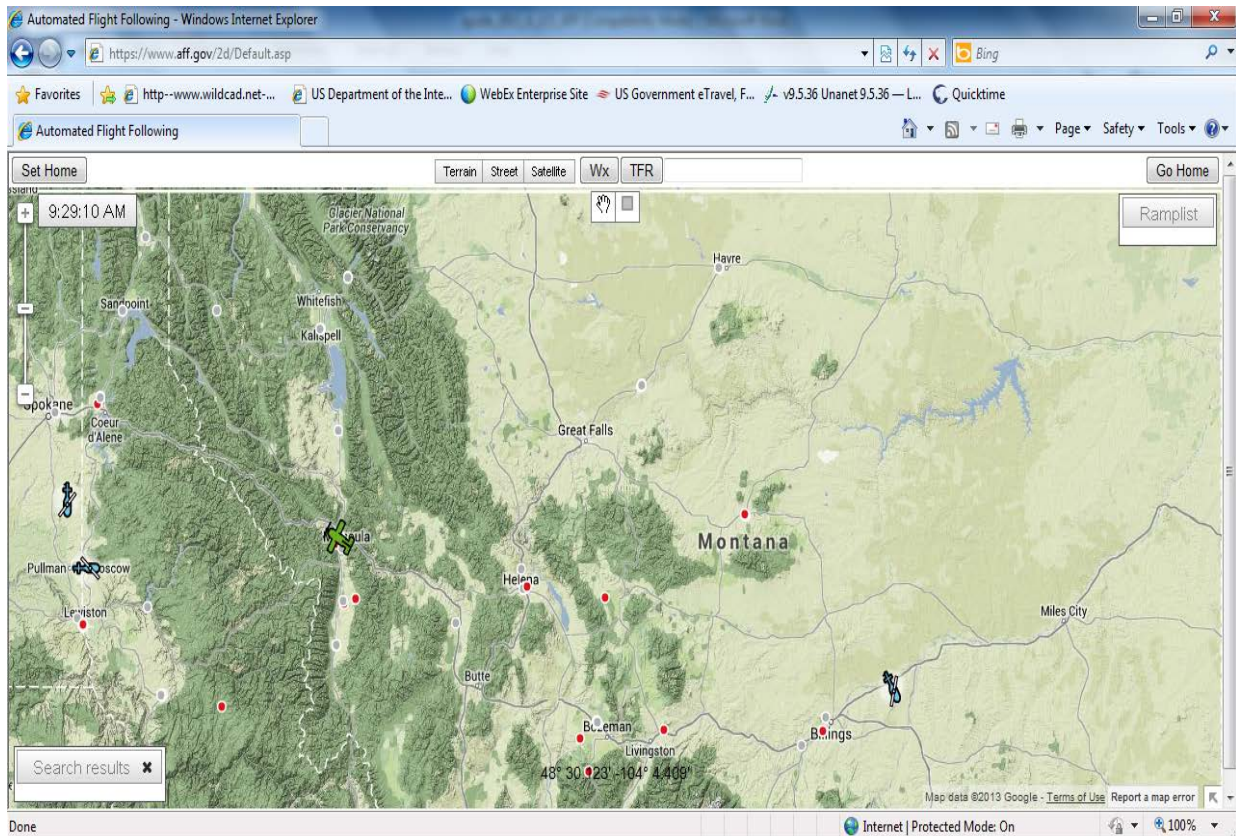


A-115 Automated (Satellite) Flight Following (AFF) www.aff.gov



Participant Workbook



Prepared by Office of Aviation Services Training Division
and Interagency Aviation Training Partners
Revised December 9, 2013

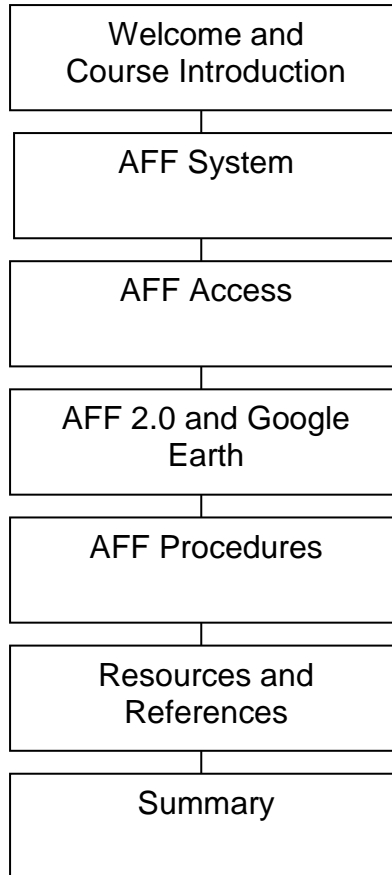
**A-115
Automated (Satellite) Flight Following (AFF)**

Version Control

Version	Description	Date
1.00	Original Materials	NA
1.5	Update to AFF2.0 and Google Maps	6/30/13
1.6	Formatting and Editing Revision	11/15/13
1.7	Link Update	12/3/13
1.8	Updated link and cross-walk with IG and PPT	12/9/13

A-115 Automated (Satellite) Flight Following (AFF)

Course Map





Welcome and Course Introduction

Get to Know Your Classmates

Be prepared to share:

- Your name?
- Your position?
- How long have you been involved in aviation operations?

Course Purpose

This course is designed to provide participants with a working knowledge of the automated flight following system commonly referred to as AFF to flight follow an aircraft.

Upon completion of this course, the student will be able to log on to the AFF Internet site, and Google Earth, and be able to utilize the features each provides and “track” an aircraft.

In addition, the student will understand the correct procedures/protocols involved with AFF.

Objectives

At the conclusion of this course, you should be able to:

1. Describe the components and infrastructure of the AFF system.
2. Identify procedures to request and obtain a “New User Account” required by the Automated Flight Following (AFF) System.
3. Describe the minimum internet browser requirements to best utilize the capabilities of the AFF 2.0 and Google Earth software.
4. Identify the icons displayed and the status represented by various colors shown on both AFF 2.0 and Google Earth.
5. Identify policy and procedures listed in the National Mobilization Guide that are required when flight following aircraft utilizing AFF.
6. Identify procedures if an aircraft icon turns “red” while being monitored by AFF.

Module 1: Automated Flight Following (AFF) System

Objective:

1. Describe the components and infrastructure of the AFF system.

Automated Flight Following (AFF) is a system that automatically tracks the location, altitude, course and speed of aircraft, providing this information in real time to authorized users.

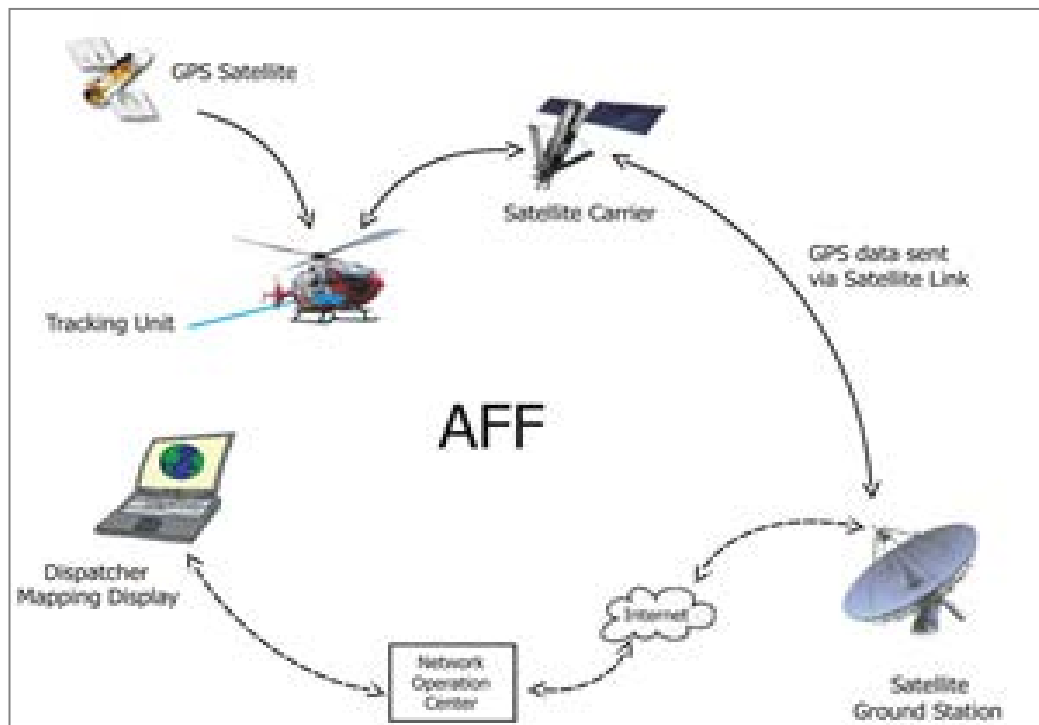
How does it work?

In a nutshell, there is a GPS unit onboard the aircraft which collects data on position, altitude, bearing and speed as long as it's turned on.

How often this data is collected depends on the vendor's subscription (similar to a cell phone account), but the minimum for our use is once every two minutes.

A tracking device transmits this data via a satellite connection (through the vendor's subscription service) to a Network Operations Center (NOC). The NOC makes the data available to display on a mapping graphical user interface which agencies can use to view their resources in real time.

AFF is **not** an emergency locating transmitter (ELT); however it does provide better information on flight history to take the "search" out of search and rescue.



AFF Components

The AFF system requires the installation of a “kit” consisting of:

- Modem
- GPS Unit
- Controller Unit
- Antenna(s) – GPS Satellite/Communications Satellite

Vendors interested in registering their equipment for use should visit the AFF website at www.aff.gov for hardware registration and required procedures.



EXERCISE:

Answer the following question.

What GPS data does AFF provide?

Module 2: AFF Access

Objective:

2. Identify procedures to request and obtain a “New User Account” required by the Automated Flight Following (AFF) System.

Navigate to the AFF web page located at: <https://www.aff.gov>

Account Administration

- Access to AFF is performed by individuals, there are no authorized “group accounts.”
- Access is for government employees and government aircraft contractors.
- Aircraft with AFF kits installed are the only aircraft displayed on the screen.
- Aircraft location and National Security issues are taken seriously by the government – **DO NOT share your password.**

New User Procedures

1. Click on “Request AFF User Account.”
2. Government employees with U.S. Forest Service (USFS) and Department of the Interior (DOI) government domain email addresses are auto-granted access to the system when they request a User ID.

For users who are not USFS or DOI employees (or those who are and are not using their government email address), their requests require additional vetting by the Help Desk in order to ensure they have a legitimate reason to access the system. They are required to provide their supervisor’s name, government or company email address, and phone number. To be approved, they can expedite the process by having their supervisor send an email confirming they need access and why, or they can wait until the help desk contacts their supervisor to confirm access.

NOTE: Aircraft contractors must register their AFF equipment with AFF website before receiving their username and password.

3. Submit information requested and account activation should occur fairly timely.

Helpdesk and Administrative Support

If users are experiencing trouble or need additional help, the “HELPDESK” is available Monday through Friday 07:30 am to 17:00 pm (Mountain time).

United States: (866) 224-7677 or email affadmin@firenet.gov

Outside US: (360) 326-6002 or email affadmin@firenet.gov

AFTER HOURS SUPPORT

In the event of **AFF OUTAGE ONLY**, call the help desk and select option 2 to contact the duty officer.



EXERCISE:

Complete the following statement.

Access is provided to the AFF system **only** to:

Module 3: AFF 2.0 and Google Earth

Objectives:

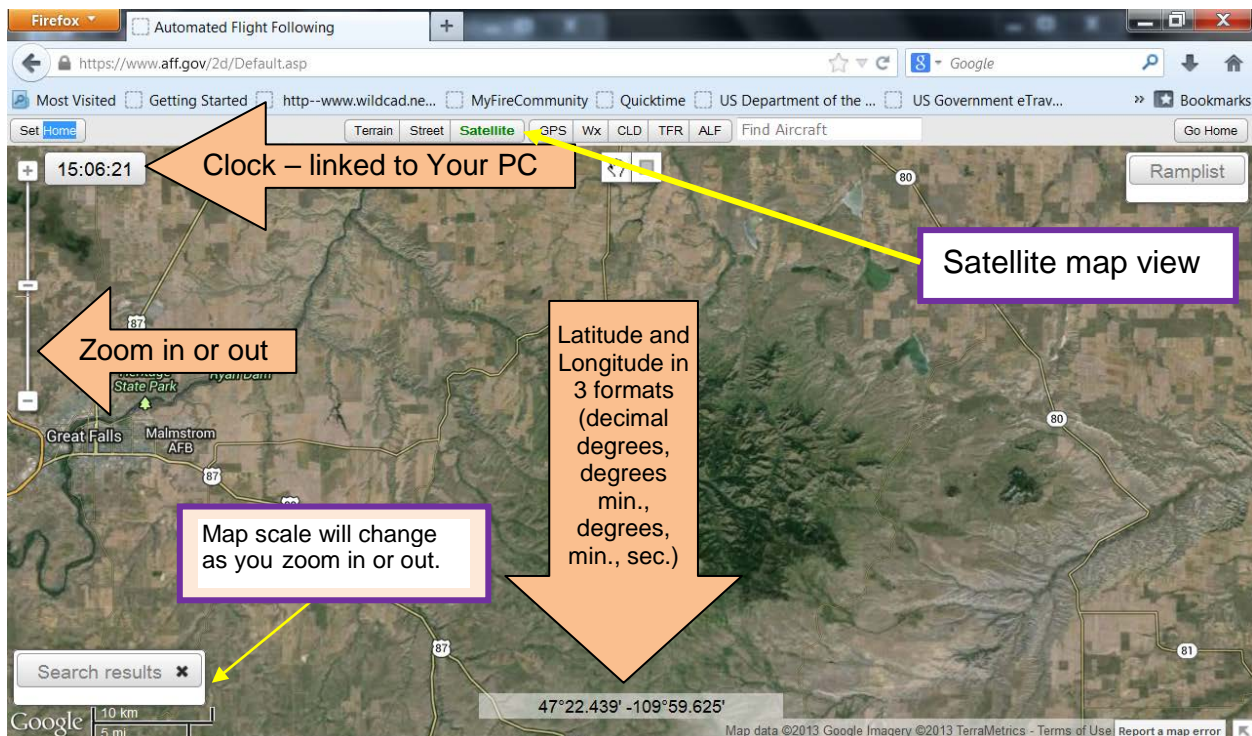
3. Describe the minimum internet browser requirements to best utilize the capabilities of the AFF 2.0 and Google Earth software.
4. Identify the icons displayed and the status represented by various colors shown on both AFF 2.0 and Google Earth.

AFF 2.0

The new AFF 2.0 uses the latest in web technology, and will run in Windows, OS X and Linux. Version 2.0 also runs on Android, iOS, and Windows 8 powered mobile devices for those needing AFF on the go at remote Helibases and retardant plants.

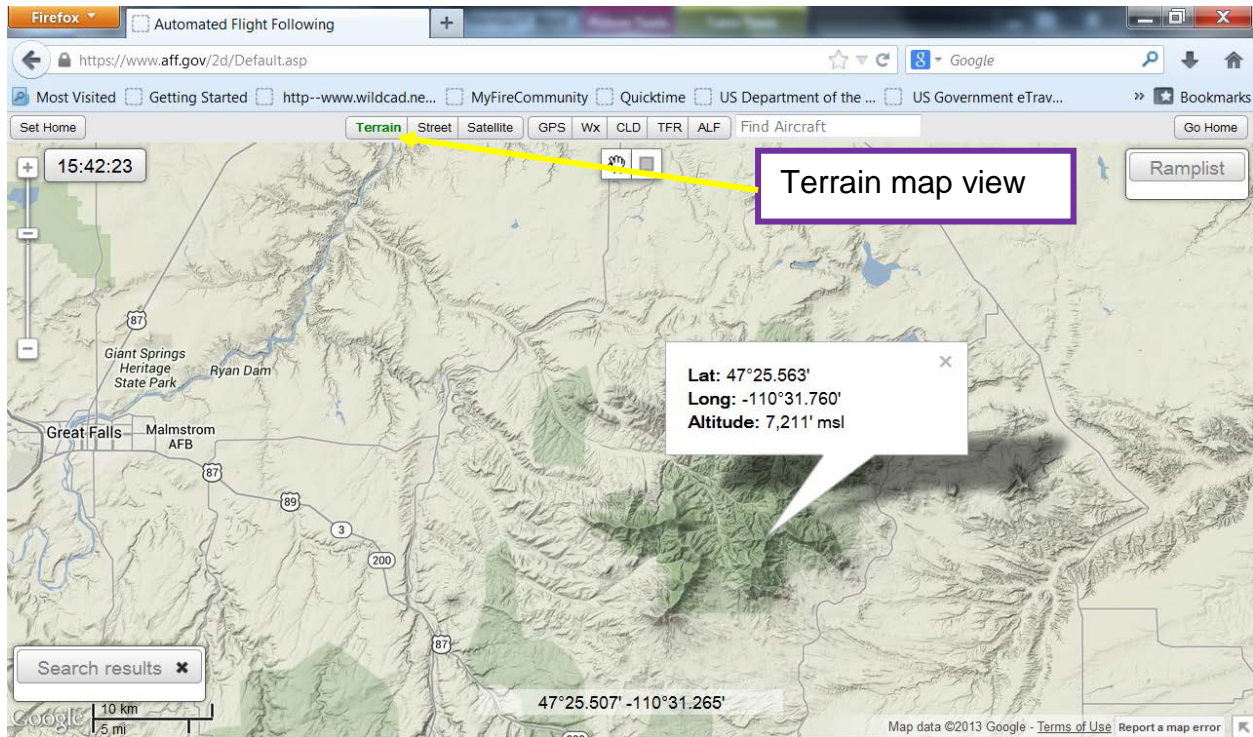
PLEASE NOTE: AFF 2.0 runs best in browsers that are less than 3 years old.

Clock: The AFF clock displayed is linked to the time shown on **your** computer. By double-clicking the clock, you can display the functional view menu (either on or off) across the top of the screen.



Pan: Click and hold the left mouse key and then drag the map. You can also use the arrow keys of the keyboard to move up, down, right and left.

Zoom: You can use the bar in the upper left-hand corner by hitting the “+” or “-” on the scroll bar to zoom in. You can also use the scroll wheel on your mouse, just place your cursor in the area you want and scroll up or down.



Altitude: To determine an altitude of a location of interest, hold the shift key and left click in the place of interest. A pop up box will display the latitude, longitude and altitude (msl). **NOTE:** A GPS's measurement of altitude is subject to error, so when comparing to an aircraft's altitude, the values may be several hundred feet off.

Set Home: To set a “home position” you pan and zoom the map to your area of interest. Click the “Set Home” button located in the upper left corner of the map. You can then move the map to a different location and different zoom level.

Once your “Home” map is established you can zoom in/out, pan, and change map types as needed. When you want to return to your “Home” map just click “Go Home” and it will bring you to your saved Home map and zoom level.

You can change your home view at any time by clicking the “Set Home” button again.

Map Types: There are 3 different map types (**Terrain, Street, and Satellite**). The different maps views have different zoom levels. If you can't zoom in as far as you'd like to in the Terrain view, try Street or Satellite.

You can also view National/State Park and National Forest Lands by using the Street Map and zooming in.



When an aircraft's position is **more than 30 minutes old**, the icon is changed to a dot to de-clutter the map.

- A **grey dot** indicates the aircraft are at a designated landing facility and **may have made a "safe landing."**
- A **red dot** indicates the aircraft are not at a designated landing facility (e.g. helibase) **OR may not** have made a "safe landing" based on the last position's altitude, speed, or proximity to airport.

Since AFF isn't notified if an aircraft is safely on the ground, AFF does calculations to decide whether an aircraft has *potentially* landed safely at a known Airport or Heliport.

Every position report is compared to an FAA landing facility database. To be calculated as potentially having made a "safe landing" the aircraft must be (a) close enough horizontally (1.5 nautical), (b) vertically (+/-150 Meters), and (c) slow enough (< 5 kts for Rotor-Wing, < 41 kts Fixed-Wing) for the icon to be changed to a grey dot. **If any one of these criteria is NOT met**, the icon is changed to a red dot to make it easy to identify this state.

Orange is assigned to aircraft that have a designated mission of delivering water or retardant. Different icon types are used to rapidly identify if the resource is a:

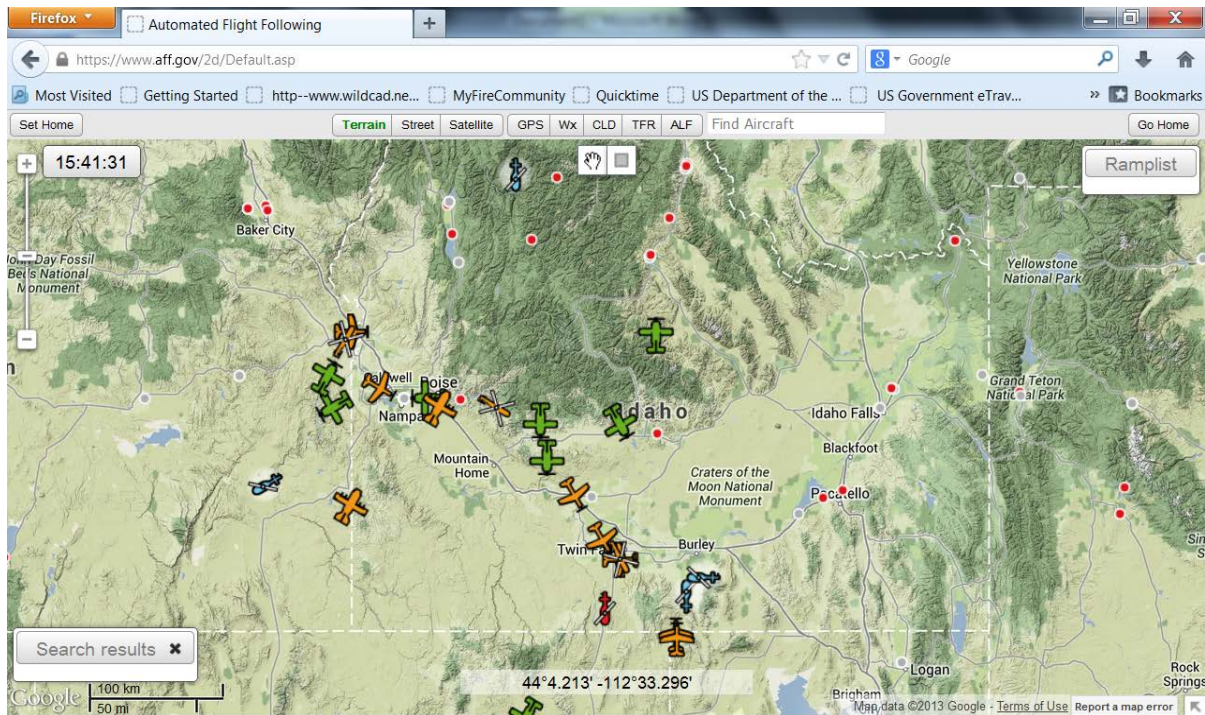
- SEAT
- Large or Very Large Air-Tanker
- Heli-Tanker

- Scooper

Green is assigned to Fixed-Wing aircraft not dedicated to retardant delivery.

Blue is assigned to Rotor-Wing aircraft not dedicated to delivering water or retardant.

Red is assigned to ANY aircraft that has not met “safe landing” parameters or has not reported in more than 15 minutes, but less than 30 minutes (Missed status check, but not “overdue”).



Clock: The clock changes color based on the last time your session received data.

- If you have not received position data from AFF for more than 2 minutes, but less than 5, the text will turn blue and have a single * around the time.
- If you have not received position data for more than 5 minutes, the text will turn red and have two ** around it.
- At any time, you can hover over the clock to see if your data is current or how old your data is.

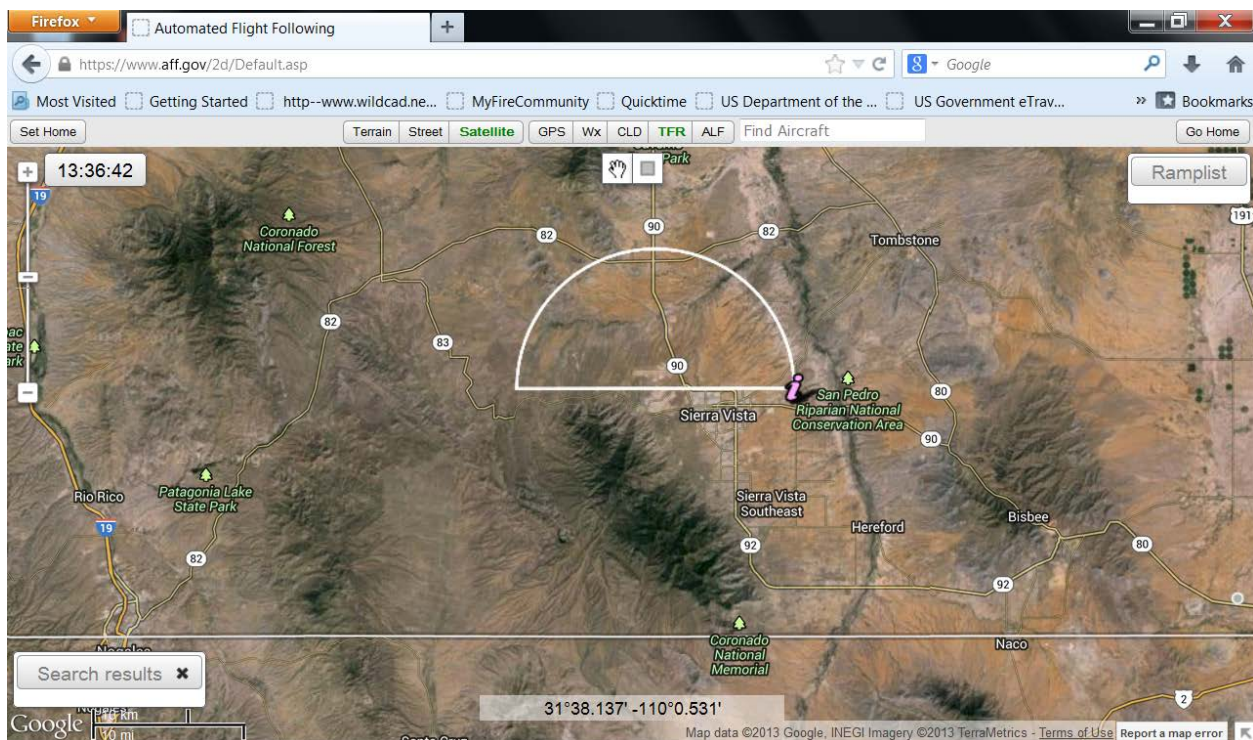
The overlay options are found in the “gray” horizontal menu bar at the top of the map.

GPS: Places a blue dot on the map based on your location. This is useful for “mobile” AFF users to provide their location on the map. AFF users on a server will only show the “server’s” location.

Wx: Overlays current temperature and condition information from weather.com. If you click on the icon for a place, a box will open showing current conditions as well as a 5-day forecast for that area with an option to view a 10-day forecast.

CLD: Overlays visible clouds. Note that the clouds will only show at certain zoom levels, if you zoom in they may not display. Also note that if you are having a hard time viewing the cloud overlay, try switching your map view selection to Satellite or Terrain.

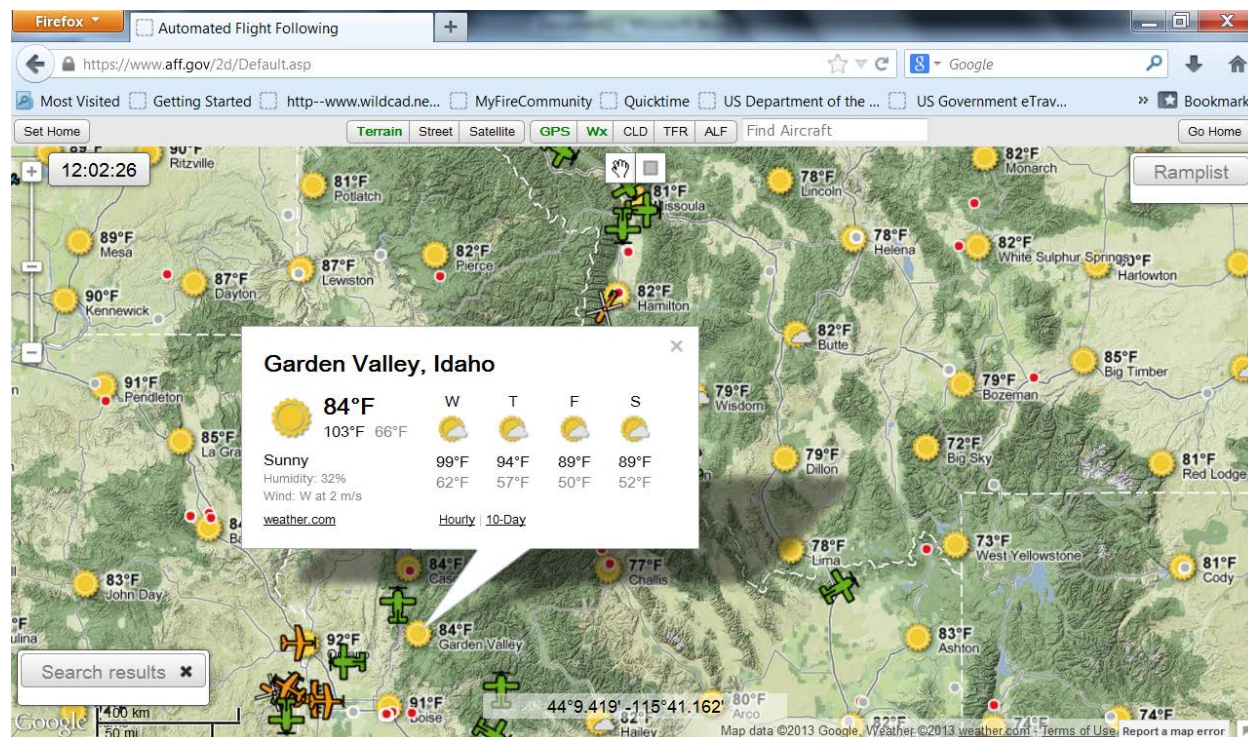
TFR (Temporary Flight Restrictions): Displays graphical TFR's of all types. If you click on the "i" it will display the NOTAM information. This feed is maintained by NASA AMES, and is updated every 15 minutes.



ALF (Active Landing Facility): Displays an airplane icon over FAA recognized landing facilities that has had an AFF equipped aircraft at it since you last logged in. If an AFF equipped aircraft has not been at that airport since you logged in, no icon will show for that landing facility.

If you hover over the icon, a box will pop up showing the name of the airport, its 3-letter identifier and any aircraft equipped with AFF that are parked there. If you hover over the icon and no aircraft are listed as being there, then that means the aircraft at that location left that facility after you logged in.

*Not available in IE8 (Internet Explorer 8) or previous versions of IE.

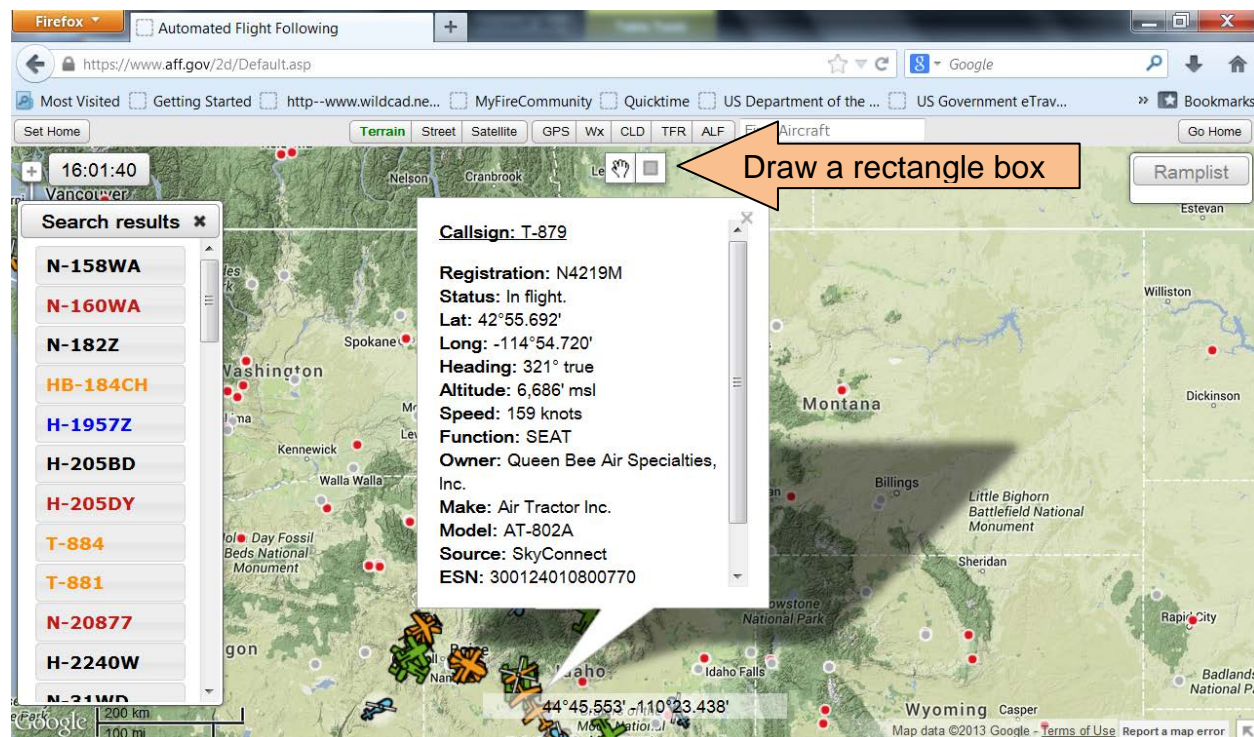


The **Home** feature does not save overlay information, just location, zoom and map view selection. However, if you have overlays on, those will stay on if you click “Go Home.”

In addition to the ALF overlay showing what aircraft are located at any given airport there are a couple other ways to locate aircraft.

Find Aircraft box: You can enter a complete or partial tail number or call sign. It is not case sensitive. It will display a drop down with matches. Click on the aircraft you are looking for. This will drop it into the “**Search Results**” box in the lower left hand corner of your screen. **Click** on the call sign in the “**Search Results**” box and it will take you to that aircraft’s location, center it on the map, and provide the information for the last known position. Remember, you can always click the “Go Home” button to go back to your original map.

To minimize the “Search Results” box and save the results, click the banner where it states “Search Results.” To close the “Search Results” box, click the “x” in the upper right hand corner of the box.



Draw a Rectangle button: This feature can be used to get a list of all aircraft within the box you draw whether they are flying or on the ground. Click the “Draw a Rectangle” button then left click and drag over the area that you would like the information from. Let go and it will populate the “Search Results” box in the lower left hand corner of your screen with the aircraft that are within that box.

Once you finish drawing a box, your cursor will change back to the hand for moving the map. To draw another box, click the draw box icon again. Every new box you draw will change the contents of the “Search Results” box.

Ramp List is a feature that will allow you to build a list of aircraft you are interested in. An example could be building a list of aircraft you regularly use and/or are currently assigned to you. It is easy to add or remove aircraft to this list. To begin, simply double click on an aircraft’s icon. The aircraft will be added to the Ramp List in the upper right hand corner of your screen. Alternatively, you can hold the shift key and click on the aircraft in the Search results to add it to the Ramp List. The attributes of this list are much like the search list in that the call sign color and ability to click on and expand the file for more detailed information is the same.

Similar to the search box, you can minimize and open the Ramp List by clicking on the “Ramp List” button at the top of the list. Unlike the Search box you cannot close the Ramp List to remove all contents. To remove an aircraft from the list you will need to double click on the aircraft icon on the map.

Alternatively, you can also remove an aircraft from the Ramp List by holding the shift key and clicking on the aircraft's button in the Ramp List.

Flight Following Tracking Mode allows a user to track one aircraft during its flight. To start this mode, click an aircraft to get the position information and leave the box open. With the next report, the aircraft will be centered on your screen and the box will be minimized displaying the critical information for flight following. The box will remain open as new position reports are received and the aircraft will remain centered on your screen.

To exit this mode, simply click the "X" on the aircraft information box.

There is a feature to **copy and paste position information for flight following**. There are multiple ways to access this feature by clicking the underlined call sign which can be seen by clicking an aircraft on the map to open the aircraft status box or by clicking an aircraft in the search list or ramp list to open the information box. Once you click on the underlined call sign, a box will pop up with the option to click Ctrl +C then enter, from there you can go to your flight follow timer, WildCAD or wherever you track aircraft status. Click Ctrl +V to paste the aircraft's status and position information. You can also right click to copy or paste the information.

An important thing to note is when the copy/paste dialog box is open, AFF 2.0 stops polling data so the position information does not change when trying to copy. You can notice this by the clock freezing. If you don't hit enter after copying, be sure to hit "Ok," "Cancel," or "X" out of the box to get current data.



EXERCISE:

Complete the following statements.

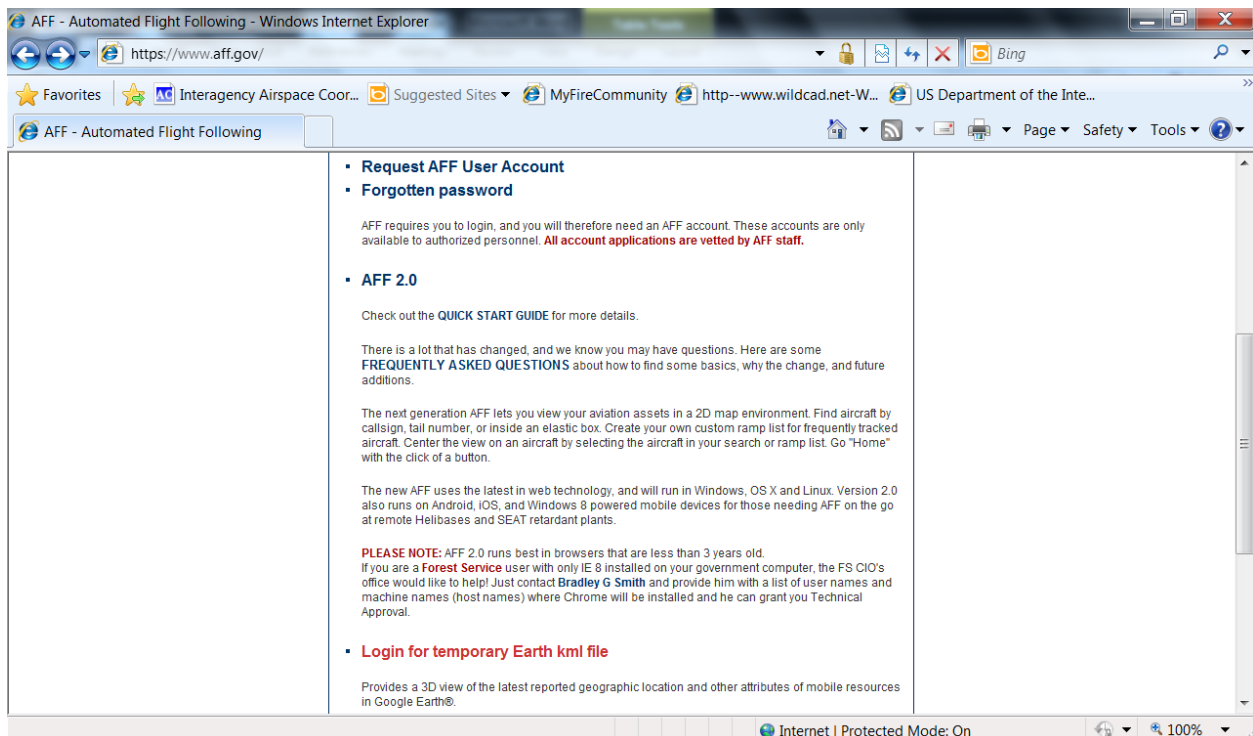
- 1) The five overlay options are:
 - a)
 - b)
 - c)
 - d)
 - e)
- 2) The three map options are:
 - a)
 - b)
 - c)

Google Earth

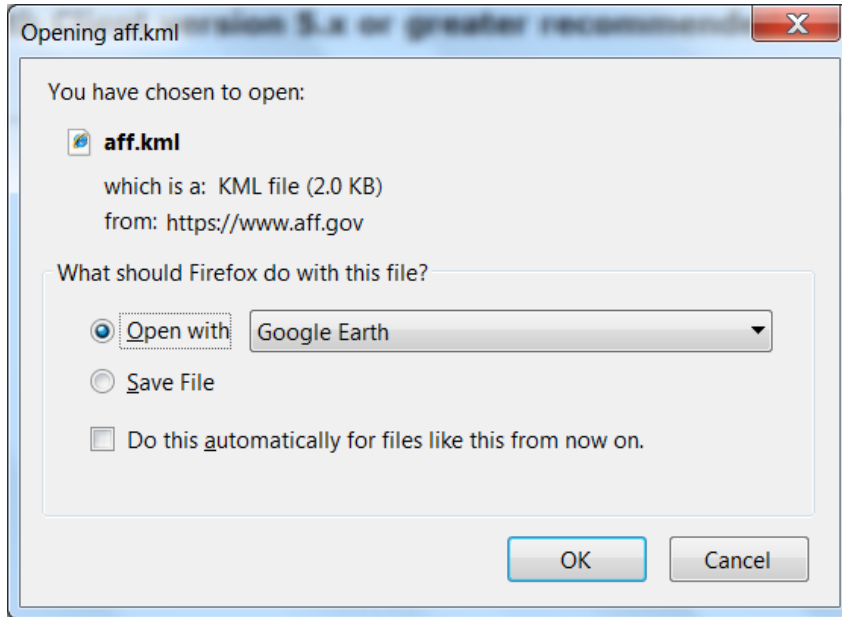
Google Earth **and** Internet Explorer 9 or higher or Mozilla Firefox must be loaded on your computer to utilize this feature. Check with your IT department for downloading this software. (Google Earth: earth.google.com – the free version of Google Earth provides all the functionality needed for AFF purposes.)

To log into Google Earth for AFF Flight Following navigate to the AFF web page located at: <https://www.aff.gov>

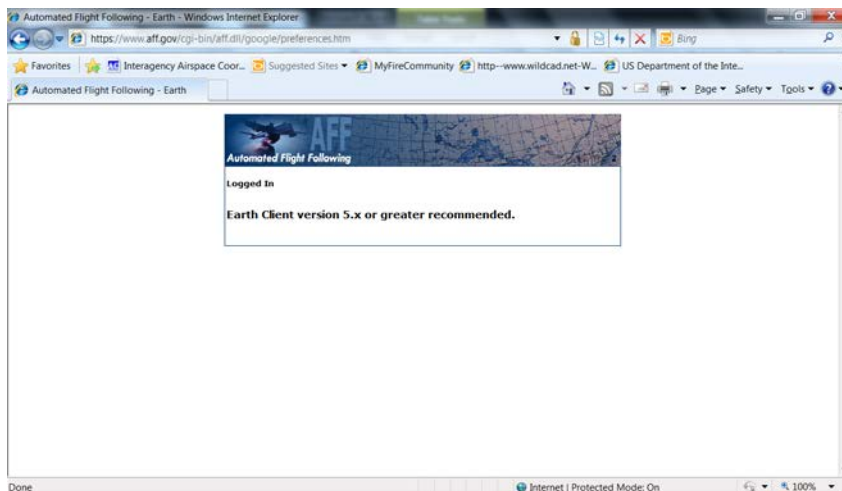
Scroll down to the Automated Flight Following section and select **Login for temporary Earth kml file**, which will prompt you to log into your AFF account.



Google Earth is accessed with the same account information as AFF 2.0. Once logged into your account, the [aff.kml](#) file should pop-up and prompt you to open it with Google Earth.

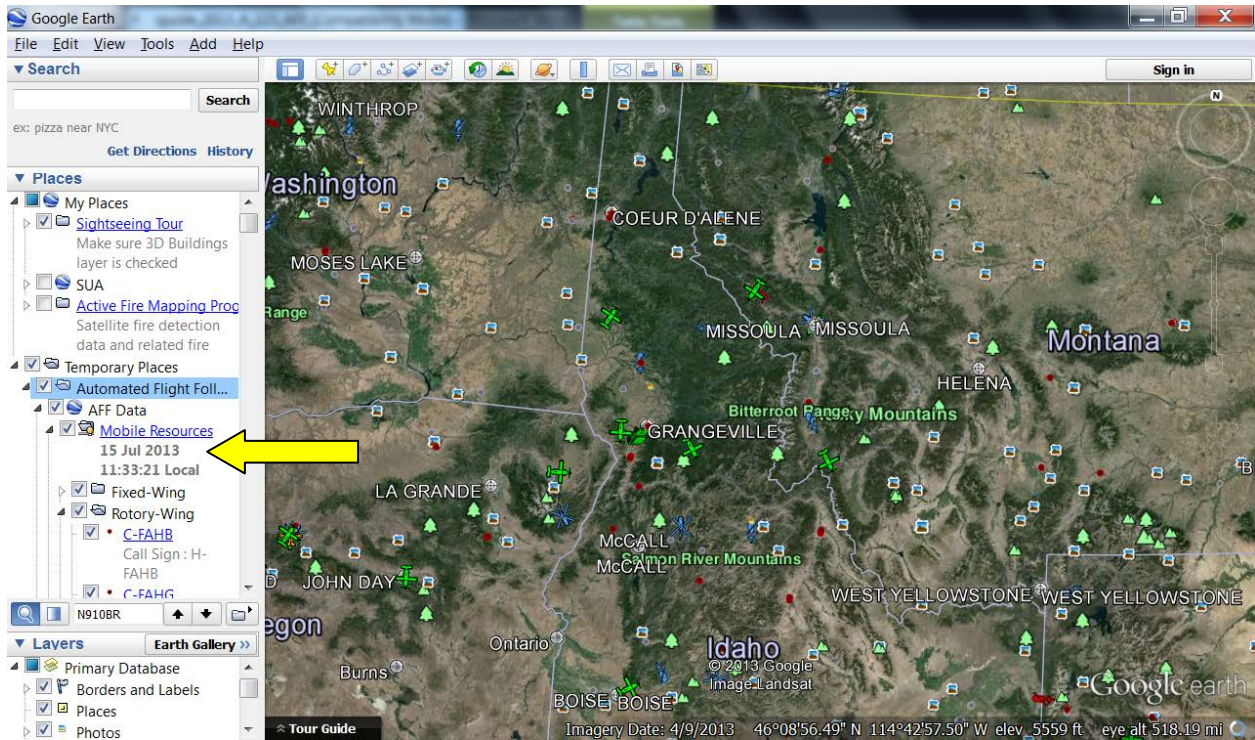


If the screen below appears **and does not change**, your browser may not be adequate to utilize the Google Earth AFF capabilities. Try again with Mozilla Firefox or confirm you have Internet Explorer 9 or higher as a browser. Check your pop-up blocker to confirm it is allowed.

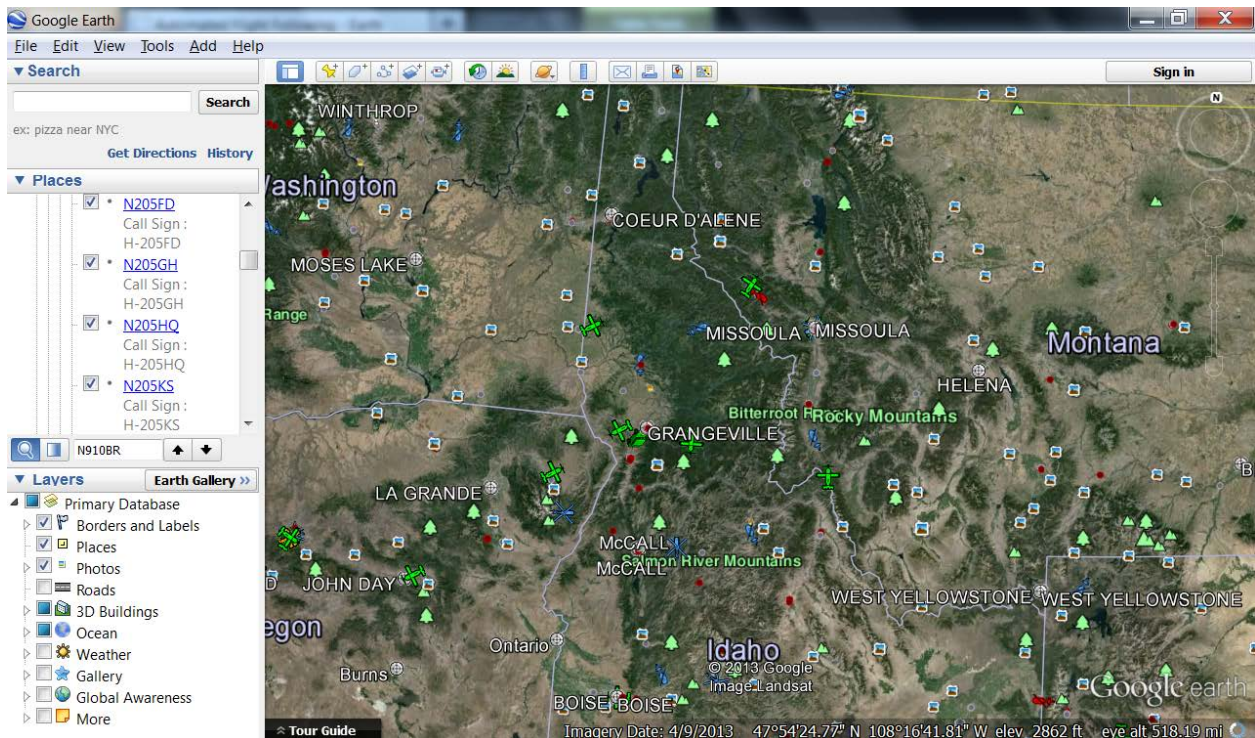


Once logged in, the screen should appear with Automated Flight Following under **Temporary Places** on the left menu.

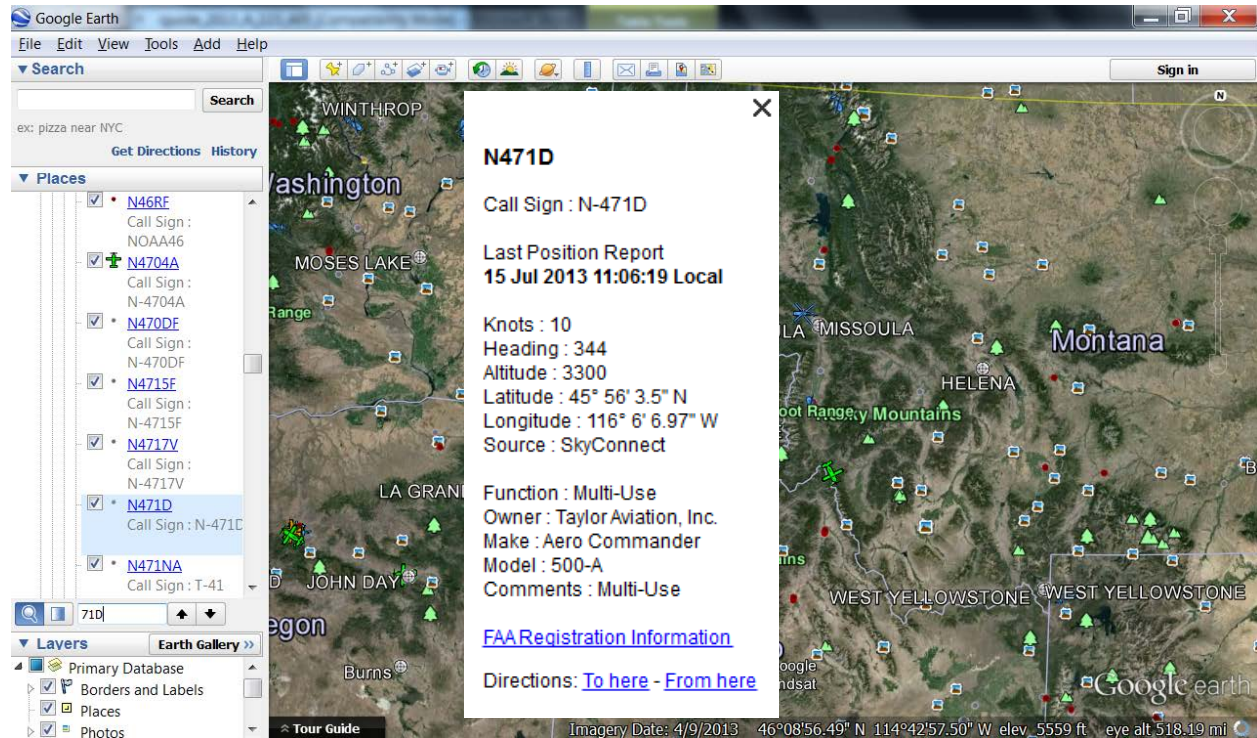
Check the “time” under **Mobile Resources**. AFF receives updated information every two minutes so watch the clock to see if it is staying current with the updated information. Some agencies do not allow instant updates to occur over the internet so this may have to be **manually refreshed** by “right clicking” and selecting “refresh.”



The icon shapes and colors are the same as found in AFF 2.0.



When flight following an aircraft, type in a portion of the tail number in the search box and aircraft with that number will be displayed. (Ctrl F is a shortcut with some versions.)



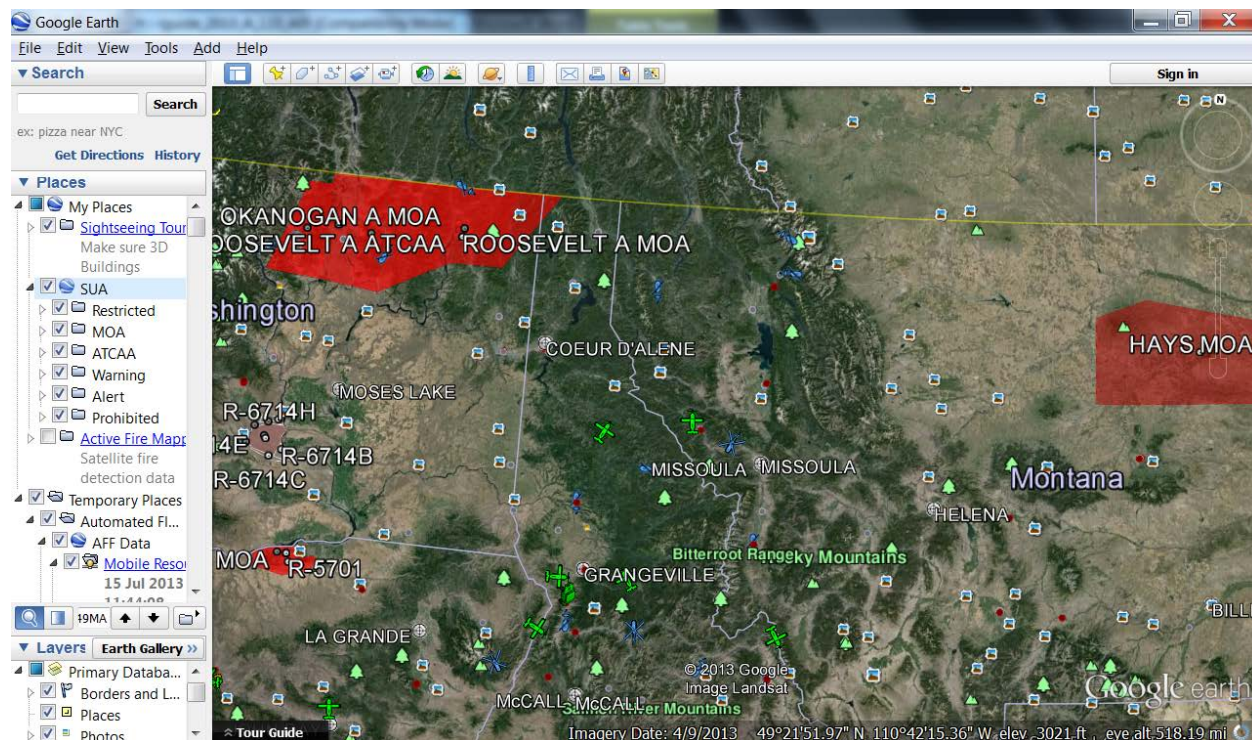
Click on the blue tail number in the menu and the aircraft will be highlighted and shown the location.

Google Earth has functionality not currently available in AFF 2.0 that aircraft dispatchers will find helpful.

To add the **Special Use Airspace (SUA) layer** into Google Earth, with AFF open, navigate to: <http://sqqate.arc.nasa.gov:9518/GoogleEarth/sua.kmz>

Zoom in and click on the SUA and the activity for that day should be shown. This is NOT always accurate and is NOT a substitute for calling to deconflict the airspace. To add the **Special Use Airspace (SUA) in 3-D** into Google Earth, with AFF open, navigate to: <http://www.pilotsandweather.com/kml/currentSUA.kml> Only those with activity within 8 hours will be shown.

Note: Military Training Routes are not shown since they are not SUA.



The website: www.airspacecoordination.net has useful layers that can be added to Google Earth to increase situational awareness. There are “kml” files to add Special Use Airspace, active fire perimeters as reported in the 209, temporary flight restrictions, and instructions for adding aeronautical sectional to Google Earth.

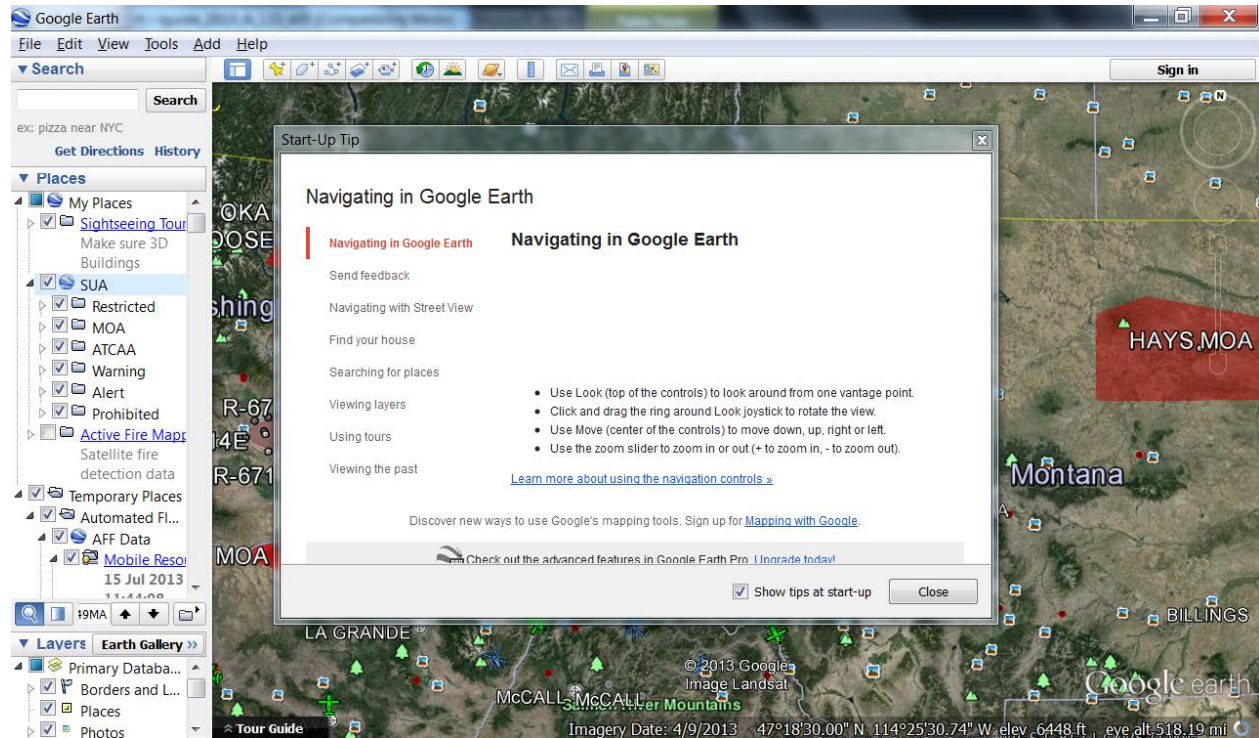
Locate the **Airspace Coordination** link and on the lower right side of the screen, you’ll locate **KML for use with Google Earth NEW**.

Closing Out of Google Earth

Important Note: When closing out of AFF for the day, once you’ve selected the “X” to close, a pop-up box will display stating, “*You have unsaved items in your ‘temporary places’ folder. Would you like to save them to your “My Places” folder?*” **ALWAYS SELECT DISCARD!** Otherwise each day, the data displayed will be for the original date it was downloaded and it will not be current.

How do I learn more? Google Earth has excellent video tutorials for use to describe the specific functionality of the icons located within Google Earth program along the top of the screen.

These tutorials are located under the **Help** icon and **Start Up Tips**.



If you have any questions while using AFF 2.0 or Google Earth, visit **aff.gov** to read the frequently asked questions (FAQ) document. If you cannot find the answer there, please submit a comment report to the help desk and we will do our best to help you.



EXERCISE:

True or False? The overlay options in Google Earth are the same as AFF 2.0.

Module 4: AFF Procedures

Objectives:

5. Identify policy and procedures listed in the National Mobilization Guide that are required when flight following aircraft utilizing AFF.
6. Identify procedures if an aircraft icon turns “red” while being monitored by AFF.

For mission flights, there are two types of agency flight following: Automated Flight Following (AFF), and Radio Check-in. AFF is the preferred method of agency flight following.

AFF reduces the requirement to “check-in” via radio every 15 minutes, and provides the dispatcher with a wide range of information on the flight, airspace, and other data that may be pertinent to the flight. This reduces pilot workload, clears congested radio frequencies, and provides the dispatcher with much greater detail on aircraft location and flight history.

Key points to remember:

- The aircraft must be equipped with the necessary equipment (AFF kit).
- Person flight following must have internet access.
- Radio communication capability is still required between the person flight following and aircraft.
- If the AFF system goes down, revert to radio check-in procedures as your policy dictates.

The National Mobilization Guide lists detailed procedures for using AFF in Chapter 20 – Administrative Procedures:

1. An agreement between the aircrew and dispatcher/flight follower that AFF will be utilized, must be communicated via phone or radio.
2. Radio frequencies and expected radio check-ins should be briefed on.
3. Dispatch office/flight follower ensures that the AFF system is active and running and the icon for that aircraft is visible on screen.
4. On take-off: Pilot/observer makes initial radio call “NXXX off (airport) requesting Automated Flight Following or AFF.”
5. Dispatch/flight follower responds: “NXXX (Dispatch call sign), I have you positive AFF.”
6. Dispatch/flight follower then sets timer for 15 minutes (or by policy requirements), monitors AFF for duration of flight and documents position as appropriate.
7. Landing: Pilot/Observer notifies dispatch/flight follower that they are on the ground.

AFF – What to do if an icon “turns RED”

An icon that turns **RED** indicates that the satellite signal has been lost. (It **DOES NOT** mean that it has crashed, but could have) Immediately attempt contact via radio and follow normal lost communication, missing aircraft, or downed aircraft procedures as appropriate. If radio contact is made after a lost signal, flight may continue utilizing 15-minute check-ins for flight following.

IMPORTANT!

Remember: Not all aircraft have AFF. You can’t “see” everything out there.

Communication between ground crews, dispatch, and aircraft will continue as before but radio congestion is greatly reduced if AFF is being utilized for flight following.

**EXERCISE:**

- 1) When flight following aircraft, if the icon turns “*red*” you must:

- 2) **True or False?** If an aircraft is equipped with AFF, the pilot does not need to contact the dispatch office/flight follower via radio upon take-off from the airport.

Resources and References

There are lots of resources available to you.
There are three categories: people, print and web resources.

People

AFF Team Contacts

Robert Roth , USFS Program Manager	(406) 829-6712	rroth@fs.fed.us
Neil Flagg , USFS Project Leader	(530) 226-2540	nflagg@fs.fed.us
Heather Matusiak , USFS Resource Specialist	(208) 387-5619	hmatusiak@fs.fed.us

Print

AFF Documents (accessed through www.aff.gov)

[National Mobilization Guide AFF Procedures](#) (Word Document)

Original "Automated Flight Following Steering Committee" Site
<http://www.fs.fed.us/r1/fire/aviation/aff/>

[AFF de-certification of Axiom GPS in Latitude and NAT devices. Aug 12, 2004](#) (Word Document)

[AFF Pilot Briefing Info Dec 03](#) (Word Document)

[Current Hardware List 07-22-04](#) (Word Format)

Web

<https://www.aff.gov/>

Enhancements to the AFF system are ongoing, suggestions, and feedback are welcomed.
Submit ideas via the form available on the AFF website: www.aff.gov/feedback.asp

Summary

Objectives Review

You should now be able to:

1. Describe the components and infrastructure of the AFF system.
2. Identify procedures to request and obtain a “New User Account” required by the Automated Flight Following (AFF) System.
3. Describe the minimum internet browser requirements to best utilize the capabilities of the AFF 2.0 and Google Earth software.
4. Identify the icons displayed and the status represented by various colors shown on both AFF 2.0 and Google Earth.
5. Identify policy and procedures listed in the National Mobilization Guide that are required when flight following aircraft utilizing AFF.
6. Identify procedures if an aircraft icon turns “red” while being monitored by AFF.

If you have any questions regarding them, ask the instructor for clarification.

Please be sure to complete and submit the Course Evaluation Form provided by the instructor.