Geospatial

Information

Interoperability

Exploitation

Portable

GIIEP

User
Guide

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1.1   System Components
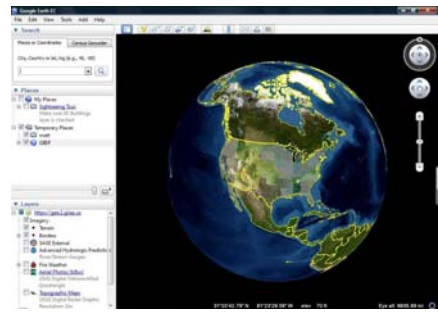
1.1.1 GIIEP Software

GIIEP Client software is government-off-the-shelf (GOTS) and non-proprietary. It is hosted on provided computing devices and can connect directly to Google Earth Enterprise (GEE) and utilize all GIIEP system capabilities. Main functions of GIIEP Client software include:

- **GPS Status:** indicates the status of your GPS Connectivity between the imbedded GPS devise and server and displays a location icon in a Google Map
- **Chat:** group and private chat capabilities developed on the Spark Chat frame
- **Picture:** capture current pictures from a camera/FMV device
- **Video:** send FMV to the GIIEP server and store locally within the local database

Once FMV stream and/or still images are available within GIIEP Client, they can be quickly disseminated to mission partners. Additionally, GIIEP Operators and Analysts will use GIIEP GEE for situational awareness utilizing the most recent mapping data obtained from USGS, Spark Instant Messenger, AVE, and ESRI software.

GIIEP Client Software Interface   *GIIEP GEE Interface*

1.1.2 GIIEP Hardware

Operators will be certified to operate each component of the GIIEP "Go-Kit" which includes the following hardware:

- Carrying Case
- CF-30 Laptop PC (Mobile Server) with interchangeable battery and optical DVD drive
- Iridium Satellite Phone with auxiliary antenna

- Ricoh Still Camera
- JVC Full Motion Video Camera
- ROVER 4 in one kit
- ROVER 5 in the other kit
- Accessories

Set 1 of 2

Carrying Case

Satellite phone

Accessories

Laptop Computer

Still Camera

Full-Motion Video Camera

Rover 5

Set 2 of 2

Carrying Case

Satellite phone

Accessories

Laptop Computer

Still Camera

Full-Motion Video Camera

Rover 4

Accessories

Surge Protector
(Use whenever possible)

Power Inverter
(Front and Rear Views)

Supplied with the the Go-Kit are a Dynex® 8-outlet surge protector to maximize charging capabilities and a CyberPower® power inverter which allows the Field Technician to quickly draw power from any 12V source.

⚠ **WARNING!**
DO NOT, UNDER ANY CIRCUMSTANCES, LEAVE 12 VOLT POWER CHARGERS UNATTENDED IN VEHICLES OR AIRCRAFT DUE TO RISK OF FIRE!

2.0   System Operations

2.1   Connecting to the Network

2.1.1 Communications via Cellular AirCard

The internal AirCard of the CF-30 Toughbook provides connectivity for full GIIEP functionality.

> **NOTE: Sprint is currently the only FCC / FAA approved device for use in an aircraft.**

Step 1: Ensure the wireless switch is in the "**ON**" position and turn on CF-30 Toughbook.
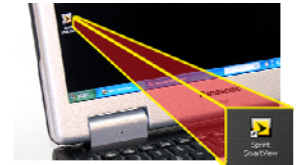
Push the power button to the right and hold until the power light illuminates.

Wireless and power switches are both located on the lower / right / corner of the computer.
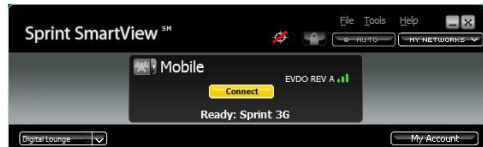
Step 2: After entering the username and password provided by your administrator, locate the **Sprint SmartView icon** on the desktop.
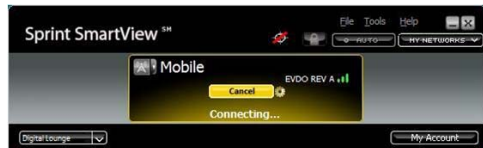
Double-click the icon to start the program.

Step 3: Start the cellular connection by clicking the "**Connect**" button.

Step 4: When a connection is established, the "Mobile" button will illuminate and the "Connected" text will be shown on the bottom of the Sprint SmartView window.

Once connected, it is recommended to keep the Sprint window maximized enabling the operator to monitor continued connection.

Step 5: In the case of cell coverage being interrupted, the software will automatically reconnect as soon as coverage is available.
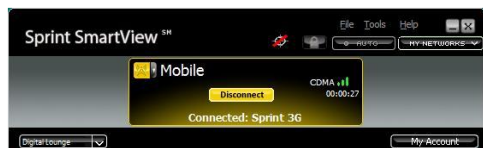
Users may also click the "Connect" button to re-establish connectivity.

NOTE: If AirCard coverage is unavailable or becomes degraded, GIIEP users should disconnect from Sprint connection using the "X" in the top-right of the window, and instead initiate communication via LAN connection or the Iridium data modem *(Section 2.1.2 Communications via Iridium Data Modem).*

If cellular coverage becomes unavailable during a mission, keep the Sprint SmartView window open to observe signal strength in case the operator wants to switch back to a cellular connection.

Now that you are connected to the GIIEP system via the Sprint AirCard, you may begin configuring GIIEP software starting on pg. 49 (**2.3.1 GIIEP Software Configurations**) or operating the software starting on pg. 51 (**2.3.2 GIIEP Software Functions**).

2.1.2 Communications via Iridium Data Modem

The Iridium satellite phone is the secondary means of communication and allows "Data only" transfer with the GIIEP system (i.e. GPS position and chat). *This device is not intended to be used for voice communications, but is available for emergency use only.*

Step 1: Switch the Iridium phone on. The power key is located on the top right of the device. Press and hold the power key for three (3) seconds until the device powers on.

Default Pin: 1111

Step 2: Locate the data terminal on the Iridium phone and connect the corresponding end of the USB cable to the data port.

Then connect the other end of the USB cable to the CF-30 USB port labeled "Iridium."

Step 3: Connect the external antenna.

    a)   Locate the antenna port on the satellite phone and remove the rubber dust boot.

    b)   Plug in the antenna adaptor by seating the phone into the carriage. Align the antenna prong with the antenna port and snap into place as shown.

    c)   Connect the auxiliary antenna to the adapter.

    d)   Place the magnetic auxiliary antenna in an **open and unobstructed location with the dome facing the sky** (preferably with 1 ft square ground plane). Check for good signal strength in the scale on the handset window. Ensure the auxiliary antenna is correctly mounted.

> ⚠ **DO NOT mount the auxiliary antenna near aircraft or vehicle compasses. The magnetic base may interfere with compass operation.**

Step 4: Verify that the Iridium Data Modem is activated by using the following steps.

    a)   Press the left soft key labeled **Menu**. The main menu will be displayed.

    b)   Use the 2-way navi-key to scroll until **Data Modem** is highlighted.

    c)   Press the left soft key, labeled **Select**.

NOTE: While data is being received or transmitted by the Iridium handset, a solid "Data message in progress" notice displayed on the handset window indicates a good connection.
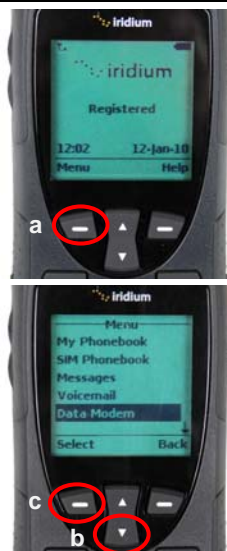
Step 5: Launch the Iridium connection by double-clicking the **Iridium icon** on the CF-30 desktop.
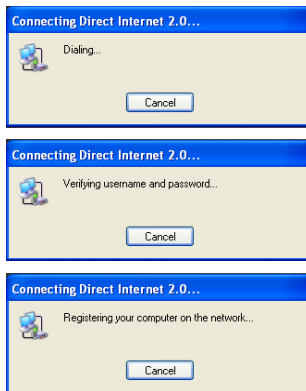
The following connection phases will begin automatically to create a link:

    Dialing…

    Verifying username and password…

    Registering your computer on the network…

Once connected, the 2.0 window will automatically close.

With a successful network connection via the Iridium Sat-phone, you may begin configuring GIIEP software starting on pg. 49 (**2.3.1 GIIEP Software Configurations**) or operating the software starting on pg. 51 (**2.3.2 GIIEP Software Functions**).

To disconnect communications, simply right-click the Iridium desktop icon and select "**Disconnect**" from the drop-down menu.
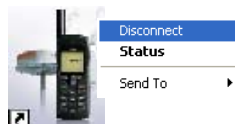
2.2   Operating FMV and Still Photography Devices

2.2.1 JVC Everio Camcorder

The JVC video camera supplied in the GIIEP Go-Kit can quickly be deployed in circumstances where there is no video element in operation.

NOTE: You do not have to record in order to provide video to the CF-30.

Step 1: Before deploying, you should ensure that you have a fully charged battery.

a)   Begin by attaching the battery to the camera by placing the battery just below the contacts and sliding upwards as depicted.

b)   An alternate way of charging the camera is by attaching the power cable into the DC input and plugging it into a 120V power outlet.

NOTE: *The JVC camera will not charge during use.*

Step 2: If desired method is to record on the device, ensure a 16GB memory card is inserted into the SD card slot, located on the bottom of the camcorder in the memory compartment.

Two 16GB memory cards are supplied with the JVC camera. When one SD card is full, remove it and insert an empty SD card for continued shooting, or the JVC will automatically switch to the 8GB internal memory.

To transfer data off an SD card, remove it from the JVC camera and insert into the CF-30 SD slot on the right side of the Toughbook.

To transfer data from the internal memory, use the USB data cable supplied with the JVC to connect to the CF-30.

NOTE: *This device has an internal 8GB memory. When memory is full, camera switches to alternative memory without having to stop recording.*

Step 3: When beginning an operation, power the device ON by opening the view screen.

NOTE: The automatic shutdown feature has already been disabled in the menu, so the device will not power off automatically.

Step 4: You do not have to press the record button in order to provide video to the laptop.

Plug in the Audio/Video cable 1/8" jack into the JVC Video Camera.

Step 5: Connect the yellow RCA connector of the video cable to the yellow RCA connector on the AVerMedia capture card.

NOTE: Though audio is not transmitted during GIIEP operations with the CF-30, it is still recommended to connect the remaining cables as shown.

Step 6: Connect the USB cable to any USB port on the CF-30. Once connected, the CF-30 should recognize the media device.

NOTE: Ensure the device is connected before executing GIIEP software.

Step 7: Open the lens cover before shooting video.

NOTE: This is a manual feature and should be used during non-operational status to protect the lens. The camcorder should always be stowed with lens cover closed.

To transfer FMV to the server via GIIEP Client software, see section **2.3.2.4 Using the Video Function** beginning on pg. 59. To capture still frames from video, refer to section **2.3.2.3 Using the Picture Function** on pg. 56.

2.2.2 Ricoh Caplio Camera

The Ricoh camera is deployable within the Go-Kit and used to capture high quality pictures and FMV.

Step 1: Before beginning an operation with the Ricoh Camera, ensure that you have a full charge on the lithium-ion rechargeable battery by using the external charger.

a) Plug the AC power adapter into the DC input on the charging dock and plug into a wall outlet.

b) Slide the battery pack into the charger face up. The "Charge" LED indicator turns red while charging and turns green when fully charged.

To reach maximum charge, the typical charge time is 2 ¼ hours.

NOTE: Two (2) AA batteries can be used to power the camera, instead of the lithium-ion battery.

Step 2: To install the battery, open the battery cover. Lift the yellow latch with the battery and slide the battery into place. The latch should lock the battery securely.

The memory card is also located behind the battery cover. Slide and click the memory card into place, to left of the battery as shown.

Memory Card   *Battery*
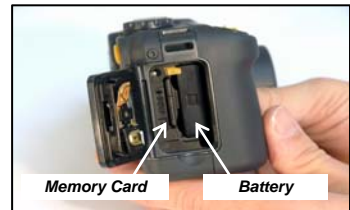
2.2.2.1 Initializing and Calibrating the GPS

If this is the first time use of the Ricoh camera, you must initialize the GPS and calibrate the compass.

- **Initializing** the GPS downloads the GPS almanac data so the device can identify where it is on the earth and therefore determine the position of the satellites when turned on. *Reinitialize if camera has moved more than 1000 miles since last operation.*

- **Calibration** allows the camera to adjust for the variations in the Earth's magnetic field. The compass reads magnetic North. *Recalibrate if camera has moved more than 100 miles since last operation.*

Step 1: Initialize

a) Take the camera outside where you are away from tall buildings, cars or other metal objects.

b) Turn on the camera ensuring the GPS indicator is on (green).

c) Stand still or set down the camera until it beeps quickly. This should take less than ten minutes. When you look on the screen, you should see the GPS coordinates displayed.

GPS Indicator

NOTE: The next time you turn on the camera, it should receive a fix much faster (under 60 seconds) if you are within 1000 miles of your last location. Each time you take pictures, make sure you have a fix (GPS coordinates appear).

Step 2: Calibrate

a) Press the **MENU/OK** button to access the main menu with three tabs:
   1) SHTG STGS (Shooting Settings)
   2) SETUP
   3) EXP SET (Expanded Settings)
      not viewable until the right arrow ▶ key is pressed twice

b) Use the right arrow ▶ to scroll to the **EXP SET** tab. Once highlighted, use the down arrow ▼ to locate menu item **4 Compass Calibration**.

c) Once highlighted, press the right arrow ▶ key which will display an alert screen prompting you to push "OK" to proceed. *Before you press OK*, get ready to rotate the camera. You will first rotate the camera clockwise and then forward 360 degrees as described in the next steps.
   Once you select OK, begin the rotations.

1) Once initiated, the LED light on the GPS module will turn red and start blinking. **Slowly** rotate the camera **clockwise** around its base ONE FULL TURN (360 degrees). **Keep the camera level and as flat as possible.** This process should take 30 seconds.

ONE 30 SECOND ROTATION CLOCKWISE

2) After reaching the camera's original position, roll the camera **forward** 360 degrees (ONE FULL TURN) for approximately 30 seconds. While rolling the camera, the antenna of the SE2 should sequentially point in the following directions: Up, Opposite direction from the user, Ground, the User, and then Up.

ONE 30 SECOND ROTATION FORWARD

3) After completing both rotations, stop the calibration by pressing the **DISP** button. Calibration will automatically stop after 70 seconds from start. **HOLD THE CAMERA STILL AND DO NOT TURN OFF.** The camera is saving the settings.

4) Once the red LED light stops blinking, power off the camera. You must turn off the camera before the settings can take effect.

5) Turn on the camera. GPS coordinates should be stored and the heading will display on the screen above the GPS coordinates.

Make sure to re-calibrate each time you move the camera more than 100 miles, **unless the camera is in operation during travel.** Ensure GPS coordinates appear each time you take pictures.

2.2.2.2 Locking GPS Information

The camera has a GPS LOCK feature that allows the user to lock the GPS coordinates of the current location and apply those coordinates to every photo taken thereafter regardless of changes in position of the camera. With the feature OFF, it will use the actual position of the camera.

GPS LOCK can be toggled ON or OFF:

a) Press the **MENU/OK** button.

b) Use the right arrow ► to scroll twice to the **EXP SET** screen.

c) Use the down arrow ▼ to select **GPS LOCK** and press the right arrow ►.

d) Use the arrow keys ▲▼ to select **ON** to enable GPS lock.

e) Press the **MENU/OK** button.

With **GPS LOCK** set to **ON**, press the left arrow ◄ key marked 🔄 (Quick Review) to lock the GPS information on the shooting screen. A "LOCK" symbol will appear on the screen.

NOTE: When GPS LOCK is ON, you cannot use the Quick Review 🔄 button for the quick review function.

2.2.2.3 Transferring Geo-tagged Images to the CF-30 Mobile Server

To load geo-tagged photos onto the CF-30 (Mobile Server):

a) Open the battery/SD card cover and press in on the SD card to eject.

b) Remove the card from the Ricoh camera and place it into the CF-30 SD slot on the right side of the Toughbook. The CF-30 will automatically recognize the card.

NOTE: If the SD card is not recognized, browse to "My Computer" and locate photos.

NOTE: The camera's USB cable and BlueTooth technology cannot be used with the CF-30 Toughbook (Mobile Server); both are disabled.

To use existing photos downloaded onto the CF-30 from the Ricoh camera, see section **2.3.2.3 Using the Picture Function,** "**Use Existing Picture**" in GIIEP Client on pg. 58.

2.2.3 ROVER 4

The ROVER 4 system receives video from an FMV source and displays received data on a laptop PC or an NTSC monitor through GIIEP software using the AVerMedia capture card.

- Portable receive-only terminal

- Provides the link to existing platforms and GIIEP

- Supports Ku-band digital, C-band digital, C-band analog, S-band analog and L-band analog signals from multiple air and ground platforms

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NOTE: You can use ROVER with GIIEP only while communicating over frequencies that are ROVER compliant.

Contents of ROVER 4 Kit:

(1) Transit Case

(2) ROVER 4 Radio with Battery Eliminator

(3) CF-19 Toughbook

(4) DC-DC Converter

(5) Battery Box

(6) Tri-Band Antenna

(7) Ku-Band Antenna

(8) 110 VAC Power Cable

(9) NATO Power Cable

(10) Belkin Video Capture Device

(11) TNC Coaxial Cable

(12) DAGR Interface RS232 Cable

(13) BNC to RCA Video Cable

(14) 12 VDC Power Cable

(15) External Battery Power Cable

(16) CF-19 Power Cable and Adapter

(17) C-Clamp and Mounting Bracket

(18) Multi-Port Cable Assembly

(19) CAT-6 Patch Cables

(20) CF-19 Documentation

(21) ROVER 4 Manual, Front Panel Guide and Belkin Software

2.2.3.1 Connections for Interfacing with GIIEP

Step 1: Plug in the power cable to the Panasonic CF-19 Toughbook as shown.

Step 2: Connect Ethernet / RJ-45 jumper into RJ-45 pigtail connector.

Step 3: Insert the supplied Ethernet / RJ-45 Connector into the Ethernet Port of the CF-19 Toughbook.

Step 4: Connect the MILSPEC "P1 (J2) (Manpack)" pigtail cable to the lower right port on the ROVER 4.

Step 5: Connect the female BNC Video Connector to the male BNC/Video Out port on the ROVER 4.

Step 6: Insert the AVerMedia Video Capture Card USB 2.0 connector into the USB port on the CF-30 Toughbook.

NOTE: This is necessary for ROVER feed to be distributed via GIIEP.

Step 7: Connect the yellow female RCA receptacle from the AVerMedia Video Capture Card to the supplied male RCA cable.

Step 8: After connecting all peripherals to the CF-19 and CF-30 Toughbooks, your system should appear similar to the example pictured here.

Step 9: Attach the MILSPEC connector to the battery eliminator, located on the rear of the ROVER 4.

Step 10: Connect one end of the Antenna coaxial cable to the ANT port on the ROVER 4.

Step 11: Connect the opposite end of the Antenna coaxial cable to either the tri-band (C, L, S band) or the KU band antenna head.

Step 12: Flip the toggle switch on the ROVER 4 Receiver to the ON position.

Step 13: Turn on the CF-19 Toughbook by sliding the power button to the right and holding until the power light illuminates. The laptop will now complete the boot process.

To broadcast FMV or store locally via GIIEP Client software, see section **2.3.2.4 Using the Video Function** beginning on pg. 59. To capture still frames from video, refer to section **2.3.2.3 Using the Picture Function** on pg. 56.

2.2.3.3 ROVER 4 Power Options

There are three ways to supply power to the ROVER 4 using the Battery Eliminator:

1) AC Cable

2) DC Cable with vehicle accessory power plug
   (must be disconnected from vehicle when not in use)

3) DC Cable with NATO power plug

The BA 5590 (NSN: 6135-01-036-3495) non-rechargeable battery, supplied by your unit, can also be used as an additional power supply for the Panasonic CF-19 Toughbook.

The BA 5590 slides into the battery box contained in the ROVER 4 case and attaches to the rear of the ROVER 4 receiver unit, in place of the battery eliminator for portable, on-the-go use.

BA 5590 Li / So2
Military Battery Pack

2.2.3.4 ROVER 4 Configuration

The ROVER 4 can be configured from either the receiver front panel or from the laptop PC. A data link receives video data from a supporting aerial aircraft.

There are four major components to select when configuring data links:

(1) **Framing Mode** – Select Packet Mux or Annex B

(2) **Link Mode** – Select Link protocol

(3) **Frequency** – Set the communications frequency using the left/right sliding bar or type in the field.

(4) **Data Rate** – Data rate entered must match transmitter's data rate

2.2.3.4.1 Configuration using CF-19 Laptop PC

Step 1: Verify that the CF-19 and the ROVER 4 receiver are powered on.

Double-click the **ROVER icon** on the desktop of the CF-19 to launch the L-3 User Interface.

Step 2: Establish a data link. Click on the **Receiver** tab to display the Receiver panel:

a) Select the **Framing Mode**, either "Packet Mux" or "Annex B" from the drop-down menu.

b) Select the desired **Link Mode** from the drop-down menu.

c) Set the **Frequency** using the left/right sliding bar on the frequency control or by typing in the frequency and pressing "Enter."

d) Select the **Data Rate** from the drop down-menu.
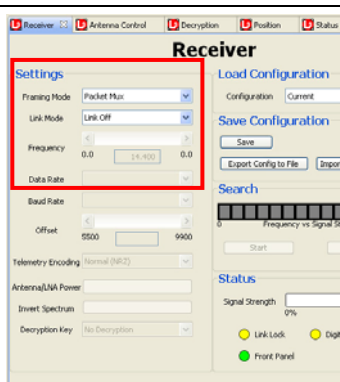
NOTE: Frequency information is provided by your state J-6 or ultimately from the payload in operation.

Step 3: Click the **Antenna/LNA Power** button to turn on the Low Noise Amplifier (LNA).
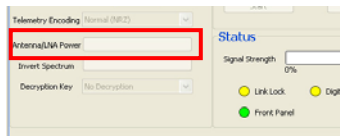
Step 4: The newly configured data link is now the current configuration.

To save the current configuration click the **Save** button. Enter a name in the Save Configuration window that appears.
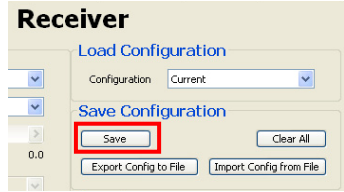
Step 5: To **Load** a previously saved configuration, select the name from the configuration drop-down menu.
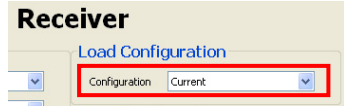
Step 6: ROVER 4 set up and configuration is complete.

To view the video feed from the CF-19, double-click the **L-3 Player icon** on the desktop.

When the player window opens, the video feed will automatically be detected and begin to play.

Video sources are selectable from the drop-down box which lists each source coming in.
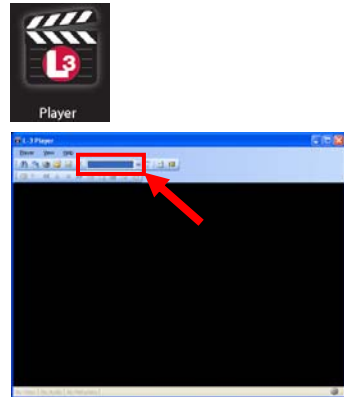
2.2.3.4.2 Using the ROVER 4 Graphical User Interface (GUI)

There are four ways to navigate through the ROVER 4 GUI windows:

Touch Screen	Includes the same functions found in all Windows applications: buttons, check boxes, and drop-down menus.
Command Bar	Popup menus switch to individual dialog pages. Once a dialog is selected then it will immediately open the corresponding page. Up and down arrows scroll through predefined values associated with an edit box.
Tabs	Press the Tab key to move from one function to another.
Five Way Touch Pad	Up and down keys on the pad function the same way as the command bar up and down arrows. The right and left keys on the pad tab through the fields in forward and backwards order.

File - The **File** menu contains two submenus:

- **Display Console**
- **Exit**
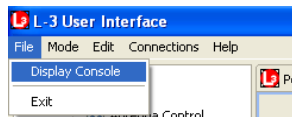
Mode - The **Mode** menu sets the ROVER 4 to either Configure Mode or Mission Mode.

- **Configure Mode** allows the user to create and save new configurations.
- **Mission Mode** allows the user to select between saved configurations.
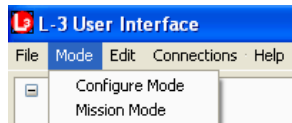
Edit – The **Edit** menu contains three submenus:

- **Units** menu allows the user to change units of measure from Metric (default) to U.S. Customary.
- **Degrees** menu changes the display of degree measurements.
- **Language** menu changes the language of the user interface.
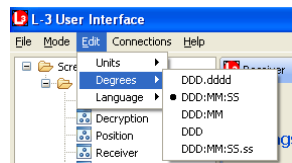
Connections – This menu contains a **ROVER** submenu:

- **Close** stops the network connection between the ROVER 4 and the User Interface.
- **Reinitialize** opens the IP window.

IP address – The laptop PC connects to the ROVER 4 Receiver through the Ethernet connector in the multipurpose cable. Enter the IP address of the laptop PC here. If the laptop PC only has one network interface card, press the "Get Local IP Address" button to obtain the local IP address automatically.

Note: The IP address should always match the IP address of the host computer. The multicast address should always match the multicast setting on the ROVER 4. The default settings are shown in the IP address window pictured.
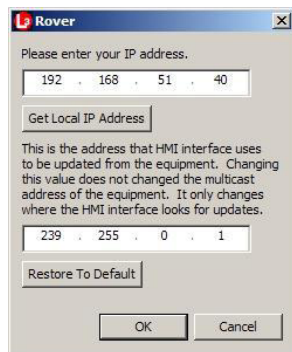
Multicast Address – The ROVER 4 receiver broadcasts video on the network using multicast technology. To receive that video, set the multicast address to match the address defined by the ROVER 4 receiver. Select the "Restore To Default" button to restore the default multicast address. This default address matches the default on the ROVER 4 receiver.

Help – The **Help** menu has two submenus:

- **About L-3 User Interface** provides information on L-3 User Interface, including copyright, version, plug-in, and configuration details.

- **Help Contents** opens a web browser version of the ROVER 4 Users Guide.

2.2.3.4.3 ROVER 4 Configure Mode

In "Configure Mode," the User Interface will display seven windows: **Receiver, Antenna Control, Decryption, Position, Status, Version,** and **Video.**

The **connection status** is indicated in the lower right corner of each window:

- 🟢 **Green** (Connected) indicates the laptop PC is receiving status information from the ROVER 4 receiver.

- 🟡 **Yellow** (Not Connected) indicates the laptop PC is not receiving status information from the ROVER 4 receiver.

- 🔴 **Red** (Hardware Failure) indicates a hardware fault.
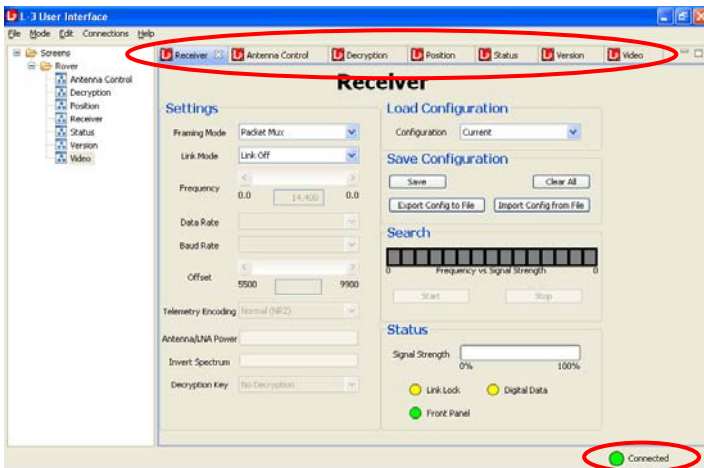
RECEIVER INTERFACE

The **Receiver window** provides the interface for configuring a data link for video data from an aerial vehicle and monitoring the status.

Settings

Framing Mode: Drop-down menu allows the user to select between "Packet Mux" or "Annex B" framing modes. This field also displays the framing mode of the current configuration.

Link Mode: Aircraft platforms use the following protocols (associated frequencies shown in parentheses):

1. Ku-band (14.4-15.35 GHz)
2. C-band (4.4-5.850 GHz)
3. L-band (1.710-1.850 GHz)
4. S-band (2.300-2.500 GHz)

NOTE: The Ku-band antenna is required for protocol 1; protocols 2 through 4 require the C/L/S-band antenna. Other options available in the drop-down menu include GPS only and Test Mode.

Frequency: Left/right slider bar increases and decreases the frequency value. To enter a frequency value manually, click in the Frequency field, type in a value and press the Enter key.

NOTE: Frequency information is provided by your state J-6 or ultimately from the payload in operation.

Data Rate: Drop-down menu allows the user to select a data rate. The following data rates are available:
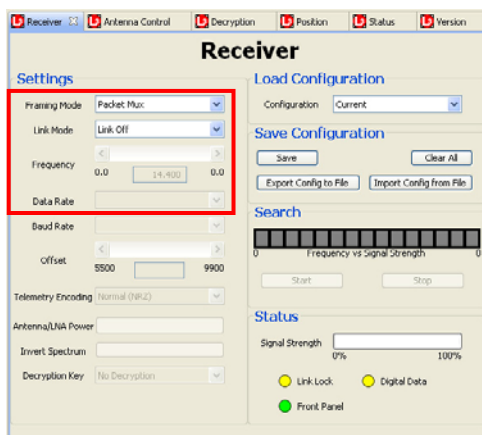
Packet Mux		Annex B	
L-band: Analog	**Ku-band:** BR-1.6 BR-3.2	**L-band:** Analog BR-1.6 BR-3.2 BR-6.4	**S-band:** Analog BR-1.6 BR-3.2 BR-6.4
C-band: Analog BR-455 BR-466 ER	BR-2.0 legacy BR-2.0 RL BR-10.71 A BR-10.71 B		
		C-band: Analog BR-1.6 BR-3.2 BR-6.4	**Ku-band:** BR-1.6 BR-3.2 BR-2.0 RL BR-10.71 A BR-10.71 B
S-band: Analog			

Baud Rate: Drop-down menu allows the user to select the rate that telemetry data will be received. The available choices vary depending on the link mode in use.

Offset: Field displays the telemetry offset from the carrier frequency.

Telemetry Encoding: Drop-down menu displays the following options: Normal, Bi phase Space, Bi phase Mark, and Manchester.

Antenna/LNA Power: Toggle button turns LNA on or off.

Invert Spectrum: Toggle button allows choice of Spectrum Inverted or Spectrum Not Inverted; applicable to some UAV platforms (for example, Hunter).

NOTE: Option only available on C-band.
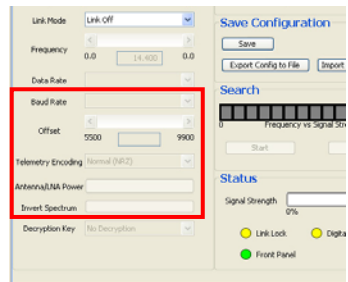
Load Configuration

Configuration: Allows the user to select previously saved configurations from the drop-down menu to load that configuration.

Save Configuration

Allows the user to:

- **Save** the current configuration:
    a) Click **Save**.
    b) Click on the configuration name to highlight it in the data entry field.
    c) Type the new name.
    d) Click the **OK** button. Click **Cancel** to close the window.
- **Export Config** [current configuration] **to File**
- **Import Config** [saved configuration] **from File**
- **Clear All** stored configurations

    NOTE: Clear All will erase all stored configurations and turn the receiver to "link off."
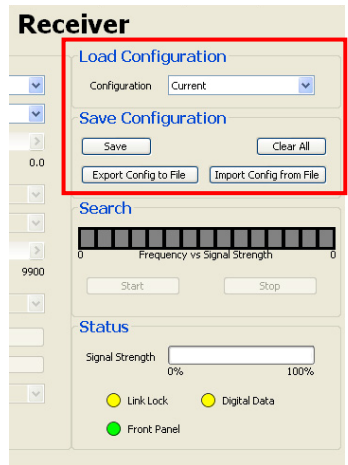
Search

Under the Search panel, the **Start** button begins a Frequency to Signal Strength search. Clicking **Stop** at any time will end the search.

Frequency vs. Signal Strength: When a Ku-band or C-band search is initiated, the ROVER 4 receiver collects data that is displayed in the signal strength bar.

The graph displays color-coded signal strength indicators of the cells (subsets of the entire frequency band) defined as follows:

- 🟩 **Green** – Maximum signal
- 🟧 **Dark orange** – Strong signal
- 🟧 **Light orange** – Moderate signal
- 🟨 **Yellow** – Weak signal
- ⬜ **White** – No signal
- ⬛ **Gray** – The ROVER 4 receiver has not evaluated the cell.

The plot acts as a progress bar during the search. Each gray cell changes color as it is evaluated. Click on a cell to initiate a fine search within the corresponding frequency range. The ROVER 4 sets itself to the strongest frequency in the cell.

Click on the **Start** button to initiate a coarse search that produces the "Frequency vs. Signal Strength" plot for the entire band. Once the search is completed, the ROVER 4 initiates a fine search in the frequency cell with the greatest signal strength. **NOTE**: *In the absence of a signal, the ROVER 4 may show moderate signal strength across the entire frequency band.*

When performing a frequency search, open the video player. Video can sometimes be attained even with very low signal strength. If video is visible, click **Stop** and make adjustments to the frequency using the frequency arrows until the best quality video is obtained. If the video is not obtained, make small adjustments to the frequency using the frequency arrows. Monitor the Signal Strength status value until the signal strength maximizes and the "Link Lock" status is green.

When a Ku-band or C-band analog search is initiated, the **Frequency Search** dialog box appears. Select either the Low Band or High Band Search and click **OK.**

- – C-band low: 4400 to 5249 MHz
- – C-band high: 5250 to 5850 MHz
- – Ku-band low: 14.400 to 15.145 GHz
- – Ku-band high: 15.150 to 15.350 GHz
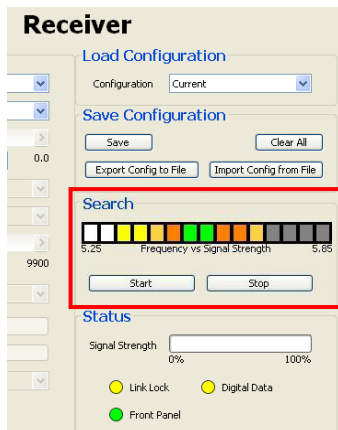
Click the **Start** button to command the ROVER 4 receiver to lock on the video signal within the frequency range of the selected **Link** band. The ROVER 4 receiver will search across the entire frequency range. Search status is displayed as a percentage. When the search is complete the status will read 100%.

A **Search** can be started at any time. Be aware that the ROVER 4 receiver always starts the search at the low end of the frequency band and continues to the high end of the frequency band. If video is being displayed when the search is started, that video will be interrupted while the receiver searches for signals. **NOTE**: *When performing a frequency search, open the video player. Video can sometimes be attained even with very low signal strength.*

The **Stop** button terminates the search process and can be clicked at any time. The Stop button is only active during a frequency search.

Status

Signal Strength: Displays the relative signal strength as a percentage of the ideal Received Signal Strength Indication (RSSI), 0 to 100%.

Link Lock: Displays status of the ROVER 4 video signal lock:

- 🟢 **Green** – Any slight video signal strength.
- 🟡 **Yellow** – ROVER 4 has not locked on a video signal.

Digital Data: Indicates the presence of video data only on the link. The system cannot detect video data on analog links (gray indicator).

Front Panel: Indicates if there is activity on the ROVER 4 receiver front panel:

- 🟢 **Green** – There is no activity on the ROVER 4 receiver front panel. It is safe to make changes using the GUI.
- 🟡 **Yellow** – There is activity on the ROVER 4 receiver front panel. Do not make any changes through the GUI.
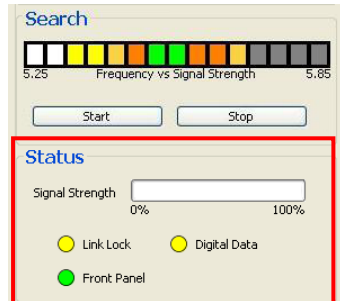
ANTENNA CONTROL INTERFACE

The **Antenna Control** window provides the interface to configure the directional antenna. The **Manual Control** allows the antenna position to be specified.

A tracking antenna is available from L-3; however, it is not included in the kit.

Contact L-3 to obtain the additional antenna and further instructions if needed.
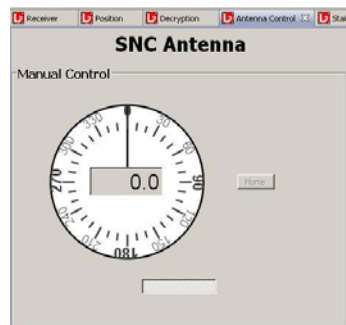
DECRYPTION INTERFACE

The ROVER 4 system is capable of performing Triple DES (Data Encryption Standard) and AES (Advanced Encryption Standard) decryption.

Contact your J-6 or COMSEC manager to obtain encryption keys.

POSITION INTERFACE

The **Position** window provides positional information about the unmanned aerial vehicle (UAV) and the target it is tracking. This window also displays the ROVER 4 location if a DAGR (Defense Advanced GPS Receiver) is connected. The location can be entered manually if a DAGR GPS is not connected.

Remote (Aircraft)

The fields of the Remote (Aircraft) display the position of the aircraft if the aircraft is sending telemetry data, but are currently only available for Ku-band links only.

Target

The Target fields give the position of the target.

- **Latitude** indicated as N (North) or S (South)

- **Longitude** indicated as E (East) or W (West)

- **Range** distance of target from the GPS receiver

- **FOV** (field of view) of camera measured in degrees

- **Width** of camera FOV measured in feet

- **Bearing** from the location of the ROVER 4 receiver to the target
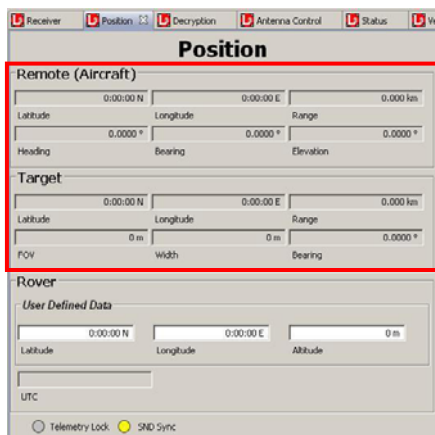
Rover

The **Rover** section displays positional information detected by the GPS receiver. The fields of the Rover display indicate:

– **Latitude** of the local ROVER 4

– **Longitude** of the local ROVER 4

– **Altitude** of the ROVER 4 receiver above Mean Sea Level (MSL)

– **UTC** Coordinated Universal Time (the local time at the Greenwich meridian) detected by the GPS receiver attached to the local ROVER 4

Telemetry Lock: This status indicates whether the ROVER 4 receiver is receiving telemetry data through the Ku-band link.

- ● **Green** – Receiver is receiving telemetry data.

- ○ **Yellow** – Receiver is not receiving telemetry data.

- ✕ **Red X** – Telemetry is not applicable for the selected link. (Telemetry is available for Ku-band only.)

SND Sync: This status indicates whether the ROVER 4 receiver is receiving Synchronized Network Data (SND).

- ● **Green** – Receiver is receiving data.

- ○ **Yellow** – Receiver is not receiving data.

- ✕ **Red X** – Data is not applicable for the selected link.

STATUS INTERFACE

The **Status** window provides status information about the ROVER 4 receiver.

Power

The **Power** status box displays the power levels of the four power supplies in the ROVER 4 receiver: 1.5 volt, 2.0 volt, 5 volt, and 12 volt. Status indicators located next to each

power display the status of the power supply:

- ● **Green** – The power supply is operational.

- ○ **Yellow** – Unable to determine the power supply status.

- ● **Red** – The power supply is inoperable.

CCA

The **CCA** status box displays the status of each of the five Circuit Card Assemblies (CCA) in the ROVER 4 receiver: Ku-band, Processor, COMBO, Front Panel and Codec. Status indicators are located next to each CCA:

- 🟢 **Green** – Operational.
- 🟡 **Yellow** – Requires attention.
- 🔴 **Red** – CCA not present, but should be.
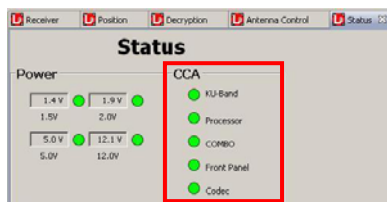
Information

Front Panel Display displays the text that is currently being displayed on the front panel of the ROVER 4 receiver.
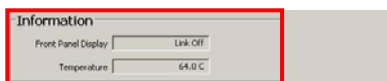
Temperature displays the temperature detected inside of the ROVER 4 receiver:

- **- 40.0°C to 85.0°C: temperature is acceptable**
- **85.0°C and up: temperature is high, but operational**

NOTE: If the temperature exceeds 85.0°C, move the ROVER 4 receiver to a shaded location, away from direct heat.

2.2.3.4.4 ROVER 4 Mission Mode

When "**Mission Mode**" is selected from the "Mode" menu, the user may choose a saved configuration, view basic status, and select link options.

Configuration Selections: The operator can only choose from four previously saved configurations.

Status: Basic status of the receiver is displayed including: Signal Strength, Link Lock, and Digital Data.

Link: "Antenna/LNA Power On/Off" and "Turn Link Off" options are available.
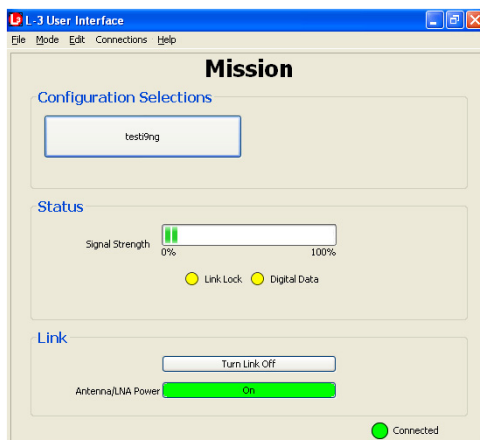
LFP Reference Chart

Displayed in the table below are the payloads of the aircraft and what Frequency range each will be using to communicate with the ROVER 4.

Link/Frequency/Player (LFP) Reference			
Aircraft	**Link Type**	**Frequency**	**Telemetry**
Dragon Eye	L Analog	1.71 – 1.85 GHz	Available
HSKT	Annex B	14.4 – 15.35 GHz	Available
Hunter	C Analog	4.4 – 5.85 GHz	
Ignat	C Analog	4.4 – 5.85 GHz	
Litening Pod	C 455	5.24 – 5.85 GHz	Proprietary
	C Analog	4.4 – 5.85 GHz	Available
Pioneer	C Analog	4.4 – 5.85 GHz	
Predator	C 455	5.24 – 5.85 GHz	Proprietary
	C Analog	4.4 – 5.85 GHz	
Raven	L Analog	1.71 – 1.85 GHz	Available
Pointer	L Analog	1.71 – 1.85 GHz	Available
Scathe View	C 455	5.24 – 5.85 GHz	
Shadow	C Analog	4.4 – 5.85 GHz	Available
Sniper Pod	L Analog	1.71 – 1.85 GHz	
Tern	L Analog	1.71 – 1.85 GHz	
*Available and Proprietary Telemetry cannot be displayed. L-band Frequency Range: 1.710 - 1.850 GHz S-band Frequency Range: 2.300 - 2.500 GHz C-band Frequency Range: 4.400 - 5.850 GHz Ku-band Frequency Range: 14.400 - 15.350 GHz			

2.2.3.4.5 Configuration through the Front Panel Display

Step 1: <u>Make sure the ROVER 4 receiver is on.</u>
Locate the four navigation buttons on the front panel:

   a) **[ESC]** moves to the left;

   b) **[ENT]** moves to the right;

   c) Up **[↑]** and down **[↓]** arrows move vertically through the front panel tree.

Step 2: <u>Set initial start-up screen.</u>
Press **[ESC]** several times until **L-3 COMM** appears in the display.

To load a previously saved configuration, skip to Step 7 pg. 32.

Step 3: <u>Establish a data link.</u>

   a) Press [**ESC**] several times until **L-3 COMM** appears.

   b) Press **[ENT]**.

   c) **Rcvr** appears in the display; then press **[ENT]**.

   d) **Config** appears; then press **[ENT]**.

   e) **Framing** appears: then press **[ENT]**.

   f) Either press **[↑]** or **[↓]** to select the link framing mode to use for the link.

   g) Press **[ENT]** to set the selected mode. (An asterisk indicates that the mode is selected).

   h) Press **[ESC]** to return to the **Framing** display.

   i) Press [↓] until **Link** appears; then press **[ENT]**.

   j) Either press **[↑]** or **[↓]** to select the link protocol to use for the link.

   k) Press **[ENT]** to set the selected protocol. (An asterisk indicates that the protocol is selected).
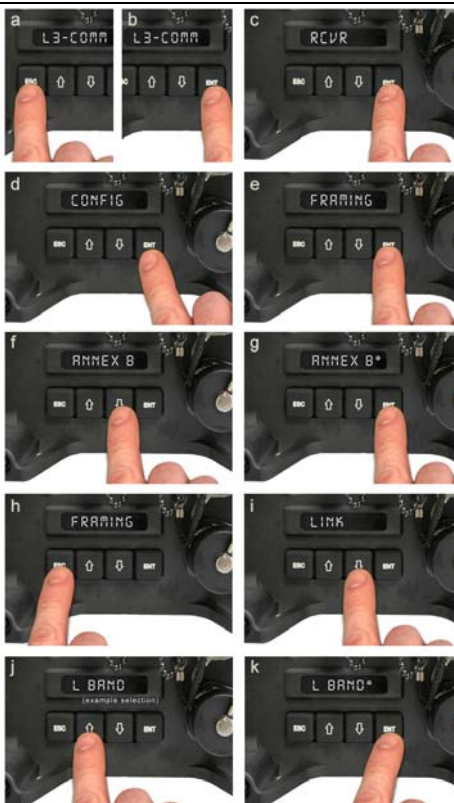
   (continued on next page)

l) Press **[ESC]** to return to the **Link** display.

m) Press **[↓]** until **Freq** appears in the display.

n) Press **[ENT]** to display the frequency. One digit should be flashing.

o) Press **[↑]** to change the value of the digit. Press **[↓]** to select another digit.

p) Press **[ENT]** to set the frequency value.

q) Press **[ESC]** to return to the **Freq** display.

r) Press **[↓]** until **Data Rate** appears in the display; then press **[ENT]**.

s) Either press **[↑]** or **[↓]** to select the data rate to use for the link.

t) Press **[ENT]** to set the selected data rate. (An asterisk indicates that the protocol is selected).

u) Press **[ESC]** to return to the **Data Rate** display.
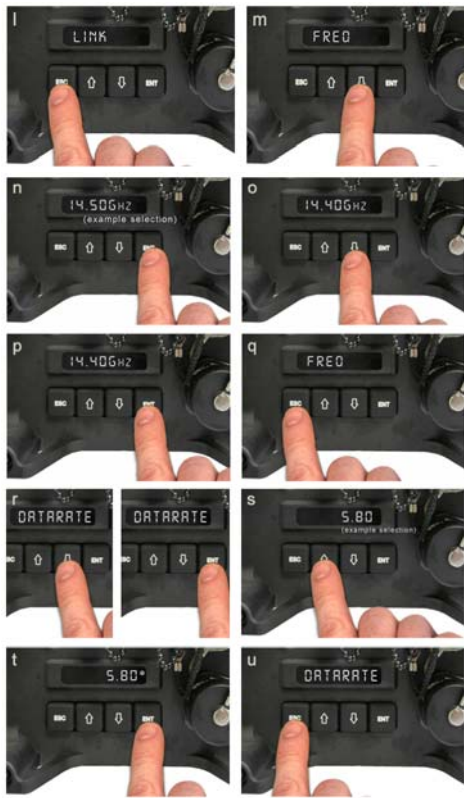
Step 4: Turn on Low Noise Amplifier (LNA) power.

a) Press **[ENT]**.

b) **Rcvr** appears in the display; then press **[ENT]**.

c) **Config** appears; then press **[ENT]**.

d) Press **[↓]** until **LNA Pwr** appears; then press **[ENT]**.

a) Press **[↑]** or **[↓]** to select **ON**; then press **[ENT]**. (An asterisk indicates that **ON** is selected).

Step 5: ROVER 4 set up and configuration is complete.

The newly configured data link is now the current configuration.

Step 6: <u>Save the Current Configuration</u>.

To save the current configuration to be used later, access the menu items in the following order:

a) Press **[ESC]** until **L-3 COMM** appears in the display.

b) Press **[ENT]**.

c) **Rcvr** appears in the display; then press **[ENT]**.

d) **Config** appears; then press **[ENT]**.

e) Press **[↓]** until **Save** appears; then press **[ENT]**.

f) Press either **[↑]** or **[↓]** to select the name (**Config 1** through **Config 4**) of the saved configuration.

g) Press **[ENT]** to save the configuration.

h) The word **Done** appears in the display when save is successful.
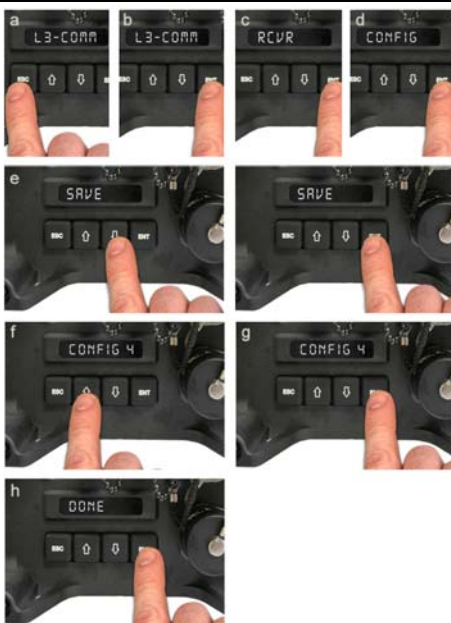
Step 7: <u>Load a Configuration</u>.

To load a previously saved configuration, access the menu items in the following order:

a) Press **[ESC]** until **L-3 COMM** appears in the display.

b) Press **[ENT]**.

c) **Rcvr** appears in the display; then press **[ENT]**.

d) **Config** appears; then press **[ENT]**.

e) Press **[↓]** until **Load** appears; then press **[ENT]**.

f) Press either **[↑]** or **[↓]** to select the name (**Config 1** through **Config 4**) of the saved configuration.

g) Press **[ENT]** to load the configuration. (An asterisk indicates that the protocol is selected).

2.2.3.4.6 ROVER 4 Shut Down Procedures

Step 1: Turn **LNA** off:

a) Press **[ESC]** several times until **L-3 COMM** appears in the display; then press **[ENT]**.

b) Press **[↓]** until **Config** appears; then press **[ENT]**.

c) Press **[↓]** until **LNA Pwr** appears; then press **[ENT]**.

d) Press **[↑]** or **[↓]** to select **Off**; then press **[ENT]**.
(An asterisk indicates that **Off** is selected).

Step 2: Turn off the ROVER 4 receiver by positioning ON/OFF switch to OFF.

Step 3: Disconnect all cables from their connections.

Step 4: Repack the ROVER 4 system in the carrying case.

- Antennas and mounts in the right compartment of the carrying case.

- Receiver and battery case in the middle compartment.

- Power adapters in the left front compartment.

- Cables and accessories in the left rear compartment.

- Place the laptop PC on top of the cables in the left rear compartment.

2.2.4 ROVER 5

2.2.4.1 ROVER 5 Setup

Setup should take approximately five
minutes to complete after you learn the
process. Before setting up the ROVER 5,
determine the following:

- Receiving, transmitting or both
- Waveform(s) to be used (Tactical, VNW, CDL, Analog)
- Frequency band (UHF, C-Band, Ku-Band, L-Band, or S-Band)
- Specific frequency
- Data rate
- Networking requirements
- Physical location. To determine the optimal location:
    - Ensure the ROVER 5 has an unobstructed line of sight to the transmitting or receiving platform.
    - Do not place the antenna next to UHF, C, L, S or Ku-Band transmitters, which will decrease the range or degrade the signal.

Radio signals are received through the top of the ROVER 5 for the L, S, C and
Ku-Band antennas. The UHF antenna receives through the side and the top of
the antenna.

Unpack the ROVER 5 from the transit case and ensure all of the components are
included in the kit.

Contents of ROVER 5 Kit:

(1) Transit Case

(2) ROVER 5 Handheld Unit

(3) UHF Antenna

(4) USB Drive

(5) GPS Cable

(6) RS-422/232 Cable

(7) Audio Cable

(8) Extended Battery Life

(9) Extended Battery Life Cover

Power Conditioner Kit includes:

(10) Auto Adapter Cable

(11) DC to DC Power Conditioner

(12) Power Conditioner to ROVER 5 Cable

(13) AC to DC Power Conditioner

(14) BA5590 (Battery) to ROVER 5 Cable

(15) Flying Lead DC Power Cable

(16) BA5590 to DC/DC Cable

(17) Standard AC Cable

ROVER 5 Frequency Band Performance

	Frequency Range		Transmit Power	
BAND	Freq Range	Step Size	Internal	External
UHF	400 MHz – 470 MHz	1.0kHz	29 dBm	5-14 dBm
L-Band	1710 MHz – 1850 MHz	0.5MHz	29 dBm	5-14 dBm
S-Band	2200 MHz – 2500 MHz	0.5MHz	29 dBm	5-14 dBm
C- Band Low	4400 MHz – 4950 MHz	1.0MHz	N/A	3-9 dBm
C-Band High	5250 MHz – 5850 MHz	1.0MHz	N/A	3-9 dBm
Ku-Band	14.4 MHz – 15.35 GHz	1.0MHz	N/A	3-12 dBm

ROVER 5 Top Connections

(1) J11 RF Transmit Port (common to all bands) – used to connect external antenna

(2) J10 UHF Transmit and Receive Port – used to connect UHF whip antenna

(3) J9 RF Receive Port (common to all bands) – used to connect external antenna

ROVER 5 Bottom Connections

(1) J8 Black I/O RS-232/422 Interface

(2) J7 GPS Connection

(3) J6 Audio Connection

(4) J5 Red I/O RS-232/422 Interface

(5) J4 Video Connection (RS-170)

(6) J3 Ethernet Connection (RJ-45)

(7) J2 USB Connection

(8) J1 Power Connection

⚠ **AVOID STANDING THE ROVER 5 HANDHELD RADIO IN A HORIZONTAL POSITION; THIS BLOCKS THE FAN INTAKE VENTS ON THE BOTTOM OF THE ASSEMBLY, WHICH CAN RESULT IN OVERHEATING THE UNIT.**

2.2.4.2 Connections for Interfacing with GIIEP

Step 1: Connect the BNC connector of the
video cable to the J4 port of the ROVER 5.

Step 2: Connect the RCA connector of the
video cable into the video port of the
AVerMedia Video Capture device and plug
into the CF-30.

> To broadcast FMV or store locally via GIIEP Client software, see section
> **2.3.2.4 Using the Video Function** beginning on pg. 59. To capture still
> frames from video, refer to section **2.3.2.3 Using the Picture Function** on
> pg. 56.

2.2.4.3 ROVER 5 Power Options

The J1 connector is the power connection for ROVER 5. Running Standard AC
Power (i.e. wall socket) will require the AC power cable to be connected to the
AC/DC power conditioner, and the power conditioner to the ROVER 5 cable.

Standard AC Power

Using the ROVER 5 with Standard AC power
requires three components: Standard AC power
cable, AC/DC power conditioner and the power
conditioner to the ROVER 5 cable.

Power is connected to the ROVER 5 at J1.

Flying Lead Power

Using the ROVER 5 with the "Flying Lead" power
cable allows the ROVER 5 to be powered from any
9-36VDC power source. This requires three
components: flying lead power cable, DC/DC power
conditioner, and the power conditioner to the
ROVER 5 cable. Power is connected to the
ROVER 5 at the J1.

12/24V Vehicle Power

The ROVER 5 may be powered by a vehicle using the auto adapter cable, DC/DC power conditioner and the power conditioner to ROVER 5 cable.

BA5590 Battery Power

The ROVER 5 may be powered directly from a BA5590 military issue battery using the BA5590 to ROVER 5 cable. Again the power is connected at the J1.

Stand Alone Battery Power

The ROVER 5 may be powered from the internal battery. The internal battery can be recharged by plugging the unit into any other power source. No external cables or connections are required to power ROVER 5 from the internal battery.

Stand Alone Extended Life Battery Power

The ROVER 5 standard internal battery may be replaced with an extended-life battery, which has a greater operating capacity.

How to Connect the Extended Life Battery:

1) Ensure the power to the ROVER 5 is turned OFF. The battery compartment can be accessed from the back of the ROVER 5. Use the 1/16" hex wrench to loosen four captive screws, then remove the cover.

2) Remove the standard battery. Locate and disconnect the power connector by pressing the release tab and gently pulling the connector. Remove the standard internal battery.

3) Securely attach the extended life battery and ensure connector clicks into place.

4) Reinstall the battery cover and secure the four hex screws.

Extended Life Battery

Remove Battery Cover
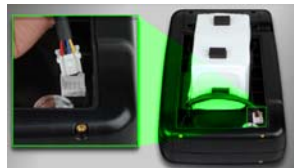
Remove standard internal battery and securely connect the Extended Life Battery. Reinstall battery cover.

2.2.4.4 ROVER 5 Controls and Indicators

Power ON/OFF

Press and hold the power button to turn the ROVER 5 power ON or OFF. Illuminates GREEN when power is ON.

If transmit or receive settings have been established, ROVER 5 will store the settings and automatically search for data feed. This is indicated by a solid display screen. If no data is available, a static screen will appear.

COV – Covert Mode

Pressing the "COV" button turns the Display LEDs and Fans OFF. All other functions continue as programmed.

> ⚠ **WARNING! Running the ROVER 5 in covert mode for an extended period of time will cause the unit to overheat.**

ESC – Escape Button

Pressing the "ESC" button stops some functions. It may also be used to go back to the previous screen or menu.

ENT – Enter Button

The "ENT" button is used to enter programmed information into the ROVER 5.

Navigation Buttons

The UP, DOWN, LEFT, RIGHT navigation buttons provide the capability to move through the menus on the screen. By using the Function, Navigation, ENT, and ESC buttons, the ROVER 5 may be operated without the use of the touch screen.

ZERO Buttons

If an encryption module was installed and keyed, pushing both 'ZERO' buttons simultaneously zeroizes (removes) the key.

NOTE: Exert firm pressure when pressing the 'ZERO' buttons in order to zeroize successfully.

Battery Charge Indicator

Illuminates GREEN when the radio is receiving proper DC voltage to charge the internal battery.

FILL Button

ON (lit GREEN) when key is loaded.

OFF (not lit) when a key is not present.

BYPASS Button

ON (lit GREEN) when in bypass mode.

OFF (not lit) when key installed.

NOTE: Bypass mode is activated by installing a bypass module or code plug.

Function Keys

Use to move between GUI menus. Referred to as F1, F2, F3, and F4 from top to bottom.

2.2.4.5 ROVER 5 Main Menu

To begin use of the ROVER 5, unit must be turned on pressing the ON/OFF button in the upper left corner of the handheld radio.

When the "Enter User Name" screen appears, enter the user name and press **Done**.

Default user name: admin

When the "Enter Password" screen appears, enter password and press **Done**.

Default password: L3rover5

The main menu screen will appear.
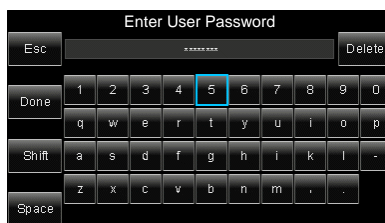
> ⚠️ **ROVER 5 uses a touch screen display. Do not press down strongly with sharp-pointed or hard objects that may mark or tear the screen (e.g., nail, pencil, or ball point pen).**

Signal Strength

Indicates the strength of the received signal. More bars indicates stronger signal.

Battery

Indicates battery charge. A lightning bolt indicates battery charging mode.

Home

Corresponds to the F1 key. Displays Main Menu screen.

Brightness

The brightness icon corresponds to the F2 key. Use the cursor to slide an indicator between 0 and 100 to adjust the LCD brightness. Press 'Accept' to accept the change or 'Cancel.'

Telestrator

The Telestrator icon corresponds to the F3 key. Use to write on the screen as a chalkboard, allowing you to mark up an image, similar to television sports broadcasting techniques.

Folder - Recall or Save

The Folder icon corresponds to the F4 key. Allows user to 'Recall' or 'Save' a ROVER 5 configuration.

Envelope

The Envelope icon opens received images. This icon only appears when an incoming image has been received.

Receiver

Displays current RX Waveform, Band, Data Rate, and Frequency for the receiver. The LEDs indicate whether a link and data are present.

GREEN LED indicates link is active and data is being received. **YELLOW** LED indicates the link is not operating and data is not being received; action needs to take place to activate link.

Transmitter

Displays current TX Waveform, Band, Data Rate, and Frequency for the transmitter. LED indicates whether the transmitter power is low (YELLOW), high (GREEN), or OFF (LED is not lit).

2.2.4.6 ROVER 5 Configuration

 The ROVER 5 receives video data from a supporting aerial aircraft. There are three major components to select when configuring data links: (1) Waveform, (2) Band, and (3) Frequency. All waveforms and bands can be configured from the front panel.

The following procedure outlines the steps to configure a C-Band analog data link.

> ⚠ **ROVER 5 uses a touch screen display. Do not press down strongly with sharp-pointed or hard objects that may mark or tear the screen (for example, a nail, pencil, or ball point pen). Setup can be accomplished using the Navigation buttons and the ENT (ENTER) key on the right side of the ROVER 5.**

Step 1: To begin the Receiver Setup, access the Main Menu in one of three ways:

- Press the F1 button
- Touch anywhere in the link configuration portion of the screen (Receiver and Transmitter boxes)
- Press the ENT (Enter) button

The Main Menu will replace the Receiver and Transmitter boxes displayed on the left side of the ROVER 5 screen.

Step 2: Select the **Receive** button.

A submenu appears displaying the current settings.

The Function keys correspond to the on-screen buttons to the right; the arrow can also be used to highlight the buttons and select with ENT.

Step 3: Select **Waveform**.

A submenu of waveform options appears (Tactical, CDL, Analog, VNW).

Step 4: Select **Analog** for this example.

A submenu of available analog bands appears along with frequency ranges (L-Band, S-Band, C-Band).

Step 5: Select **C-Band** for this example.

A numeric keypad appears.

Step 6: Using the keypad, **enter the exact frequency** including a decimal point. If an invalid frequency (out of range) is entered, an error message will appear. Re-enter a new frequency. It may be necessary to click **Clear** (erases all entries) or **Delete** (erases the last number entered) to erase the previous frequency before you enter a new one.

When the frequency is correct, select **Enter**.

Step 7: The Antenna Select menu appears.

Select **Internal** antenna for this example.

Step 8: If the link is configured correctly, the "Link" light on the Receiver display will be **GREEN** and live video will be running on the display screen.

2.2.4.7 ROVER 5 Transmit (TX) Setup

Step 1: To transmit or receive in UHF, the UHF antenna must be installed to connector J10 on top of the ROVER 5.

NOTE: The ROVER 5 cannot transmit and receive simultaneously from the same antenna.

Step 2: To begin the Transmit Setup, access the Main Menu in one of three ways:

- Press the F1 button
- Touch anywhere in the link configuration portion of the screen (Receiver and Transmitter boxes)
- Press the ENT (Enter) button

The Main Menu will replace the Receive Transmitter boxes displayed on the left side of the ROVER 5 screen.

Step 3: Select **Transmit**.

NOTE: To save power, it is best to leave the Transmit "Power" Off until you are ready to send a picture. When you are ready to transmit, the system will ask you if you want the transmitter turned on at that time.

Step 4: A submenu appears displaying the current displaying the current power, waveform, and band settings.

Select **Waveform** to begin the setup process.

Step 5: A submenu of Waveform options is displayed (Tactical, CDL, Analog, VNW).

For this example, select **Tactical**.

Step 6: Select **Band** to display a submenu of frequency ranges. For the Tactical waveform, all five bands (L-Band, S-Band, C-Band, Ku-Band, and UHF-Band) are available.

For this example, select the **UHF-Band**.

Step 7: A numeric keypad appears.

Enter the exact frequency using the numeric keypad. If an out of range frequency for the band is entered, an error message is displayed.

It may be necessary to clear the previous frequency before you enter the new one by pressing the **Clear** button. **Delete** erases the last entry.

Select **Enter** to set the correct frequency.

Step 8: The "Data Rate" menu appears. For this example, select the **BR-0.466ER** option.

Step 9: The "Antenna Select" menu appears.

Select **UHF Port**.

Step 10: If ready to send a picture, select the **Power** option. In this case, select the **High** antenna power.

Step 11: Return to the home screen by pressing the 'ESC' button or selecting the 'Esc' option on the screen.

Step 12: The home screen displays the current transmitter settings. With the transmitter configured, you may transmit images from the Telestrator.

2.2.4.8 Configuration from a Laptop PC

The ROVER 5 may be configured through a computer using the Ethernet connection and a browser-based user interface.

NOTE: Due to the restrictions set on the CF-30, it is recommended to use any other PC, including the CF-19 from the ROVER 4 kit, to configure the ROVER 5.

Step 1: Using a standard Ethernet cable, plug the Ethernet cable into the J3 connection located on the bottom of the ROVER 5.

Step 2: Plug the other end of the Ethernet cable into the computer.

NOTE: Use of the CF-30 is not recommended to configure the ROVER 5 due to the restrictions set on the computer.

Step 3: Power on the ROVER 5 and the computer.

Step 4: Ensure the computer displays that the Local Area Network (LAN) has been connected. If so, proceed to Step 6.

If the LAN connection is not made, it will be necessary to configure the TCP/IP settings on the external computer explained in step 5.

Step 5: On the external computer, click the 'Start' button in the lower left corner.

Select 'Control Panel', then 'Network Connections'.

When the network connections screen is displayed, right-click the LAN connection and select 'Properties' from the drop down menu.

Click the 'Internet Protocol (TCP/IP) option and select 'Properties'.

When displayed, make sure the 'Obtain an IP address automatically' button is selected. It may also be necessary to select the 'Advanced' button on this screen to ensure the DHCP is enabled.
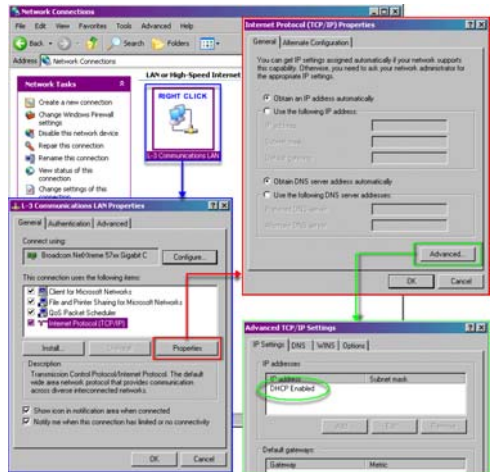
Step 6: With all the settings correct and the LAN connection between the ROVER 5 and external computer established, click on the internet browser icon.

Step 7: To identify the specific IP address on the ROVER 5, press the F1 button to open the Main Menu. Select the 'More' option twice, then select 'Admin,' and finally select 'Networking.' The IP address will be displayed on the ROVER 5 screen.

Step 8: Type http://ui in the browser's address bar to access the User Interface.

If a *'Page cannot be found'* message appears, type the IP address for the ROVER 5 into the address bar.

If your ROVER 5 has received a transmission from another ROVER 5, the address may have changed.
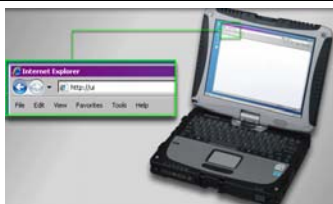
Step 9: When the external computer accesses the ROVER 5, a Login Screen will appear. Use the same login that was used on the ROVER 5. Next, select the 'User Interface' option to open the external GUI which controls the ROVER 5.
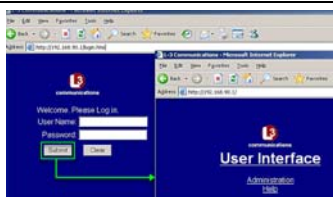
This interface is used to configure the ROVER 5 instead of using the ROVER 5 front panel.

The ROVER 5 can still be configured through the front panel while the external GUI is connected.

Note: If the GUI Status indicator is not green, the Ethernet link with the ROVER 5 receiver is not functional.

2.2.4.9 ROVER 5 Shut Down

To shut down the ROVER 5, hold down the Power button for three seconds to turn off the ROVER 5.

2.3   Advantaged Users

There are two roles as an advantaged user – Field Technician and Analyst:

1. A **Field Technician** is responsible for carrying the "Go-Kit" to the affected area to gather data to send to various organizations for assessment and analysis. The Field Technician has full access to GIIEP software including the GIIEP GEE *(Section 2.3.3).*

2. The **Analyst** is responsible for receiving the transmitted data from the server, performing exploitation and developing usable products while annotating points of interest. The Analyst utilizes Spark Chat (*Section 2.3.4*), a commercial chat program preconfigured to interface with GIIEP chat, which allows communication with the Field Technician. Along with Spark, the Analyst will use GIIEP GEE (*Section 2.3.3*) and AVE (*Section 2.3.5*).

The Advantaged User software disc is provided by your system administrator. This disc includes AVE, GEE, and Spark.

2.3.1 GIIEP Software Configurations

If producing video, a video source must be plugged into CF-30 prior to executing the software in order for the software to acknowledge the camera.

Step 1: With a successful internet connection, locate the "**GIIEP Client**" **icon** on the desktop. Double-click the icon to launch the GIIEP Client software.

Step 2: A login screen will appear.

Enter your "**User**" name and "**Password**" that is issued by the system admin and click the "**Sign In**" button.

Step 3: The GIIEP GUI will then appear.

Click the **Configure** icon to open your configure "**Options**" page.
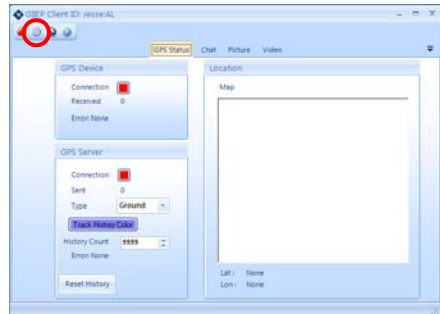
2.3.1.1 Global Positioning System (GPS) Configuration

Click the "**GPS**" **icon** on the left to configure settings.

a) Click the "**Comm Port**" "**Find"** button to locate the GPS module that will be used on your computer. (The "COM3" Comm Port will always be used on a CF-30).

b) Enter the "**Server IP**" address **provided by your J-6 administrator**.

c) Select the "**Update Rate in seconds**" from the drop-down menu. (This controls how often GPS information is sent to the server).

d) Click "**Save**" when completed.
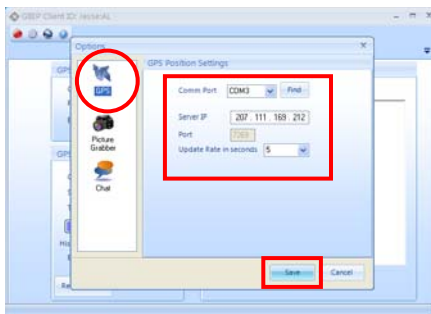
2.3.1.2 Picture Grabber Configuration

Click the "**Picture Grabber**" **icon** on the left to configure settings.

a) Enter the "**File Name**" that you wish to save still pictures as. (This is a root name for every photo being captured).

b) Define "**Save Folder**" to store downloaded pictures on your CF-30 Mobile Server by clicking the browse button [...].

c) The "**Starting Index**" (defaults to zero) is the starting point of files saved and continues in numerical order.

a) Click "**Save**" when finished.
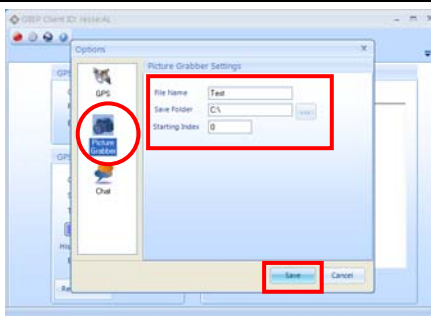
2.3.1.3 Chat Configuration

Click the "**Chat**" **icon** on the left to configure settings.

  a) Enter your "**Server IP"** address **provided by your J-6 administrator**.

  b) Click the "**Save**" button. This exits out of the Configuration Options page and returns to the GIIEP User Interface.
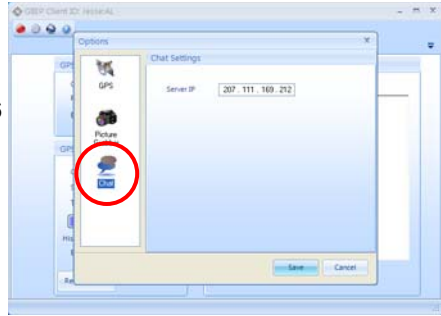
Once you have completed these steps, you are finished with the Configuration Setup. The next section will discuss operating the GIIEP software.

2.3.2 GIIEP Software Functions

2.3.2.1 Connecting to the Server and Using the GPS Function

The steps below will initiate your connection to the server, and at the same time start the GPS update stream. This stream is required for Google Earth clients to view your location.

Step 1: Once logged into the GIIEP Client, the "**GPS Status**" tab will display by default.

  • "**GPS Device**" indicates connection status and the amount of information that is received by the software from the GPS Module that is being used.

  • "**GPS Server**" indicates connection status and the amount of GPS information packages that have been sent to the server.
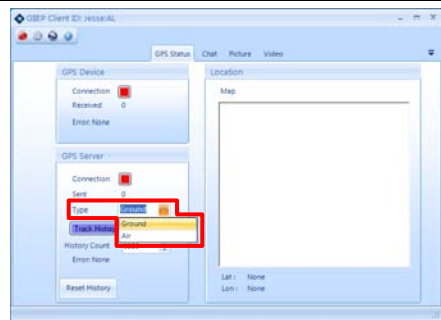
In the "**GPS Server**" panel, select "**Type**" from the drop-down menu to determine if you are an "Air" asset or a "Ground" asset:

  • **Ground**: Clamps the asset to the ground on COP. Elevation is not a factor.

  • **Air**: Sends elevation of asset in GPS updates and is reflected on the COP.

Step 2: Click on the red **Connect** ●
icon in the top left corner of the GIIEP
User Interface to establish connection
with the server.
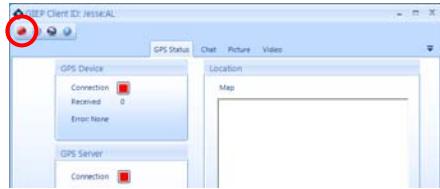
Step 3: The red **Connect** button should
turn green ● verifying that a
connection has been established.

Also check the "GPS Device"
Connection and the "GPS Server"
Connection indicators. They should
turn green with a successful
connection.

If there is a problem with the GPS or
connecting to the server, indicator
lights other than green will appear.

There are three possible status
indicators:

■   **Green** – Successful connection to server and built-in GPS module

☐   **Yellow** – Server did not accept connection

■   **Red** – No connection

NOTE: If you do not successfully connect to the server (i.e. display yellow or red
connection indicator), refer to Troubleshooting in the **GIIEP Training Manual** or
contact **GIIEP Customer Support** listed on pg. 107.

Location: Successfully connected, a
map with a location indicator will
appear along with current latitude (Lat)
and Longitude (Lon) coordinates at the
bottom of the window.

NOTE: If the location map does not
appear or has the wrong location,
ensure the GPS module located on the
top right of the CF-30 has an
unobstructed, clear view of the sky.
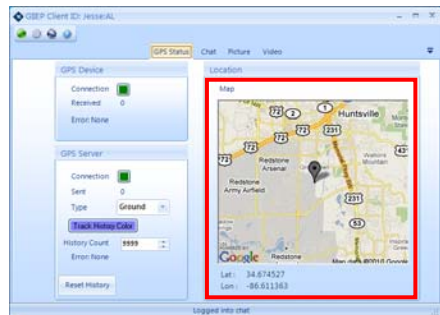
GPS Device:

- **Connection** indicator displays green (successful), yellow (not accepted), or red (no connection)

- Amount of information that is **Received** by the software from the GPS module used

- **Error** messages, if any
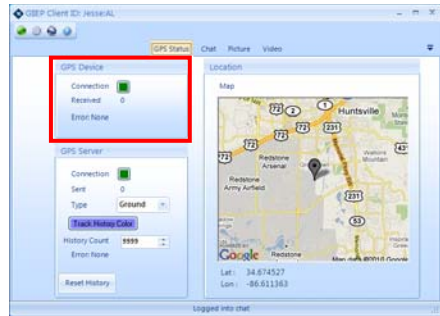
GPS Server:

- **Connection** indicator displays green (successful), yellow (not accepted), or red (no connection)

- Amount of GPS information packages that have been **Sent** to the server

- **Type** of asset – Ground (asset on ground on COP) or Air (sends elevation of asset in GPS updates and is reflected on the COP)

- **Track History Color** button allows the user to choose the desired color of the path history shown in Google Earth from a color palette. Select a color and click "OK."

- **History Count** is the number of GPS updates posted on Google Earth.

- **Reset History** button clears all history and restarts.

.
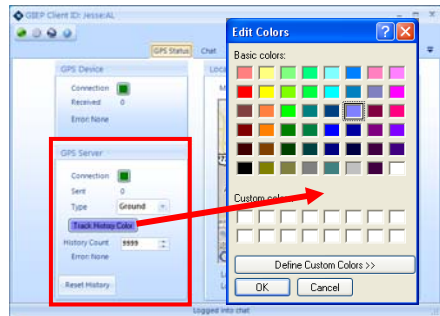
2.3.2.2 Using the Chat Function

Click the "**Chat**" tab to open a chat room.
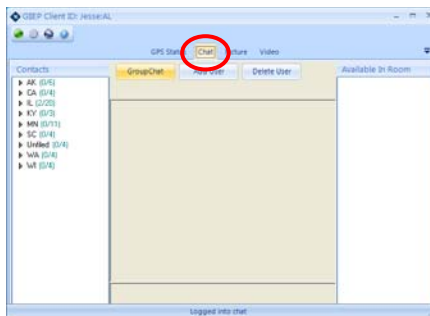
To join Group Chat, click the "**Group Chat**" button.

Select the "**Conference Server**" and then "**Room**" from the drop-down menus.

If the desired room is not listed or a new room needs to be created, type in the desired name.

Click "**OK**."

The "**Room Configuration**" window will appear.

Set the desired parameters and click "OK."

NOTE: The room will only become permanent if the "**Room is Persistent**" box is checked.
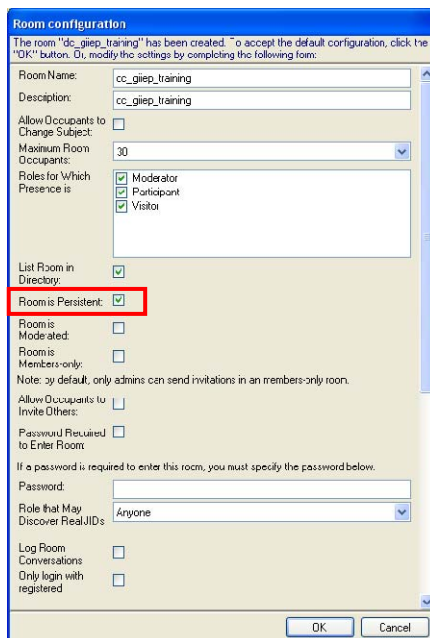
To post a message, click in the **typing field** located at the bottom of the window.

Type your message and then press the [enter] key to send.
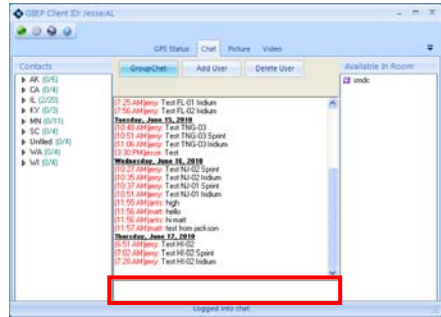
To initialize a private chat, double-click the **icon** next to the name of the individual. This will open a secondary "Conversation" window for a private chat between you and that user.

Type your message in the typing field and press the [enter] key to send.

The yellow indicator is illuminated when someone is online and available.
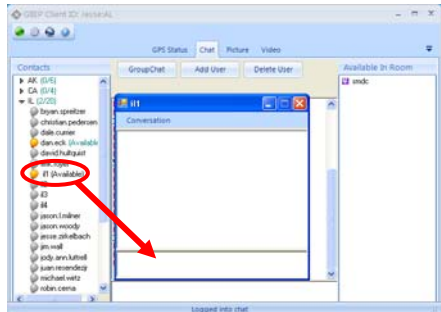
To add another user to the "Contacts" list, click the "**Add User**" button.
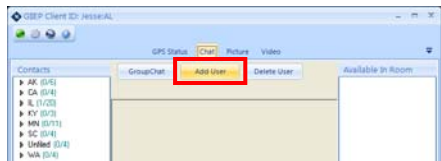
Enter the username (JID) the user wishes to add. The conference IP and the "Nickname" will automatically fill in.

Select one of the existing "**Groups**" by checking the box next to the ID or create a new one by typing a group name in the text field and clicking the "**Add Group**" button.

Click "**OK**" when finished.

To delete a user, highlight the name in your "Contacts" list panel and click the "**Delete User**" button.
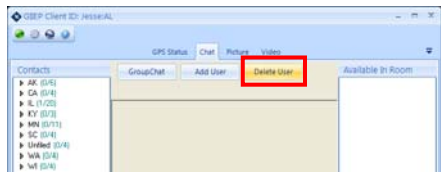
2.3.2.3 Using the Picture Function

Click the "**Picture**" tab.

Click on the "**Properties**" drop-down menu to select the capture device that is being used.
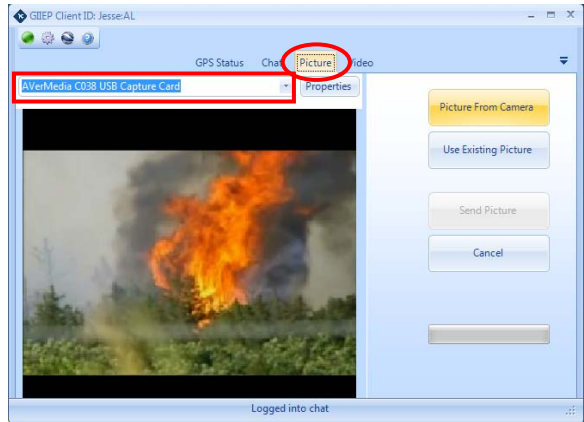
Click the "**Picture From Camera**" button to capture a still frame of the image in the Video/ Image Source.

Every image captured will automatically be transferred to the designated file previously established during the setup and configuration phase.

NOTE: Once you click the "**Picture From Camera**" button, the View/ Image Source pauses to show the picture captured while the live video feed continues to transmit back to the server and record to the local hard drive.
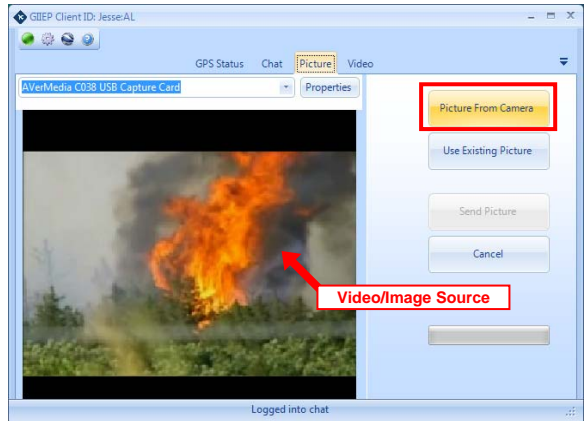
If the image is acceptable, click the "**Send Picture**" button.

Use the "**Cancel**" button to delete the current image and return to image capture.
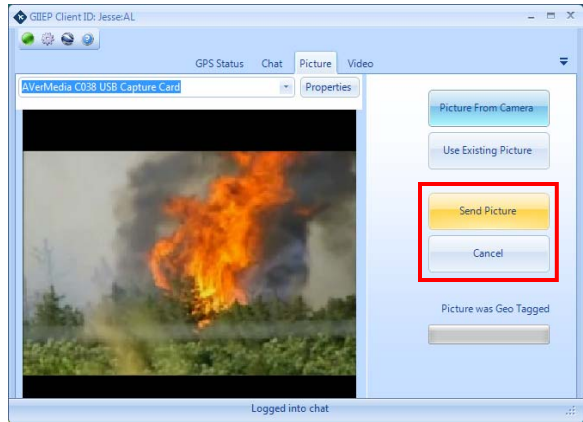
After clicking "**Send Picture**," the user may enter a "**Name**" for the picture.

Click "**Upload**" to send the picture to the server.
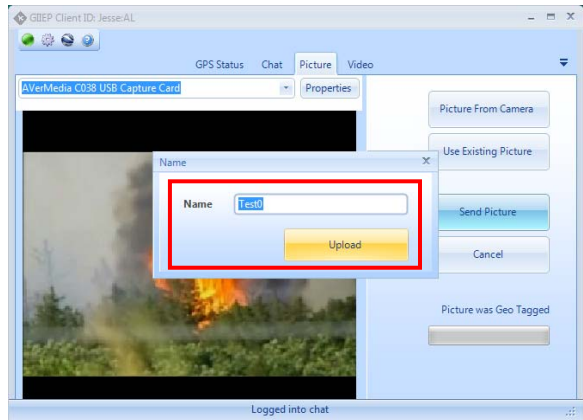
The "**Picture Being Sent**" status bar will indicate the progress of the picture transmission.
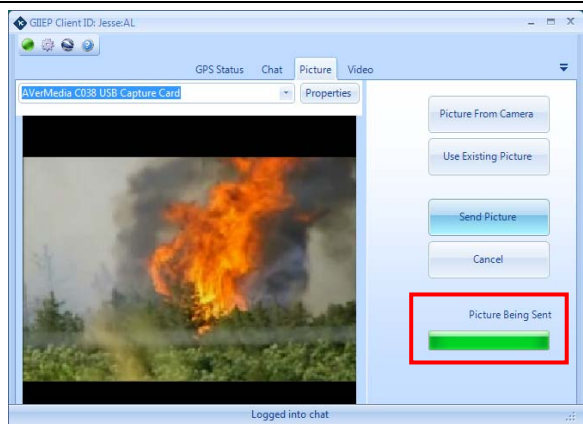
If the picture transmission was successful, the "**All Sent Successfully**" message will display.

NOTE: Once photos have been sent, they are automatically shown in GEE under operators' data and displayed on other users COP.
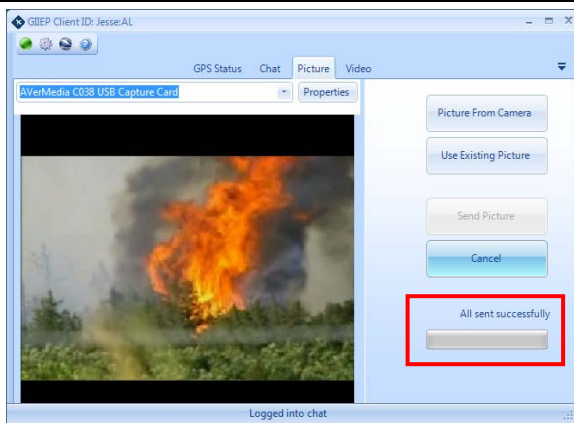
To send an existing photo downloaded onto the CF-30 from the Ricoh camera or other source, click the "**Use Existing Picture**" button.

Browse and locate the desired photo, then click "**Send Picture**" to transfer the picture to the server.

A status bar will display the progress of the picture transmission.
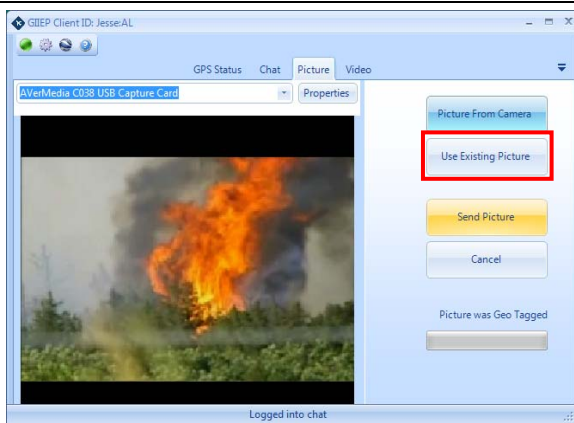
2.3.2.4 Using the Video Function

Click the "**Video**" tab to start streaming live video from your video source.
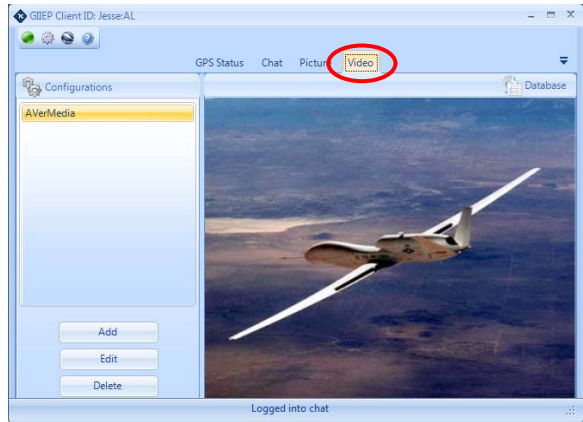
Select the "AVerMedia" video source under **Configurations** and click the "**Start**" button to initiate the streaming process.

If the "AVerMedia" configuration is not available, use the "**Add**" button to create one and follow the steps below.
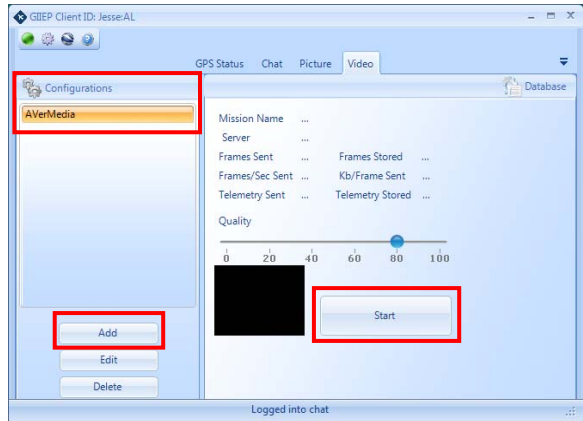
ADDING A CONFIGURATION

a) In the "Configuration Wizard" window, add a "**Configuration Name**" by typing in the field.

Click the next arrow →
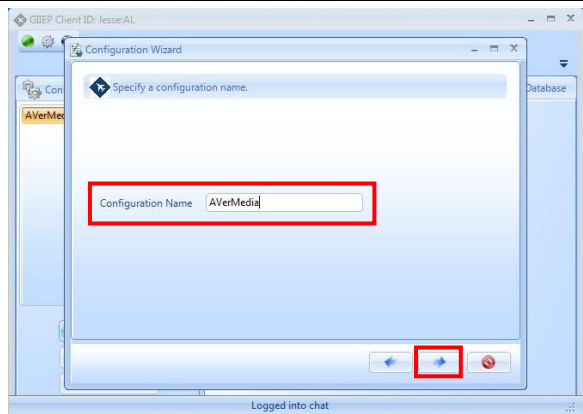
ADDING A CONFIGURATION

b) Select the "**Direct X video device**" from the drop-down menu.

Click the next arrow →
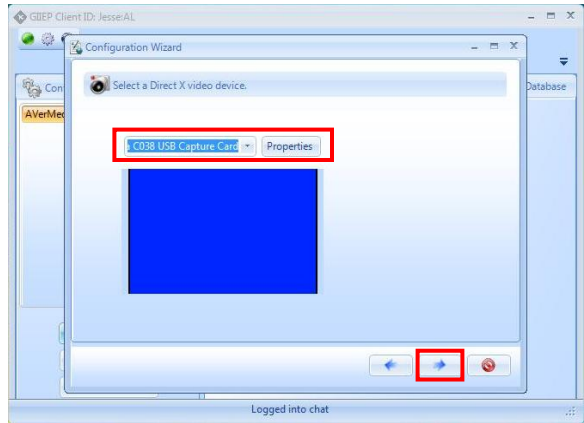
ADDING A CONFIGURATION

c) Select the "**type of telemetry**" by clicking the **NMEA (GPS)** radio button**.**

Click the next arrow →

NOTE: In the current application with the CF-30, NMEA (GPS) is the primary telemetry configuration within GIIEP due to the CF-30's embedded GPS device.
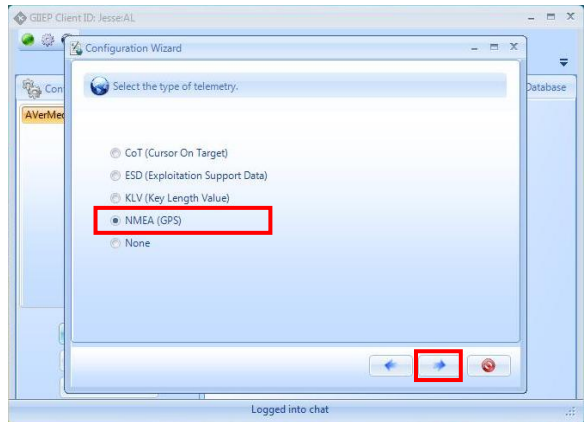
ADDING A CONFIGURATION

d) A summary of the configuration is provided.

Click the next arrow → to return to the Video tab.
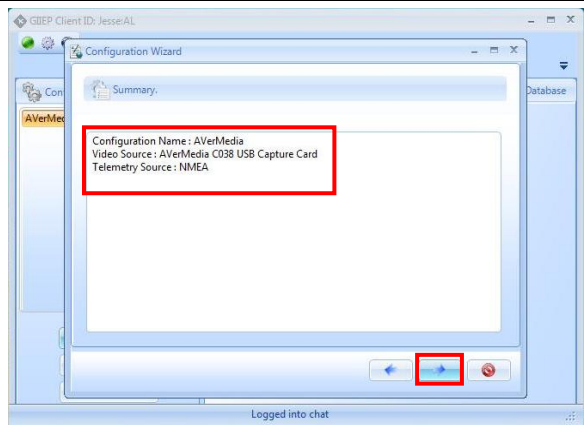
After starting a video stream, the "**Stream Parameters**" window will appear.

a) Enter the "**Mission Name**"

   NOTE: The Mission Name <u>must be changed every time</u> and differ from any other Mission Name previously recorded; if not, the operator will receive an error and/or the mission will overwrite an existing stream. It is recommended to use a naming convention of date/time group.
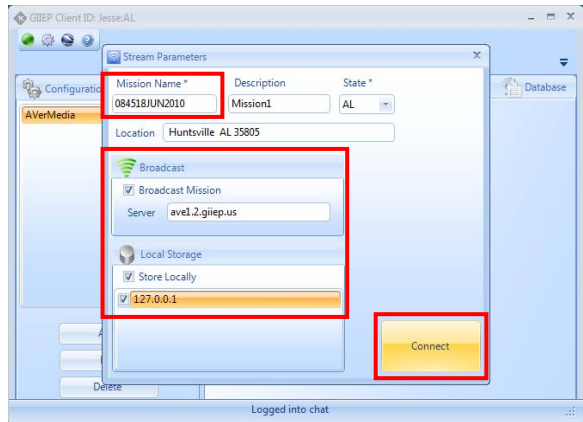
b) Select "**Broadcast Mission**" to send the FMV through the network to the server and/or "**Store Locally**" to store the FMV to the POSTGRES local hard drive database.

c) Click the "**Connect**" button.

If the "**Store Locally**" loop back IP address is not available, the configuration must be made by clicking "**Database → Configure Databases → Add**."
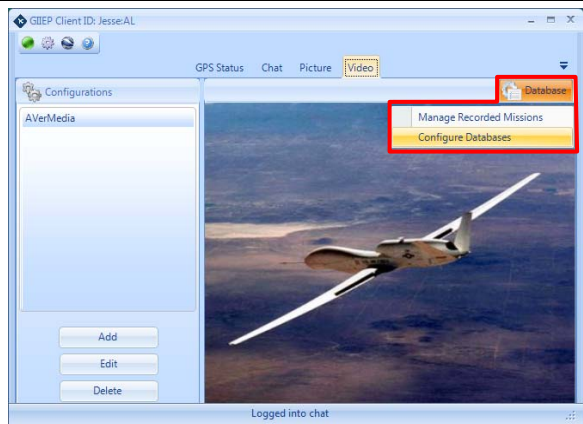
In the "**Database Connection**" window, enter the following POSTGRES information:

Database Type: POSTGRES
Server: 127.0.0.1
Username: postgres
Password:
Army_Smdbl\\1100
Database:
VideoManagement

Click "**OK**."

NOTE: POSTGRES is a predefined user account and database on the CF-30 used for video management. All locally stored FMV is stored in this database on the local hard drive.

Once connected, a thumbnail of the streaming video will appear in the window along with the current variables of all transmitted and stored information regarding the assigned mission:

- Mission Name
- Server
- Frames Sent
- Frames Stored
- Frames/Sec Sent
- Kb/Frame Sec
- Telemetry Sent
- Telemetry Stored
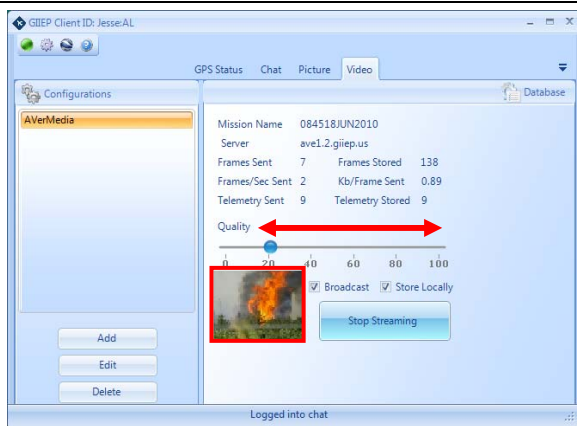
Use the "**Quality**" slide bar to adjust the video's Frames Per Second (FPS) depending on signal quality and bandwidth. Increasing the quality will reduce FPS sent; decreasing quality will increase frame rate.

Uncheck "**Broadcast**" and/or "**Store Locally**" to stop these services during a mission.

NOTE: In the case of degraded cellular coverage, the user may stop the "Broadcast" of a mission and continue to "Store Locally."

Stopping "**Broadcast**" will terminate the FMV feed sent through the network to the server.
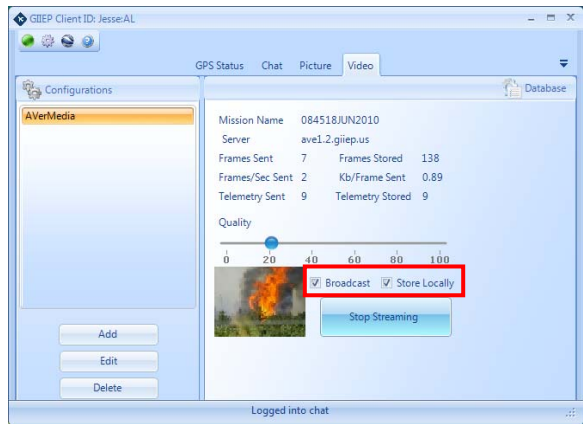
Stopping "**Store Locally**" will no longer store the FMV to the POSTGRES local hard drive database.

To view a larger image of the video screen, double-click the video thumbnail.
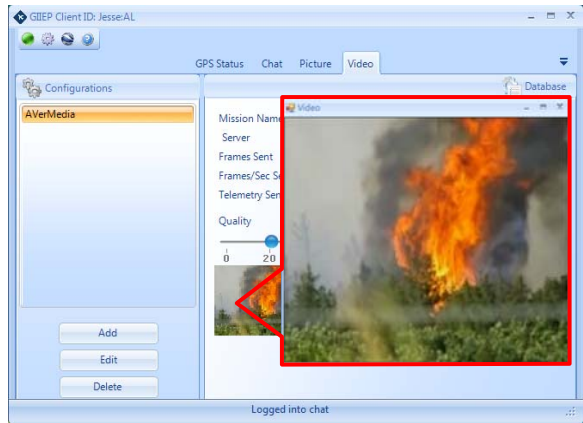
Once the mission is complete, click the "**Stop Streaming**" button to terminate the video feed.
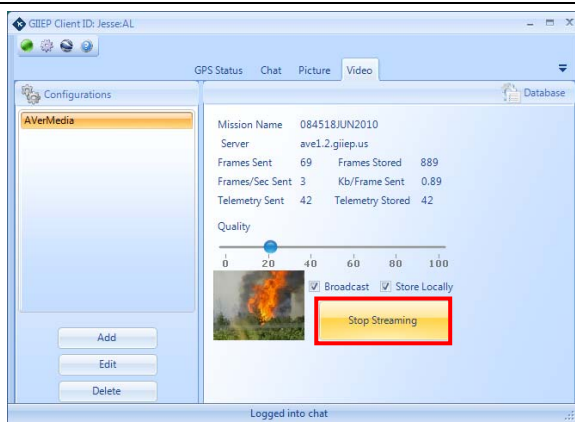
Upon returning from a mission, the user may upload quality recorded video from the local hard drive by clicking on "**Database → Manage Recorded Missions**."
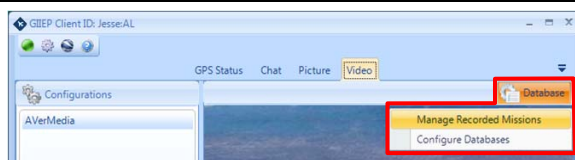
Select the desired mission and click "**Upload**."
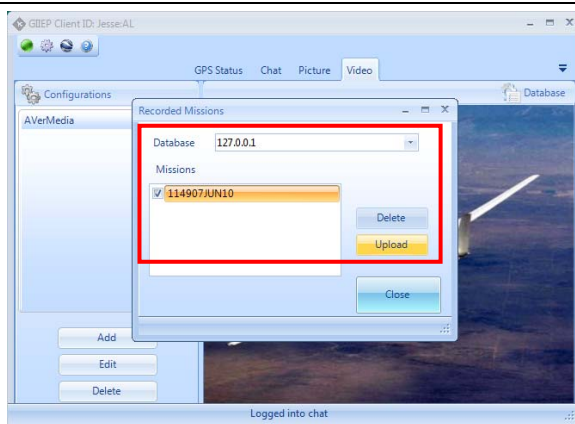
2.3.2.5 About GIIEP Software

Click the **About** ❓ **icon** to view the GIIEP Client software version details.

GIIEP Support contact information is also listed.
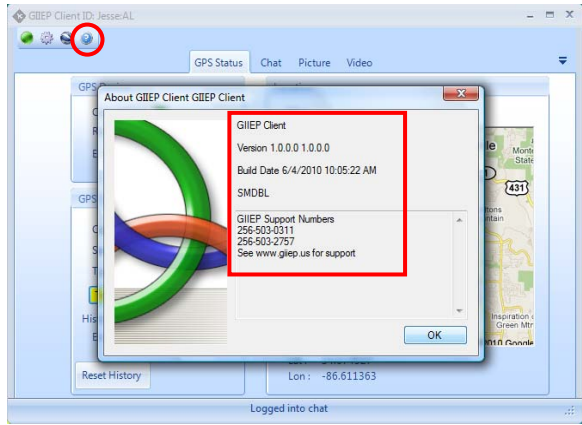
2.3.3 Google Earth Enterprise (GEE) Software

The following steps will guide you through configuration settings and the operation of GEE by Field Technicians and Analysts to include:

- Sensor Symbols and Track History
- COP Data from Situational Awareness Geospatial Enterprise (SAGE)
- Input and Share Placemarks
- Input a Photo
- Import ESRI Shapefiles

Step 1: GEE will be launched from the GIIEP Client by clicking on the

Google Earth **icon**. Once GEE has launched, GIIEP Client can be minimized.

NOTE: By using GIIEP to execute GEE, the server path is already configured.

Step 2: GEE will prompt you to login.

Enter the "**Username**" and "**Password**" provided by the administrator and click "**OK**."
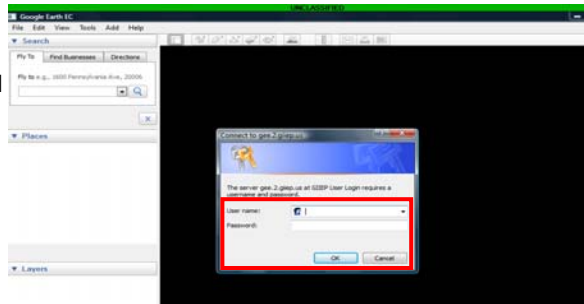
Step 3: GEE interface will list your user ID under "**Temporary Places**."

Temporary Places will display each GIIEP user and their respective data to include GPS location, track history, photos, placemarks, etc.

NOTE: "Temporary Places" should not be saved under "My Places" when exiting GEE.
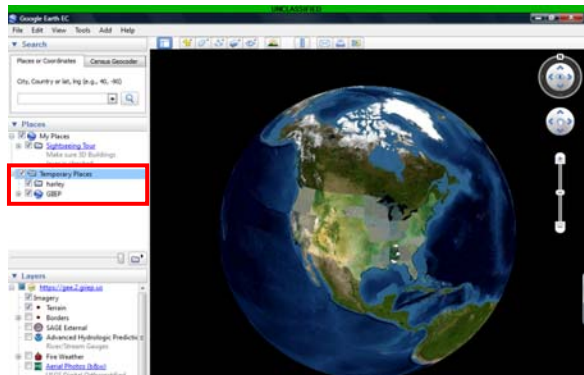
SENSOR SYMBOLS

Step 4: The GPS location of the user(s) will be displayed on the GEE map as the National Incident Management "Sensor" Symbol.

The current Lat/Long position of the user(s) will be listed in the "**Places**" panel under "**Temporary Places**" + "**GIIEP**" + "**Cop**"
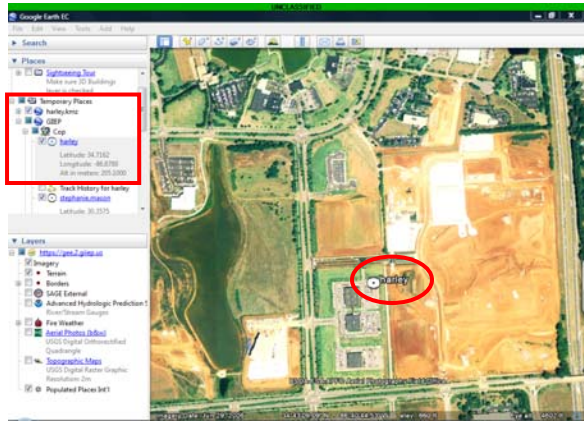
TRACK HISTORY

Step 5: Click "**Track History for [user ID]**" to view the tracked movement of the user from one location to another.

In this example, the tracked route is displayed in yellow. Track History color can be changed from the GIIEP Client "**GPS Status**" tab described on pg. 53.

Users can toggle on and off the display of the track history or sensor by checking or un-checking the box located next to the item.
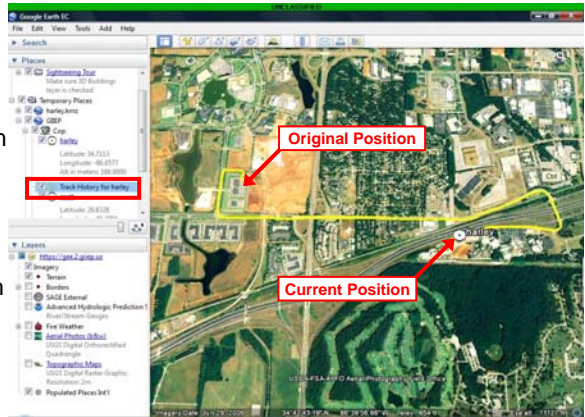
COP DATA FROM SAGE

Step 6: To view SAGE, locate and click the checkbox next to "**SAGE External**" in the "**Layers**" panel. SAGE offers USNORTHCOM .kmz files available as Google Earth overlays.

You will be prompted to log into the NORAD USNORTHCOM server. Enter the **Username** and **Password** provided by the administrator and click "OK."
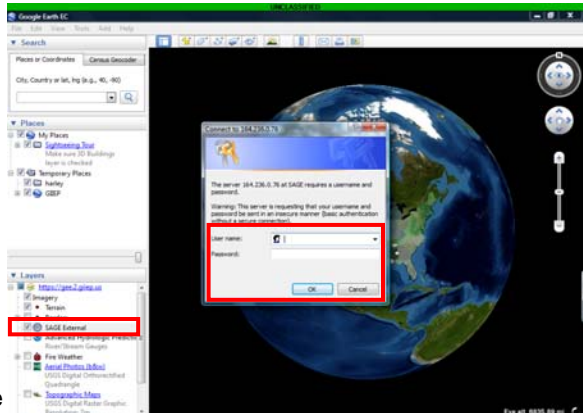
NOTE: To request access to the NORAD USNORTHCOM server, visit GIIEP Web at http://www.giiep.us/ and click the link
 "To request SAGE accounts click here (NORTHCOM Site)" (response should be received in 24 hours) or visit NORAD NORTHCOM's SAGE Earth webpage directly at https://sageearth.northcom.mil/

Step 7: Once connected, the NORAD USNORTHCOM SAGE icon will appear in the top left corner of the Google Earth map.

Additionally, the "**SAGE Home Page**" link will appear underneath the SAGE External Layer.

NOTE: Connection could take up to 10 seconds to initialize.
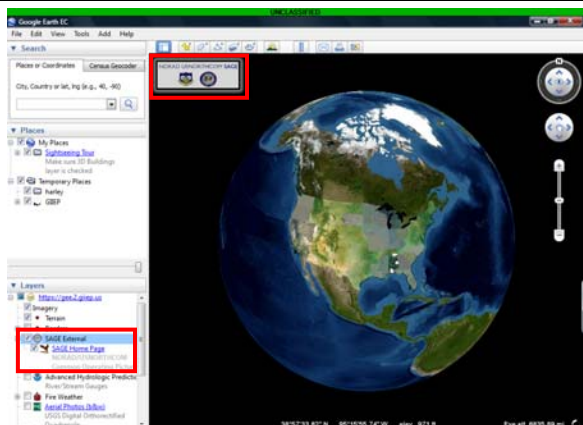
Step 8: Clicking the "**SAGE Home Page**" link will launch the home page for selection of additional layers to import into GEE. The SAGE home page offers a listing of different subjects with multiple .kmz files under each category such as locations of schools, hospitals and cellular towers.

Move your cursor over an item and left-click to select and load on the GIIEP GEE.
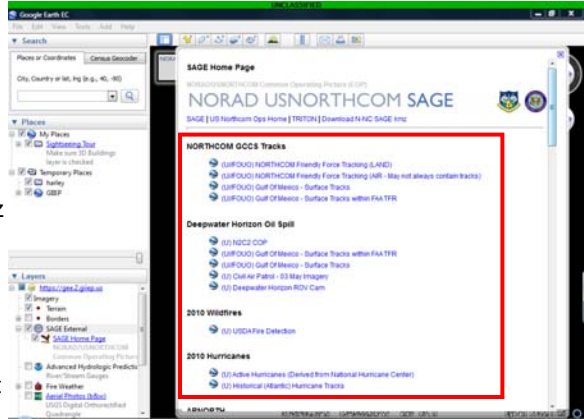
NOTE: This page changes daily to reflect the operations of USNORTHCOM. A list of User Guides is available at the bottom of the home page for additional information.

Step 9: Clicking a link on the SAGE home page will load as a **Temporary Place** in the "Places" panel.

In this example, we selected the link "Gulf Of Mexico - Surface Tracks."
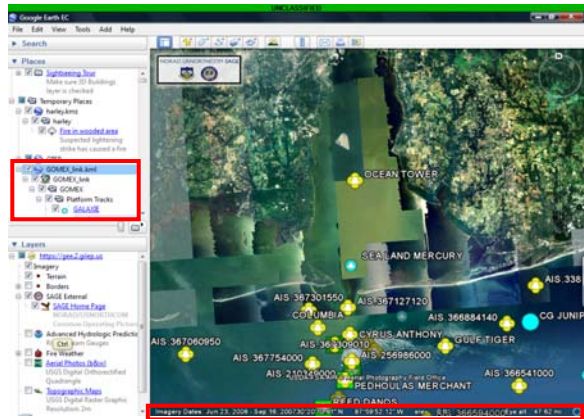
STATUS BAR

Imagery Dates: While the cursor is moved across the map, the Imagery Dates of when the image was captured is displayed in the lower left corner of the view along with the coordinates of the cursor location.

Topographic Maps

Step 10: Select "**Topographic Maps**" in the "**Layers**" panel to load a topographical map in the viewing area only.

Topographic Maps are useful for looking at roadways that are not very visible or have been destroyed. These maps also provide grids for easy marking and navigation.

The user is able to toggle layers of different maps on/off and fade in/out with the slide bar for easy comparison as shown in the step below.
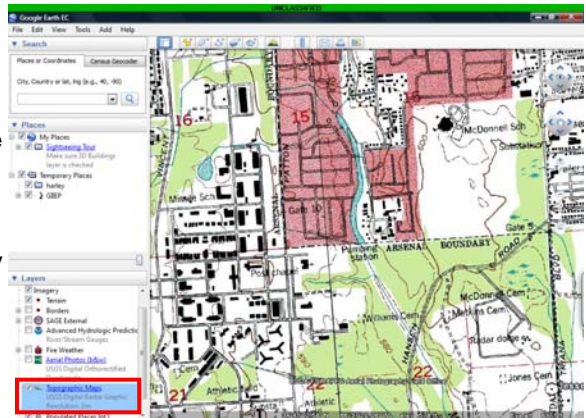
Step 11: Move the **slider bar**, located directly above the "**Layers**," panel from right to left to change the view from Topographical to Imagery and vice versa. Moving the slider causes the top layers to become transparent for easy comparison.
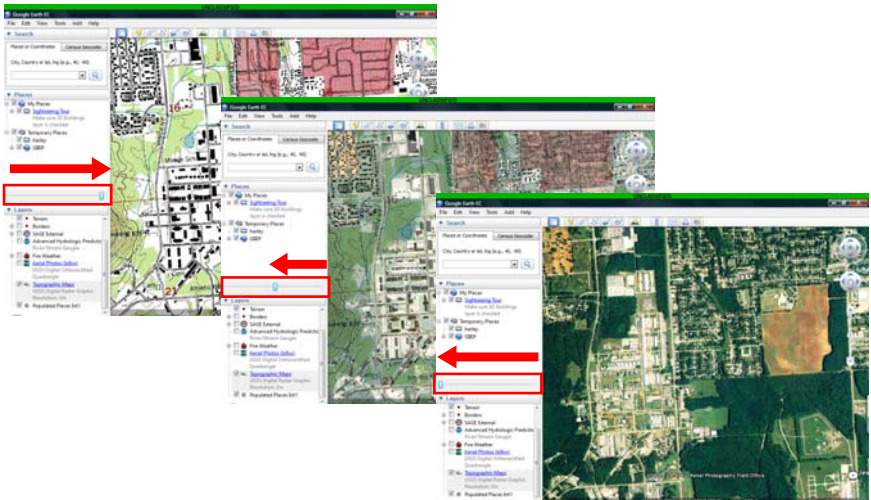
Aerial Photos

Step 12: An option for **Aerial Photos** (Black and White) is available under the "**Layers**" panel.
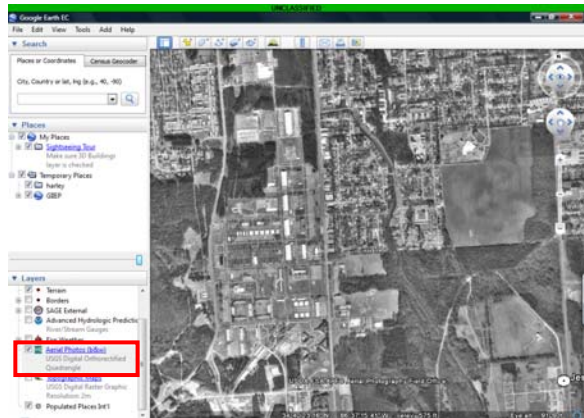
Step 13: The "**Topographic Maps**" and "**Aerial Photos**" will load only what is viewed in the screen.

In the example shown, the map was expanded out before the map was refreshed. After a refresh, an Aerial Photo (B&W) will cover the whole viewing area.
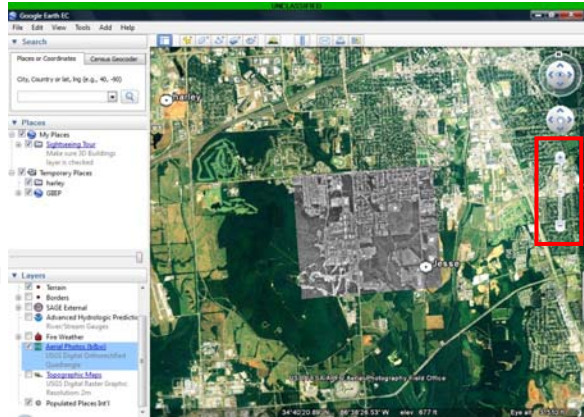
ADDING PLACEMARKS

Step 14: A **Placemark** is used to create or highlight a point of interest on the map interface.

To input a Placemark, locate and right-click your ID that is pre-generated from the GIIEP configuration setup.

Highlight "**Add**" from the drop-down menu and select "**Placemark.**"
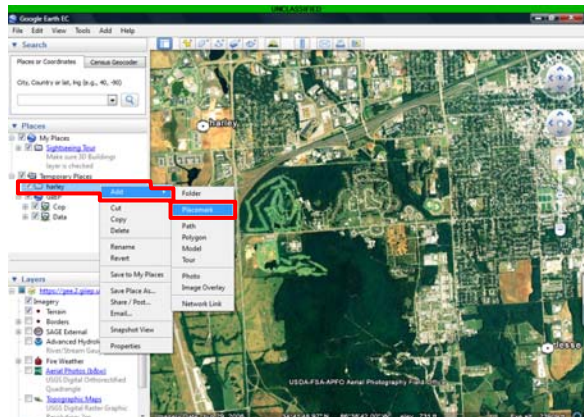
Step 15: Upon clicking "**Placemark**," a yellow push-pin along with a "**New Placemark**" information box will appear.

The push-pin will automatically appear center screen. You have the option of clicking and dragging the push-pin to a designated location or type in the Latitude and Longitude of the point of interest.
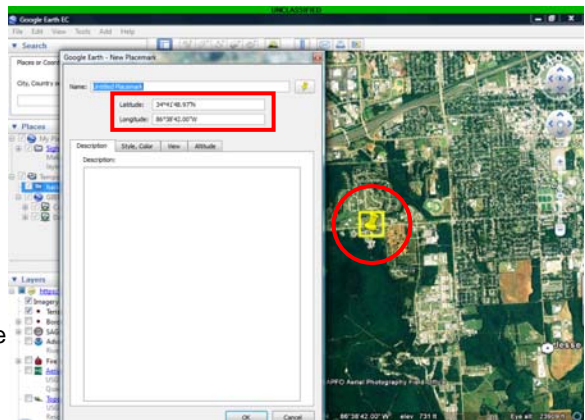
Step 16: To change the color or select a different icon for your Placemark, click the icon next to the "**Name**" block.

A new window will appear with preloaded icons.

To add a custom icon, click the "**Add Custom Icon**" button located at the bottom left of the icon window.
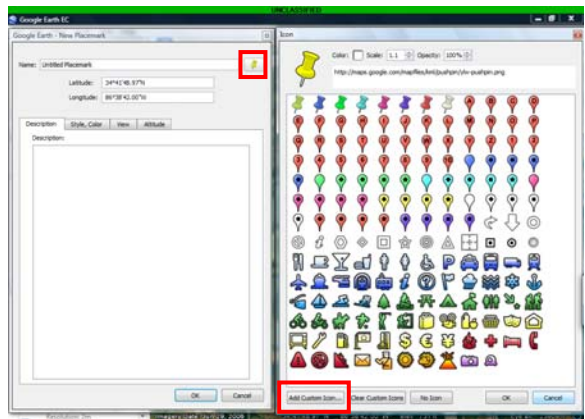
Step 17: After selecting "**Add Custom Icon**," the Icon Location window opens.

Click "**Browse**" to locate the National Incident Management Symbols that have been preloaded.

Select the file name of the desired icon and click "**Open**."
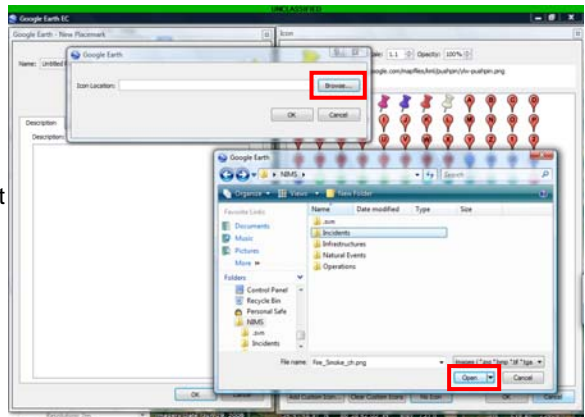
Step 18: The selected icon will appear in the "Icon" window and replace the yellow push pin icon next to the Placemark name field.

The icon will also replace the yellow push pin on the map display.

Click "**OK**" to save.
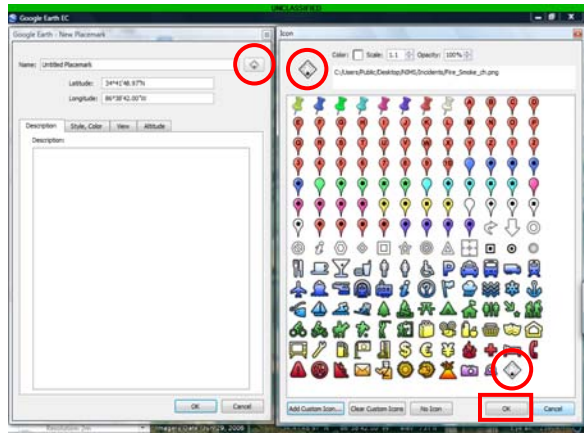
A complete reference of NIMS symbology descriptions can be found through the NORAD NORTHCOM SAGE Earth home page, by clicking the link under "User Guides": (U) FGDC Homeland Security Working Group Symbology Reference

or by visiting: http://www.fgdc.gov/HSWG/ref_pages/Operations_ref.htm

The National Incident Management System (NIMS) Symbols	
TYPE	**DAMAGE**
Incident	Fully Operational
National Incident	Operational but Closed
Operations	Operational but Damaged
Infrastructure	Destroyed
EXAMPLES	

Air Incident	Tornado	DEA Operation	Military Armory (Destroyed)	Sensor Symbol used for GIIEP sensors.

Step 19: At this time, enter a "**Name**" for the Placemark and a "**Description.**"

Click "**OK**" to save.
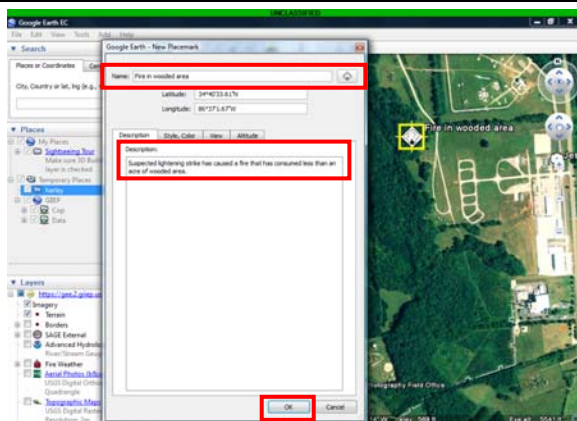
Step 20: The new Placemark will display in the "**Places**" panel under the user ID and on the map.

Notice the Description appears under the Placemark name.
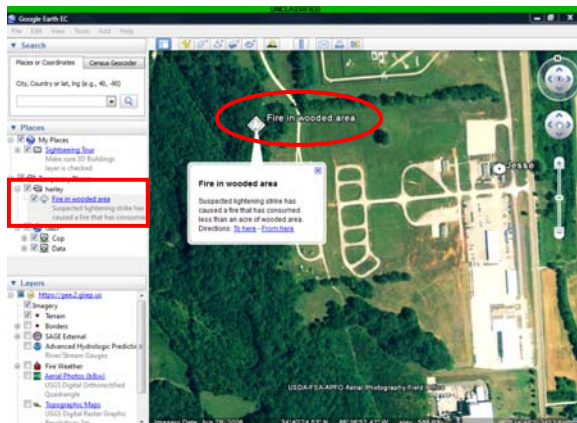
SHARING PLACEMARKS

Step 21: In order to allow your points of interest to be seen by other clients, you must save places to the master server.

Right-click your user ID under "**Places**" and select "**Save Place As…**" from the drop-down menu.
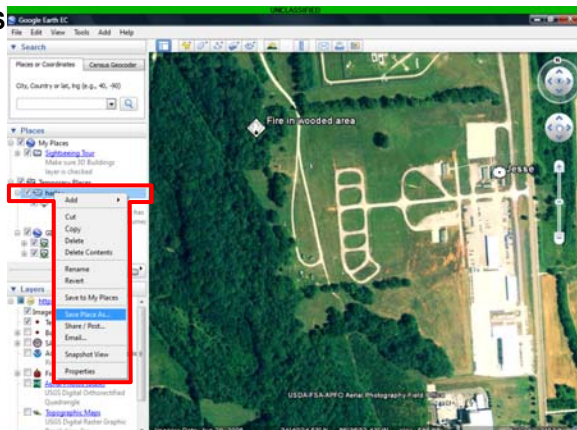
Step 22: A "**Save File…**" window opens. Click "Save" <u>without</u> changing the file name.

You will be prompted to "Confirm Save As" and replace the existing file. Select "**Yes**."
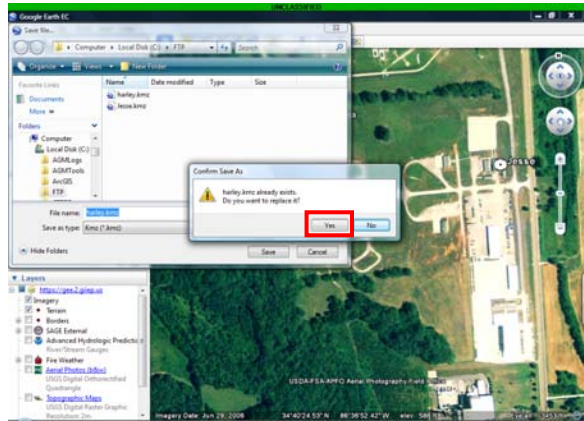
Step 23: Once places have been saved, all of your Placemarks will upload onto the master server where any client can access and view your "Points of Interest."

In this example, you will see two instances of "Fire in wooded area" – one from your computer under "Temporary Places" and one from the server under "GIIEP" – "Data" – your user ID.
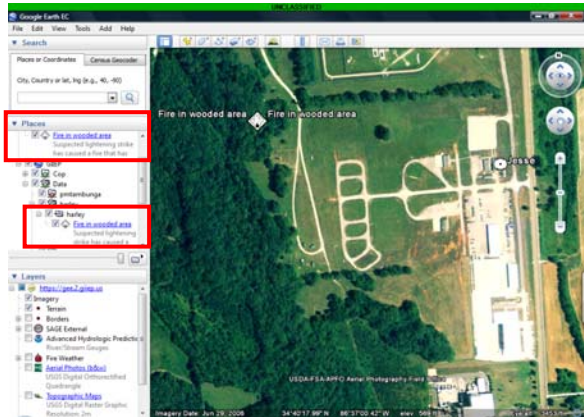
DELETING PLACEMARKS AND OTHER DATA

In order to delete all placemarks, paths, etc., the .kmz file can be deleted entirely from the FTP folder in the Local Disk (C:) or deleted one at a time under Temporary Places and then resaved by selecting "**Save Place As…**" as described in step 21. Any changes the user makes will be reflected on the server and all other users' COP, if this method is followed.
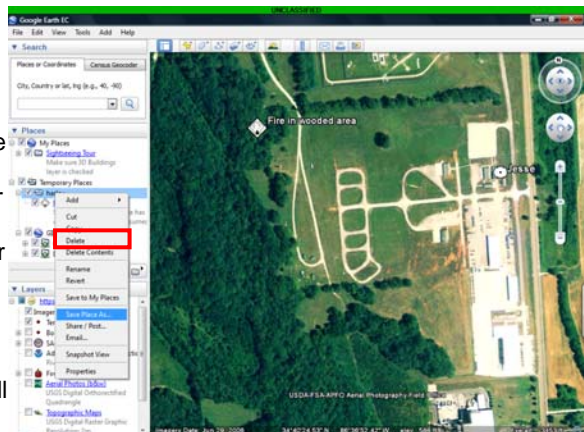
INPUT A PHOTO

Step 24: To add a geo-tagged photo, right-click your user ID under "**Temporary Places**."

Click "**Add**" from the drop-down menu, then select "**Photo**."
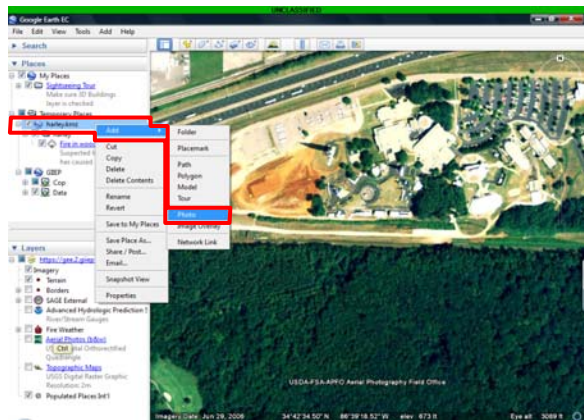
Step 25: Upon clicking "**Photo**," the "**New Photo Overlay**" window appears.

Enter a "**Name**" for the picture in the field provided and click the "**Browse**" button to locate the photo.

Select the desired photo and click "**Open**."
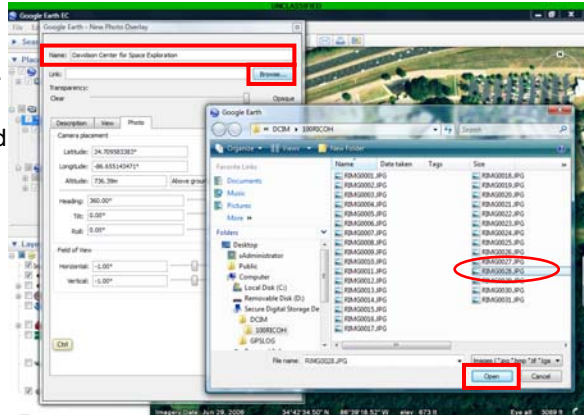
Step 26: GEE will automatically place the photo according to the geo-tagged information in the photo. If not, click and drag the photo to the correct location or type in the correct coordinates.

Click "**OK**" to close the window and view the photo.
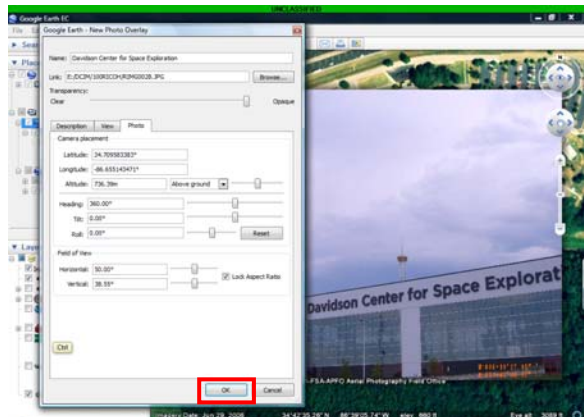
Step 27: The photo will appear in the "**Places**" panel, "**Temporary Places**," under your **user ID**.

Uncheck the box next to the photo ID if you wish to hide the photo overlay.

Perform the same steps to share a Photo as you did when sharing a Placemark (*steps 21-23, pg. 74-75*).
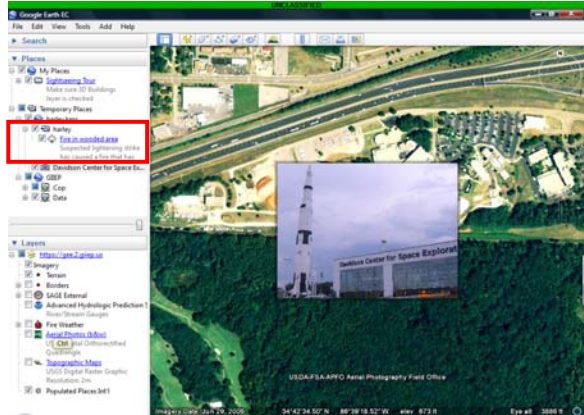
NOTE: The larger the photo files, the longer it will take to refresh the COP data (Default: every 15 seconds). Using Ricoh photos without being resized will cause every user's COP to process slower.

IMPORT ESRI SHAPEFILES

Step 28: To Import ESRI Shape files, open the "**File**" menu and select "**Import**…" from the drop-down menu.
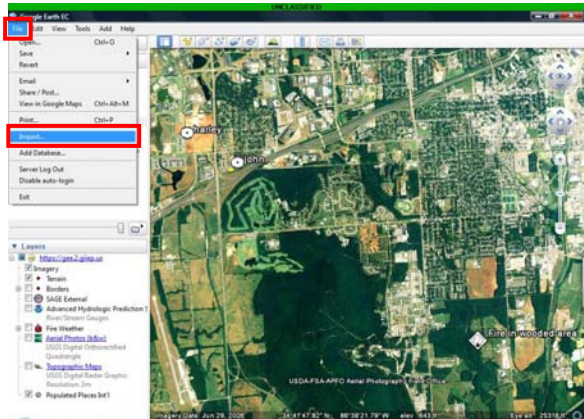
Step 29: Browse to the Shapefiles stored on the computer.

In this case they are loaded in the "**ESRI**" folder located on the "**Local Disk (C:)**."

Double-click the desired file or select the file and click "**Open**."

For this example, the user has selected to import "Hospital" data.

NOTE: Any type of .kmz/.kml file can be loaded into GEE using this method.
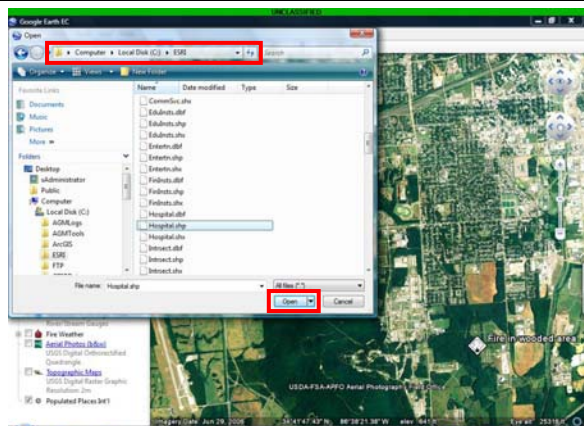
Step 30: The imported shapefile will be appear in the "**Places**" panel under "**Temporary Places**." Click the checkbox next to the item name to display the data on the map.

NOTE: All ESRI information pertaining to the shapefile selected will be displayed. For this example, "Hospital" was chosen and all hospitals for Alabama are depicted on the map.
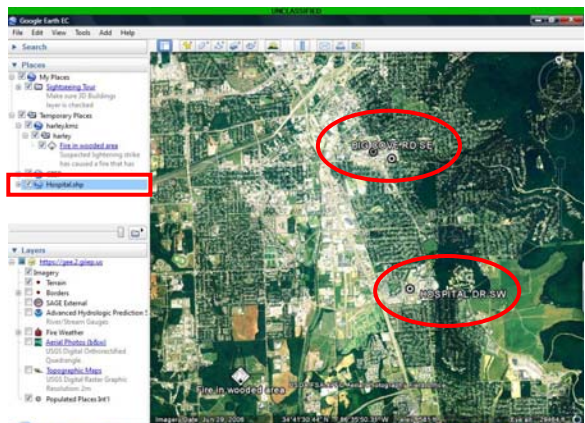
2.3.4 Spark Instant Messenger

Spark is a commercial chat program preconfigured to interface with GIIEP chat. Advantaged Users with no access to GIIEP Chat can use Spark to communicate with the Field Technician and other users.

2.3.4.1 Spark Software Installation

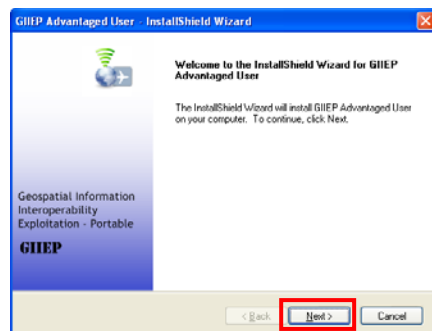To load Spark chat tool, explore the Advantaged User disc and browse to the "**GIIEPAdvUser ChatSetup**" folder.
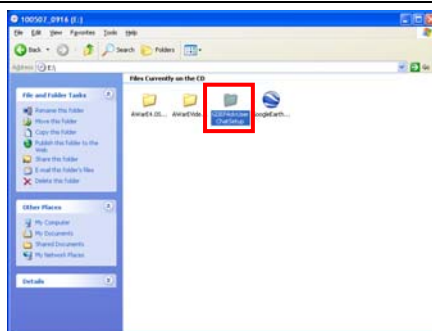
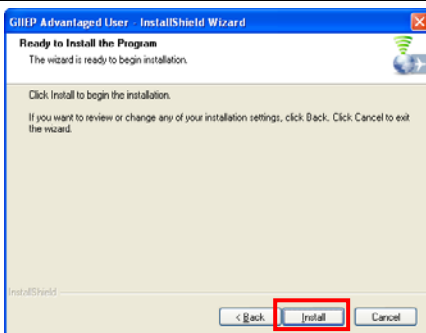Within this folder, there is a "**setup**" executable file.

Double-click this file to initiate the **GIIEP Advantaged User - InstallShield Wizard**.
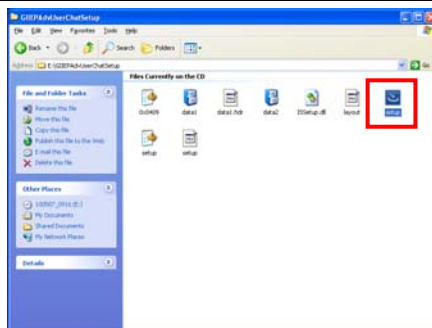
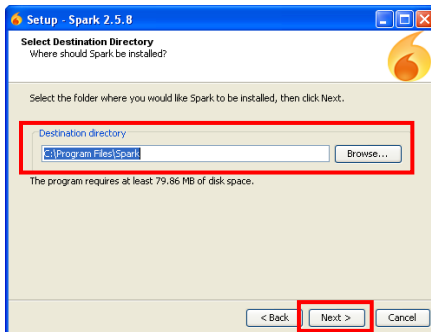Use the navigational buttons to complete the setup.
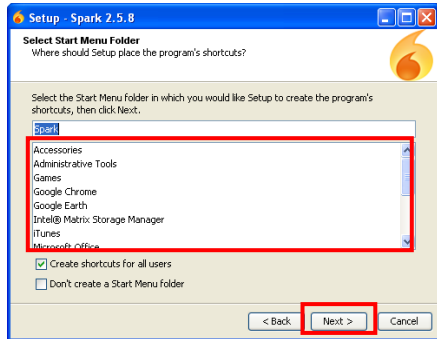
Click "**Install**" to begin the installation.

It is recommended that you close all other applications before continuing.
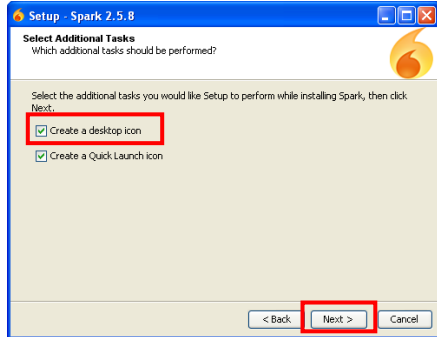
Click "**Next**" to continue.
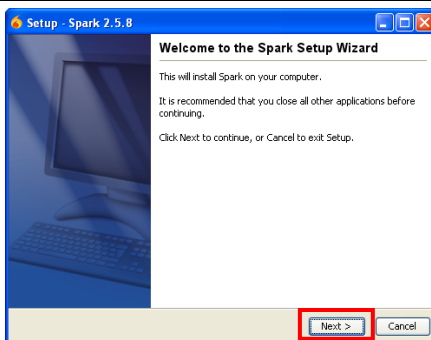
Browse and select the "Destination Directory" to install Spark, then click "**Next**."

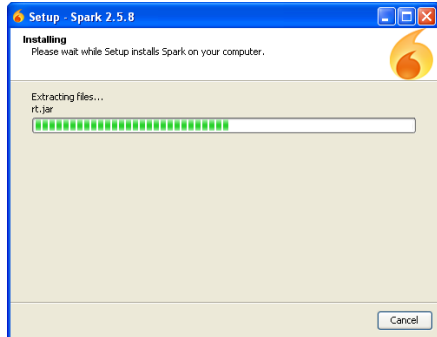Select the Start Menu folder in which you would like Setup to create Spark's shortcuts, and then click "**Next**."

It is recommended to "**Create the desktop icon**" for usability.
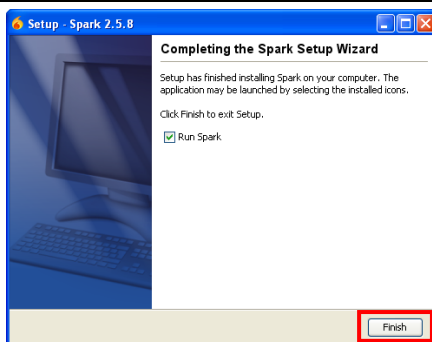
Click "**Next**" to begin installation.

Wait for installation to complete.

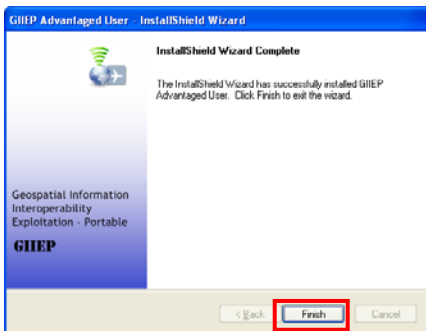A progress bar will indicate the status of installation.

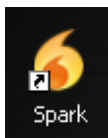After Spark has been installed, click "**Finish**" to exit setup.

The InstallShield Wizard is complete.

Click "**Finish**" to exit the wizard.

2.3.4.2 Spark Software Functions

Double-click the **Spark icon** to initiate the program and login.

Enter the same "**Username**" and **"Password"** as the GIIEP login provided by the administrator.
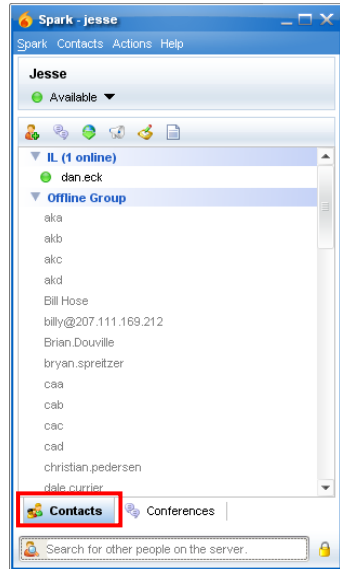
Server: ave1.2.giiep.us

Click "**Login**."

NOTE: <u>DO NOT</u> use the "Accounts" button to setup accounts. Accounts must be established and changed through the system administrator using the LDAP software.
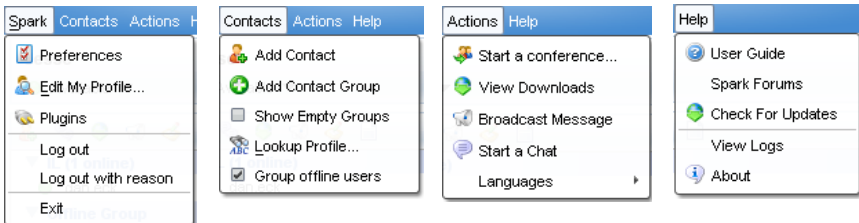

CONTACTS

After login, the default page lists all the **Contacts** in the GIIEP community and indicates whether they are online or offline.

MENU BAR

Spark offers many menu options in the main menu bar, as pictured below.

HOT KEYS BAR

Spark also displays six "Hot Keys" that allow the user to quickly perform the following tasks.

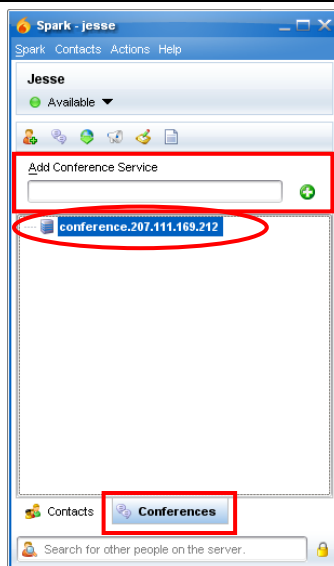|			
	Add a Contact		Send a Broadcast
	Join Conference Room		View Task List
	View Downloads		View Notes

CONFERENCES

By clicking the **Conference** tab, all loaded conferences will be listed.

The user is capable of adding a conference by typing in the "**Add Conference Service**" field and clicking the "**+**" icon.
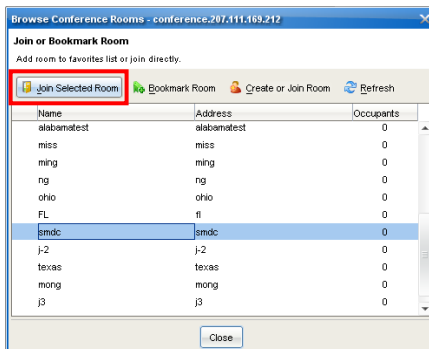
To start chatting, double-click the desired conference.

While browsing conference rooms, the following options are available:

- Bookmark Room
- Create or Join Room
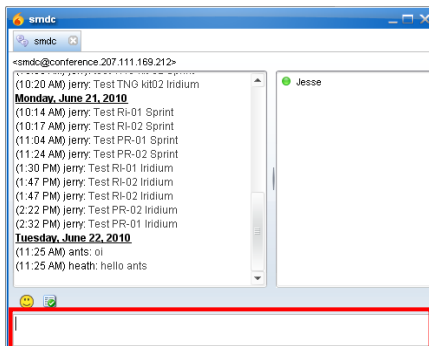- Refresh

To join a room, click and highlight the desired room and then click the "**Join Selected Room**" button.

After joining a room, the chat window appears.

The user can view everyone that is currently logged into the chat room, along with all the chat history that has taken place.

To chat, click inside the typing field, type your message, and press [enter] to send the chat text.

2.3.5 AWarE Video Elements (AVE) Software

The AVE system is a non-proprietary, government owned end-to-end solution for the collection, storage, analysis and exploitation of video and metadata from video sources. AVE provides a very robust exploitation capability for real-time and archived FMV. The robust search capability allows easy access to archived video data via timestamp, geospatial coordinates (selected from map or entered by user), mission name, call sign, annotation type, annotation keyword or comment, or via Google Earth or FalconView generated area. AVE captures, geo-codes, and exploits video and metadata from multiple platforms simultaneously and disseminates the incoming data to multiple AVE clients in a secure fashion in near real-time for viewing, annotation, and editing.
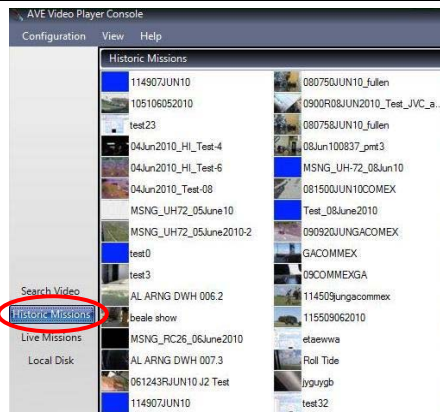
2.3.5.1 AVE Video Player Console

2.3.5.1.1 Configuration Menu

Step 1: Start the AVE Video Player Console by double-clicking the **AVE icon** on the desktop.
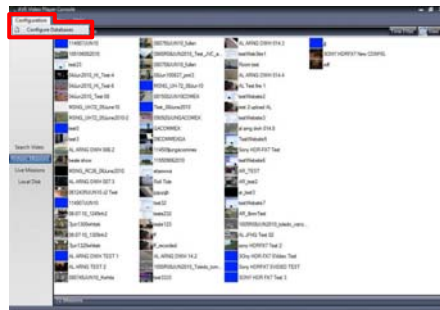
AVE defaults to the **Historic Missions** screen where you will see pre-recorded missions available.
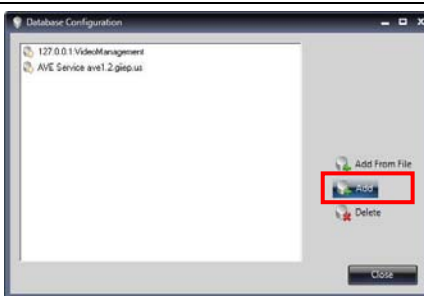

Step 2: The first tab located in the top left corner is the "**Configuration**" tab. Use this tab to create Databases.

Click "**Configuration**" → "**Configure Databases**"

Step 3 (a): If no missions populate and no configurations are listed in the window shown, then the databases are not configured correctly.

To add a database, click the "**Add**" button.

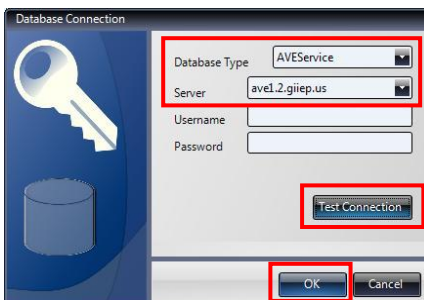Step 3 (b): To setup an AVE Service type database, select the following:

Database Type: AVEService

Server: ave1.2.giiep.us

Username and **Password** are left blank.

Click the "**Test Connection**" button to test if there is a solid connection between AVE and the AVE Server.

Click "**OK**" to save configuration.

Step 3 (c): To setup a POSTGRES type database, select the following:

Database Type: POSTGRES

Server: 127.0.0.1 (localhost)
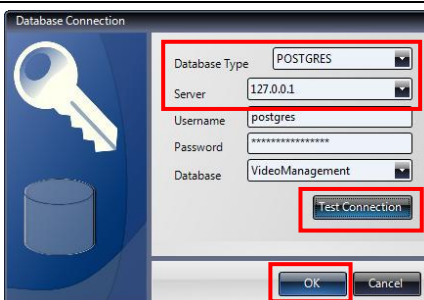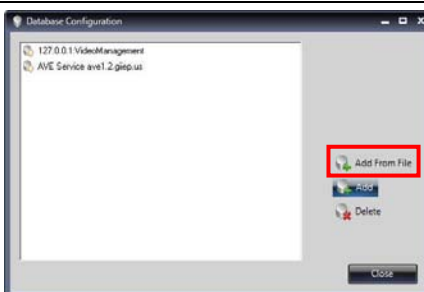
Username: postgres

Password: Army_Smdbl\\1100

Database: VideoManagement

Click the "**Test Connection**" button to test if there is a solid connection between AVE and the Localhost.

Click "**OK**" to save configuration.

Step 4 (a): To add a database from a file provided by the AVE administrator, click "**Add From File**" to select a configuration file for another database.

Step 4 (b): Browse for the configuration file provided by the AVE Administrator.

Click "**Open**" after selecting the appropriate file.

NOTE: The configuration file is usually named (xxx.dbcon.config) where xxx may be the database name or some other database indicator.
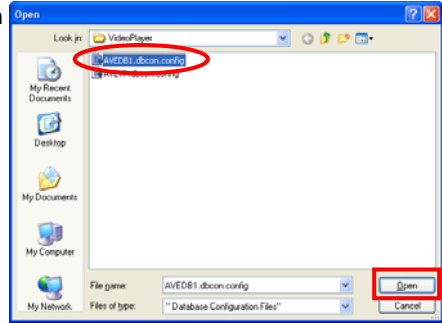
Step 5: To delete a configured database, select the desired configuration, then click the "**Delete**" button.

NOTE: The Video Player attempts to connect to every database in this list. Please delete any inactive database connections. An error message box will appear if the player cannot connect to one of the databases in the list.
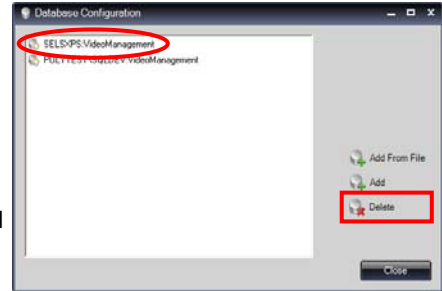
Step 6: The database storing the missions will be identified directly above the mission icons.

Missions are grouped by database.
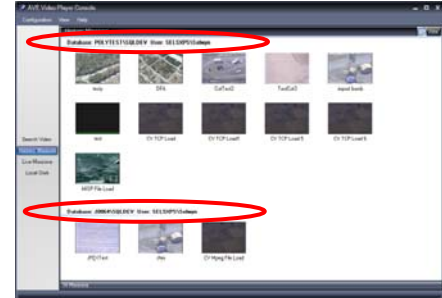
2.3.5.1.2 View Menu

The "**View**" menu allows the user to modify the window style, refresh the data, and display the User information pertaining to the database connected to and the user account used to access that database.
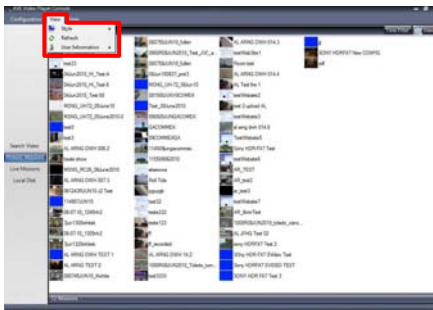
Style: Allows the user to change the physical color of the console.

Refresh: Allows the user to reload the current page.
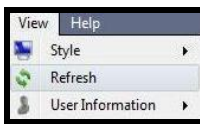
User Information: Allows the user to view the databases that are currently loaded.
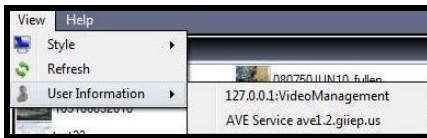
2.3.5.1.3 Help Menu

Help: Has two submenus: "**User Manuals**" and "**About**"

User Manuals: Opens AVE documentation on the local hard drive.

About: Executes a separate "**Details**" window displaying specific information about the AVE Video Player.
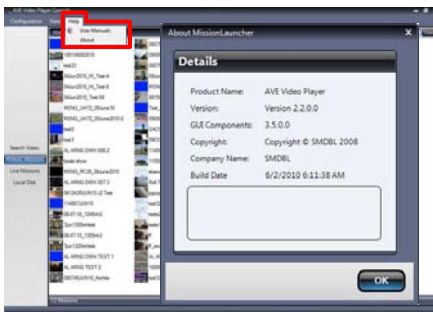
2.3.5.2 Search Video

Search Video: Allows the user to perform a variety of searches on all loaded databases.

The Icons in the left "**Video Query Builders"** panel represent the available search criteria. Any combination of the query builders can be made to refine the query:

GeoSpatial: by user-specified geo-coordinates

Time: by mission start and/or end time

Annotation: by annotation type or user

Mission: by mission name and/or call sign

Keyword: by keyword added to an annotation

Comments: by comment added to an annotation

Google Earth: by viewport points from within Google Earth
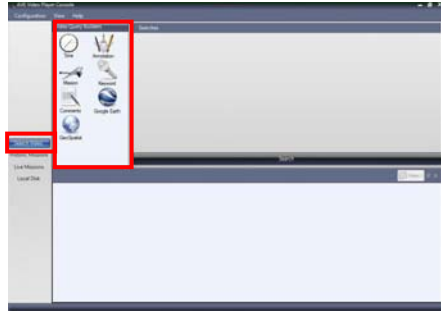
ATTENTION: The queries are constrained to "**AND**" combinations.

Example performed:
MissionName = 'BirdOneMon' AND AnnotationType = 'Suspicious Activity'

Example NOT performed:
MissionName = 'BirdOneMon' OR AnnotationType = 'Suspicious Activity'

To perform a search, the user must click and drag a "**Video Query Builder**" icon into the "**Searches**" panel on the right.

For this example, "GeoSpatial" was selected.

A new window will launch allowing the user to enter search parameters.
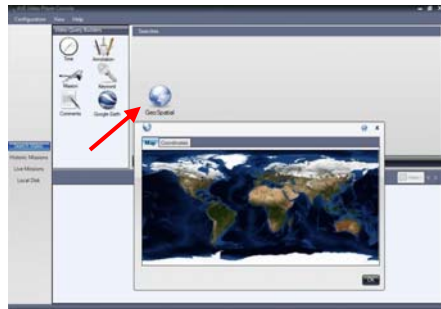
Enter the desired search parameters and click "**OK**."

The type of criteria selected will determine the parameters available for specification / modification.
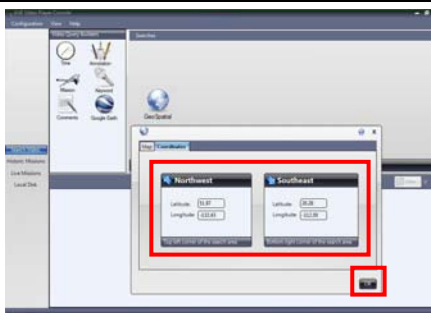
Click the "**Search**" bar to see the archived video within the set parameters.
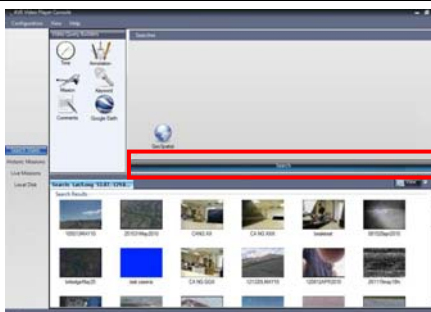
2.3.5.3 Mission Modes

Historic Missions: Displays all Missions in the database.

Requires a database connection.
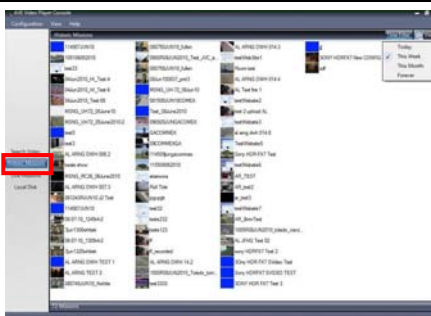
Live Missions: Displays a reference to view all missions that are being recorded and broadcast at the present time from the AVE Server. User can select to view one or more available live missions.

Requires a database connection.
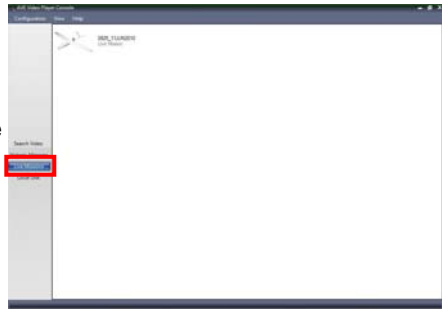
Local Disk: Displays a file browse panel allowing the user to browse and select missions that have been exported in CoT format for playback in a Video Player.

The CoT file can be from an external source other than AVE.

NO database connection required.
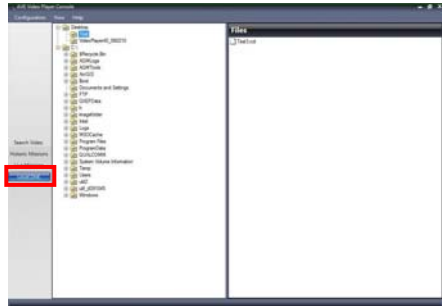
Time Filters can also be set to view only the videos uploaded within a certain time frame.

The user also has a **View** feature available.
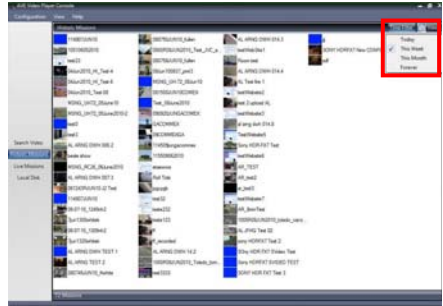
2.3.5.4 AVE Video Player Main Screen

Double-click a Mission to view the video in the Video Player Main Screen.

Video Controls include:

a) **Buffering Mission**

b) **Video Position and Time Bar**

c) **Video Playback Controls**

d) **Playback Speed**

The "**File**" menu offers several export functions. These options will export either an entire mission, selected parts of the mission or the current frame based on the export method selected.

Under **Export → Mission** the user has four options to export an entire mission:

- **Video** (.avi) – cuts a segment of the video to desired length and converts it to an .avi file for dissemination.

- **CoT** (Cursor on Target) – principally used to process location information of entities moving around the battlespace, so the payload will contain entity location, entity type, time stamp, etc.; an eXtensible Markup Language (XML) that is an object oriented approach to XML schemas.

- **Google KML** – format recognized by Google Earth containing geographic data, can be shared and implemented into Google Earth COP.

- **ESRI Shapefile** – storage format containing geometric information, recognized by Google Earth and ArcView GIS that spatially describes geometries such as points, polylines and polygons. This method is generally small in size and can virtually represent anything.

Export → Annotation Reports automatically generates a report of annotations for quick and easy mission briefing preparation and exports as:

- PowerPoint
- Word Document
- PDF

Under **Export → Current Frame**, the user has three formats to export individual frames:

- **Image** (jpg, tiff, png, bmp, etc.)
- **KML Image** – Google Earth based format that can easily be implemented into Google Earth as an overlay
- **NITF** (National Imagery Transmission Format) – DoD's default format for interchange between systems

Under the "**Edit**" menu, the user is able to set beginning and end markers for saving a clip of the currently playing video to an AVI or CoT file:

- **Set Video Marker Start** (CTL+B)
- **Set Video Marker End** (CTL+E)
- **Clear Markers** erases the beginning and end marks

The "**View**" menu gives the user three sub categories that allows multiple features to be displayed during the viewing of the video:

- **Overlays**
- **Style**
- **Toolbars**

View → Overlays allows the user to toggle between displaying or not displaying **Lat/Lon** (Latitude/Longitude) in **Decimal Degrees** or Military Grid Reference System (**MGRS**) and Security **Classification**.

View → Style allows the user to change the physical color of the player.

Options include: Black, Blue, Silver, Sparkle Blue, Sparkle Orange, Sparkle Purple.
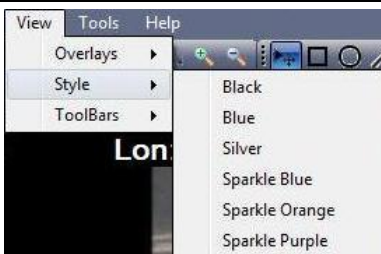
View → Toolbars allows the user to toggle between displaying or not displaying Drawing, Size, and Export tools.

Drawing Tools: Selection Mode, Rectangles, Circles, Lines, Line Width, Line Ends, Clear All Drawings, Clear Selected Drawing

Size Tools: 1x Size, 2x Size, ½x Size, Maximize, Zoom In, Zoom Out

Export Tools: Export Still Image to Disk, Save Annotation to PowerPoint File, Export to Word Document, Export to PDF
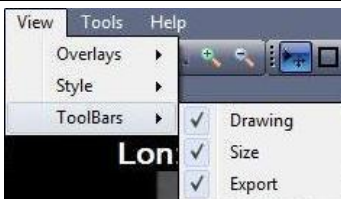
Drawing Toolbar:
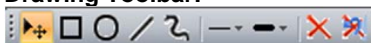
Size Toolbar:
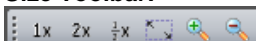
Export Toolbar:

The "**Tools**" menu gives the user the ability to:

- **Broadcast to AWarE Backplane**
- **Broadcast to Google Earth**
- **Configure Annotations**
- Configure other **Options**

Tools → Broadcast to AWarE Backplane will generate an AWarE message from the incoming telemetry and broadcast to the AWarE Backplane. This will allow the telemetry to be visualized on any available mapping tool and/or provide access to the telemetry to other systems via the backplane. The IP address of the machine running the Backplane is required.
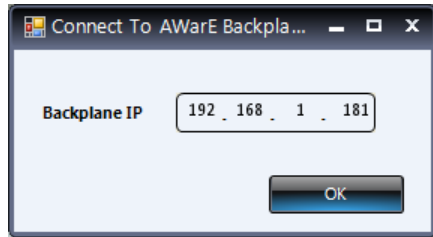
Tools → Configure Annotations allows the user to set Hot Keys. While the video is in play mode, the user can use the Hot Keys to set annotation marks to reference back or export into documents and reports.

Once the definition is highlighted, use the arrow key to establish as a "Hot Key."

The assigned key can be changed by pressing the desired key while the definition is highlighted.
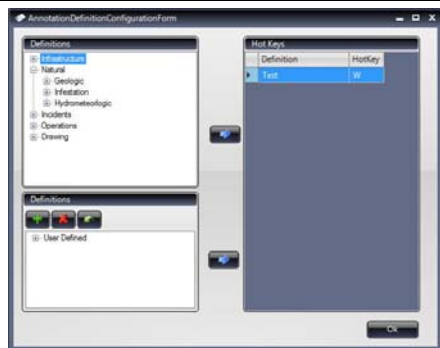
Tools → Options → General allows specification of Slider Options (mission attributes to be displayed as the slider bar progresses through the playing video) and Folder Options (Quicksave directory for snapshots and video clips).

Checking any of the Slider Options will display that attribute in the Video Player window.
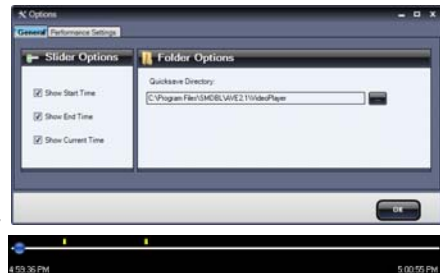
Tools → Options → Performance Settings allows the user to control the performance of the playing mission. The **Performance Settings** tab will indicate which database the viewer is connected to. The connected database may reside on a server that is connected to the viewer on a low (**slow network**) or high bandwidth (**fast network**) network, or something in between.
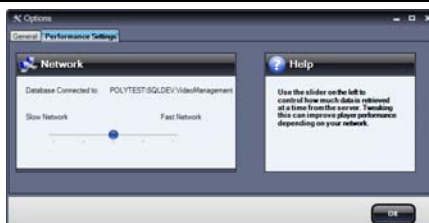
The slider bar allows the user to select a possible network speed to improve playing of a mission. Place the slider bar on desired position then click **OK**.

NOTE: Without adjusting these settings, a mission being viewed over a slow network MAY appear to stall at times.

Clicking **Help → About** opens a separate "Details" window displaying specific information about AVE Mission Viewer.

Annotations can also be viewed and marked by expanding the **Annotations and Color Corrections** tab.

The user can add annotations by double-clicking the name or using the Hot Keys previously established.

Annotations can be modified by right-clicking the name of the annotation.

This allows the user to "**Edit**" annotation properties or "**Remove**" the annotation.

ANNOTATION PROPERTIES

Annotation: User can view the **Timestamp**, change the **Type** and add **Keywords** or **Comments** that will also appear in exported reports.
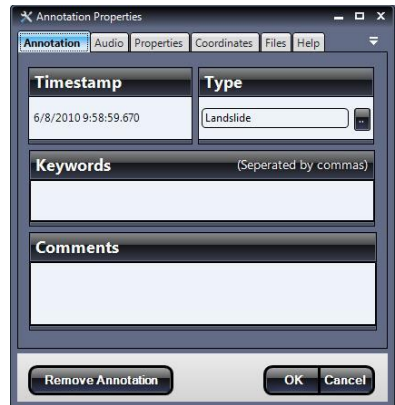
Audio: A microphone can be utilized to add vocal recording to the annotation.

Properties: Displays the user information that created the annotation and the time it was created.

Coordinates: Allows the user to add coordinates to the annotation manually.

Files: Allows the user to associate (link) files to an annotation or a mission by clicking the "Add" button. The user may also "Open" or "Remove" associated files.

Help: Provides general help information about annotations.

Color Corrections tab gives the user several options to manipulate the video viewer:

- **No Filter** – removes any filters on the original image

- **Grayscale** – converts image to black and white

- **Invert** – reverses black to white and white to black

- **Sobel Edge Detection** – defines edges by calculating the gradient of the image intensity from light to dark

- **Difference Edge Detection** – performs a more refined edge detection from light to dark

- **Brightness** – allows user to adjust image brightness using a slider bar

2.4   GIIEP Web Users

The GIIEP Web User is limited in their role. They are able to access a website remotely from any internet access point that allows them to view data provided by the Field Technician using the following web address:

http://www.giiep.us

The GIIEP Web home page offers useful links and information including GIIEP Support Contact Numbers and System Messages (including a link to request SAGE accounts on the NORTHCOM site).

GIIEP Web is continually updated to fit users' needs.

NOTE: GIIEP Web is compatible only with Microsoft Internet Explorer (IE) version 6 and above. Mozilla Firefox, Google Chrome, or other internet browsers are not supported.

2.4.1 Certificate Installation and AVEWeb

Once the web page has loaded, you must first install the Public Certificate to access the GIIEP Web. Click the link for **Certificate Installation Instructions** and follow each step.

Next, click "**Enter GIIEP Web**" to access Live and Historic video. Accounts will be provided by the administrator.

If this is the first time GIIEP Web has been accessed by a computer, it will immediately begin to download the **AVEWeb** Application. Once the application has downloaded, it will ask the user to agree with the terms. Upon selecting "Accept," the GIIEP Web Login page will load.
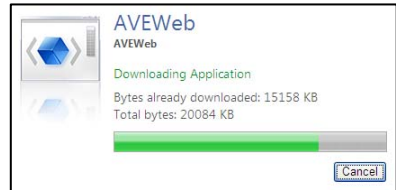
NOTE: Note: Some workstations / laptops will need to have Microsoft .net Framework loaded to view the GIIEP Web page.

2.4.2 Viewing Mission Data

Enter the same **Username** and **Password** provided by the Administrator and click "**Login**."

The page will only display the state(s) associated with that user, which is determined by the System Administrator.

Click the down arrow next to the state abbreviation to expand state details.

GIIEP Web provides a video player window and a map for all Live and Historic Missions.

Use the "up" and "down" arrows to expand the **Live Missions** or **Historic Missions**.

Single-click the desired Mission to automatically play video in the window and populate data on the map.

The map displays the current location of where the video is being recorded with a marker.

The Video Player window has three control buttons: **Pause/Play**, **Stop**, and **Maximize**.

Maximize opens a separate window for an enlarged view.

Use the "**Add Another Video**" button to view more than one mission at a time.

Use the "**X**" in the top right corner to close each mission window.

The User can change the **Map** view by selecting options from the drop down menu.

"**[State] Pictures**" button allows the Web User to view all photos associated with the state(s) in a separate window.

These photos were previously loaded from GIIEP software by using the "Send Picture" feature discussed in section **2.3.2.3 Using the Picture Function**.
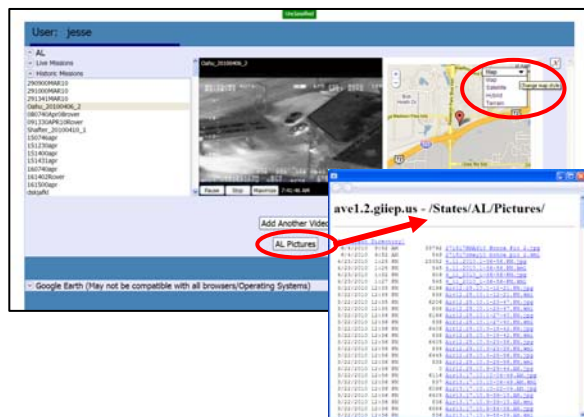
Click the "**Google Earth**" down arrow to expand the GIIEP GEE globe.
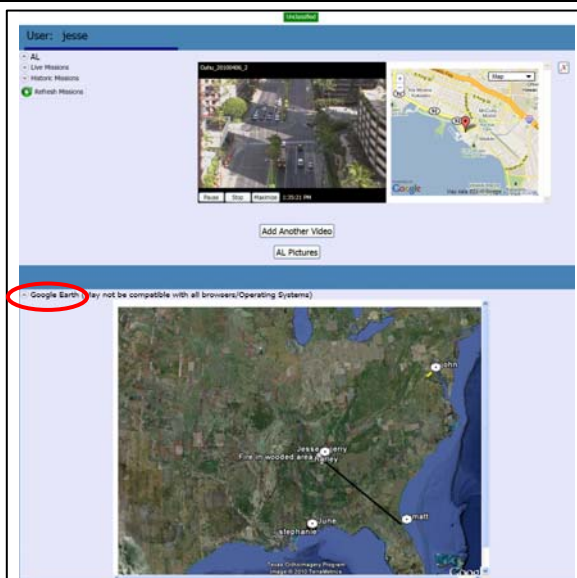
3.0   Maintenance and Warranty

3.1   Monthly Inventory

Inventory should be performed once a month using the provided **Inventory Checklist** to ensure that all components are accounted for.

INVENTORY CHECKLIST			
	Date	Date	Date
Pelican Case Model 1510			
Panasonic Toughbook CF-30			
Iridium Sat Phone Model 9555			
AT1621-12B 6' Magnetic Antenna			
Iridium Data Cable			
Iridium Extension Cable			
Iridium Antenna Adapter			
Video Camera Model GZ-MS230BU			
AVerMedia USB Capture Cable			
Ultra II 16 GB SD Memory Cards (2 ea)			
Ricoh Camera Model 500SE-W			
Kingston 2 GB SD Memory Card (1 ea)			
CyberPower Inverter Model CPS400A1			
Power Strip 6'			
Coax Cable 10'			

3.2 Preventative Maintenance (PM)

Perform PM following the **Monthly Component Health Checklist** to ensure that all individual components will be operationally ready. Should any component fail during Preventive Maintenance checks/service or operation, please refer to component User/Operator Manual/Instructions for remediation instructions.

MONTHLY CHECKLIST

1. **LAPTOP CHECKS**
   a. Run and install Microsoft updates
   b. Run and install all Java updates
   c. Run and install all Antivirus updates
   d. Test CAC card reader
   e. Test lighted keyboard
   f. Recharge and switch the laptop batteries

2. **IRIDIUM SAT PHONE**
   a. Turn on and enter pin test connection with both antennas
   b. Check battery strength and recharge if needed

3. **EO STILL CAMERA**
   a. Power up and recharge batteries if needed

4. **EO VIDEO CAMERA**
   a. Power up and test batteries and recharge if needed

3.3 Army Systems Management

Users may access the SSN-LIN Automated Management and Integration System (SLAMIS) website (https://www.slamis.army.pentagon.mil) for more identification information pertaining to the GIIEP System. Users must have a valid SLAMIS login account to access the website and only an AKO username/password or CAC card may be used to access SLAMIS. Information includes line item number (LIN) / non-standard line item number (NSLIN) and management control number (MCN) / national stock number (NSN) as listed below.

> **LIN/NSLIN**: FA209F
>
> **LIN/NSLIN NOMENCLATURE**: GIIEP SYSTEM
>
> **MCN/NSN**: 582-001-C-137-048
>
> **MCN/NSN NOMENCLATURE**: GIIEP SYSTEM: GO KIT

3.4 Hardware Warranties

The following hardware products are backed by limited warranties. Please review the product user manuals available on the GIIEP Training DVD before requesting warranty service. If the product is still not functioning properly after troubleshooting, please contact a GIIEP User Representative to obtain warranty service, if necessary.

Hardware	Warranty
Pelican Carrying Case	3 Year Limited Warranty
Panasonic CF-30 Toughbook	3 Year Limited Warranty
Iridium Sat Phone 9555	3 Year Limited Warranty
JVC Everio GZ-MS230 Camcorder	3 Year Limited Warranty
Ricoh Caplio 500SE Camera	1 Year Limited Warranty

GIIEP Customer Support

Specialist support can be received by contacting GIIEP Customer Support at the numbers listed below or by visiting the website at:

www.giiep.us

Mailing Address:
**USASMDC
Attn: SMDC-FWB-M
Building 5220
Wernher Von Braun Complex
Redstone Arsenal, AL 35898**

Primary: (256) 503-0311

Secondary: (256) 503-2757

Fax: (256) 955-2536

Annex A: Glossary of Acronyms and Terms

Acronym	Definition
AC	Alternating Current
AES	Advanced Encryption Standard
AKO	Army Knowledge Online
AVE	AWarE Video Elements
AVI	Audio Video Interleave
AWarE	Advanced Warfighter Environment
B&W	Black and White
BNC	Bayonet Neill-Concelman
CAC	Common Access Card
CCA	Circuit Card Assemblies
CDL	Common Data Link
COMSEC	Communications Security
COP	Common Operational Picture
CoT	Cursor on Target
DAGR	Defense Advanced GPS Receiver
DC	Direct Current
DEA	Drug Enforcement Administration
DES	Data Encryption Standard
DHCP	Dynamic Host Configuration Protocol
DoD	Department of Defense
DVD	Digital Video Disc
EO	Electro-Optical
ESRI	Environmental Systems Research Institute
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FMV	Full Motion Video
FOUO	For Official Use Only
FOV	Field of View
FPS	Frames Per Second
GEE	Google Earth Enterprise
GIIEP	Geospatial Information Interoperability Exploitation Portable
GIS	Geospatial Information Systems

Acronym	Definition
GOTS	Government-Off-The-Shelf
GPS	Global Positioning System
GUI	Graphical User Interface
I/O	Input/Output
ID	Identification
IE	Internet Explorer
IP	Internet Protocol
J-2	Directorate of Intelligence (Joint)
J-6	Command, Control, and Communications Systems Directorate (Joint)
KML	Keyhole Markup Language
KMZ	Keyhole Markup Language Zipped
LAN	Local Area Network
LCD	Liquid Crystal Display
LDAP	Lightweight Directory Access Protocol
LED	Light-Emitting Diode
LFP	Link/Frequency/Player
LIN	Line Item Number
LNA	Low Noise Amplifier
MCN	Management Control Number
MGRS	Military Grid Reference System
MILSPEC	Military Specific
MSL	Mean Sea Level
NATO	North Atlantic Treaty Organization
NIMS	National Incident Management System
NITF	National Imagery Transmission Format
NMEA	National Marine Electronics Association
NORAD	North American Aerospace Defense Command
NORTHCOM	U.S. Northern Command
NSLIN	Non-Standard Line Item Number
NSN	National Stock Number
NTSC	National Television System Committee
PC	Personal Computer

Annex A: Glossary of Acronyms and Terms

Acronym	Definition
PDF	Portable Document Format
PM	Preventative Maintenance
RCA	Radio Corporation of America
RF	Radio Frequency
ROVER	Remote Operations Video Enhanced Receiver
RSSI	Received Signal Strength Indication
RX	Receive
SAGE	Situational Awareness Geospatial Enterprise
SD	Secure Digital
SLAMIS	SSN-LIN Automated Management and Integration System
SMDC	U.S. Army Space and Missile Defense Command
SND	Synchronized Network Data
TCP	Transmission Control Protocol
TNC	Threaded Neill-Concelman
TX	Transmit
UAV	Unmanned Aerial Vehicle
UHF	Ultra High Frequency
USASMDC	U.S. Army Space and Missile Defense Command
USB	Universal Serial Bus
USGS	United States Geological Survey
USNORTHCOM	U.S. Northern Command
UTC	Coordinated Universal Time
VGA	Video Graphics Array
VNW	VORTEX Native Waveform (L-3 Communications)
XML	Extensible Markup Language

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