin: 0;">Departure Point <u>PNM - Princeton</u> Destination <u>Wright County</u></p> <p style="margin: 0; font-size: x-small;">Circle</p>		
AIRCRAFT	<p style="margin: 0;">N # <u>482TC</u> Manufacturer <u>Bell</u> Model <u>206 L4</u></p> <p style="margin: 0;">Owner/Operator <u>Carisch Helicopters</u> Pilot <u>Michael Carisch</u></p>		
<p>NARRATIVE: Please provide a brief explanation of the event.</p> <p>On Saturday March 28th, 2015 2TC responded to a lowland fire, Little Falls Fire #34 in Wright county just across the Mississippi river from Elk River. Suppression activity was taken without any issues, 2TC then returned to Princeton and completed the day.</p> <p>On Sunday April 4th while researching and looking at news articles from recent fires in the area Paul Talbot (Zimmerman lead HECM) noticed the attached article, http://erstarnews.com/2015/04/03/andover-fire-chief-testing-drone-in-emergencies/. This could have caused quite a problem in the airspace over the fire and could have catastrophic and possible fatal consequences.</p> <p>The photo taken from the drone shows the fire near the time our resources were on the scene. The article states that this drone can fly 400' vertical and be up to a kilometer from the operator. We have to remember to be vigilant and keep our eyes and ears open. Private individuals will also have these tools and could also be operating these vehicles in the FTA at any given time.</p> <p>Wildfire Aviation Supervisor Comments:</p> <p>Several steps have been taken since we were notified of this incident:</p> <ol style="list-style-type: none"> 1. Created protocols for our suppression aircraft to systematically disengage from their missions if a UAS is operating over a wildfire until the airspace is confirmed to be safe. 2. Contacted the FAA for assistance in making UAS operators aware of our airspace concerns and to obtain information on local law enforcement procedures. 3. Contacted the State Fire Marshall's Office to make them aware of our safety concerns and request they relay the information 4. Contacted the Fire Chief who was operating the UAS on the wildfire 5. Distributed a press release to make the public aware of our safety concerns for aerial suppression aircraft and requesting that UAS operators not fly their units over wildfires. 6. Created protocols for firefighters to follow if they observe or are made aware of UAS operating over a wildfire. <p style="margin-top: 20px;">Special thanks to Paul Talbot for finding this information and sharing it.... If you see something, say something.</p>			

SAFECOM v. 2016

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)	
Name	Phone
Jody Leidholm	218-244-9629
Organization	Date
MN DNR	4/29/2018

EVENT

Date	Local Time	Injuries	Damage	Location	State
4/29/2018	1220??	N	N	Prairie Fire – Little Falls Area	MN

MISSION

Type (PAX, Cargo, Recon, Sling, Long Line, etc.)		Procurement (Contract, CWN, Rental, Fleet, Cooperator, etc)	
UAS		Exclusive use contract	
Departure Point		Destination	
Brainerd Tanker Base		Prairie Fire – Little Falls Area	
Number of Persons Onboard		Special Use	Hazardous Materials Onboard
2		N	N

AIRCRAFT

N #	Manufacturer	Model	Owner/Operator	Pilot
8652K	Cessna	340	Flying A Flight Service	Parker

NARRATIVE

Please provide a brief explanation of the event. Use additional sheet if necessary.

Air Attack 1 was working the Prairie Fire about 6 miles NE of Little Falls with FB-201, FB-202, and Helicopter 56BH. Each Fire Boss had made two drops with 56BH continuing to do bucket work. The Pilot of AA1 noticed what he thought was a bird fly underneath the Air Attack platform and above the helicopter that was doing bucket work as AA1 observed from a higher altitude. As the pilot continued to watch the object's flight he observed that its flight pattern was not consistent with a bird, but that it was instead an UAS quadcopter.

AA1 informed 56BH that a UAS had been seen over the fire and 56BH discontinued bucket work and landed at an LZ south of the fire. AA1 repositioned east of the fire and contacted the IC and informed him of the UAS protocol and asked the IC's assistance in locating the UAS' operator. The IC made contact with law enforcement and had members of the local fire department that was already on scene to disperse and try to locate the operator.

The earlier tanker drops and helicopter bucket work had taken care of most of the running fire. Air Attack 1 contacted HMGB Westerman for an assessment of the fire and his opinion if the ground resources could handle the remaining suppression work. Westerman informed AA1 that in his opinion it could be held with the resources on scene. AA1 contacted IC Butler and relayed the assessment and the IC released AA1.

56BH remained on the ground for approximately 25 minutes after AA1 departed the fire to return to Brainerd TB. The HMGB contacted Brainerd TB and asked that they call the Air Desk to determine the next steps as attempts to locate the drone operator were unsuccessful, and the UAS had not been seen since the initial sighting.

Air Desk confirmation was received that if the UAS had not been seen recently, and the operator could not be located, that the flight crew could use their discretion to lift off. The HMGB contacted the IC and confirmed that 56BH was no longer needed on the fire, and that no ground resources, the FD, or law enforcement had seen the UAS airborne. The HMGB let the IC know that 56BH would depart the fire to the south, clear the area as soon as possible, and would not recon. the fire before leaving.

FWOS Comments: Great job on the part of AA1's pilot maintaining situational awareness and spotting the UAS! Another reminder that we need to remain vigilant and document all incursions so we can continue our public education and outreach efforts in the hopes of mitigating this issue. Established procedures were followed and were successful.

Aviation Safety Advisor: UAS incursions in fire airspace have been steadily increasing over the last few years on a nationwide basis. Kudos to Parker the AA pilot on being heads-up and to the AA, IC and HMGB on the incident and to airtanker base and dispatch staff for following the established UAS protocols for deconflicting the airspace and making appropriate notifications to the FAA.

SAFECOM v. 2016

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)	
Name	Phone
Click here to enter text.	Click here to enter text.
Organization	Date
MN DNR Forestry	4/20/2019

EVENT

Date	Local Time	Injuries	Damage	Location	State
4/16/2019	24 hr format	N	N	Almelund, MN	MN

MISSION

Type (PAX, Cargo, Recon, Sling, Long Line, etc.)		Procurement (Contract, CWN, Rental, Fleet, Cooperator, etc)			
Wildfire Suppression		Fleet & Contract			
Departure Point		Destination			
Princeton, MN		Almelund, MN			
Number of Persons Onboard		Special Use		Hazardous Materials Onboard	
2		Y		N	

AIRCRAFT

N #	Manufacturer	Model	Owner/Operator	Pilot
N #	Manufacturer	Model	Owner/Operator	Pilot

NARRATIVE

Please provide a brief explanation of the event. Use additional sheet if necessary.

On 4/16/2019 Air Attack 5 (AA5) was dispatched to a grass fire near Almelund MN, in Chisago County. It was lead for two SEATs who worked the fire along with a suppression helicopter. The MN DNR IC had tied in with the Chisago Co. Sheriff's deputy on scene, and together they managed the personnel on the ground. Operations concluded with the fire being suppressed and all resources returned to their stations. A video on social media showed the SEATs and helicopter in action, making suppression drops on the fire. Some of the footage was taken by a UAS operating in the vicinity. Neither the Incident Commander, the deputy, or aerial firefighters were unaware of the UAS.

The county Emergency Planner, aware of the safety risk, thought his emergency response units were aware of the danger a UAS poses to piloted aircraft. In an effort to prevent similar incidents a news release was prepared that was passed to our cooperators to share on their social media accounts, expressing the extreme danger a single drone poses to an aircraft as well that if a drone is noticed above a fire, standard operating procedure is to halt all aviation activities on that fire, until the drone has landed. It is understood that a drone may provide very valuable information to the IC in an emergency situation, but these efforts must be coordinated, and proper safety measures must be in place.

Select HOS/FWOS/Pilot, Thank you for reporting this incursion. All UAS pose a great risk to flight crews regardless of the UAS' mission and size. MN DNR is in the very early stages of UAS use and on occasion it may be necessary to utilize another agency's UAS. Any activity with UAS needs to be approved by the Wildfire Aviation Supervisor or delegate, coordinated with the IC, and notification provided to aircraft on the incident. The best practice for UAS is to wait until the initial attack efforts are completed. Unauthorized operations of UAS which endanger manned aircraft are illegal and punishable by law.

Aviation Safety Advisor: Thank you to MN DNR staff for alerting aviation program personnel of this incident. A Safety Alert (see attached) was created and shared with Law Enforcement, Fire Departments, and Emergency Managers in addition to the press release regarding UAS. A similar event occurred in April, 2015 which was the catalyst for similar outreach to the MN State Fire Marshall's Office. Remember—if UAS are spotted in the vicinity, ALL SUPPRESSION AIRCRAFT ARE TO DISENGAGE FROM SUPPRESSION, LAND OR LEAVE THE AREA for the safety of aerial firefighters.

Aviation Safety Alert

Date: April 18, 2019
Subject: Agency UAS (drone) Operations at Wildfire Incidents
Distribution: All Agencies Supporting Fire Incidents in MN

Discussion: On Tuesday, April 16 Minnesota Department of Natural Resources aircraft including a helicopter, fixed wing aerial supervision platform and two single engine air tankers responded to a wildfire in East-Central Minnesota. Aerial footage was obtained by a UAS of the helicopter with its water bucket, and this footage was included in a video posted to social media. UAS operation on wildfire incidents creates extreme danger for flight crews of manned aircraft. This Safety Alert is to explain these dangers and provide information about coordinating the use of drones on wildfire incidents.

1. **Wildfire suppression aircraft are directed to land or leave the scene of a wildfire if a UAV is being operated in the airspace of a wildfire incident.** To prevent damage and injury to flight crews, manned aircraft including helicopters, aerial supervision platforms and tankers cannot operate in the same airspace as a UAS. Agencies that support wildfire operations including fire departments, emergency management agencies, and law enforcement are asked to de-conflict the airspace by notifying the Incident Commander that a UAS is operating over a wildfire. If/When manned aircraft are requested, all UAV's operated by FD, EM and LE agencies must be grounded or suppression aircraft will be grounded and/or released. UAS incursions result in disruptions to wildfire suppression operations and have occurred in many areas of the United States, as well as in 2018 near Little Falls, MN.
2. **Fire department, emergency management and law enforcement agency UAS can be valuable to management of wildfire incidents.** Like other suppression resources, UAS can provide value to Incident Commanders by obtaining information about wildfire incidents. UAS resources provided by FD, EM or LE agencies could be asked to perform reconnaissance. The availability of this resource must be communicated to the Incident Commander to authorize and coordinate any use.

Airspace Coordination: Firefighting aircraft follow a communications standard known as the Fire Traffic Area (FTA), which is typically a 5-mile radius from the center point of an incident. UAS must follow this standard. The airspace surrounding an incident is managed by the aerial supervisor who must implement FTA procedures. All wildland fire incidents, regardless of aircraft on scene, have an FTA.

The FTA is not a TFR and does not pertain to other aircraft who have legal access within a TFR (Medevac, Law Enforcement, Media, VFR airport traffic, IFR traffic cleared by the FAA.) However, fire suppression aircraft will be grounded and/or released from a wildfire if a UAS is in the FTA.

For additional information on the FTA visit:

https://www.nwcg.gov/sites/default/files/publications/pms505d_FTA-card-2015.pdf

Recommendations: Review this Aviation Safety Alert, share with your agencies remote pilots, and help MN DNR wildfire aviation resources work in the safest work environment possible.

Questions may be directed to Darren Neuman, MN DNR Forestry Wildfire Aviation Supervisor at darren.neuman@state.mn.us or Matt Woodwick, MN DNR Forestry Assistant Wildfire Aviation Supervisor at matthew.woodwick@state.mn.us.

/s/ Darren Neuman

Darren Neuman
Wildfire Aviation Supervisor
MN DNR Forestry

/s/ Matt Woodwick

Matt Woodwick
Assistant Wildfire Aviation Supervisor
MN DNR Forestry

SAFECOM v. 2016

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)	
Name	Phone
Austin Dane	Click here to enter text.
Organization	Date
MN DNR Forestry	5/6/2020

EVENT

Date	Local Time	Injuries	Damage	Location	State
5/4/2020	14:00	N	N	Biwabik	MN

MISSION

Type (PAX, Cargo, Recon, Sling, Long Line, etc.)		Procurement (Contract, CWN, Rental, Fleet, Cooperator, etc)	
Initial Attack		Contract	
Departure Point		Destination	
HIB		Fire	
Number of Persons Onboard	Special Use		Hazardous Materials Onboard
Select	Y/N		Y/N

AIRCRAFT

N #	Manufacturer	Model	Owner/Operator	Pilot
N #	Manufacturer	Model	Owner/Operator	Pilot

NARRATIVE

Please provide a brief explanation of the event. Use additional sheet if necessary.

While navigating to the fire area, IC Dane observed individual operating a UAS. IC immediately requested the UAS be grounded, and stressed that all air operations would have to be ceased until it was on the ground. The operator insisted the UAS was not very high and was being used to verify if the fire was burning on company property. The IC insisted the altitude does not matter and the UAS must be grounded. Operator complied and began to fly UAS back to his location.

At this time, aerial detection was over the fire, and a suppression helicopter was attempting to make initial contact with the IC. Helicopter was informed of UAS and directed to remain 7nm from incident, and IC would confirm when UAS was grounded. An engine was assigned duty of maintaining contact with UAS operator and reporting when UAS was on ground.

Within minutes, the UAS was confirmed grounded. IC informed helicopter UAS was grounded and that the detection plane was the only other aircraft on the incident and to coordinate FTA entry with them. Helicopter coordinated with detection, recon'd the fire and set down to reconfigure for bucket operations.

HOS Comments: Excellent decision making by the IC to ensure flight crew safety. Insisting the UAS be landed immediately, requesting the inbound helicopter to hold at 7NM and assigning a resource to ensure the UAS operator complied with the request serves as a great example of understanding and correctly implementing established protocols. Great job keeping our folks safe!

Aviation Safety Advisor: There is no better outcome than what occurred in this incident. Follow-up with the operator and continued messaging to public and commercial operators are next actions. Good job by all involved.

This form is used to report any condition, observance, act, maintenance problem, or circumstance which has potential to cause an aviation related mishap. SAFECOMs are submitted electronically to the HOS, FWOS or MIFC Pilot within 24 hours of the event on the 2016 version of the SAFECOM form.

SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Dan Hertle Phone 218-246-8343
Organization DNR Forestry Date 04-29-03

EVENT	Date <u>04 27 2003</u> Local Time <u>1700</u> Injuries? Y <u>N</u> Damage Y <u>N</u> <small>Mo Day Year 24 Hour Clock</small>
	Location <u>Snowshoe Lake Fire, Sec. 20 T58N R25W</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Fire Detection</u> Procurement <u>Contract</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board <u>2</u> Special Use? Y <u>N</u> Hazardous Materials Onboard? Y <u>N</u> Circle Departure Point <u>GPZ</u> Destination <u>Deer River Detection Route</u>
AIRCRAFT	N # <u>N6418D</u> Manufacturer <u>Cessna</u> Model <u>172</u>
	Owner/Operator <u>Airways Aviation</u> Pilot _____

NARRATIVE:

Please provide a brief explanation of the event.

Alpha-22 reported a smoke within the Federal Protection Area. Grand Rapids Dispatch notified Chippewa Dispatch of the fire. Chippewa Dispatch requested Alpha-22 to stay over the fire until Engine 631 arrived. While scanning the Chippewa frequency, Alpha-22 realized that Fire Bird had also been dispatched to the fire. Alpha-22 contacted Fire Bird to let them know their position and altitude. Shortly there after Fire Bird was turned around and North Patrol was sent to the fire. Again Alpha-22 made contact with the incoming aircraft and notified them of their position and altitude. Because of the presence of North Patrol, Alpha-22 returned to its detection route without being released from the fire.

The directing of two additional aircraft into the same airspace was done without notifying the reporting aircraft. All three aircraft were operating at the same altitude at the same time. Although neither aircraft got closer than six to ten miles, an incident could have occurred if the observer hadn't been alert.

The observer is also a commercial pilot and is very experienced at doing detection. A less experienced observer may not of recognized the situation that was developing.

To minimize aerial detection confliction, dispatchers need to keep the aircraft over their incident informed of other responding aircraft.

CHIEF PILOT NOTES:

Chippewa Dispatch was trying to contact Alpha 22 and the Blackduck/Effie detection planes on the Chippewa frequency. I feel because the handheld radios in the airplanes are in the scan mode, all of the Chippewa dispatch transitions were not heard by the detection planes.

Experienced pilots and observers along with a scannable, multi-channel radio were able to receive and transmit information faster than the Chippewa dispatch.

Scannable radios are good – but some vital information can be missed.

SAFETY ADVISOR NOTES: Scanning needs to be held to a minimum.

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SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Terry Novak Phone 218-732-3309
Organization DNR Forestry Date 4/28/03

EVENT	Date <u>04 27 03</u> Local Time <u>1545</u> Injuries? Y <u>N</u> Damage Y <u>N</u> <small>Mo Day Year 24 Hour Clock Circle</small>
	Location <u>Red Lake Fire 540</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Retardant Dropping</u> Procurement <u>Contract - BIA</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board <u>1</u> Special Use? <u>Y</u> <u>N</u> Hazardous Materials Onboard? Y <u>N</u> <small>Circle Circle</small>
AIRCRAFT	Departure Point <u>Bemidji Airport</u> Destination <u>Fire 540</u>
	N # <u>T-444</u> Manufacturer <u>Snow</u> Model <u>AT-802</u> Owner/Operator <u>Queen Bee</u> Pilot <u>Larson</u>
<u>NARRATIVE:</u> Please provide a brief explanation of the event.	
<p>Tanker 444 was returning to the fire with a load of retardant. Before he was on scene, T-263 (a CL-215) started dropping water on the fire. T-444 reported in 10 miles out and was told to over fly the fire at 2,500' MSL (approx. 1300' AGL). Air attack was at 3,000' – T-263 low level.</p> <p>T-444 over flew the fire but dropped down to T-263's altitude without notifying anyone. As T-263 was on final, T-444 flew parallel to and passed T-263 at the same altitude. T-263 told him to pull up and there was no reply. T-263 dropped his load and announced he was breaking right. He asked for better altitude management.</p> <p>In debriefing, T-444's pilot stated that he had T-263 in sight and was no factor. Myself and T-263's pilots were quite concerned as we didn't know T-444's intentions.</p>	

This form is used to report any condition, observance, act, maintenance problem, or circumstance which has potential to cause an aviation-related mishap.

SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Terry Novak Phone 218-828-2575
Organization MN DNR Date 4/10/03

EVENT	Date <u>4/10/03</u> Local Time <u>1505</u> Injuries? <u>Y</u> <u>X</u> N Damage <u>Y</u> <u>X</u> N Mo Day Year 24 Hour Clock
	Location <u>5 Miles NE. of the Brainerd Airport</u> State <u>MN</u> Airport, City, Lat.../Long, or Fire Name
MISSION	Type <u>Retardant Dropping</u> Procurement <u>CWN</u> Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.
	Number of Persons On board <u>2</u> Special Use? <u>Y</u> <u>X</u> N Hazardous Materials Onboard? <u>Y</u> <u>X</u> N Departure Point <u>Brainerd Air Tanker Base</u> Destination <u>Wildfire 5 miles NE. of base</u>
AIRCRAFT	N # <u>26AU</u> Manufacturer <u>Lockheed</u> Model <u>P3A</u>
	Owner/Operator <u>Aero Union Corporation</u> Pilot <u>Hock / Lesley</u>

NARRATIVE:

Please provide a brief explanation of the event.

As T-26 was dropping the last ½ of its load another aircraft flew over the fire. It was parallel to and slightly in front of T-26. Separation was approximately 200 yards horizontal and was **LOWER** than T-26. It did not activate T-26's TCAS nor respond to calls on Unicom. Type of aircraft is unknown – white, small low wing airplane. Tanker 26 never saw the plane.

Safety Advisor Notes: Excellent reminder to be “HEAD’S UP” for other aircraft. A news release will be sent out by MIFC reminding pilots to avoid fires and be alert for firefighting aircraft.

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SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Jon Coil Phone 218-647-8268
Organization MN-DNR Date 4/27/04

EVENT	Date <u>4 27 2004</u> Local Time <u>1405</u> Injuries? Y <u>N</u> Damage Y <u>N</u> Mo Day Year 24 Hour Clock Circle
	Location <u>Blackduck Detection Route</u> State <u>MN</u> Airport, City, Lat.../Long, or Fire Name
MISSION	Type <u>Detection</u> Procurement <u>Contract</u> Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.
	Number of Persons On board <u>2</u> Special Use? Y <u>N</u> Hazardous Materials Onboard? Y <u>N</u> Circle Circle Departure Point <u>Big Fork</u> Destination <u>Detection</u> Route
AIRCRAFT	N # <u>N739 XK</u> Manufacturer <u>Cessna</u> Model <u>172</u> Owner/Operator <u>Airway Aviation</u> Pilot <u>Roland Heaton</u>

NARRATIVE:

Please provide a brief explanation of the event.

On routine detection flight for the Blackduck Area between checkpoints 1 and 2, we looked at a previous day fire in Sec 30-151-32. We were continuing to checkpoint 2 and were just off the SE corner of Lower Red Lake when pilot Heaton noticed a plane in front of us. The plane passed directly over us about 200 feet above us. Pilot Heaton recognized the tail # as 7NR and called 7NR on 122.925. Pilot Ettl answered and said he was on the SE corner of Lower Red Lake but hadn't seen us.

Safety Advisor Note:

Near Mid Air Collisions (NMAC's) are extremely serious situations which need to be reported. NMAC's generally include the element of surprise. Methods to avoid Mid Air collisions include:

- 1) Vertical separation – MIFC Logistical support flight are generally flown at 3,000 feet MSL, due to most detection routes being flown at 2500 MSL or less.
- 2) Horizontal separation – knowing the general Area's or routes flown by other aircraft and staying clear of smoke and other activity that have other aircraft assigned.
- 3) Communications on Area and common VHF – AM radio frequencies to determine other aircraft locations.
- 4) Practicing good cockpit resource management, staying alert, keeping your eyes outside the cockpit, and adhering to see and avoid techniques.

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SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Steve Newbloom Phone 218-879-0823

Organization DNR Forestry Date 05/06/2004

EVENT	Date <u>05</u> <u>06</u> <u>2004</u> Local Time <u>1535</u> Injuries? <u>N</u> Damage <u>N</u> <small>Mo Day Year 24 Hour Clock</small>
	Location <u>46 33.133 92 53.414</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Detection</u> Procurement <u>Contract</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board <u>2</u> Special Use? <u>N</u> Hazardous Materials Onboard? <u>N</u> Departure Point <u>TWN</u> Destination <u>TWN</u>
AIRCRAFT	N # <u>9011T</u> Manufacturer <u>Cessna</u> Model <u>182</u>
	Owner/Operator <u>Anderson Aero</u> Pilot <u>Mark Lande</u>

NARRATIVE:

Please provide a brief explanation of the event.

An incident occurred in the Cloquet detection area. Our detection plane spotted a smoke in the Sandstone area. The detection observer radioed that they would check it out. The dispatcher informed St. Louis 1 to "Standby" while a call was made to the Sandstone dispatch.

Upon calling Sandstone, Cloquet dispatch was informed that they had their detection plane heading towards the reported smoke. Cloquet dispatch called St. Louis 1 to inform them that they could resume their route. Detection then informed dispatch that they were over the fire.

Cloquet dispatch immediately informed St. Louis to go back to the Cloquet area and resume their route. Dispatch and the observer discussed the incident. The observer was reminded of the protocol used for flying into another Area's air space.

FORESTRY CHIEF PILOT'S NOTES:

We have procedures for crossing area boundaries; they are reviewed at Fire Team Leader meetings, Dispatcher Meetings and at pre-season detection start up meetings. The observer is the person in charge of the flight. The pilot takes direction from the observer. The person managing the individual detection contract should review the procedures for crossing Area boundaries with their observers and pilots. Make people accountable for their actions. This is not the only Area having this problem.

SAFETY ADVISOR'S NOTES:

We have established good procedures to help avoid mid air collision or near mid air collisions in these types of situations. Now we need to identify why we continue to have these types of incidents despite our procedures: Supervision failure? Training failure? Communication failure? Inadequate briefings? Other?

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SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Jody Leidholm Phone 218-278-6651
Organization DNR Forestry - ATGS Date 10-26-00

EVENT	Date <u>10</u> <u>19</u> <u>00</u> Local Time <u>1530</u> Injuries? Y <u>N</u> Damage Y <u>N</u> <small>Mo Day Year 24 Hour Clock Circle</small>
	Location <u>Carlos Avery Fire</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Media Helicopters - Bell 206</u> Procurement <u>N/A - Media / TV</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board <u> </u> Special Use? Y <u>N</u> Hazardous Materials Onboard? Y <u>N</u> <small>Circle</small>
AIRCRAFT	Departure Point <u>Mpls / St. Paul</u> Destination <u>Carlos Edge Fire</u>
	N # <u>111AR</u> Manufacturer <u>Bell (Blue - w/Red A9"</u> Model <u>206?</u> Owner/Operator <u>KMSP Channel 9</u> Pilot <u> </u>

NARRATIVE:

Please provide a brief explanation of the event.

While working 2 Type III helicopters, 1 SEAT, and 1 CL 215 Air Tanker on initial attack, I sighted a Blue Helicopter that appeared to be a Jet Ranger flying at or below the same altitude as the Air Attack Platform - 2500 MSL. It had a large number 9 painted on the side that looked exactly like the KMSP Channel 9 logo from Mpls/St. Paul. I tried to contact him on 122.92 as well as various UNICOM Frequencies.

Since I was busy watching him and the other aircraft, which I had notified of the traffic, I asked my pilot, Jack Huhta to see if he could get the helicopter up on frequency. He contacted MSP approach and found out that the (ch9) was up on approach freq. So approach contacted the Ch. 9 Media ship and instructed him to contact us on 122.925. He contacted us and we talked. Channel 9 media ship was nearly done filming by this time but we gave him an altitude clear of other traffic for his time remaining. He then contacted us for departure and we cleared him southbound at days end, I informed dispatch of this situation and was assured follow-up phone calls would be made to avoid further situations like this.

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SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Mark A. Anderson

Phone 320-532-3137

Organization DNR Forestry

Date 4-02-00

EVENT	Date <u>4</u> <u>02</u> <u>00</u> Local Time _____ Injuries? Y <u>N</u> Damage Y <u>N</u> <small>Circle Mo Day Year 24 Hour Clock Circle</small>
	Location <u>Wyanett Twnshp Camb Area Fire 16-36-25</u> State _____ <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Initial Attack - Isanti County</u> Procurement <u>Contract</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board _____ Special Use? Y <u>N</u> Hazardous Materials Onboard? Y <u>N</u> <small>Circle Circle</small>
	Departure Point <u>PNM / Princeton Airport</u> Destination <u>Fire IA / Camb Area 16-36-25</u>
AIRCRAFT	N # <u>39102</u> Manufacturer <u>Bell Helicopter</u> Model <u>BIII Jet Ranger</u>
	Owner/Operator <u>Hillcrest Aircraft Co</u> Pilot <u>Michael Wilton</u>

NARRATIVE:

Please provide a brief explanation of the event.

SUBJECT: DETECTION AIRCRAFT:

At morning briefing between helitack and tanker personnel, the subject was brought up that detection plane for St. Cloud area was flying too low (500' agl and below. Hillcrest helicopter 102 had the detection plane in his air space when he was doing bucket work the previous week in Benton County. Air Attack (Terry Novak) said he'd check into it and St. Cloud dispatch was notified to inform detection to stay higher.

At 1:20 p.m. we were dispatched to a fire in Isanti County (16-36-25). Approximately 2 to 1 mile out we noted Charlie 1 directly on our heading in a right hand turn 1/4 to 2 mile out at our elevation 500' AGL Michael Wilton, 102's pilot asked me to have detection climb to a higher orbit. I relayed the message to detection. Detection did not acknowledge immediately. At this point, Cambridge dispatcher repeated my message and detection acknowledged and began climbing.

*At no point during this time were we in any immediate danger, but it should be noted that if the area was real smokey or if there were more aircraft in the vicinity, the outcome could be drastically different.

FWOS NOTE: Please remind detection pilots to maintain an altitude well above 500' above ground level and monitor VHF-AM 122.925.

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SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Greg Johnson

Phone

Organization DNR Forestry

Date 4-9-00

EVENT	Date <u>4</u> <u>09</u> <u>2000</u> Local Time <u>1500</u> Injuries? Y <u>N</u> Damage Y <u>N</u> <small>Mo Day Year 24 Hour Clock Circle Circle</small>
	Location <u>Forest Lake Fire #51 (Taconite)</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Bucket Work</u> Procurement <u>CWN</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board <u>0</u> for <u>bucket</u> work Special Use? Y <u>N</u> Hazardous Materials Onboard? Y <u>N</u> <small>Circle Circle</small>
AIRCRAFT	Departure Point <u>Forest Lake Helibase</u> Destination <u>Ham Lake Fire</u>
	N # <u>56P</u> Manufacturer <u>Bell</u> Model <u>206BIII</u> Owner/Operator <u>Ideal Helicopters</u> Pilot <u>Jeff McDermott</u>

NARRATIVE:

Please provide a brief explanation of the event.

While en route to a dispatched fire, we contacted the detection plane. We were in bound at 1500' for size-up and 360E when another helicopter (Dark R22) was encountered at same altitude. He broke off to his left and we continued on recon. When we set down to hook up bucket, he was still orbiting. We tried to make contact but were unable and not sure if detection plane had contact either. One other helicopter also made one loop around fire and left - also no contact. Finished fire and returned to Forest Lake helibase. We have people working on finding where these helicopters are coming from.

HOS NOTE: Thanks Greg for a good SAFECOM. This is one example of the activity in Metro Region. I have received several similar reports. In order to improve the situation, we are:

- 1.) Meeting with Robinson 22 flight instructors at Crystal Airport.
- 2.) Doing our annual airport mailing with our message to stay away from fire.
- 3.) Putting out a news release on giving firefighting pilots their space.
- 4.) Putting out a news release on TFR's.
- 5.) Asking all aviation folks to look up, look around and look out.

*Do good briefings * Be an active Apart of the flight crew.

Thank you for your efforts. Sheldon Mack

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SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Mike Eilers

Phone

Organization DNR Forestry

Date 4-26-00

EVENT
Date 4 25 00 Local Time 1505 Injuries? Y N Damage Y N
Mo Day Year 24 Hour Clock Circle Circle
Location Forest Lake Fire #66 State MN
Airport, City, Lat.../Long, or Fire Name

MISSION
Type Bucket / I.A. Procurement CWN
Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.
Number of Persons On board 0 Special Use? Y N Hazardous Materials Onboard? Y N
Circle Circle
Departure Point Forest Lake Base Destination Holly Fire

AIRCRAFT
N # 2756P Manufacturer Bell Model 206 BIII
Owner/Operator Ideal Helicopters Pilot Jeff McDermott

NARRATIVE:

Please provide a brief explanation of the event.

While working a fire for approximately 20 - 25 minutes, 56P pilot Jeff McDermott noticed a shadow of another aircraft directly overhead. Shortly after that, 56P was advised by I.C. Tom Lynch to be aware of a helicopter flying over the fire. Later questioning pilot and I.C. determined that 56P was at 100' agl with a bucket of water when the Robinson 22 helicopter overflew 56P at a agl of 300' - 400' and never returned. A tail # was observed by I.C. Lynch. This same helicopter has been seen repeatedly on other fires flying in unexpectedly/unannounced at an agl of less than 500' for a short overflight and then leaving again. Action will be taken to try to keep this helicopter/pilot from showing up unannounced and causing a possible aviation incident or accident.

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SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Doug Lloyd Phone 218-327-4529
Organization DNR Forestry Date 5-04-00

EVENT	Date <u>5</u> <u>04</u> <u>00</u> Local Time <u>1030</u> Injuries? Y <u>N</u> Damage Y <u>N</u> <small>Mo Day Year 24 Hour Clock Circle Circle</small>
	Location <u>Elbow Lake Fire</u> <u>48E 0.85' 92E 33.617'</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Buckets</u> Procurement <u>Cloquet Contract</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board <u>1</u> Special Use? Y <u>N</u> Hazardous Materials Onboard? Y <u>N</u> <small>Circle Circle</small>
AIRCRAFT	Departure Point <u>Elbow Lake Helibase</u> Destination <u>Elbow Lake Fire</u>
	N # <u>589</u> Manufacturer <u>Bell</u> Model <u>206 BIII</u> Owner/Operator <u>Cascade Helicopter</u> Pilot <u>Bill Lovitt</u>

NARRATIVE:

Please provide a brief explanation of the event.

Pilot Lovitt reported a helicopter that flew through our airspace over the Elbow Lake Fire. A TFR was in place at the time. Helibase tried to contact unidentified helicopter on our Victor AM freq with no response. Ship flew through fire area and then departed. Was not a threat to our operations. Lovitt thought a camera was on board. Possibly a media ship.

HOS Note: Thanks Doug. Good Safecom. The attached safety alert was posted on our web site and sent to the media. The 122.925 Victor is our normal I.A. frequency. Incident AM frequencies can change. We will continue to work hard at minimizing unannounced aircraft on fires. Good example that TFR=s are not a fix-all. Keep alert and fly safe!

Sheldon

May 5, 2000 Safety Alert:

We received notification that what was assumed to be a media helicopter was flying over the Elbow Lake Fire on May 4. They did not respond to contact from the aircraft working on the fire. A temporary flight restriction was in place.

PLEASE REMIND YOUR PILOTS FOR THE SAFETY OF EVERYONE INVOLVED, IT IS OF UTMOST IMPORTANCE WE COMMUNICATE ON VICTOR 122.925. THERE WERE 10 AIRCRAFT WORKING ON THE FIRE. WE WILL MAKE EVERY EFFORT TO ACCOMODATE YOU, BUT WE MUST MAINTAIN A SAFE OPERATION.

Thank you for your cooperation!
MN Interagency Fire Center

This form is used to report any condition, observance, act, maintenance problem, or circumstance which has potential to cause an aviation-related mishap.

SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name _____ Phone _____
Organization _____ Date _____

EVENT	Date <u>10</u> <u>21</u> <u>00</u> Local Time <u>1530</u> Injuries? Y <u>N</u> Damage Y <u>N</u> <small>Mo Day Year 24 Hour Clock Circle Circle</small>
	Location <u>Carlos Avery Fire</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Air Attack</u> Procurement <u>CWN</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board <u>2</u> Special Use? <u>Y</u> N Hazardous Materials Onboard? Y <u>N</u> <small>Circle Circle</small>
AIRCRAFT	Departure Point <u>ANE</u> Destination _____
	N # <u>111AR</u> Manufacturer <u>Beechcraft</u> Model <u>65</u> Owner/Operator <u>Bemidji Aviation</u> Pilot <u>Breuer</u>

NARRATIVE:

Please provide a brief explanation of the event.

While flying air attack over the Carlos Avery Fire on Sunday, October 22, our TFR airspace was violated by intruders on numerous occasions, most of the violations occurred from 1400 local time to the time we left (because we felt safety was compromised) about 1535.

Listed below is the approximate chronological order of events:

1400 - 1420 Several intruders a fair distance away from us
1424 - 1450 White float plane enters airspace and flies all over in the airspace, we follow him to landing on lake, called in ground personnel to talk to him
1450 - 1515 One or two more intruders a fair distance away
1518 Yellow Piper Cub enters airspace south to north 1,800' msl, tail #NC21478
1530 White Cessna 172 or 182 flies right over the top of us 200' - 300' higher than us (at this time we decided to cease air operations)

We feel it would keep TFR airspace violations down if the TFR was better disseminated, possible actions follow:

- 1) Fax TFR to all airports within 100 NM with instructions to post
- 2) Involve news media in TFR dissemination

FWOS notes: Good call shutting down operations! This is another reminder that a TFR does not ensure clear airspace.
SEE AND AVOID!! Follow up is underway with the F.A.A.

This form is used to report any condition, observance, act, maintenance problem, or circumstance which has potential to cause an aviation-related mishap.

SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Ron Goetzinger Phone 218-485-5400
Organization DNR Forestry Date 4/30/01

EVENT	Date <u>4</u> <u>28</u> <u>01</u> Local Time _____ Injuries? Y <u>N</u> Damage Y <u>N</u> <small>Mo Day Year 24 Hour Clock Circle</small>
	Location <u>Moose Lake Area - Sawmill Fire</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Tactical Suppression</u> Procurement _____ <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board _____ Special Use? Y <u>N</u> Hazardous Materials Onboard? Y <u>N</u> <small>Circle Circle</small>
AIRCRAFT	Departure Point <u>Anoka County Airport</u> Destination <u>Willow River, MN</u>
	N # _____ Manufacturer _____ Model _____ Owner/Operator _____ Pilot _____

NARRATIVE:

Please provide a brief explanation of the event.

Air Attack 4 and T-266 were dispatched from Anoka County Airport to a fire near Cass Lake, MN. They were diverted to the Sawmill Fire near Willow River in the Moose Lake Area. On approach to the fire, Air Attack 4 contacted the fire personnel for information about the fire and other aircraft. Frequency 122.925 was established as the air-to-air frequency. The detection plane, Moose 1, was told to go up to 3,000 feet so the tanker and helicopter operations could be conducted safely with vertical separation below 2,500 feet. There was some difficulty maintaining air to ground communications so the air-to-air communications were being handled by the air attack pilot. The detection plane continued its route after a short time. At some point, air attack had some communication interference from other incidents using 122.925 also. Air Attack 4 decided to change from 122.925 to 123.025 from the yellow-green plan. All incident aircraft confirmed the change. The detection plane, while on his route, was unaware of the frequency change. As the detection plane approached the incident air space again, he was unable to contact air attack on 122.925. What is the corrective action needed for this circumstance?

Air Attack should notify the local Area Dispatcher of the frequency change so that the detection plane can be notified prior to completing a route and re-approaching incident airspace.

c:\safecom\sawmillfire.wpd

This form is used to report any condition, observance, act, maintenance problem, or circumstance which has potential to cause an aviation-related mishap.

SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Larry Zajanc

Phone 208-523-1412

Organization USFS

Date 10-20-00

EVENT	Date <u>10</u> <u>20</u> <u>00</u> Local Time <u>0830</u> Injuries? Y <u>N</u> Damage Y <u>N</u> <small>Mo Day Year 24 Hour Clock Circle Circle</small>
	Location <u>Carlos Avery Fire</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>
MISSION	Type <u>Air Attack</u> Procurement <u>Fleet</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc. Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board <u>2</u> Special Use? <u>Y</u> N Hazardous Materials Onboard? Y <u>N</u> <small>Circle Circle</small>
AIRCRAFT	Departure Point <u>Princeton</u> Destination <u>Carlos Avery Fire</u>
	N # <u>37250</u> Manufacturer <u>Cessna</u> Model <u>310</u> Owner/Operator <u>Division of Enforcement</u> Pilot <u>Jack Huhtaa</u>

NARRATIVE:

Please provide a brief explanation of the event.

On Friday, October 21, 00, while flying air attack over the Carlos Avery Fire, numerous aircraft had intruded into restricted airspace.

A 180, 182, 206 (Amphib Floats) and a Citabria were observed within the TFR.

The 206 (Amphib) had passed within 500' of our flight path. Attempts to contact the intruding aircraft were unsuccessful.

I contacted air support and informed him of the situation.

Upon landing at Anoka County, the tower was notified and reminded of the TFR, for announcement to departing aircraft.

FWOS notes: Another reminder that a TFR does not ensure clear airspace. **SEE AND AVOID1**

This form is used to report any condition, observance, act, maintenance problem, or circumstance which has potential to cause an aviation-related mishap.

SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Michael Eilers

Phone 218-278-6651

Organization DNR

Date 04/11/10

EVENT	Date <u>04 / 11 / 2010</u> <small>Mo Day Year</small>	Local Time <u>1600</u> <small>24 Hour Clock</small>	Injuries? <u>Y</u> <u>N</u> <small>Circle</small>	Damage <u>Y</u> <u>N</u> <small>Circle</small>
	Location <u>Carver Cty. Fire / Waconia Fire Dept.>>> Legal: NWSE 116-24-20</u> State <u>MN</u> <small>Airport, City, Lat.../Long, or Fire Name</small>			
MISSION	Type <u>IA & Recon./ GPS</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc.</small>		Procurement <u>CWN</u> <small>Contract, CWN, Rental, Fleet, Cooperator, etc.</small>	
	Number of Persons On board <u>3</u> <small>N Circle</small>	Special Use? <u>Y</u> <u>N</u> <small>Circle</small>	Hazardous Materials Onboard? <u>Y</u> <small>Circle</small>	
AIRCRAFT	Departure Point <u>Anoka Airport</u>		Destination <u>Carver Cty. Fire</u>	
	N # <u>39101</u>	Manufacturer <u>Bell</u>	Model <u>206B3</u>	
	Owner/Operator <u>Scotts Helicopters</u>		Pilot <u>Mike Balch</u>	

NARRATIVE:

Please provide a brief explanation of the event.

After we completed initial attack operations on the fire a request was made by the Waconia Fire Dept. for a recon. / GPS flight. While performing this mission we were alerted by the crew members on the ground of a helicopter in the area of the fire. After circling the fire perimeter, we noticed that there now were two helicopters in the vicinity, but still outside of the parameters of any immediate danger of our flight path. At that point, the pilot of 101 attempted and successfully made contact with both media helicopters. At no point was vertical separation jeopardized. The two media helicopters did not initiate radio contact with us as they approached the fire.

HELICOPTER OPERATIONS SPECIALIST'S NOTES:

In debriefing with the pilot of 101, he did talk directly with the Channel 11 media helicopter on 122.925. The helicopter did not try to contact 101 before entering the fire area, but they were on the correct frequency when 101 called them.

The media pilots for Channel 11 and Channel 5 were communicating with one another while on scene. We will continue to meet with the media pilots to encourage them to "call in the blind" on 122.925 when within 12 miles and approaching wildfires.

AVIATION SAFETY ADVISOR'S NOTES:

This form is used to report any condition, observance, act, maintenance problem, or circumstance which has potential to cause an aviation-related mishap.

SAFECOM v. 2016

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)	
Name	Phone
Ernest Schmitt	218-335-6647
Organization	Date
MN DNR	5/8/2016

EVENT

Date	Local Time	Injuries	Damage	Location	State
5/8/2016	1325	N	N	Taylor Rd Fire	MN

MISSION

Type (PAX, Cargo, Recon, Sling, Long Line, etc.)		Procurement (Contract, CWN, Rental, Fleet, Cooperator, etc)			
Recon		CWN			
Departure Point		Destination			
KHIB		KHIB			
Number of Persons Onboard		Special Use		Hazardous Materials Onboard	
3		N		N	

AIRCRAFT

N#	Manufacturer	Model	Owner/Operator	Pilot
111AR	Beechcraft	Queen Air	Bemidji Aviation	Neil Forst

NARRATIVE

Please provide a brief explanation of the event. Use additional sheet if necessary.

While conducting a recon flight at the Taylor Road Fire, Tower Area, which had a TFR (ZMP 6/0609-1) in place. As we made our first circuit around the fire we turned south, the pilot identified an oncoming aircraft. AirAttack 7, 111AR was flying at 1000' AGL.

The aircraft approached at approx. 120' AGL. The aircraft, a yellow small tail dragger, possibly a Piper Cub, or Aeronca Champ, with orange trim, and very small registration # on its tail, flew directly over the fire area, violating the TFR, and causing us to abandon our mission until we were confident the aircraft had left the airspace.

The IC was contacted as soon as we spotted the plane, asked if anyone on the ground could get a tail #. No one on the ground was able to get a registration # from the ground.

FWOS Comments: This has been a reoccurring issue and one with no easy solution. I have been doing some outreach to some EAA groups in an attempt to do some public education about the FTR and FTA programs in relation to wildland fire. Unfortunately many of the operators of these smaller aircraft do not have radios or are not very inclined to use them. Ceasing operations was a good call and your only option at that point.

Aviation Safety Advisor: Good job by the pilot and crew of remaining vigilant to "see and avoid" even though a TFR was in place. We do our best to provide a safe airspace but this is a reminder that even our best efforts cannot allow us to let our guard down. When the fire is active and smoke is evident we may get more compliance to our request (and TFR's) to have pilots remain 5 miles and 5'000' from fires than when fires are in their later stages, there is not much smoke, and curiosity overcomes the good planning and judgement of some private pilots.

This form is used to report any condition, observance, act, maintenance problem, or circumstance which has potential to cause an aviation related mishap. SAFECOMs are submitted electronically to the HOS, FWOS or MIFC Pilot within 24 hours of the event on the 2016 version of the SAFECOM form.

SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name: Dennis Danzl Phone: _____
 Organization: MNDNR Date: 4-29-15

EVENT	Date: <u>4-29-15</u> Local Time: <u>15:55</u> Injuries? <u>N</u> Damage <u>N</u> <small>Mo Day Year 24 Hour Clock</small>
	Location: <u>Sand Creek Rd Fire, Hinckley</u> State: <u>MN</u> <small>Airport, City, Lat./Long, or Fire Name</small>

MISSION	Type <u>Air Attack</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc.</small>	Procurement <u>CWN</u> <small>Contract, CWN, Rental, Fleet, Cooperator, etc.</small>
	Number of Persons On board <u>2</u>	Special Use? <u>N</u> Hazardous Materials Onboard? <u>N</u>
	Departure Point <u>KBRD</u>	Destination: <u>Sand Creek Fire</u>

AIRCRAFT	N # <u>5ER</u> Manufacturer: <u>Cessna</u> Model: <u>303</u>
	Owner/Operator: <u>Kentucky Airmotive</u> Pilot: <u>Bill Robinson</u>

Please provide a brief explanation of the event.

NARRATIVE:

AA2 made contact with Smokey who was over the Sand Creek Fire Smokey said he was 3,500 and cleared AA2 in at 2500. This was when AA2 was about 15 miles out. When AA2 was about 10 miles from fire Smokey said he was clearing the scene and was enroute to Hinckley Airport. AA2 should have determined where Hinckley Airport was in relation to our route to the fire but did not. Smokey's route was exactly 180 degrees opposite on the same exact path. TCAS did its job and warned us of the aircraft in time to descend safely. Smokey passed overhead around 300 ft above us. I certainly should have had a better handle on where the route to the airport was going to put Smokey.

FWOS

I am recommending an AAR on this incident. Some details are not completely clear from this report and there are several options and possibilities that need to be considered. Good job on AA2's part in identifying and reporting this incident. Also some good initial considerations for solutions. We need to explore collision avoidance options such as hardware, policy and/or training. I will pursue the AAR.

P. Wannarka

Wildfire Aviation Supervisor

I agree with the need for an AAR so we can provide clear and concise direction to all pilots and Air Attacks in a timely manner. In addition to AA2's recommended solutions additional communications need to take place in the future between aircraft in this situation. Altitudes and headings must be known and understood between aircraft in this situation. Adequate separation must be established and maintained.

B. Schuster

This form is used to report any condition, observance, act, maintenance problem, or circumstance which has potential to cause an aviation related mishap

SAFECOM

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)

Name Ron Goetzinger
Organization DNR

Phone _____
Date 4/5/12

EVENT	Date <u>03 04 2012</u> <small>Mo Day Year</small>	Local Time <u>11:45</u> <small>24 Hour Clock</small>	Injuries? Y <u>N</u>	Damage Y <u>N</u>
	Location <u>Boone Fire in Brooklyn Park</u> <small>Airport, City, Lat.../Long, or Fire Name</small>		State <u>MN</u>	
MISSION	Type <u>Fire Suppression</u> <small>Pax, Cargo, Recon, Sling, Long line, Rappel, etc.</small>	Procurement <u>Contact & Cooperator</u> <small>Contract, CWN, Rental, Fleet, Cooperator, etc.</small>		
	Number of Persons On board _____	Special Use? Y <u>N</u>	Hazardous Materials Onboard? Y <u>N</u>	
	Departure Point <u>Anoka County A.P.</u>	Destination <u>Brooklyn Park</u>		
AIRCRAFT	N # <u>111AR</u>	Manufacturer <u>Beechcraft</u>	Model <u>Queen Air</u>	
	Owner/Operator <u>Bemidji</u>	Pilot <u>Head</u>		

Please provide a brief explanation of the event.

NARRATIVE: Air Attack 5 and T-890 were dispatched to the Boone Fire at Brooklyn Park. When commo was established with fire personnel on the ground, Air Attack 5 was informed that the helicopters Trooper 9 and 2TC were using the Victor (am) frequency of 123.025 for air to air communication. The DNR fire standard is 122.925. This situation creates the opportunity for incoming aircraft (broadcasting in the blind) to assume there are no other aircraft within the fire area.

Note: Apparently Trooper 9 suggested the frequency to 2TC when 2TC came on scene. All operators and partners should be aware of the standard.

FIXED WING SPECIALIST COMMENTS: Will follow up making sure that appropriate contacts are made, incident information is shared and that proper procedures are communicated and recommended to responding resources.

HOS COMMENTS: The firefighting mission is new for the State Patrol. We implemented State Patrol pilot training and awareness of our standard procedures the day after this fire. Coordination of the airspace within the FTA, safety and tactics were our primary focus for this training. Mixing rotor wing and fixed wing aircraft on tactical missions in a smoke-filled environment requires that we are all working as a team. A DNR Forestry / MN State Patrol Helicopter Firefighting Operations Plan has been drafted and reviewed. In the future if the State Patrol is requested to respond to a wildfire they will have a helicopter manager assigned or will be coordinating with an ATGS before they enter the FTA.

Helicopter Managers must ensure that when on wildfires all Air-Air AM radio communications are on 122.925 unless a frequency change is implemented by the ATGS. The All-Risk frequency (all missions except wildfire) is 123.025.

SAFETY ADVISOR'S NOTES: This is an example of how a chain of events begins and continues until someone breaks the chain. Ron did a good job of breaking the chain by getting folks back on track by returning folks to our standard operating procedures. A good job by Bill insuring a quick After action review was performed that identified the risk and assessed the risk. Risk mitigation steps are continuing including the "DNR Forestry / MN State Patrol Helicopter Firefighting Operations Plan". Supervision of the risk mitigation steps will continue as we move forward.

SAFE C

Reported By (Optional)	
Name	Phone
Todd Tisler/Allen Jessop	406-360-6842
Organization	Date
MN DNR	4/23/2019

EVENT

Date	Local Time	Injuries	Damage	Location	State
4/23/2019	1230	N	N	Bemidji Forestry Area	MN

MISSION

Type (PAX, Cargo, Recon, Sling, Long Line, etc.)	Procurement (Contract, CWN, Rental, Fleet, Cooperator, etc)	
Initial Attack	Contract	
Departure Point	Destination	
Bemidji Tanker base	Becida Fire	
Number of Persons Onboard	Special Use	Hazardous Materials Onboard
4	N	N

AIRCRAFT

N #	Manufacturer	Model	Owner/Operator	Pilot
7CH	Bell	206 B3	Choice Aviation	Allen Jessop

NARRATIVE

Please provide a brief explanation of the event. Use additional sheet if necessary.

7CH was dispatched to the Becida Fire at 1235hr from the Bemidji (BJI) Tanker Base. While enroute to the fire, the pilot tried calling Hawkeye (area detection plane) on the AM (122.925) to get clearance into the fire traffic airspace. After several attempts and no response, the pilot tried an alternate AM frequency (Unicom 122.800). Again, after several attempts there was no luck reaching Hawkeye. 7CH began a holding pattern 8 miles out from the fire to ensure safety and follow fire traffic area protocols. After 5 minutes of calling Hawkeye on both AM frequencies, the HMGB called the Bemidji Tanker base to get an update on the location of the detection plane. BJI Tanker Base contacted the Bemidji Area and it was confirmed that the detection plane was leaving the fire and returning to its normal detection route. This communication was relayed and 7CH continued to the fire. While enroute, 7CH continued to try to contact Hawkeye on both AM frequencies but again had no luck. 7CH was able to communicate with Smokey #1 (Park Rapids Detection) on AM 122.925 during this time who was also trying to reach Hawkeye but had no response.

7CH proceeded to the fire and was released shortly after giving a size up. All other ops normal.

HOS Comments: Good job adhering to FTA protocols and obtaining necessary info on Hawkeye's location prior to entering the FTA. A follow up with the area Fire Team Leader was completed. The communication issues were relayed and radios double-checked on the detection aircraft. It was discovered that the detection aircraft was not using 122.925, all radios were found to be functioning normally. It should be mentioned that this was Hawkeye's first flight and first fire of the season; this may have been a factor in the communication issues as well.

Aviation Safety Advisor: This fire occurred as the detection plane left the airport on a shakedown flight. The frequency 122.925 was in the VHF-AM radio but not selected and thus not being monitored, not due to a lack of awareness and experience but the result of a simple mistake. Key issues: 1. The detection plane needs to monitor 122.925 on one of the two AM radios. 2. The detection plane should have been reachable over the Area simplex. 3. If the pilot and observer are aware that other aircraft are being requested, communication over these radio systems should be anticipated. As HOS commented, appreciate FTA protocols being followed to de-conflict airspace by 7CH.

SAFECOM v. 2016

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)	
Name	Phone
Kirk M Johnson	218-231-8054
Organization	Date
MN DNR	6/8/2018

EVENT

Date	Local Time	Injuries	Damage	Location	State
5/18/2018	1609	N	N	Hibbing Air Tanker Base	MN

MISSION

Type (PAX, Cargo, Recon, Sling, Long Line, etc.)		Procurement (Contract, CWN, Rental, Fleet, Cooperator, etc)	
Aviation Initial Attack response		Contract	
Departure Point		Destination	
Hibbing Air Tanker Base		Horseshoe Lake Fire; MN-MNS-2018-402	
Number of Persons Onboard		Special Use	Hazardous Materials Onboard
1		N	N

AIRCRAFT

N #	Manufacturer	Model	Owner/Operator	Pilot
212FB, 3072Y	Air Tractor	AT-802F	Dauntless Air	Dornan, Moore

NARRATIVE

Please provide a brief explanation of the event. Use additional sheet if necessary.

At 1609 Hibbing ATB received a dispatch for Air Attack, 2 Firebosses and a Helicopter to the Horseshoe Lake Fire (USFS) between Marcell and Bigfork. AA9, T-204, T-206, and 19BH were dispatched to the fire. 25Z, flying the CHP detection route was sent to the fire.

Upon dispatch, we pulled up the MN DNR Detection tracking page to check for possible conflicts with the responding tactical aircraft. We normally give a courtesy call to Area offices to inform them when we have aircraft working at a location in their area or when aircraft are crossing through their area enroute to a fire.

Thunderhawk, Deer River's detection plane, was near Deer Lake (NE of Deer River) heading to the northeast on their route. The farthest NE checkpoint on Thunderhawk's route was in the path of the responding Firebosses and the helicopter. AA9 was beyond that point and no factor.

We called the Deer River Area and informed them that we had aircraft responding to the Horseshoe Lake Fire and that there may be a conflict between Thunderhawk and the responding aircraft at the farthest NE checkpoint. Deer River Dispatch was unaware until then that we were sending aircraft across their area.

Deer River Dispatch notified Thunderhawk and informed them of the situation. Thunderhawk shortened their route to exclude that checkpoint and there was no conflict.

When AFF updated, we noticed that 19BH would have been no factor as they had already passed that point. We are unsure how close the Firebosses would have been to Thunderhawk when passing that checkpoint, but we made the call proactively to avert any possible conflict.

The Hibbing Area has also amended their detection route this year after being informed that we will have retardant aircraft crossing their detection route multiple times while working a fire and reloading at the base. This is an easy way to deconflict some of the airspace for responding tactical aircraft.

FWOS Comments: Great demonstration of good situational awareness and initiative by tanker base staff. The situation outlined in this Safecom is something that warrants further research and discussion. Integration of our detection program with our suppression activities is an area that has been touched upon and raised as a possible issue.

Aviation Safety Advisor: Airspace deconfliction is an important part of the ACDP function. ATIM's should also deconflict the airspace when needed. Knowing the agency or area that aircraft are responding to can help with deconfliction as pointed out above. This has happened in the past when crossing jurisdictional boundaries. The airtanker base staff did a remarkable job finding out where the detection aircraft was located and the intended flight path. See and avoid are the basic rules of all fire response aircraft, but everyone chipping in to make the flight more safe is always appreciated. Discussions of having an AFF capable system in detection aircraft have occurred. A decision has not been made at this point but this SAFECOM will be a part of the next discussion.

SAFECOM v. 2016

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)	
Name	Phone
Wurst AAT 6	218-235-9224
Organization	Date
DNR Forestry	5/8/2018

EVENT

Date	Local Time	Injuries	Damage	Location	State
5/5/2018	12:20	N	N	Camp Ripley	MN

MISSION

Type (PAX, Cargo, Recon, Sling, Long Line, etc.)	Procurement (Contract, CWN, Rental, Fleet, Cooperator, etc)	
AAT mission	Click here to enter text.	
Departure Point	Destination	
KBDR	Lake Beauty Fire	
Number of Persons Onboard	Special Use	Hazardous Materials Onboard
2	N	N

AIRCRAFT

N #	Manufacturer	Model	Owner/Operator	Pilot
N8652K	Cessna	340A	Flighing A Flight Service	Dawkins

NARRATIVE

Please provide a brief explanation of the event. Use additional sheet if necessary.

We received a dispatch for a fire east of Long Prairie MN. I briefed the pilot that we would need to fly around Camp Ripley Restricted area and he confirmed. During start up he was having issues with loading Lat/Long into the GPS. After several tries he was able to save the coordinates. While in route I notice we had flown into the restricted airspace and directed the pilot to fly due west and leave the airspace. We are now in the orange and headed for red. We continued on with no other issues with this mission.

This was the pilots first day on duty and the owner operator of aircraft. Good pilot but had not used this GPS unit as of late. Also the aircraft iPad georeference was disabled which led to our busting airspace. We de-briefed and discussed that we were not fire ready and that not being familiar with this GPS and the iPad issues started a chain of events that took us out of the fire mission and into Camp Ripley. We are in the yellow now.

FWOS Comments: This is the second Safecom that may have been reduced in severity or possibly avoided altogether if proper use of iPad/ForeFlight settings had been better utilized. In this case some more attention spent on ForeFlight ops during the pilot inbriefing could possibly mitigate some of these occurrences.

Aviation Safety Advisor: Good job utilizing CRM and recognizing the Camp Ripley Restricted area ahead of time and telling the pilot. People make mistakes, but proper utilization of the technologies available would have prevented flight into restricted airspace. Contact with MPLS Center to advise the aircraft had inadvertently flown into and was leaving directly is recommended.

SAFECOM v. 2016

AVIATION SAFETY COMMUNIQUE

Reported By (Optional)	
Name	Phone
Click here to enter text.	Click here to enter text.
Organization	Date
Click here to enter text.	Select date

EVENT

Date	Local Time	Injuries	Damage	Location	State
5/3/2018	1430	N	N	Tower	MN

MISSION

Type (PAX, Cargo, Recon, Sling, Long Line, etc.)	Procurement (Contract, CWN, Rental, Fleet, Cooperator, etc)				
Detection	Contract				
Departure Point	Destination				
ORB	Allstar Route				
Number of Persons Onboard	Special Use		Hazardous Materials Onboard		
2	N		N		

AIRCRAFT

N #	Manufacturer	Model	Owner/Operator	Pilot
N9660H	Cessna	172	Taconite Aviation	Rick High

NARRATIVE

Please provide a brief explanation of the event. Use additional sheet if necessary.

Allstar was on the North side of the Southern portion of its route. Checking in at Crane Lake they mentioned a smoke just to the East. The Fire Program Forester knew that the USFS was conducting a prescribed burn in that area, but neglected to inform Tower Dispatch and asked Dispatch to advise Allstar to move closer to confirm. Allstar went on a SouthSoutheast trajectory and approached the edge of State protection. Allstar advised burning appeared to be near Lake Jeanette and Tower Dispatch had received a phone call from USFS advising us it was their prescribed burn. Allstar resumed its route, with a max deviation of approximately 4 miles from original route.

As per the Airspace Deconfliction Guide, this issue was due to lack of proper follow-through with Area Dispatch and the Area Fire Program Forester. When the smoke was observed in the USFS protection zone USFS dispatch should have been contacted by the area and then briefed about the smoke that was spotted. They would have gotten back to the area and advised to either continue to smoke or return to normal operation.

For any deviation from route that involves going into another area or agency airspace, the neighboring dispatch needs to be contacted.

MIFC Pilot Comments: As stated above the USFS Dispatchers should have been contacted to coordinate the need to fly to the fire. The coordination between dispatchers provides a safer flight environment and efficient use of aircraft.

Aviation Safety Advisor: Great job in the narrative explaining the problem and the solution.

APPENDIX C: INFORMATION

APPENDIX C-1



Fire Danger

**STAY CLEAR OF WILDFIRES AND
SMOKE FOR YOUR SAFETY AND THE SAFETY OF
FIREFIGHTING AIRCRAFT**

Firefighting aircraft operate at wildfires throughout the United States. Fire aircraft fly from ground level to several thousand feet above wildfires with low visibility transiting to and from fires at a variety of altitudes.

- ◇ Check NOTAMs for temporary flight restrictions
- ◇ General Aviation pilots are asked to stay seven miles away from and 5,000 feet above all fire
- ◇ Even if no firefighting aircraft are visible, general aviators should assume they are in the airspace around a fire
- ◇ Flying to “check out the fire” could be disastrous
- ◇ To report a wildfire, contact ATC or the nearest flight service





Produced by the Minnesota Interagency Fire Center ◇ 402 SE 11th Street, Grand Rapids, MN 55744

DNR FIREFIGHTERS ASK PILOTS FOR THEIR HELP

Cooperation from all pilots is being requested to ensure a safe environment for aerial firefighting aircraft and crews.

In Minnesota during periods when weather and fuel conditions cause our forests and wetlands to be in the moderate to high fire danger range, the DNR uses helicopters and airplanes as part of their firefighting arsenal. During these periods, 40 - 50 aircraft may be working or on stand-by every day for aerial delivery of water, retardant, firefighters, cargo and for fire detection.

Aircraft and crews are strategically located around the State to quickly respond to wildfires. One or more aircraft may be dispatched to any fire in the State within minutes after it starts, depending on what is burning and the values that are threatened by the fire.

According to Bill Schuster of the Minnesota Interagency Fire Center in Grand Rapids, sometimes conflicts arise between private aircraft and firefighting aircraft when they find themselves in the same airspace. Bill is a Helicopter Operations Coordinator for the DNR and has been involved with aerial firefighting since 1982. He says that some private pilots seem to be naturally attracted to smoke and will change their course or even take a quick flight just to see what's burning. He and his colleagues have seen this type of behavior occur all over the nation which sometimes causes air operations to be suspended until the airspace can be cleared.

Given the extensive use of aerial firefighting resources, We need to change the culture of pilots. Our goal is to obtain an area free of non-emergency aircraft within a 5 mile radius below 5,000' MSL from all fires. In Minnesota, the average elevation above Mean Sea Level (MSL) is 1500' and the DNRs request will give the firefighters 3,500' to work in and provide separation between their airplanes and helicopters.

Often, a large fire takes firefighters several days to control, similar to the Andover fire in 1999 and the Carlos Edge fire of this past October, or the fires that occurred this past summer in the Western United States. A Temporary Flight Restriction (TFR) is requested by the firefighting agency and is placed over the area by the FAA.

Any pilot of a non-emergency relief aircraft who flies into this restricted airspace without permission is subject to penalties that are assessed by the FAA. These penalties may include remedial training, Pilot Certificate suspension or revocation, and/or fines of up to \$1,000 per occurrence. These TFRs seem to work on a large fire that burns for several days where the general public is aware of the situation and if pilots obtain a briefing before their flight to check current Notices to Airmen (NOTAMs).

Over 99% of the wildfires that occur in Minnesota are smaller, quick moving, wind driven type fires that do most of their damage within the first few hours after they start. With the ever increasing urban interface (areas where people are building in forests and near wetlands) Minnesota firefighters are forced to be more aggressive with their assault on wildfires. This aggressive assault includes the extensive use of aircraft.

On most of the fires in Minnesota, there simply is no time to request, place and notify pilots of a flight restriction. "Voluntary cooperation by all pilots in the State will be much more effective", says Schuster. "We are asking for the professional courtesy of all pilots to stay 5 miles and 5,000' MSL from fires so we can do our job safely, efficiently and effectively."

APPENDIX D: TFR ENFORCEMENT EXAMPLE

U.S. Forest Service
Bureau of Indian Affairs
National Park Service

MN Department of Natural Resources
U.S. Fish and Wildlife Service
MN Department of Public Safety
Emergency Management

“Minnesota’s Emergency Response Agencies”

For Immediate Release

Contact: Fire Aviation Dispatch, (218) 327-4573 or Fire Information, (218) 327-4564

General Aviation Pilots Pose Threat to Firefighters, Public

Friday, October 27, 2000, Grand Rapids, Minn. – Minnesota Interagency Fire Center (MIFC) officials say they will pursue violations of temporary restrictions of flight space over wild land fires. Sheldon Mack, Helicopter Specialist at MIFC, said, “We are disturbed by the number of general aviation pilots that ignore temporary flight restrictions and want them to know they pose a threat to lives and property of citizens, as well as the firefighters.” This type of restriction is regularly placed over wild land fires because air support is often critical to extinguishing the fire.

During a year when fire blazed across the state, temporary flight restrictions were set in place many times. A Temporary Flight Restriction (TFR) is granted in accordance with FAA regulations. The TFR allows for law enforcement and media aircraft if they operate at an altitude above suppression efforts. Other aircraft need clearance from the controlling office. Violation of the TFR is turned over to the FAA for investigation and enforcement. Pilots found in violation may be subject to pilot certification suspension or revocation, or fines.

MIFC officials offer this advice to general aviation pilots: Make yourself aware of any temporary flight restrictions in effect before departing. If you see smoke or hear of a fire, avoid it. Resist the urge to go “have a look”. You will be endangering the lives of firefighters and the public.

Recently, air operations were suspended on an 8,500-acre fire near Wyoming, Minnesota that burned four homes and threatened hundreds more, forcing evacuation and road closures. This case has been turned over to the FAA. Numerous other instances have occurred in which aerial operations were almost curtailed due to close calls with sightseers making over flights of a fire.

Mack said, “Suppressing wild land fires is like any other emergency when the public is required to give ample space for emergency equipment. In the case of fires, aircraft are part of the suppression efforts, including EMS helicopters or law enforcement aircraft”. Even during the best weather conditions, aerial firefighting operations can be complicated. The complexity is compounded because firefighters must hit targets while flying in congested airspace, often near power lines and radio towers with adverse weather and smoke conditions.

APPENDIX E: FIRE TRAFFIC AREA PROCEDURES



NWCG Fire Traffic Area (FTA)

NWCG Standards for Aerial Supervision, PMS 505,

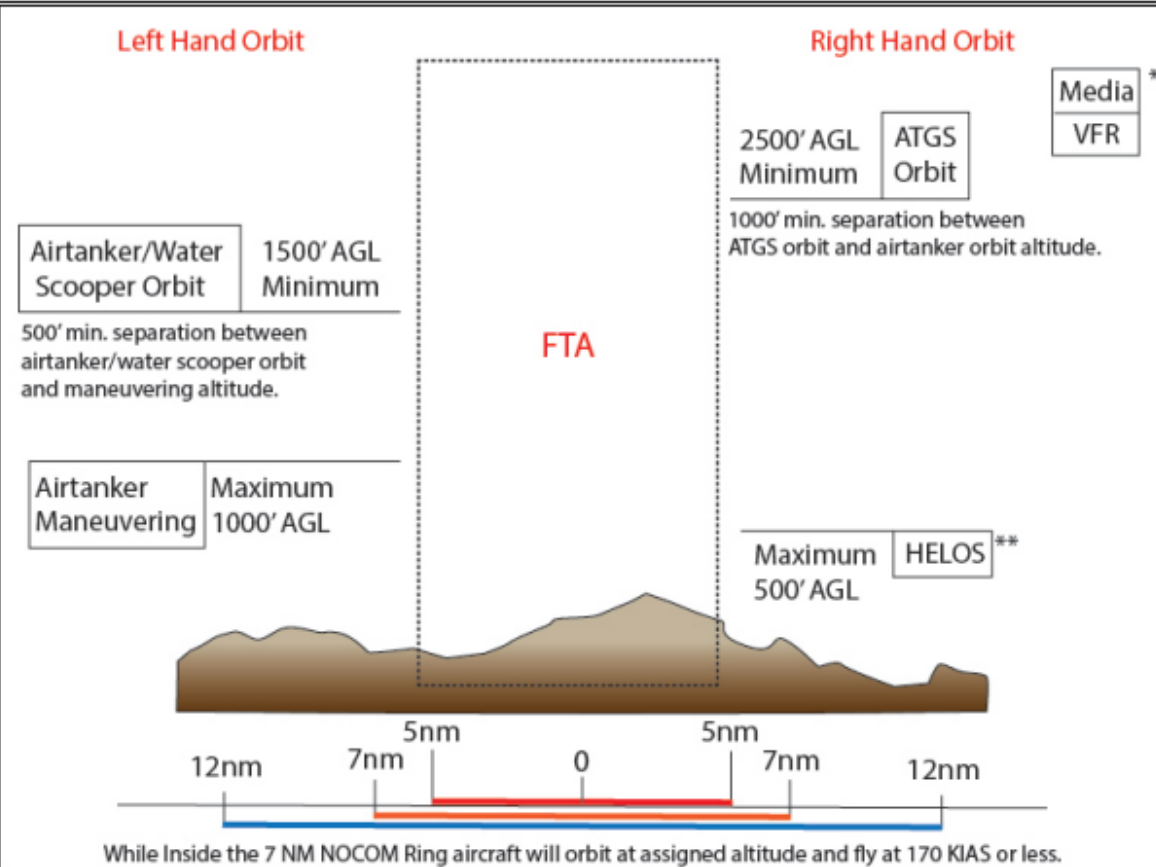
<https://www.nwcg.gov/publications/505>

*****Clearance is required to enter the FTA*****

Initial Radio Contact: 12 nm on assigned air tactical frequency.

No Radio Contact: Hold a minimum of 7 nm from the incident.

Note: Airtanker maneuvering altitude determines minimum airtanker and ATGS orbit altitudes. Assigned altitudes may be higher and will be stated as MSL.



* Media and IAA Aircraft: Maintain VFR separation above highest incident aircraft or at the altitude assigned by the controlling aircraft.

** Helicopters: Fly assigned altitudes, orbits, and routes.

Airtanker Base As Assigned	Air Guard 168.625 Tx Tone 110.9	Air to Air As Assigned	National Flight Following 168.650 Tone 110.9 TX and RX
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APPENDIX F: AIR TACTICAL GROUP SUPERVISORS (ATGS) – ROLES AND RESPONSIBILITIES

ATGS ROLES & RESPONSIBILITIES

The Air Tactical Group Supervisor works for the Incident Commander. The ATGS is an airborne firefighter tasked with airspace coordination.

Duties include:

- Provide airspace supervision, including holding patterns and altitudes
- Coordinate flights of all aircraft
- Develop, recommend and implement air-to-air communication plans
- Develop, recommend and implement air-to-ground communication plans
- Make tactical recommendations
- Evaluate if structures are threatened
- Assign aircraft specific tasks
- Brief pilots on strategy and tactics
- Provide safe separation of all aircraft
- Assess situation, aircraft hazards and potential problems
- Establish flight patterns – approve any changes
- Clears ground resources from drop areas, in coordination with Incident Commander
- Establish geographical operating separation
- Determine air safety requirements and procedures
- Takes appropriate action on aircraft incidents and accidents
- Determines and recommends aircraft needs over incidents
- Recommends temporary flight restrictions
- Coordinates with media, Enforcement and other agencies over the incident
- Enforces safety & operating procedures
- Determine aircraft capabilities and limitations
- Inform Incident Commander of overall incident conditions
- Requests subsequent drops
- Requests additional aircraft as necessary
- Return aircraft to base when not needed
- Brief ground resources on potential safety concerns and fire behavior
- Conduct de-briefings with all incident aircraft post mission
- Recommend other resources needs, both ground and aerial

Aerial supervision will normally be dispatched, when available, for initial attack and extended attack to enhance aviation efficiency and safety.

The ATGS also may advise, regarding:

1. Fire Behavior
2. Safety
 - a. Spread relative to congested areas and fire resources
 - b. Adverse fire behavior, which may endanger workers
 - c. Location of escape routes and safety zones
 - d. Safety of ground personnel and equipment
 - e. Air operations safety
3. Fire Tactics and Use of Resources
 - a. Direction and rate of spread
 - b. Access
 - c. Anchor points
 - d. Water source
 - e. Effectiveness of attack
 - f. Location of spot fires
4. Number and type of aircraft needed
5. Appropriate use of all aviation resources

The ATGS role in coordinating ground and aviation resources is critical. An ATGS's primary responsibility is the coordination of aircraft operating on an incident.

ATGS's Initial Attack Responsibilities with no IC: The ATGS's role and responsibilities may vary between initial and extended attack. The ATGS, when making an initial attack with no IC, should:

1. Provide an incident size-up.
2. Recommend dispatch of resources needed based on access, tactical capability, known availability, response time, fire behavior and expected spread.
3. Give periodic status reports to dispatch/unit.
4. Develop tactical plan and assign arriving resources based on the strategy.
5. Until a qualified IC arrives on-scene, the responsible agency may temporarily rely on the ATGS for tactical assignments. Upon arrival of an IC, the ATGS should assume the "normal ATGS role".
6. Brief ground resources on potential safety concerns and fire behavior.

ATGS Roles in Multiple Fire Situations: Some fire management units activate the ATGS position when multiple fires start. The ATGS can provide the following services and intel:

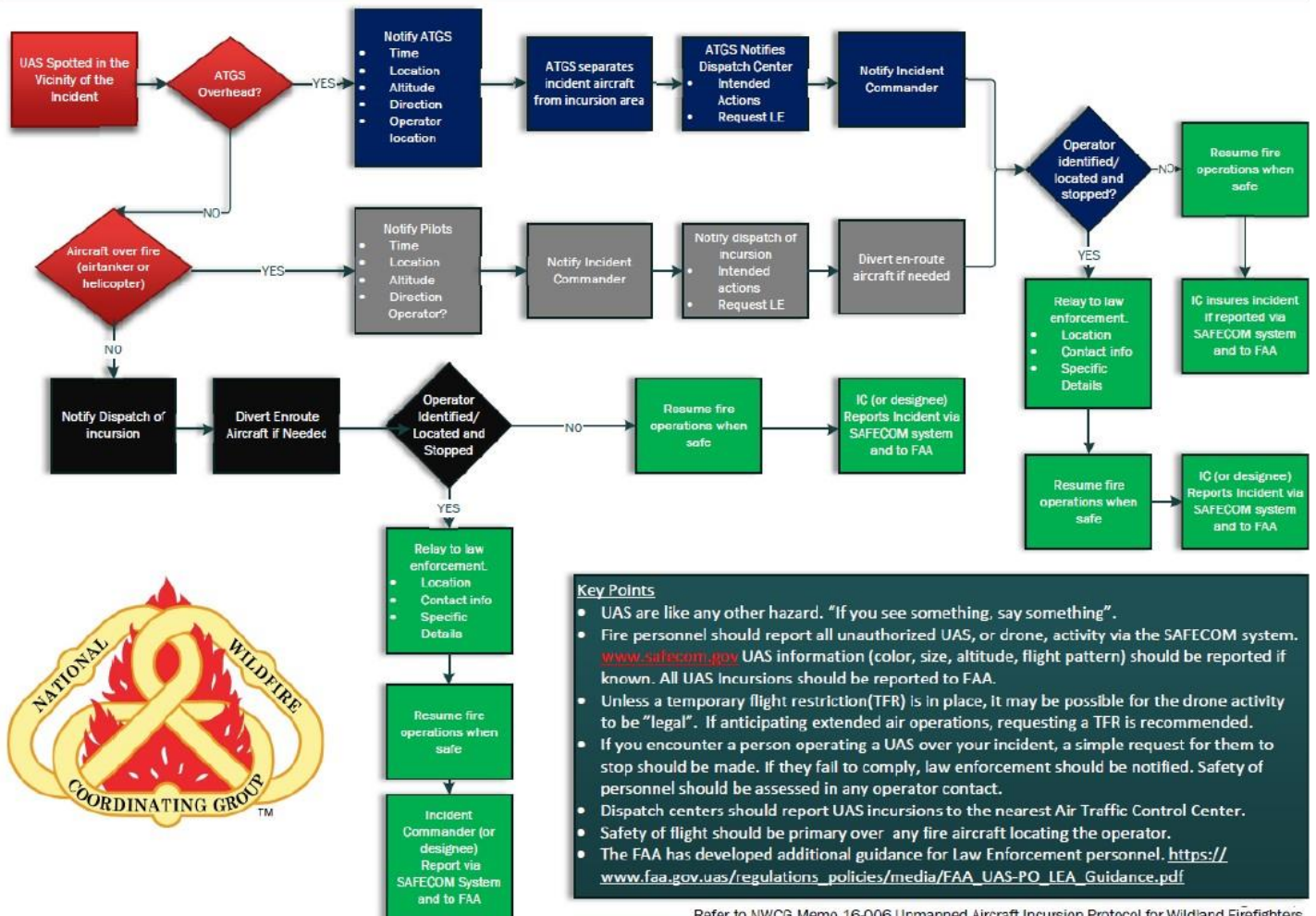
1. Provide fire detection and location. Accurate locations using “legal description”, latitude and longitude, VOR and radial.
2. Prioritize wildfire incidents based on threat to life, property and resources along with chance of containment.
3. Assess access to the incident. Distance and time requirements.
4. Recommend the best resource(s) to commit to the incident, based on resource capability, mode of access, probably availability and response time.
5. Develop an initial attack strategy and tactical plan based on fire behavior elements and types/numbers of air and/or ground resources responding within specific time frames.
6. Direct fire resources as per strategy/tactical plan until a qualified IC arrives on-site.
7. Collect and report intelligence information for dispatch and the IC.
8. Re-assign resources to higher priorities if they develop.

APPENDIX G: IRON RANGE MINING FACILITIES



APPENDIX H: UAS Conflict Flow Chart (Reference PMS 515, NWCG Standards for UAS Operations)

NWCG Unmanned Aircraft System Incursion Protocol for Wildland Firefighters



Refer to NWCG Memo 16-006 Unmanned Aircraft Incursion Protocol for Wildland Firefighters