MISSION PLANNING PROCEDURES 0007 00

THIS WORK PACKAGE COVERS:
Laptop Setup and Startup
Loading Map Data
LCMR Radar Software Startup
Adding a Mission View to Favorites
Creating a Mission
Saving a Mission
Opening an Existing Mission
Mission Editing
Uploading Mission to the Radar
Setting Radar Radio Modem Channel
Exiting LCMR Radar Software
Express Mission Planning

Mission Planning is performed on the Laptop (SRC1619) using the LCMR Radar Software in either the **Mission Planning and Operation** or the **Express Mission Planning** mode. Mission Planning allows the operator to define the Area of Operations, identify key zones within the Area of Operation, and download these parameters to the Radar. This WP provides instructions for performing the various Mission Planning tasks listed below. These tasks do not need to be executed in the order listed; they may be referred to on an "as needed" basis.

- Laptop Setup and Startup
- Loading Map Data
  - o Loading DTED-1 Data
  - o Loading GeoTIFF Data
  - o Verifying Imported Maps are Loaded Correctly
- LCMR Radar Software Startup
- Adding a Mission View to Favorites
- Creating a Mission
  - o Mission Creation Wizard
  - o Manual Mission Planning
- Saving a Mission
- Opening an Existing Mission
- Mission Editing
  - o Editing Existing Zones
  - o Deleting Zones
- Uploading Mission to the Radar
- Setting Radar Radio Modem Channel
- Express Mission Planning
  - o Changing the Radar Radio Modem Channel
  - o Creating/Uploading a New Mission (DTED only)
  - o Uploading an Existing Mission

NOTE

Although the LCMR Radar Software is based on FalconView™ software, this manual does NOT provide detailed instruction on using FalconView™. This manual only includes FalconView™ instruction as it applies to the LCMR Radar software. Users are encouraged to become familiar with FalconView™ software prior to performing Mission Planning.

NOTE

Throughout this TM, unless otherwise stated, "click" means to click once with the left mouse button.

NOTE

A mission MUST be created and uploaded to the Radar Cylinder prior to operation; otherwise, inaccurate IPLs and LPLs will occur.

LAPTOP SETUP AND STARTUP

The user should ensure that the Laptop (SRC1619) has adequate power. If local "grid" power is available, the Power Adapter/Battery Charger should be used. If local power is not available, the Laptop can operate on battery power for up to four hours.

The Power Adapter/Battery Charger (**Figure 1)** may be stored in one or two pieces. If stored in two pieces, plug the cord with the three-sided connection into the three-sided receptacle on the Power Adapter/Battery Charger. When assembled, there should be a standard, three-prong wall outlet plug on one end and a small, single-prong plug on the other.

Figure 1. Laptop Power Adapter/Battery Charger

The single-prong plug is inserted into the power connection receptacle located on the side of the Laptop (**Figure 2**).
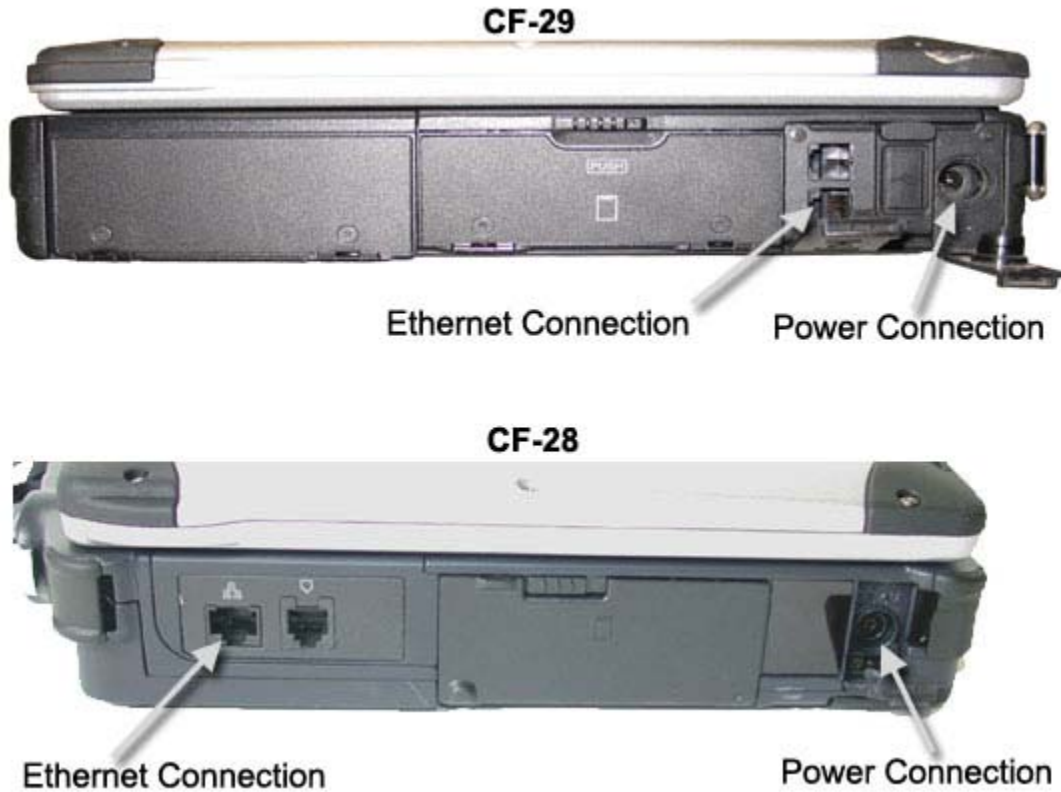
Figure 2. Laptop Power Connection

The Power Adapter/Battery Charger will operate on 110-240 VAC, 50-60 Hz. The Laptop will charge in three hours if left OFF, and in approximately six hours if being used while charging.

After the Laptop is connected to the power source, the Laptop should be connected to the Cylinder using a Cross-Over Ethernet Cable (SRC1619-2) (**Figure 3**). If there is a direct connection between the Laptop and the Radar, a Cross-Over Ethernet Cable must be used. The LCMR includes a 100 ft, Category 5e Cross-Over Ethernet Cable with standard RJ-45 male Ethernet connectors (**Figure 4**) for direct connection between the Laptop and the Radar, if required. The Ethernet connection should be made while the Laptop and the Radar Cylinder power are both OFF.

NOTE

If the Laptop is being directly connected to the Radar, a Cross-Over Ethernet Cable must be used. If a Cross-Over Ethernet Cable is NOT used, the Laptop and the Radar will NOT be able to communicate.
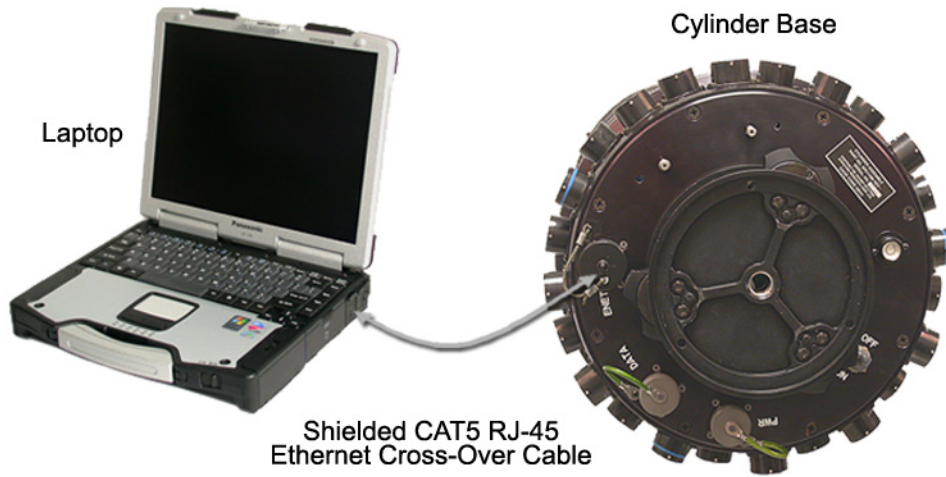
**Figure 3. Cross-Over Ethernet Cable Connection**

Figure 4. Cross-Over Ethernet Cable with RJ-45 Connectors (SRC1619-2)

MISSION PLANNING PROCEDURES   **0007 00**

However, if a standard Ethernet Hub or Switch is placed between the Laptop and the Radar; two Straight-Through Ethernet Cables may be used (**Figure 5**). If the distance between the Laptop and Radar is greater than 100 ft, the Hub or Switch should be used to extend the distance and ensure that proper communication is maintained.

NOTE

The Straight-Through Ethernet Cables and the Ethernet Hub and Switch are not provided with the LCMR system.
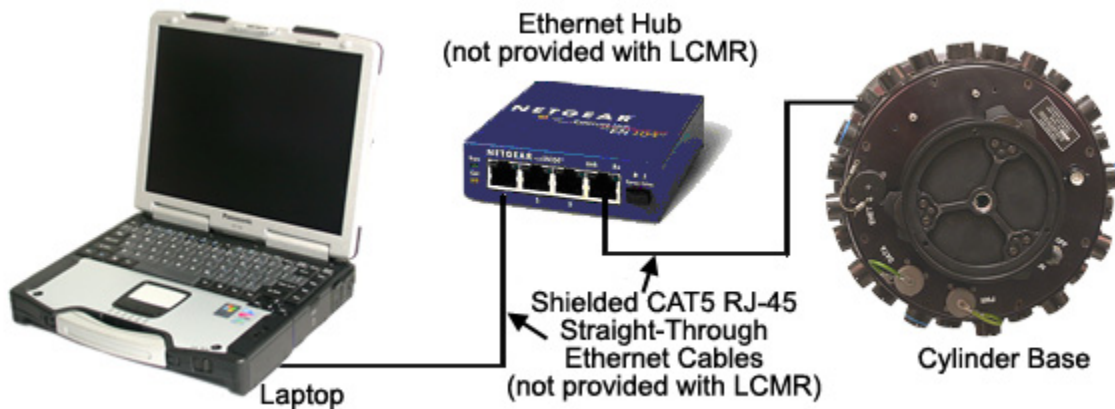
Figure 5. Straight-Through Ethernet Cable with Hub

The Ethernet Cable is attached to the Ethernet Port located at the base of the Cylinder (**Figure 6**). Once the Laptop is connected to the Cylinder, the Cylinder and Laptop power may be turned ON. The Cylinder is turned ON using the Power ON/OFF Switch located at the base of the Cylinder. As shown in **Figure 7**, the CF-29 Laptop is turned ON by toggling the switch from left to right; the CF-28 Laptop is turned ON by pressing down on the switch located to the right of the Laptop handle.

NOTE

The Laptop does NOT need to be connected to the Cylinder to perform Mission Planning. If the Laptop is NOT connected to the Cylinder, a mission may be planned and saved on the Laptop and uploaded to the Cylinder at a later time. However, the mission MUST be uploaded to the Cylinder prior to supporting operations.
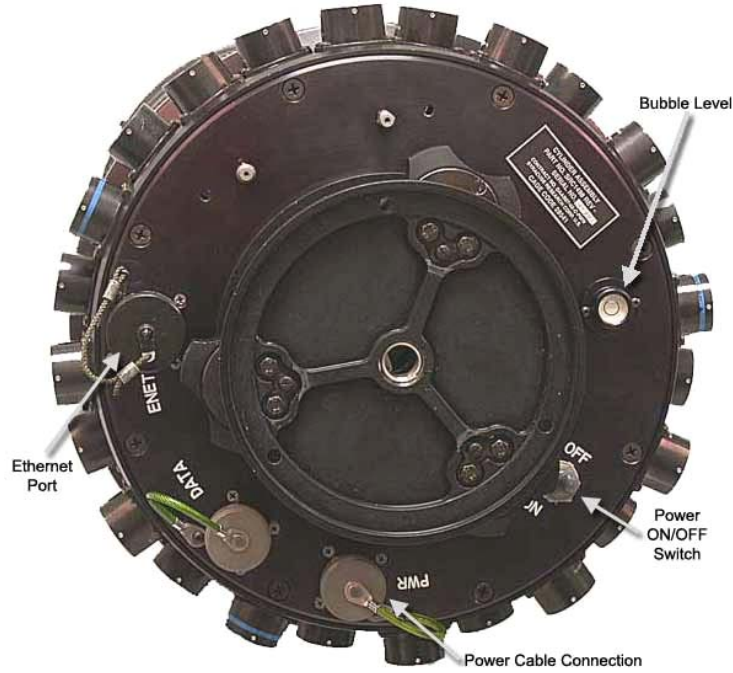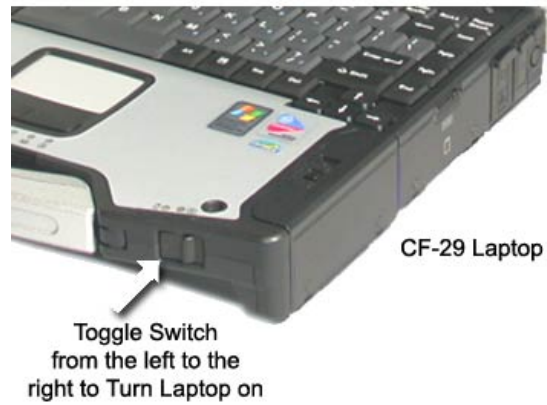
Figure 6. View of Cylinder Base

Figure 7. Power Switch for CF-29 and CF-28 Laptops

MISSION PLANNING PROCEDURES   **0007 00**

LOADING MAP DATA

The first time the Laptop (SRC1619) is used for Mission Planning, or if the current mission is located in a theater of operations very different from all previous missions (outside of the 50 km x 50 km mission area), the Digital Terrain Elevation Data (DTED) and/or map graphics (GeoTIFF) data must be loaded onto the Laptop.

NOTE

DTED for only Afghanistan/ Operation Enduring Freedom (OEF) and Iraq/Operation Iraqi Freedom (OIF) are preloaded and provided on the Laptops. DTED for other regions of the world are not provided with the LCMR system. Also, GEOTIFF and other map types are not provided with the LCMR system.

The following instructions for loading DTED and GeoTIFF data are provided to aid the novice FalconView™ user.

Loading DTED-1 Data

NOTE

When using DTED data for Mission Planning, red rectangles on the maps indicate that the maps are located on the CD-ROM; green rectangles indicate that the maps are located on the hard drive. For Mission Planning, all DTED areas used MUST be loaded onto the hard drive and will therefore appear as a green rectangle.

NOTE

If the DTED file (.dat) is accidentally deleted during mission planning, it may be recreated by opening the mission file (.mf) and re-saving the mission.

NOTE

If DTED data is not available for Mission Planning, the Radar will assume that the surrounding terrain is flat and at sea-level. As a result, hilly or mountainous terrain will cause significant LPL errors. If there is no way to get DTED information for the area of operation, the user MUST set the Radar elevation at zero, or an estimated average height above the surrounding terrain. However, this will not eliminate LPL errors.

The DTED-1 data must be loaded onto the Laptop prior to beginning a Mission Planning session. The user must first copy the data files from DTED-1 CD-ROMs and then verify the data file import using the procedures described in this WP.

To copy DTED-1 data onto the Mission Planning Laptop hard drive:

1. Insert the DTED-1 CD-ROM into the CD-ROM drive.

2. On the desktop, double-click **My Computer** and then double-click the D drive to access the CD-ROM files.

3.   Open the D:\DTED folder (**Figure 8**).

4.   Go to the **Edit** menu and click **Select All** to select all of the D:\DTED folders (the folders will be highlighted). Go to the **Edit** menu and click **Copy** to copy the D:\DTED folders.

5.   Open the C:\PFPS\falcon\DATA\DTED folder (**Figure 8**).

6.   Go to the **Edit** menu and click **Paste** to add the D:\DTED folders to the Laptop hard drive.
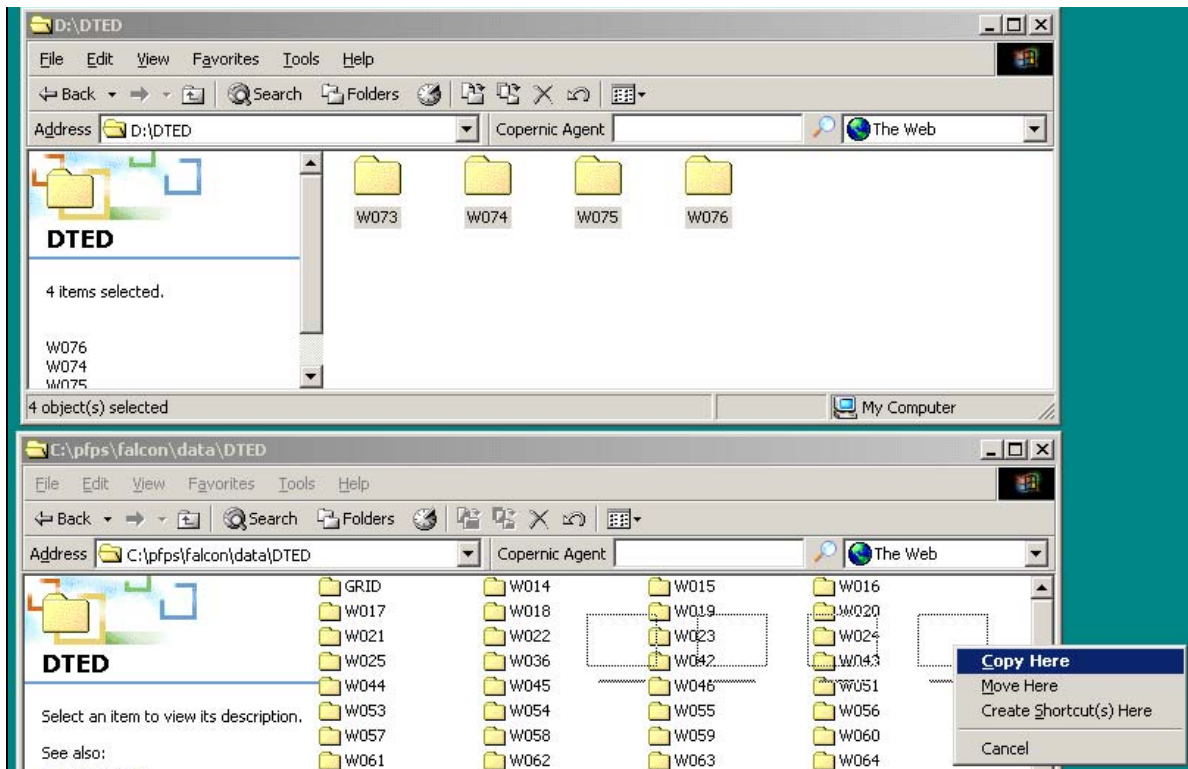
Figure 8. Copying DTED Data

7.   If a **Confirm Folder Replace** pop-up window appears (**Figure 9**), click **Yes** to continue copying the D:\DTED files to the Laptop hard drive.
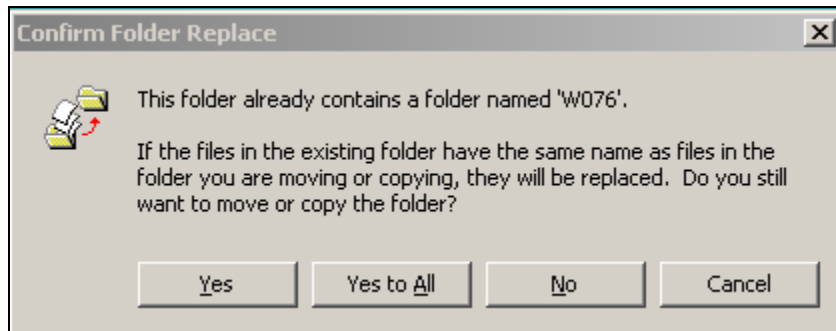
Figure 9. Confirmation Message

8.   Repeat Steps 1-7 above for additional DTED-1 CD-ROMs. This process will build an index of maps for use with the LCMR Radar Software.

9. After copying the files from the CD-ROM, double-click the **LCMR Radar** icon on the Desktop to open the LCMR Radar Software.

10. After the LCMR Radar Software is started, click **Tools** (**Figure 10**); point to **Data Administration**, and click **Data Check** (**Figure 11**).
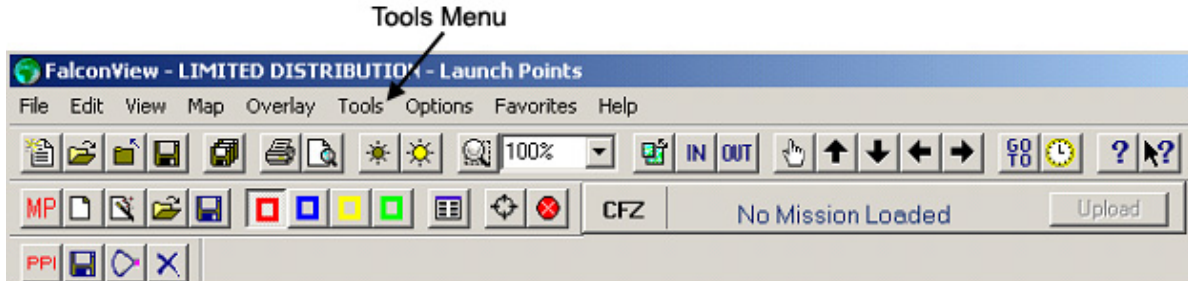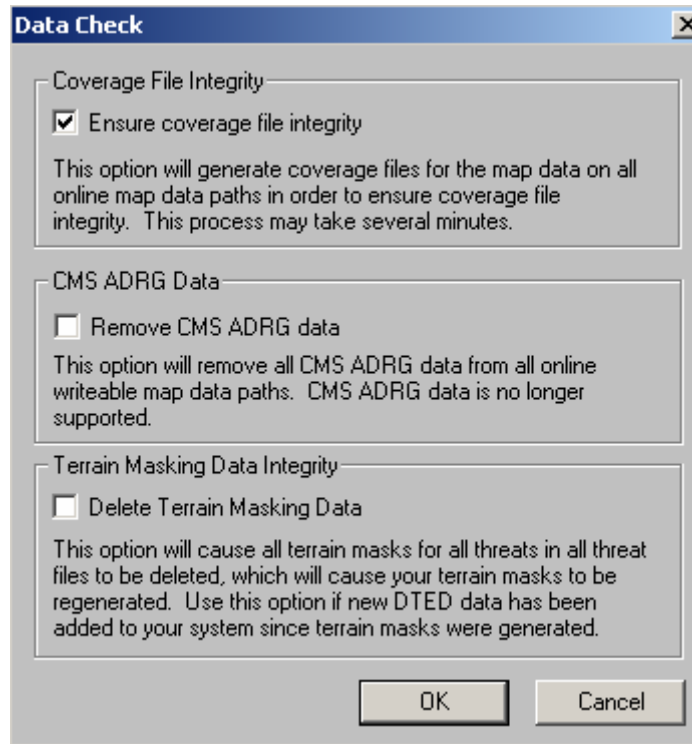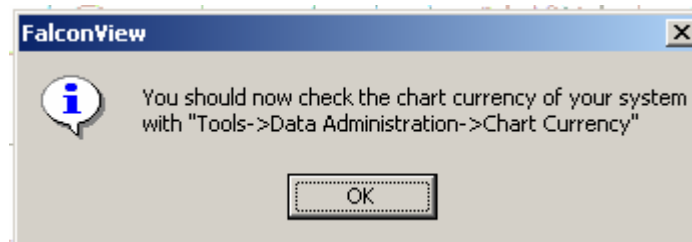

Figure 10. Tools Menu
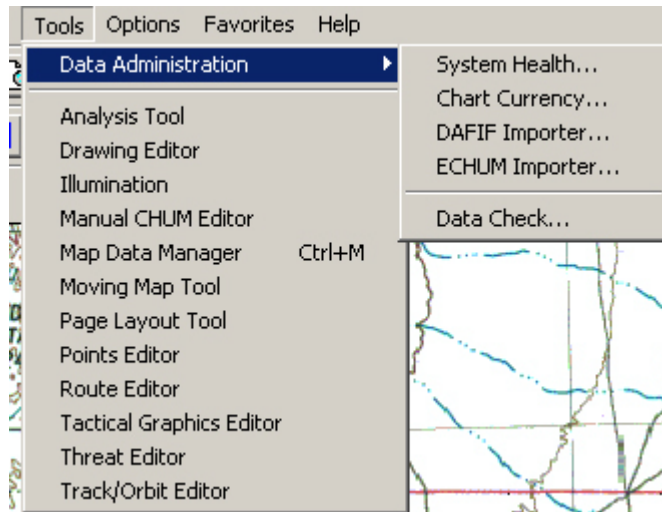
Figure 11. Performing Data Check

11. The Data Check window (**Figure 12**) will appear. Make sure the upper box titled **Ensure coverage file integrity** is checked.

Figure 12. Data Check Window

12. Click **OK**. A progress window will appear for a few seconds.

13. If the **Chart Currency** window appears (**Figure 13**), click **OK**.

Figure 13. Chart Currency Window

14. The DTED data integrity check is now complete.

Loading GeoTIFF Data

Although the LCMR Radar Software does not require the GeoTIFF map data, the GeoTiff data makes it easier to visualize the Area of Operations with all rivers, roads, and landmarks displayed. If available, the GeoTIFF maps should be loaded onto the Laptop to facilitate Mission Planning and provide additional, detailed map data.

The GeoTIFF maps are loaded onto the Mission Planning Laptop following the same procedure used to load the DTED data. The only difference is that the GeoTIFF maps are copied and loaded into the C:\PFPS\falcon\DATA\GEOTIFF folder.

MISSION PLANNING PROCEDURES 0007 00

To copy GeoTIFF maps onto the Mission Planning Laptop hard drive:

1. Insert the GeoTIFF CD-ROM into the CD-ROM drive.

2. Copy the GeoTIFF files (*.tif) from the CD-ROM into the C:\PFPS\falcon\DATA\GEOTIFF folder following the same procedure used to copy the DTED files (refer to Steps 1-7 above).

3. After the GeoTIFF files have been loaded on the Laptop, open the LCMR Radar Software by double-clicking the **LCMR Radar** icon on the Desktop.

4. Repeat Steps 10-14 above to perform the Data Checking procedure.

Verifying Imported Maps are Loaded Correctly

After the DTED-1 and GeoTIFF files have been loaded, it is important that the maps are verified to make sure the maps loaded properly and are available for Mission Planning. The map verification procedure should be performed for both the imported DTED-1 and GeoTIFF maps.

1. Double-click the **LCMR Radar** icon on the desktop (**Figure 14**) to start the software.

2. Click the option button for **Mission Planning and Operations** (**Figure 15**). (**Express Mission Planning** is described at the end of this WP).

3. Click **Start**. The LCMR Radar Software will open to display either the last map used or the global map view.
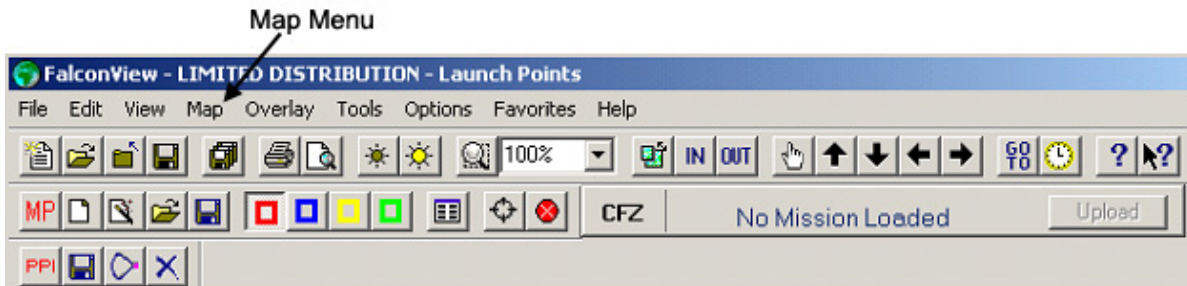

Figure 14. LCMR Radar Icon

Figure 15. **Mission Planning and Operation Mode**
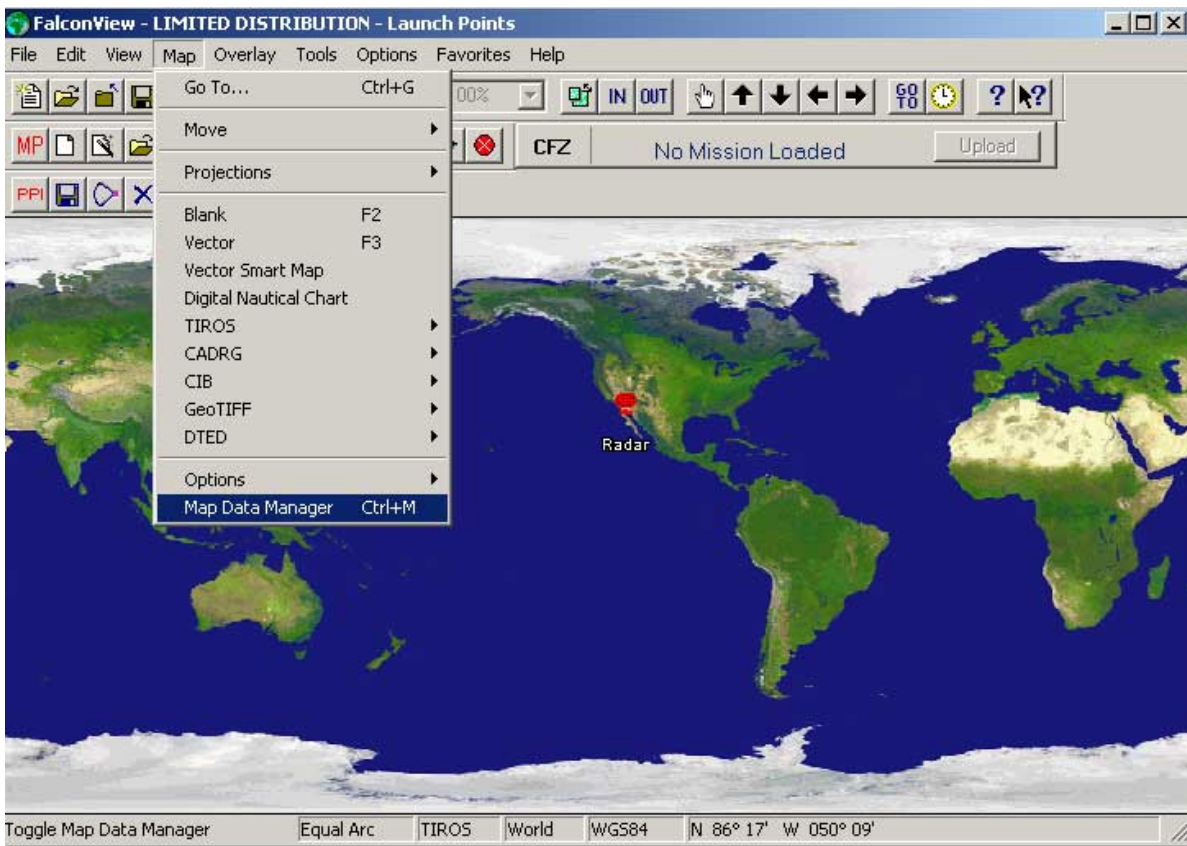
NOTE

The R-PDA GUI MUST remain open while performing mission planning.
Exiting or closing the R-PDA GUI will exit the LCMR Radar Software.

4. Click **Map** (**Figure 16**).

Figure 16. Map Menu

5. Select **Map Data Manager** (**Figure 17**).

Figure 17. Select Map Data Manager

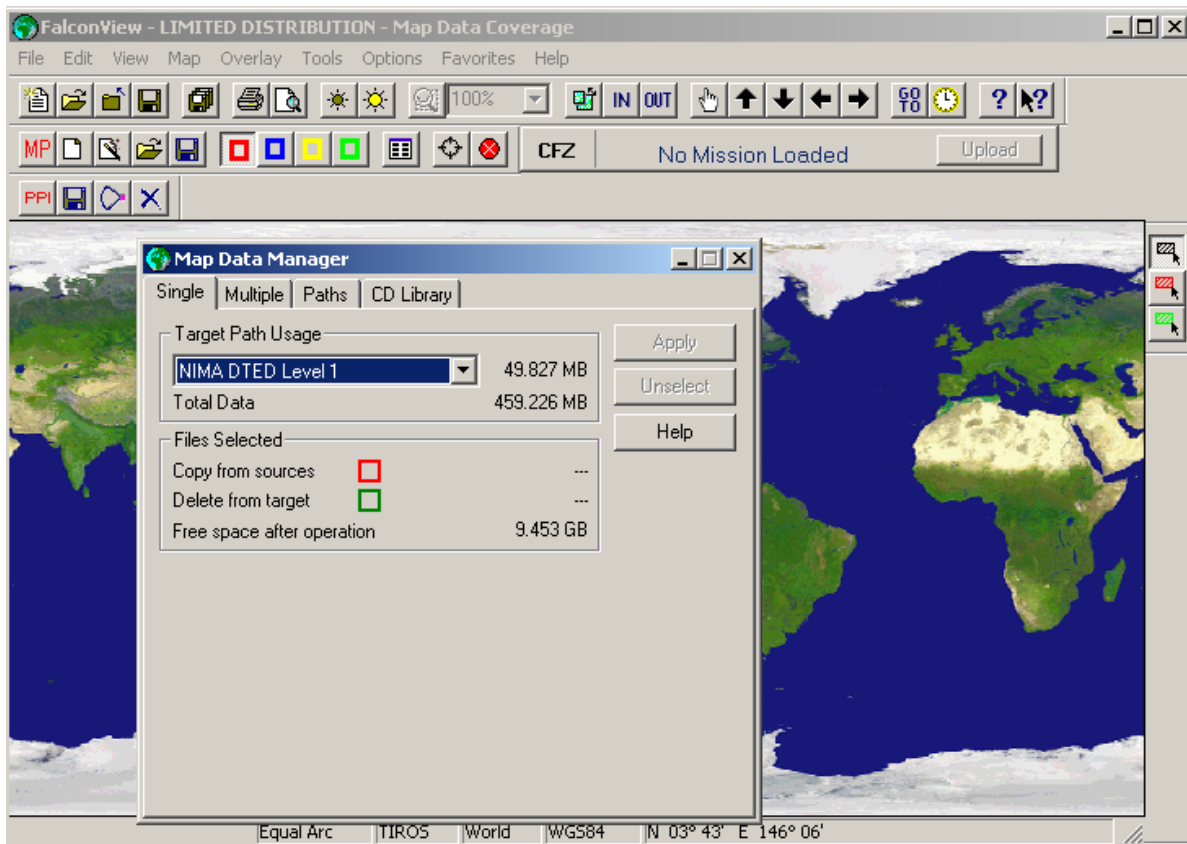6. Click the **Single** tab in the **Map Data Manager** window (**Figure 18**).

Figure 18. Map Data Manager Window

7. From the **Target Path Usage** drop-down list:

   a. For DTED-1 data, select **NIMA DTED Level 1**.

   b. For GeoTIFF map, select the appropriate GeoTIFF map scale. **GEOTIFF 5 meter Color** corresponds to a 1:24,000 map. **20 meter** corresponds to a 1:100,000 map.

NOTE

It is important that the Map Data Manager window remains open for Steps 6-9. The window may be minimized so the entire world map is visible; but it cannot be exited or closed.

8. In the map area, there should be only Green rectangle(s) visible within the specified or targeted area(s). If red rectangles are present, go back to Step 1.

9. Remove the CD-ROM from the Laptop.

10. Right-click on the desired map area and select **Center Map**.

11. Click the **Scale In** or **Out** buttons to scale the map of the world to locate the Green rectangles (**Figure 19**). The map may also be scaled in or out by right-clicking the desired map area and selecting **Scale In** or **Scale Out**.

NOTE

If the DTED and/or GeoTIFF files DO NOT appear in the Target Path Usage drop-down list, repeat the procedure above (Steps 1-15) for loading the DTED and/or GeoTIFF Data.
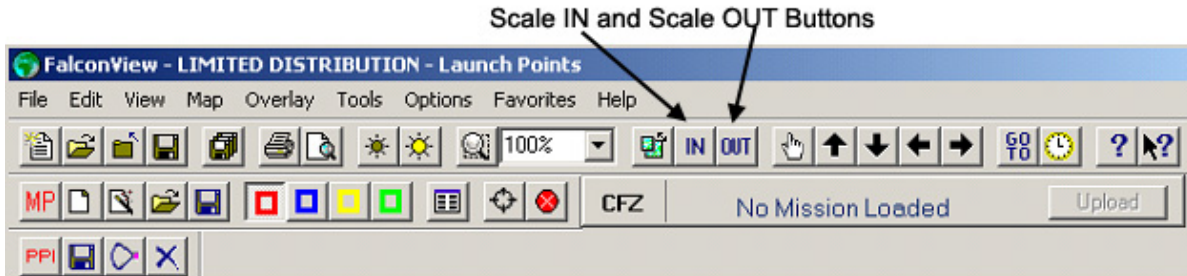
Figure 19. Scale In and Scale Out Buttons

12. Scale the map in until a warning message appears indicating that **Data is not available for the selected map. Use the Map Data Manager to view map data coverage** (**Figure 20**).
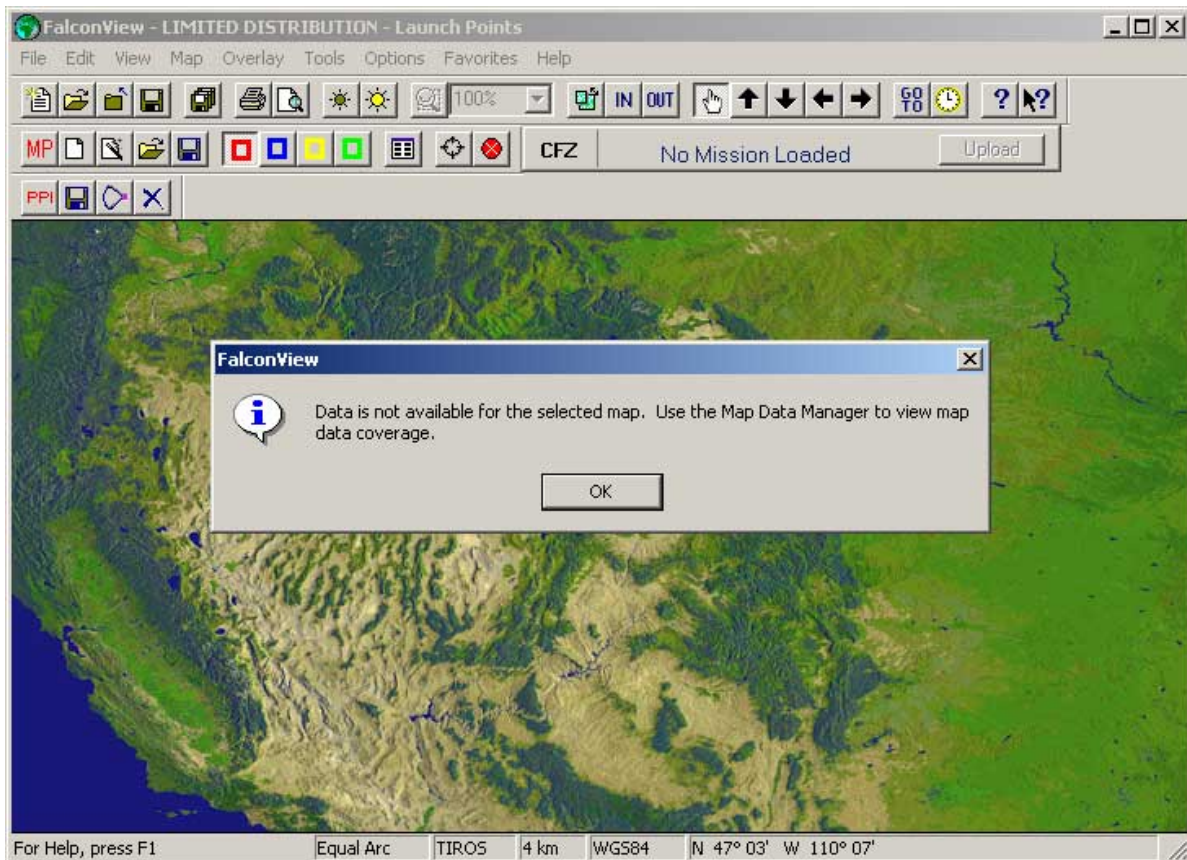

Figure 20. Data Not Available

13. After all maps have been verified, click the "**X**" in the upper right corner to close the **Map Data Manager** window.

Map Coordinate Formats

To change the coordinate format on the map (as displayed in the lower right hand corner of the screen in **Figure 21**), click the **Options** menu bar, and then select **Coordinate Format** in the dropdown menu that appears. An alternative method to get to the **Coordinate Format** window is to double-click on the coordinate displayed in the lower right corner of the window. Selecting the desired map coordinate format should be done before performing Mission Planning.
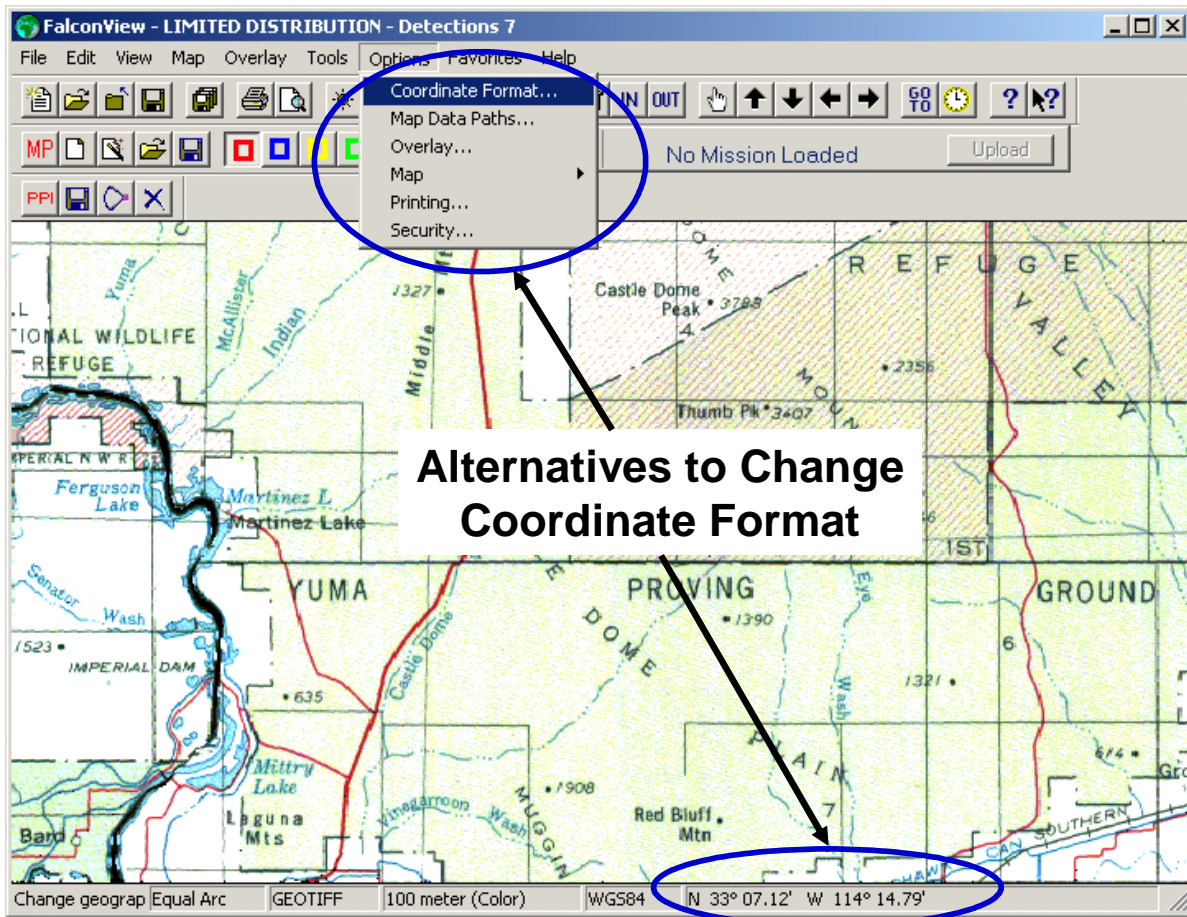
Figure 21. Alternative Methods to Change the Coordinate Format

In the **Coordinate Format** window, click the appropriate option button to set the default to primary or secondary, and then select the desired format for display (**Figure 22**). The user may specify Lat/Lon, Military Grid (MGRS), or UTM for either the Primary or Secondary Coordinate Format (**Figure 23**).
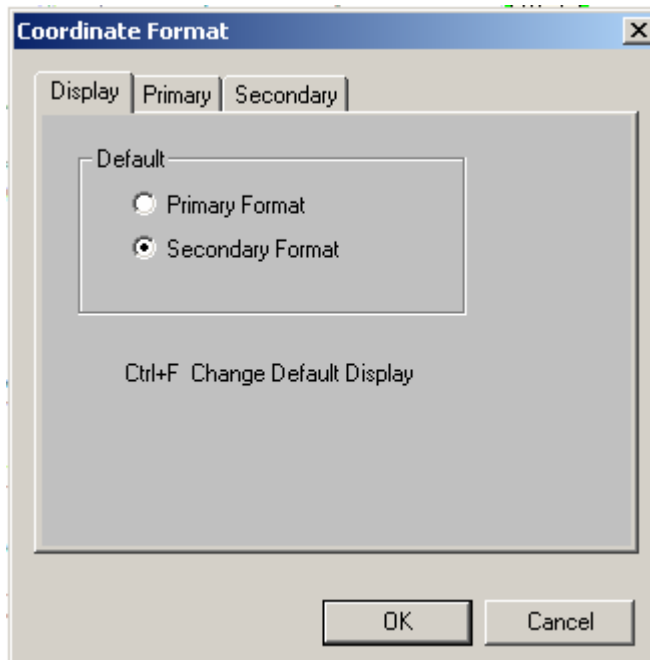
Figure 22. Selecting the Coordinates Format
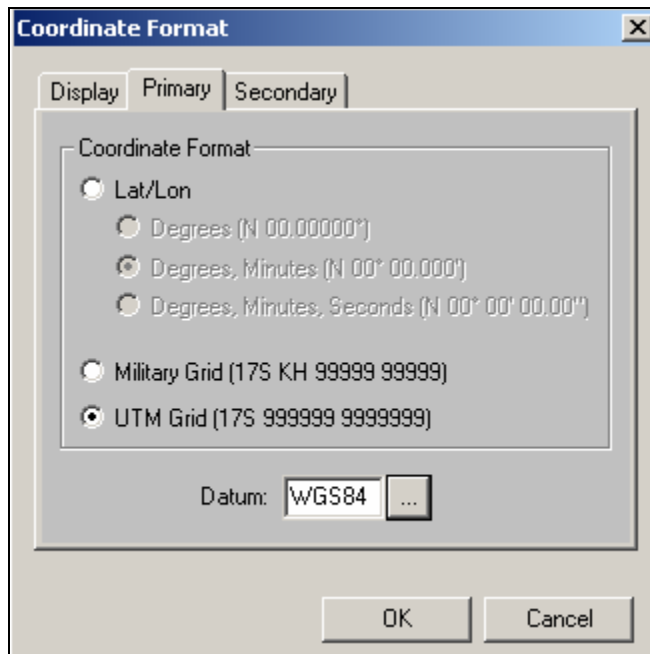
Figure 23. Selecting a Primary Coordinate Format

The Secondary Coordinate Format may also be either Lat/Lon, UTM, or MGRS, depending on which is the most convenient for use with other maps for that mission (**Figure 24**).
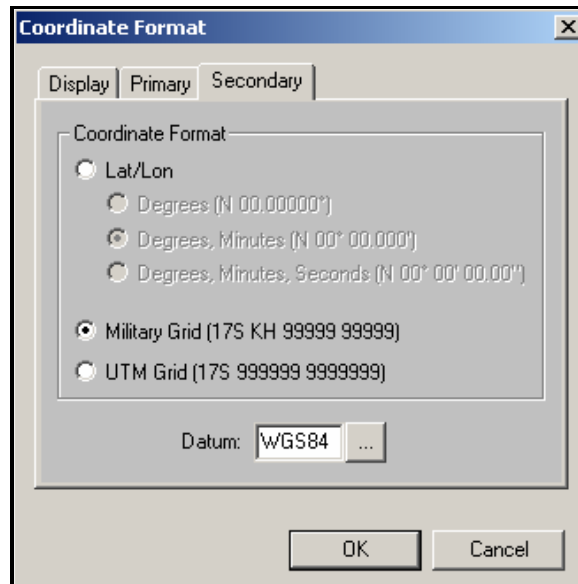
Figure 24. Selecting a Secondary Coordinate Format

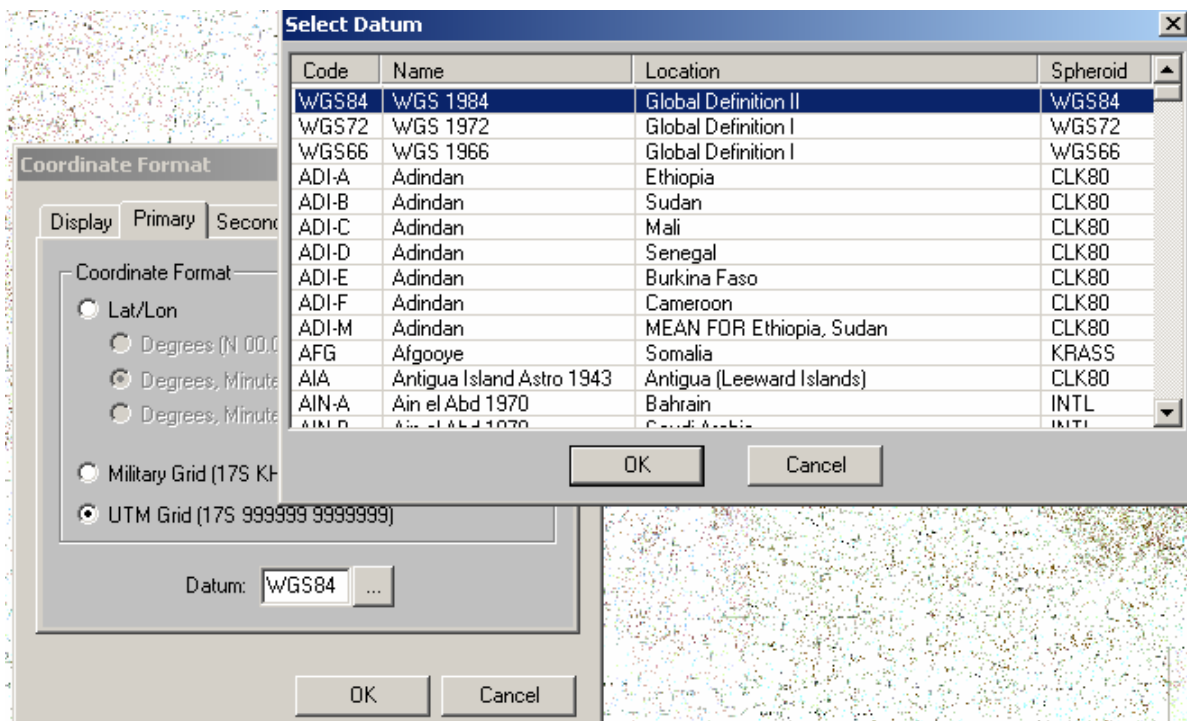The Datum for the Coordinate Format may be changed as well (**Figure 25**). However, WGS84 is the datum used by most current maps.

Figure 25. Datum Selection for Coordinate Format

LCMR RADAR SOFTWARE STARTUP

1. Double-click the **LCMR Radar** icon on the desktop (**Figure 26**) to start the software.

2. Click the option button for **Mission Planning and Operations** (**Figure 27**). (**Express Mission Planning** is described at the end of this WP).

3. Click **Start**.

Figure 26. LCMR Radar Icon

Figure 27. **Mission Planning and Operation Mode**

The LCMR Radar Software will open to display either the last map used (**Figure 28**) or the global map view (**Figure 29**). The software will also automatically open the R-PDA graphical user interface (GUI) upon start-up. The R-PDA GUI's basic functionality is the same as the R-PDA (SRC1615-1). The operating procedures for the R-PDA and the R-PDA GUI are provided in WP0010.

NOTE

The R-PDA GUI MUST remain open while performing mission planning. Exiting or closing the R-PDA GUI will exit the LCMR Radar Software.

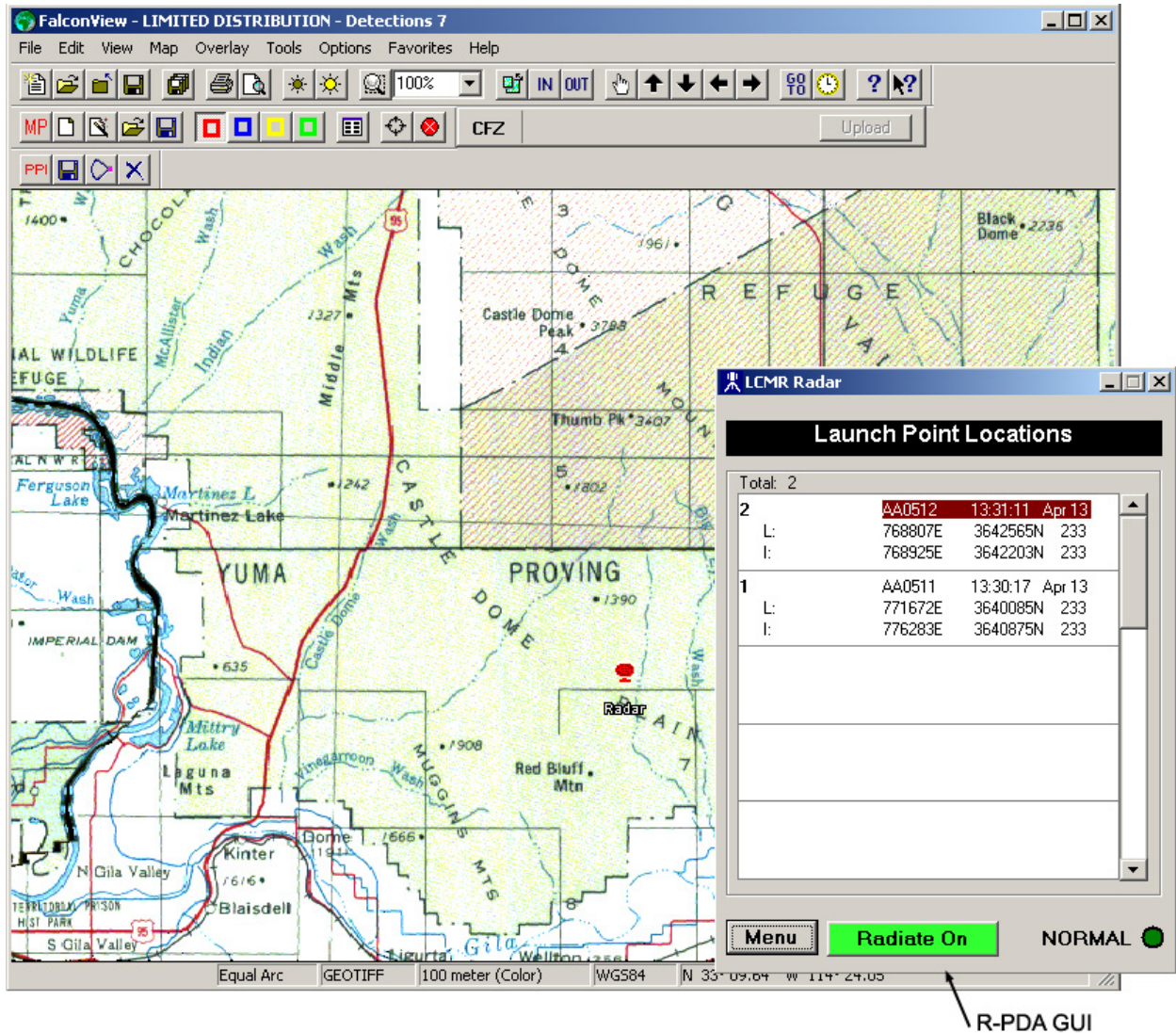The R-PDA GUI is not used when performing Express Mission Planning.

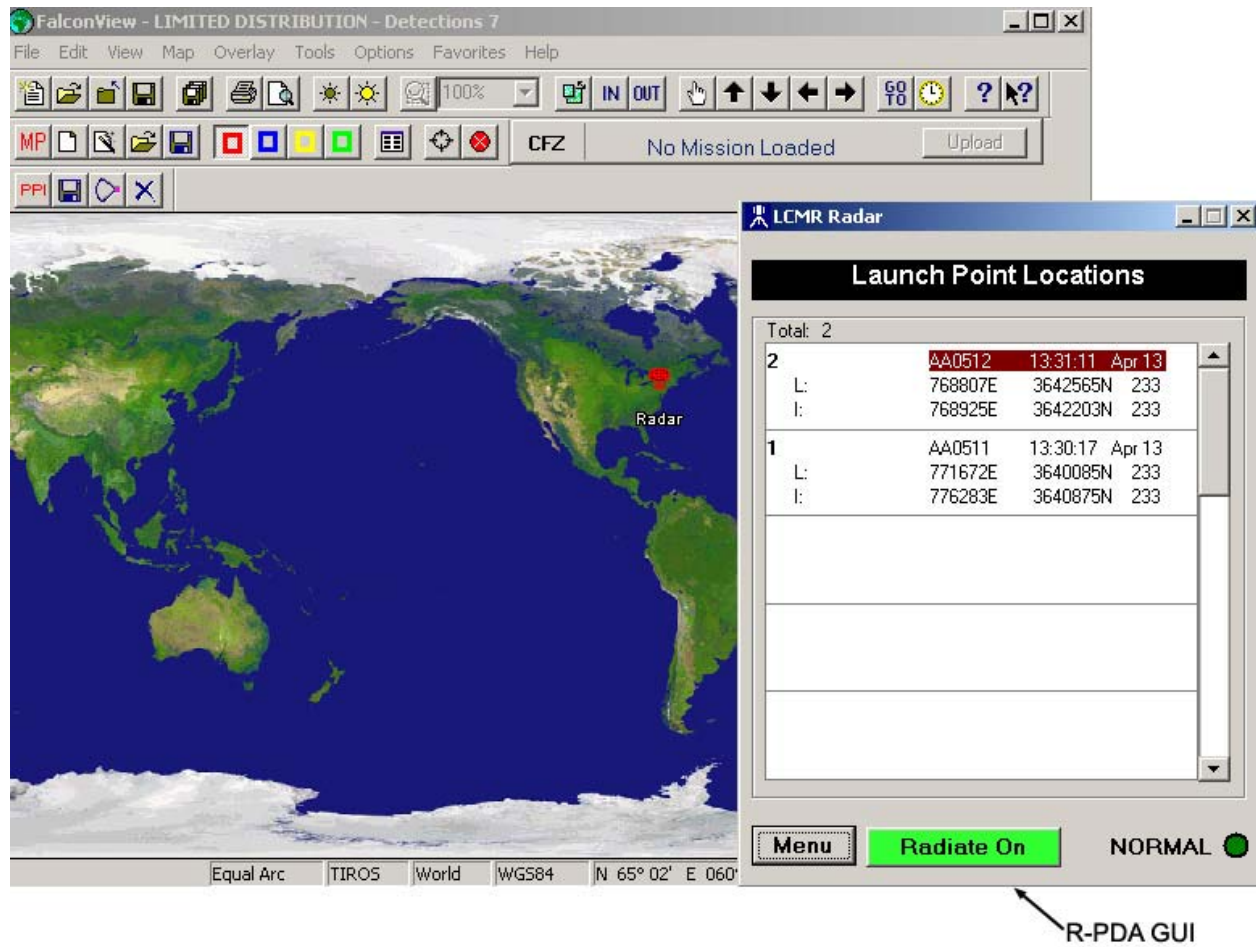**Figure 28. Mission Planning Screen with GeoTIFF Display**

Figure 29. Mission Planning Screen with Global View

As shown in **Figure 30**, the top toolbar is the FalconView™ toolbar, and the bottom toolbar is the Mission Planning toolbar.
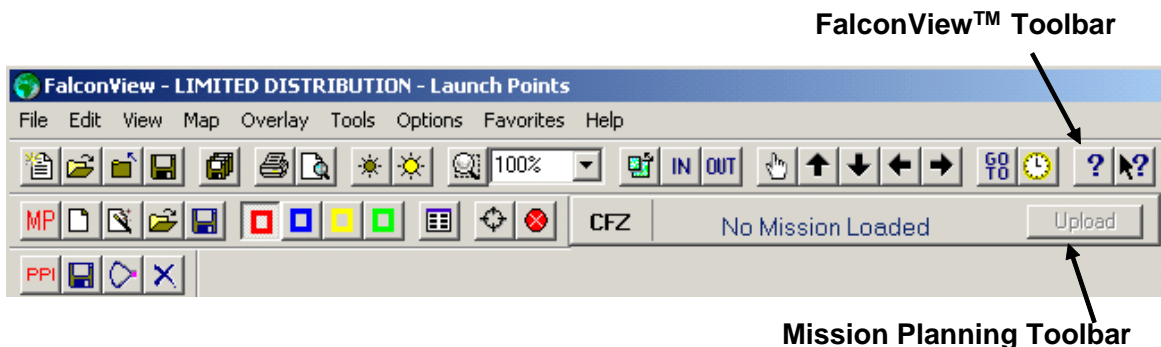
FalconView™ Toolbar

Mission Planning Toolbar

Figure 30. Toolbars

1. Place the "cross-hair" cursor on the desired location on the map. Right-click and select **Center Map** (**Figure 31**).
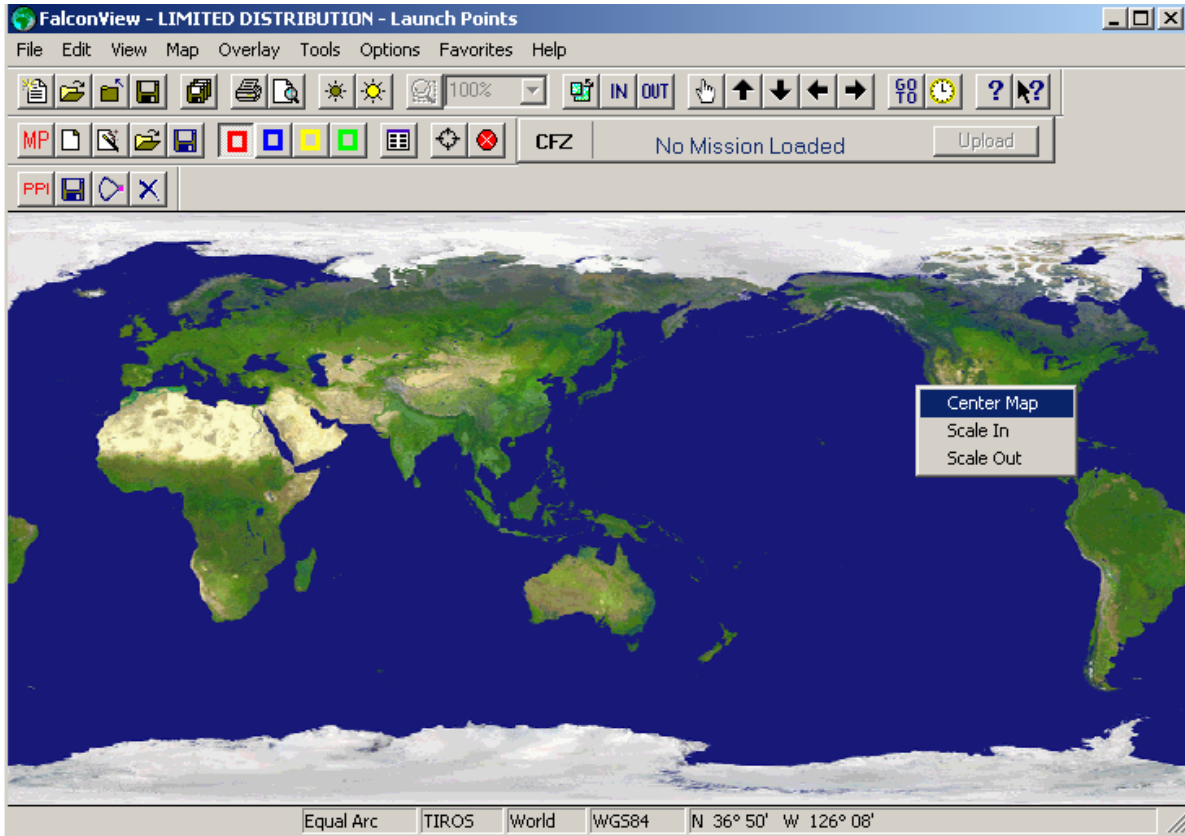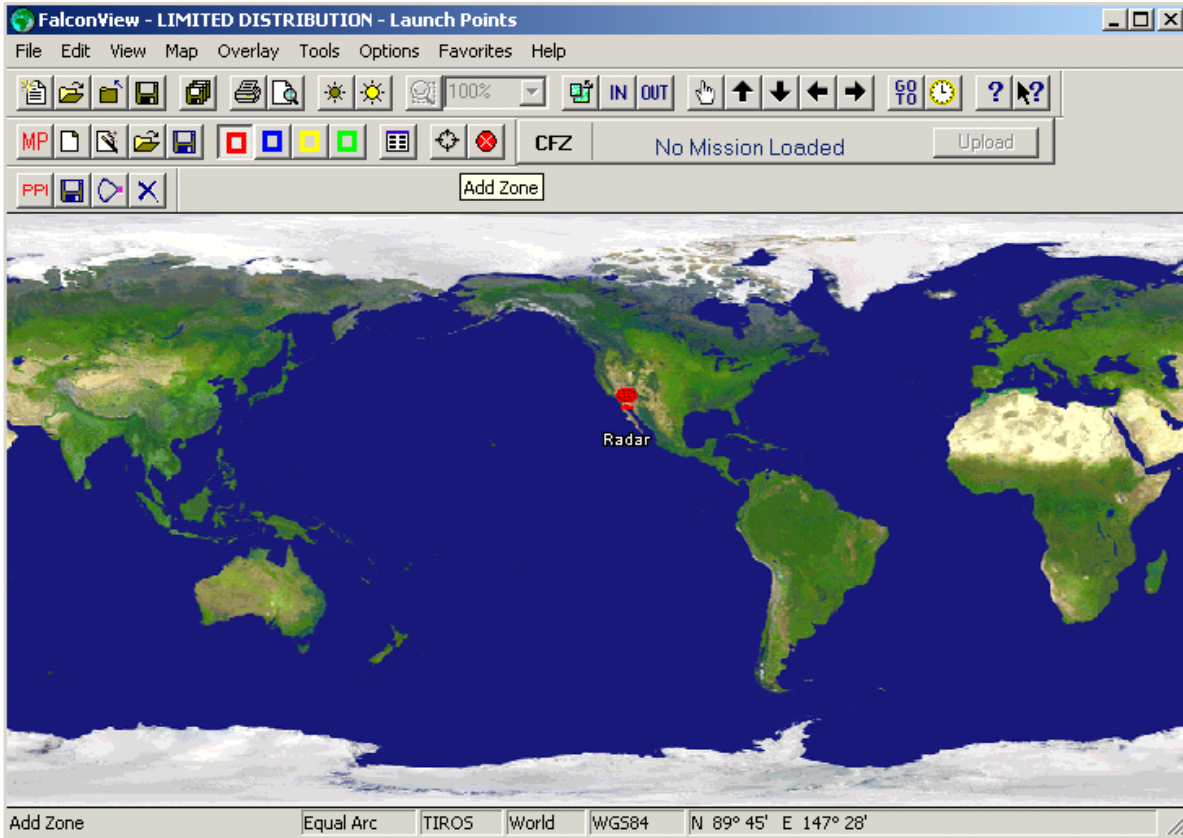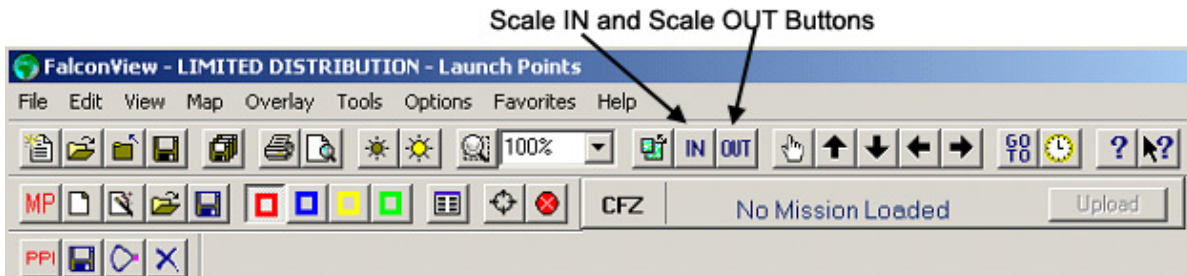

Figure 31. Center the Map

2. The centered map will now appear as shown in **Figure 32**.

Figure 32. Centered Map

3. Click the **In** or **Out** buttons (**Figure 33**) to scale the map of the world to locate the rectangles. The user may also scale in or out by right-clicking the desired map area and selecting **Scale In** or **Scale Out** in the drop-down menu that appears.

Figure 33. Scale In and Scale Out Buttons

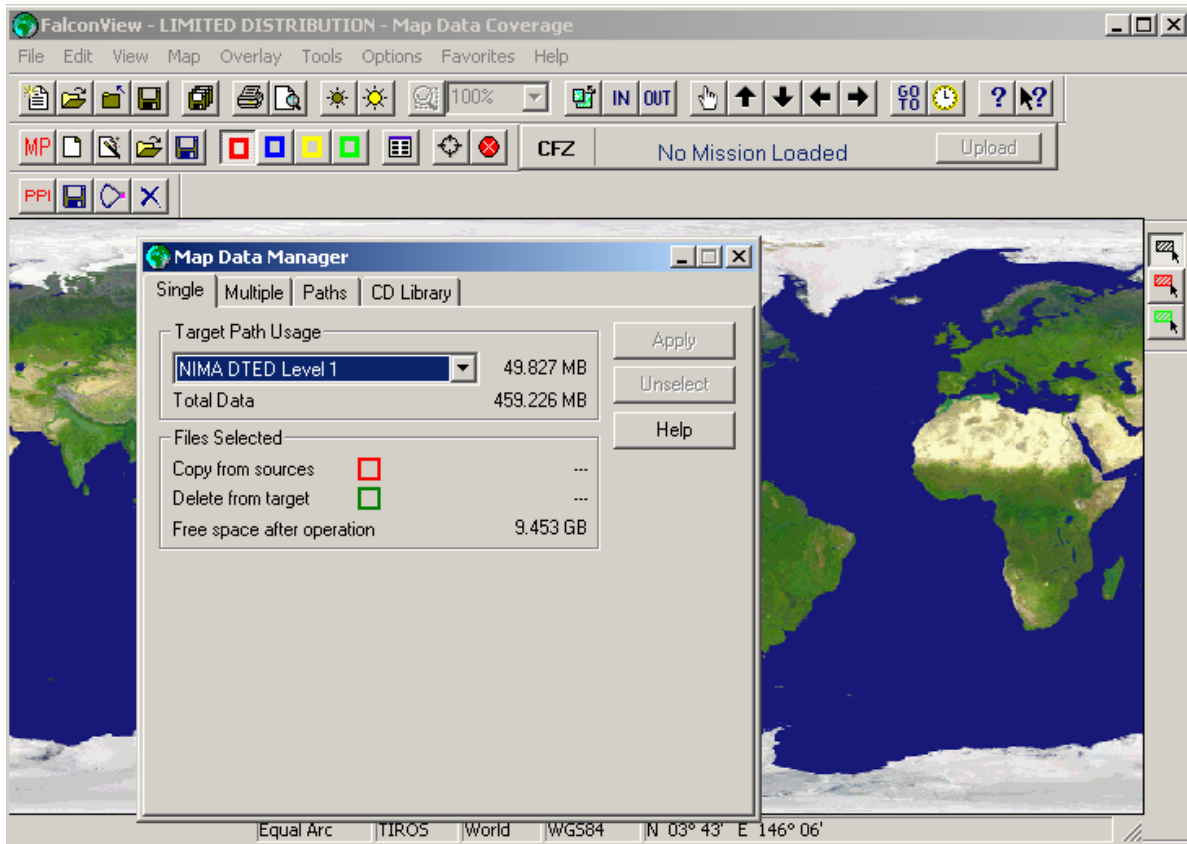4. Go to the **Map** menu bar and select **Map Data Manager** (**Figure 34**).

Figure 34. Map Data Manager

5. Locate the Green rectangle(s) that define the area where GeoTIFF data is available. For example, in **Figure 35** there are several Green rectangles visible within the United States.
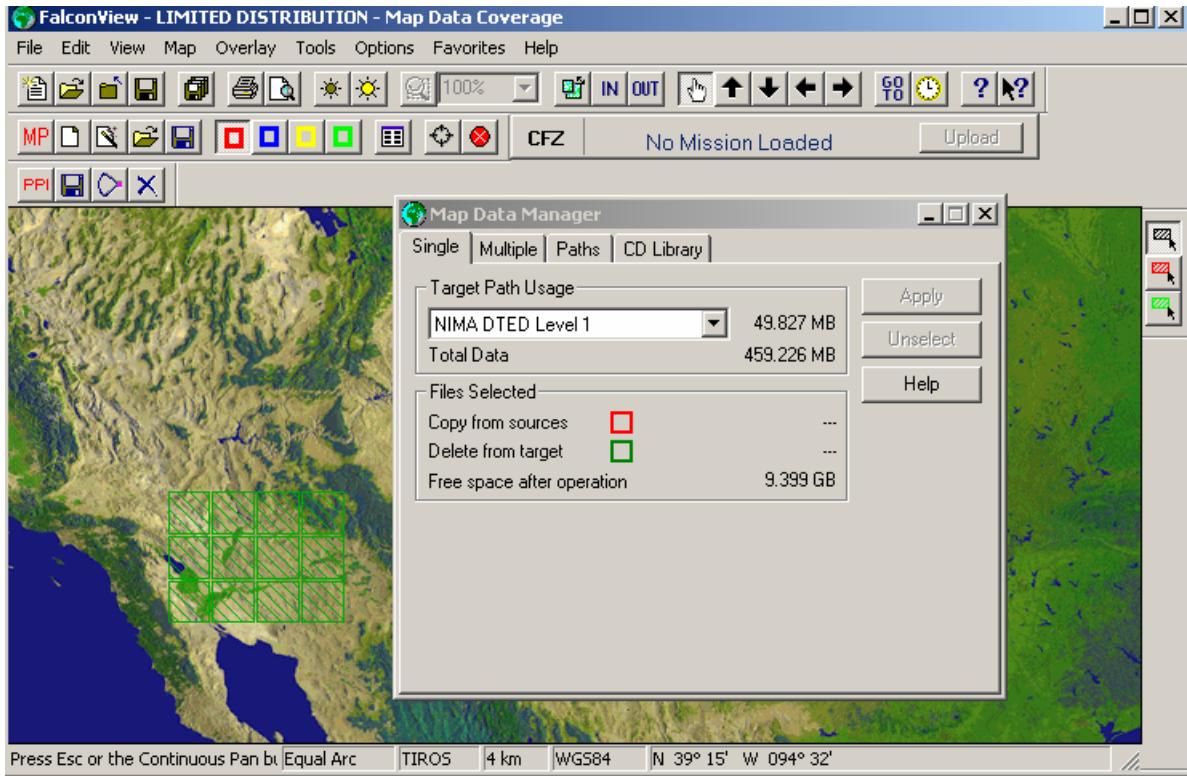

Figure 35. Map Data Locations

6. The map should be scaled in to locate the specific mission area. **Figure 36** shows a mission area that was scaled in from the global view.
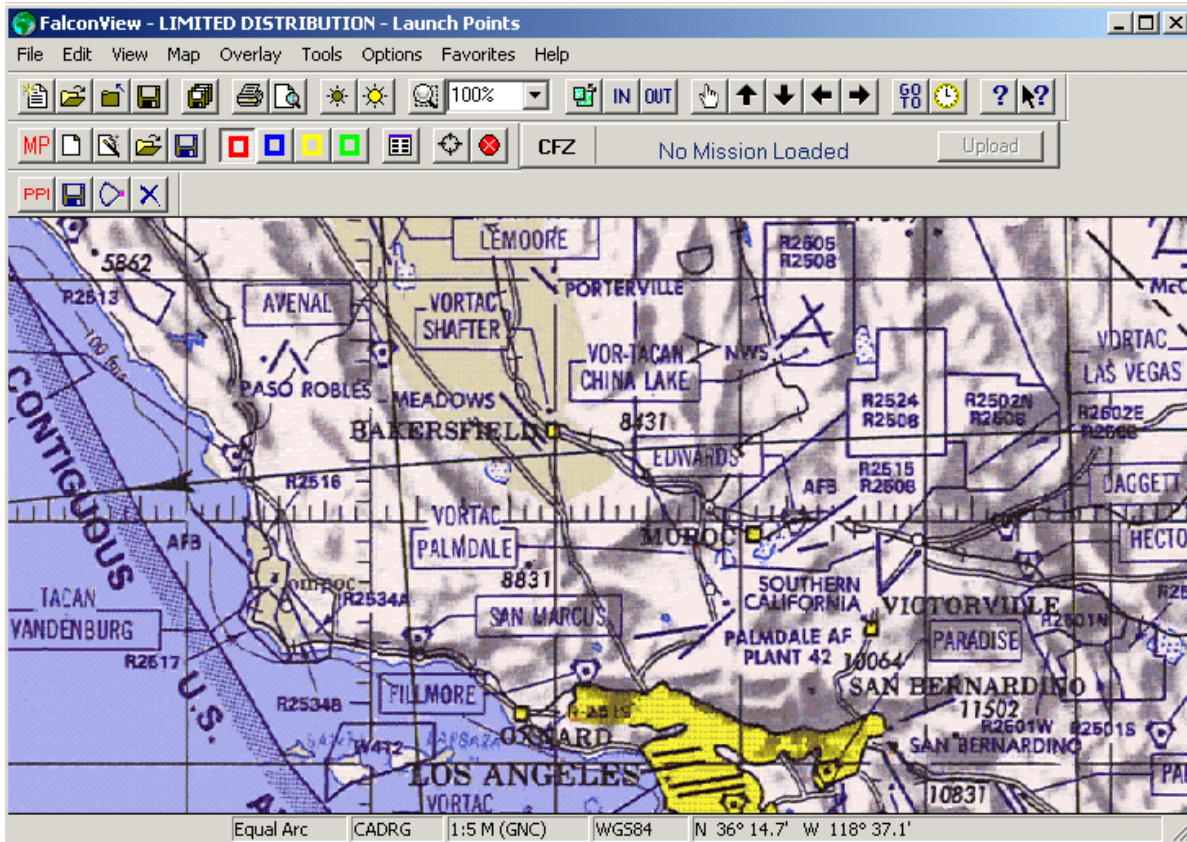

Figure 36. Mission Area Data

MISSION PLANNING PROCEDURES   **0007 00**

ADDING A MISSION VIEW TO FAVORITES

Occasionally, the user may wish to save a mission view for quick reference or for future missions. A view is defined by its map center and the magnification. Saving a specific mission view and adding it to "Favorites" is not a required step in the Mission Planning process. It is a useful option that allows the user an efficient way to access a specific mission view.

To save a mission view, click **Favorites** on the **Favorites** menu bar and select **Add to Favorites** in the drop-down menu (**Figure 37**).
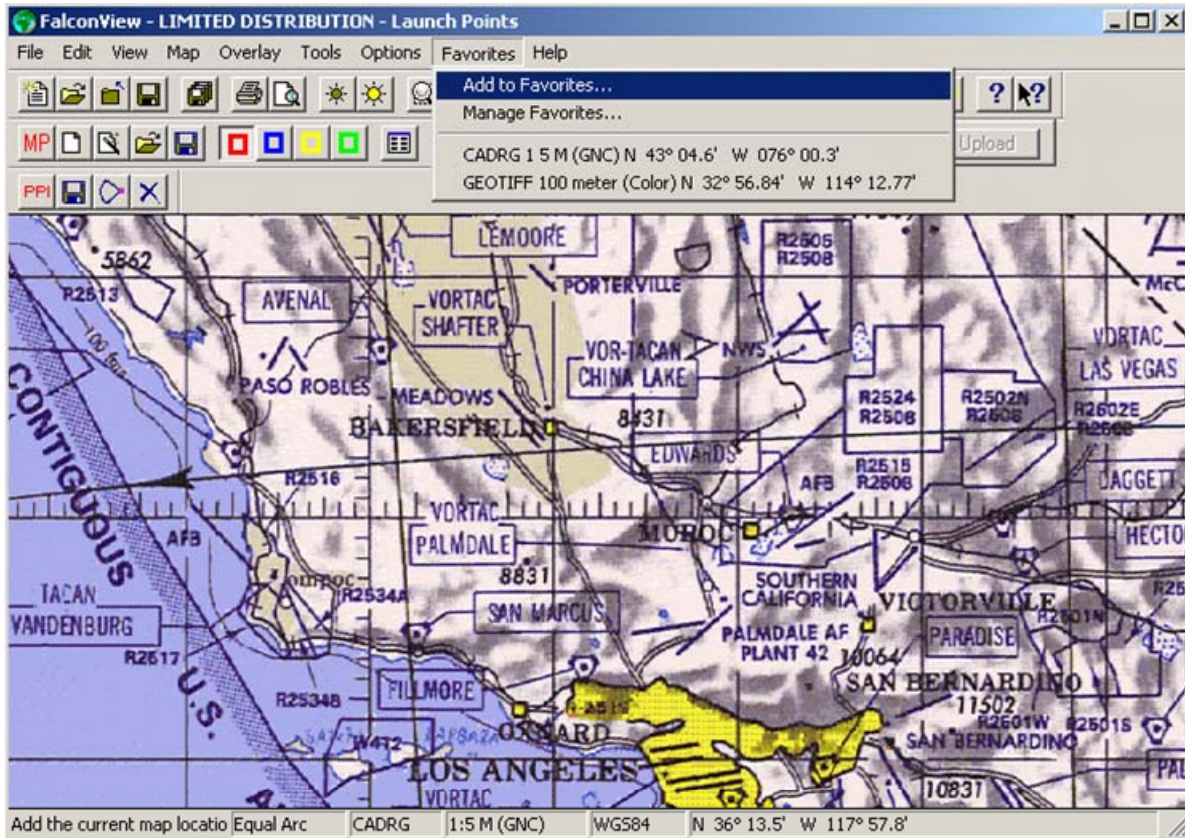
Figure 37. Adding Mission View to Favorites

After adding the "favorite" view, the user will then be prompted to name the "favorite" view. The view default name is the resolution with the map center (**Figure 38**).
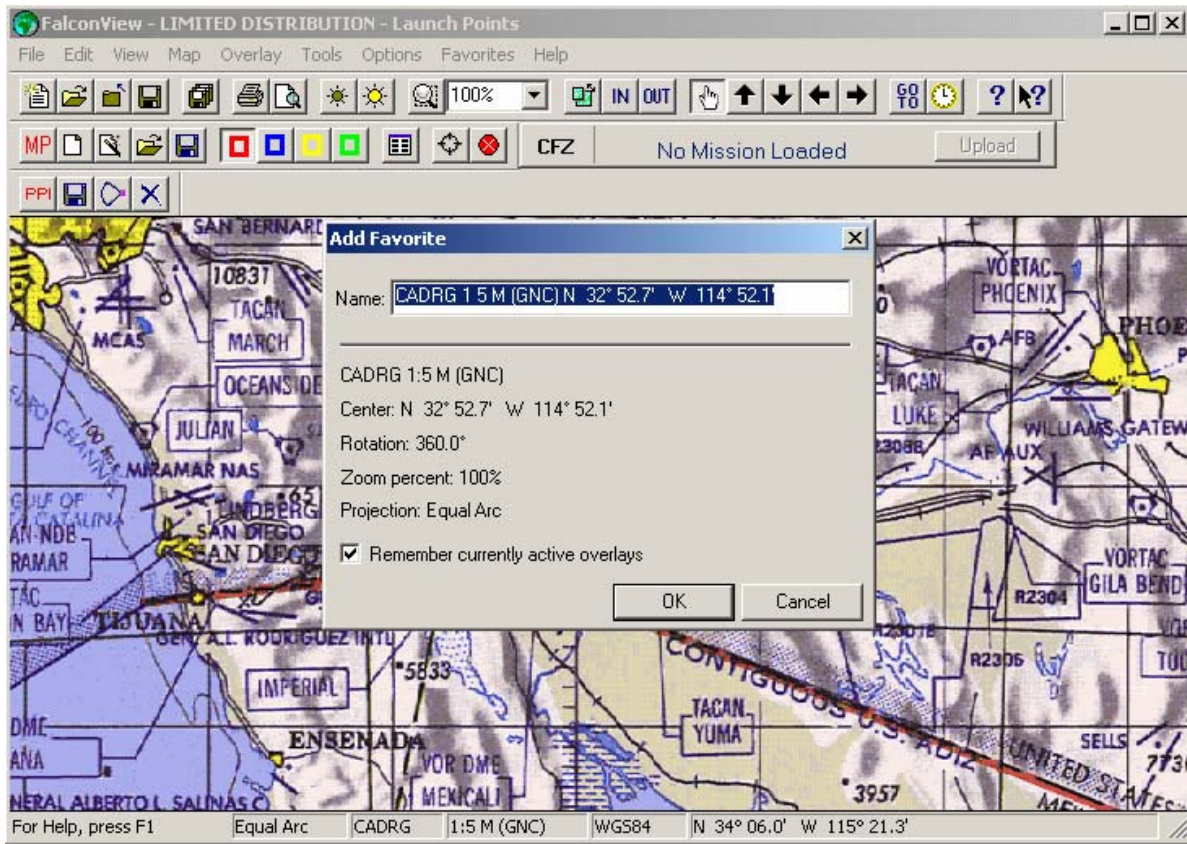

Figure 38. Favorite Default Name

The "favorite" view should be named for its location or related mission(s) (**Figure 39**). Once named, click **OK**.
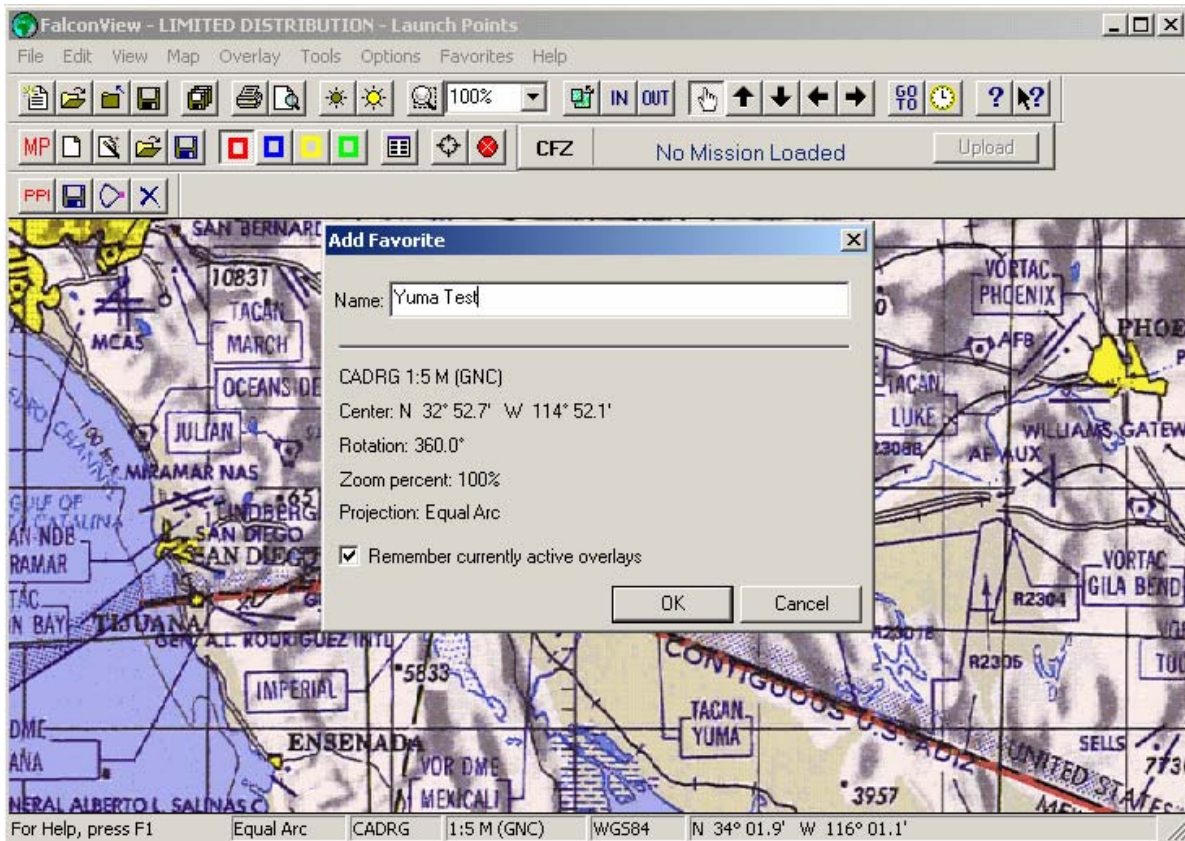

Figure 39. Favorite Name – Example Yuma Test

MISSION PLANNING PROCEDURES   **0007 00**

Once saved, the "favorite" view will appear under **Manage Favorites…** in the **Favorites** menu bar (**Figure 40**).
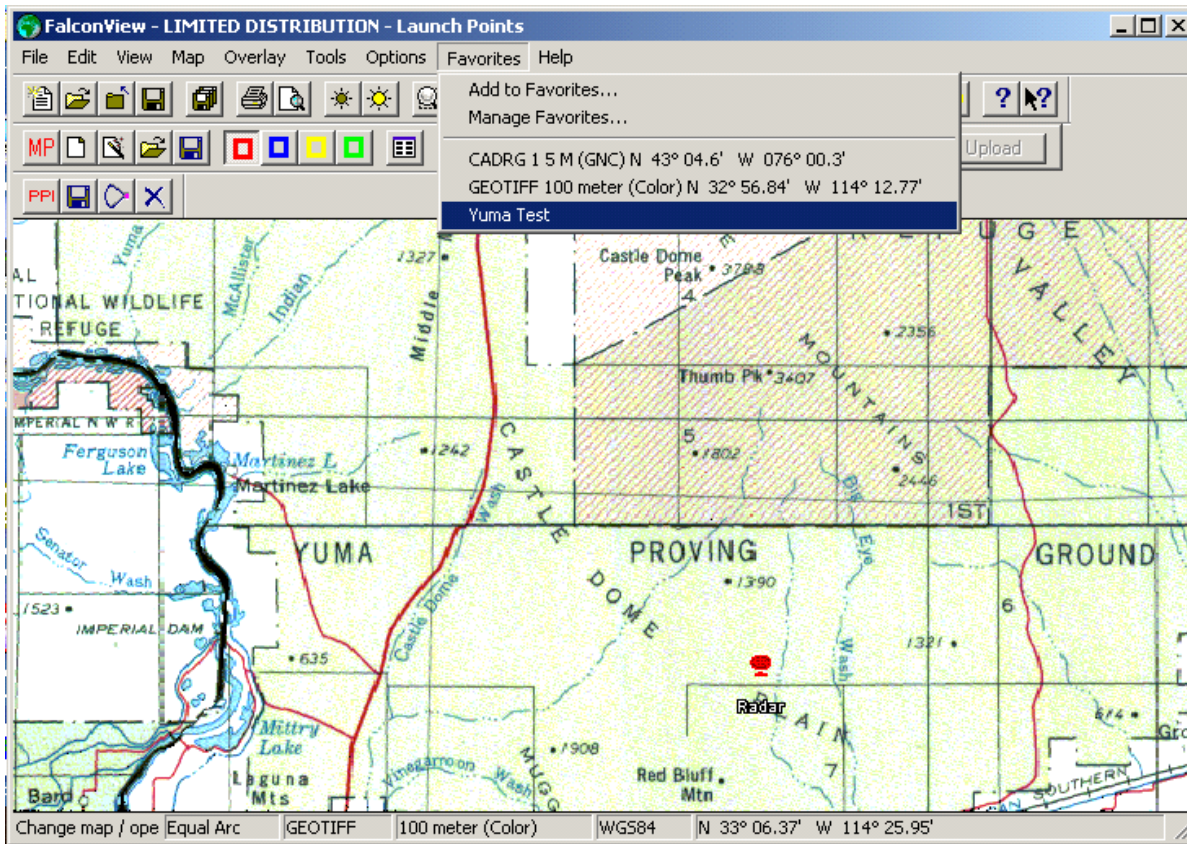

Figure 40. Mission View Added to Favorites

CREATING A MISSION

NOTE

The mission must be created and uploaded into the Radar Cylinder prior
to operation; otherwise, inaccurate LPLs/IPLS will occur.

A mission can be created using one of three methods:
- Mission Creation Wizard.
- Manually create a mission or edit an existing mission.
- Create and upload a new mission (DTED only) using Express Mission Planning.

Create a Mission using the Mission Creation Wizard

1. Click the **Mission Wizard** icon on the Mission Planning toolbar (**Figure 41**).
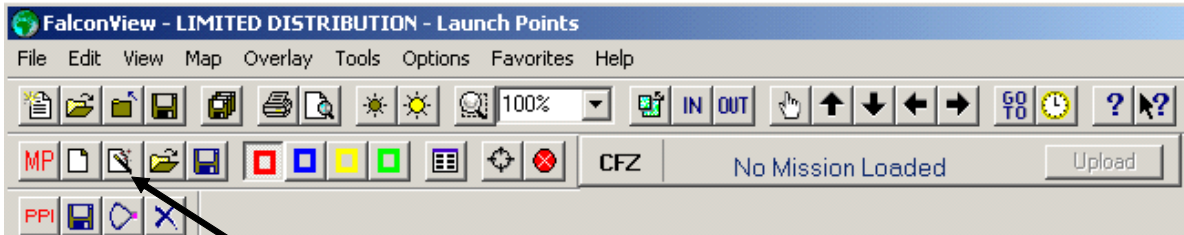
Mission Wizard Icon

Figure 41. Mission Wizard Icon

The **Mission Creation Wizard** window (**Figure 42**) appears allowing the user to define the Area of Operations. This window prompts the user for the coordinates of the center of the Area of Operations. These coordinates may be manually entered into the fields located below the **Region Center** or they may be entered automatically by clicking **Get Coordinates From Map**.

Clicking **Next** after the coordinates are entered (either manually or automatically) will allow the user to continue the Mission Planning procedure.

Based on the coordinates provided, the LCMR Radar Software will create a 50 km x 50 km Area of Tactical Operations around that central point (**Figure 43**).

The software limits placement of the LCMR to a 30 km x 30 km area within the 50 km x 50 km Area of Operations. The limits of the Area of Operations are shown as two Light Blue boxes; however, they are only be visible when the **Map Magnify** menu is decreased to approximately 25% with a map resolution of 5m. Other map resolutions require different magnification selections (**Figure 44**).
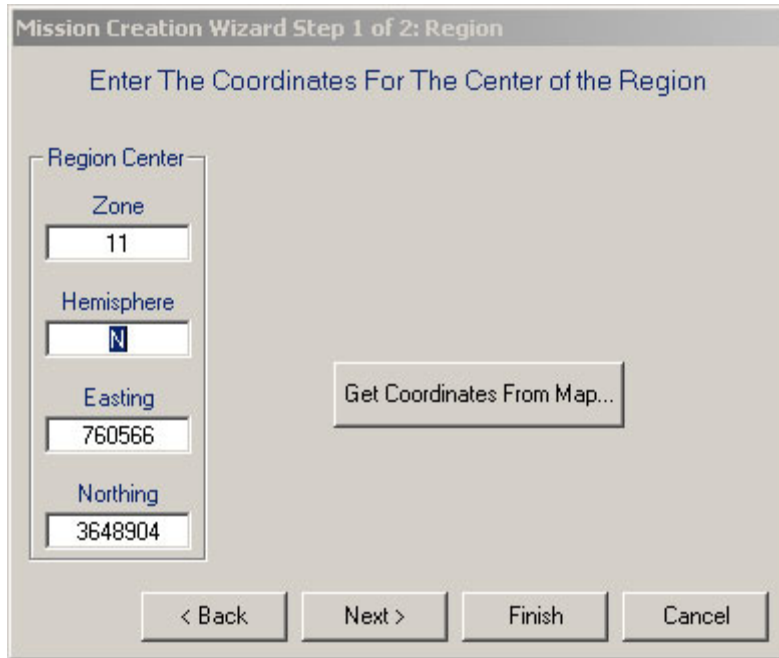
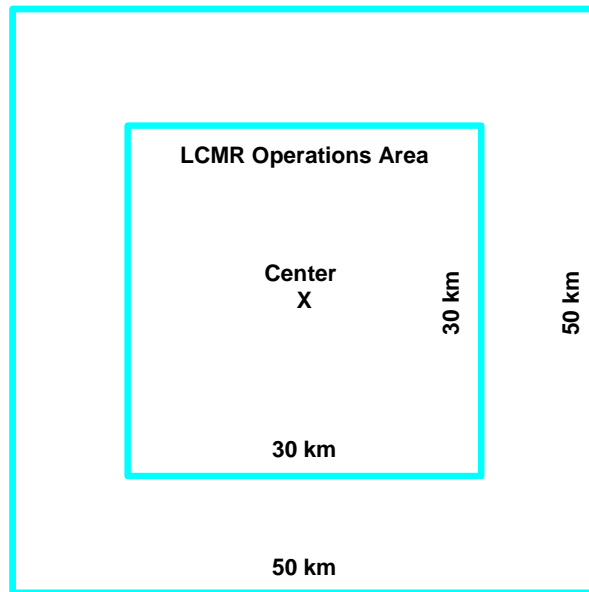**Figure 42. Entering a Region Center Using the Mission Creation Wizard**

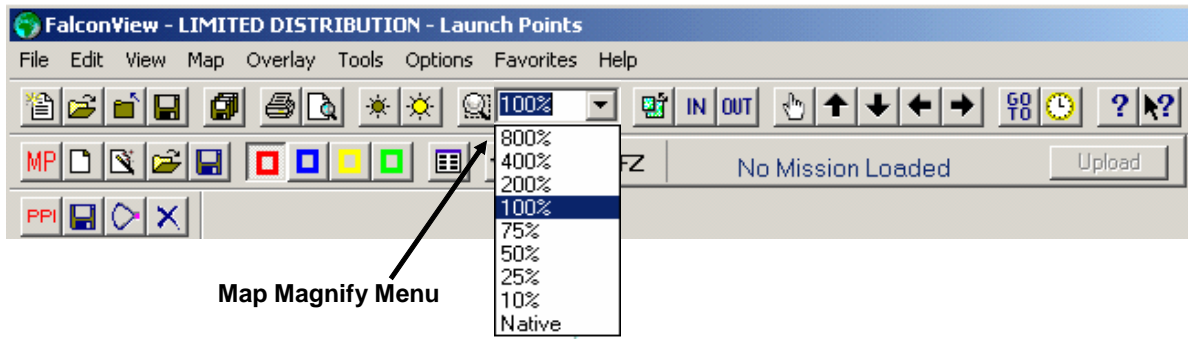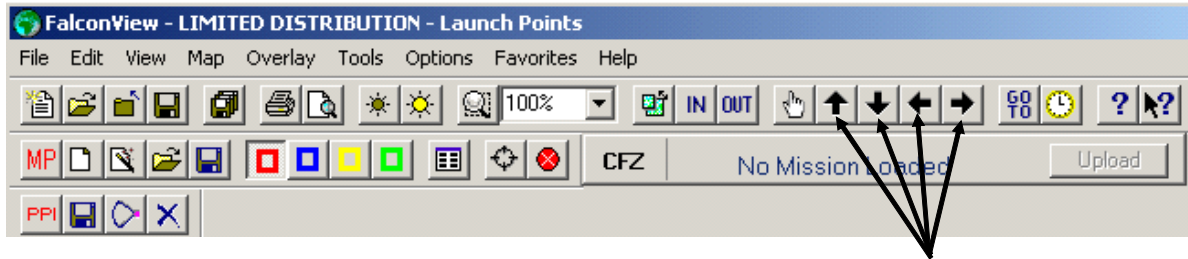**Figure 43. Definition of Tactical Operations Region**

Figure 44. Map Magnification Percentages

Positioning the Map

The black arrows (**Figure 45**) located on the top toolbar may be used to move the map Up, Down, Left, or Right.


Figure 45. Arrows to Move the Map Location

To make fine adjustments, right-click on the map and select **Center Map** in the drop-down menu.

The next window will prompt the user to enter Zones (**Figure 46**).

NOTE

> Up to 10 of each Zone type may be entered on the map, allowing for a maximum of 40 zones that may be placed in the Operations Area. If the maximum capacity is exceeded, a warning message will appear informing the user that the maximum number of Zones has been reached.
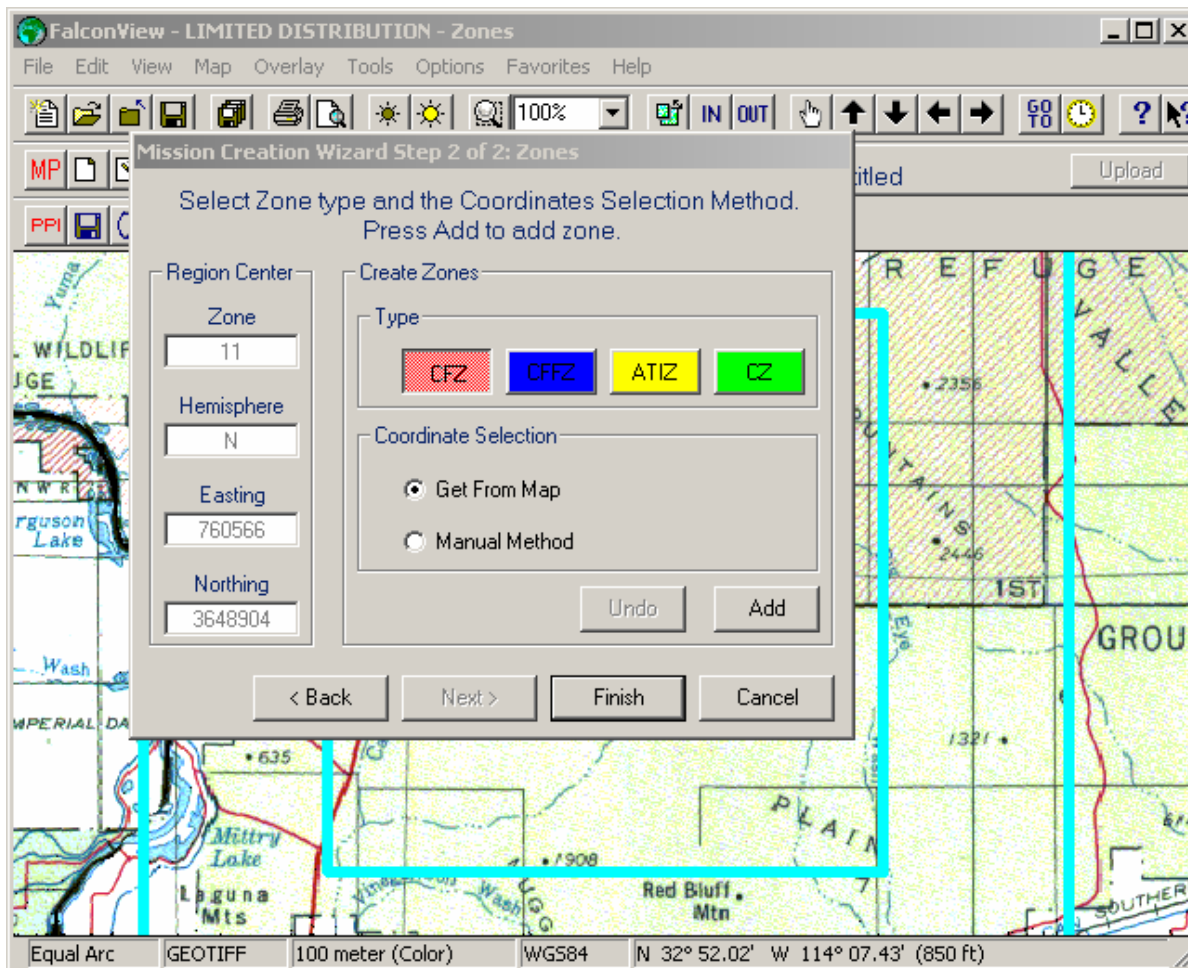
Figure 46. Entering Zones on the Map Using the Mission Creation Wizard

NOTE

> Zones may not touch one another (share grids), intersect, or be placed inside one another.
>
> A Zone can extend beyond the 30 km square, but not beyond the 50 km square.
>
> Similar type Zones can be placed along the same AZ line.

MISSION PLANNING PROCEDURES   **0007 00**

Table 1 provides the descriptions and color codes for the four Zone types that may be placed on the map.

To place a Zone on the map, click the desired **Zone Type** (one of the colored boxes in the **Mission Creation Wizard Zone Definition** window) and then click **Add** (**Figure 47**). Clicking **Add** will change the cross-hair cursor to a type cursor.

Table 1. Zone Color Codes, Acronyms, and Descriptions

| Zone Acronym and Color Code	Zone Name	Zone Description
CFZ	Critical Friendly Zone	This Zone is displayed in Red on the map. This area is usually a friendly unit or location that the commander designates as critical. It is used to protect an asset whose loss would jeopardize the mission.
CFFZ	Call For Fire Zone	This Zone is displayed in Blue on the map. This is a search area forward of the FLOT (forward line of troops) that the commander wants suppressed, neutralized, or destroyed. An area designated as a CFFZ would likely be on a suspected enemy indirect fire system.
ATIZ	Artillery Target Intelligence Zone	This Zone is displayed in Yellow on the map. This is an area in enemy territory that the commander wishes to monitor closely.
CZ	Censor Zone	This Zone is displayed in Green on the map. This is an area from which the commander wishes to ignore all target detections. A CZ may be used to ignore a friendly artillery position that, because of its aspect angle to the radar, could be detected as enemy artillery. This could occur when the FLOT is uneven or when friendly units are in enemy territory.
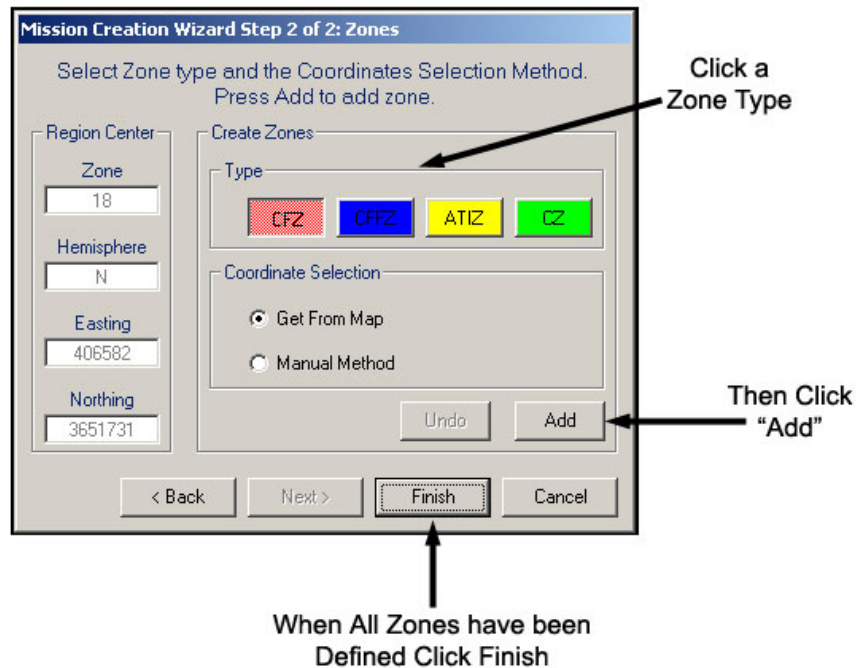
Figure 47. Mission Planning Wizard Zone Definition Dialog Box

MISSION PLANNING PROCEDURES **0007 00**

The **Mission Creation Wizard** window will disappear allowing the user to enter the points (or corners) of the Zone on the map. Each Zone may be defined by three to six points.

For example, to draw a CFZ Zone, click the **Red Box** icon (**Figure 48**) in the **Mission Creation Wizard** window, and then click **Add**. Click on the map to form corners around the desired area. The first corner will not show up until the second click is made. To form a triangle, click three corners, and then click the **Close Zone** icon located on the Mission Planner toolbar (**Figure 49**). The Zone must be created within the boundary of the Area of Tactical Operations square.
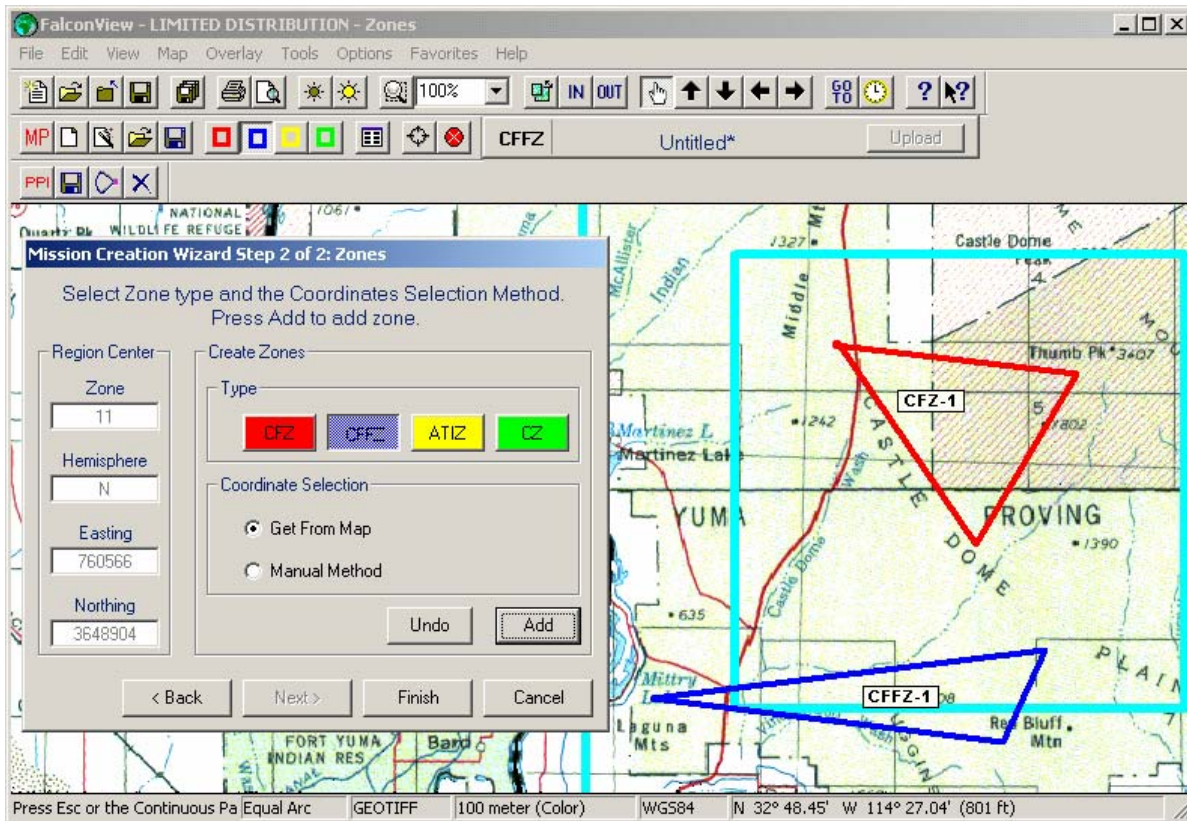

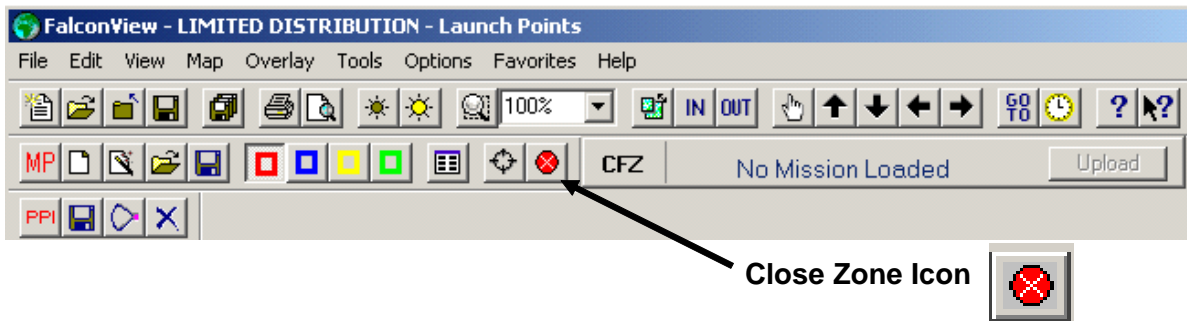**Figure 48. Drawing Zones using the Mission Creation Wizard**

Close Zone Icon

Figure 49. Close Zone Icon

Clicking **Close Zone** is used to close a Zone created with three, four, or five clicks, but on the 6th click, the Zone will automatically close.

Each time a different Zone type needs to be added, click the desired **Zone Type** in the **Mission Creation Wizard** window and then click **Add**. Click on the map to draw the Zone (**Figure 48**). If the same Zone type as the previous Zone needs to be added to the map, click **Add**, and then click on the map. (The Zone type does not need to be selected again.)

Zones can be precisely placed by watching the map coordinates in the lower right corner of the window as the mouse rolls over the map. When the exact coordinates appear, the user must click on the map to add that corner.

After the Zone has been completed, or when **Close Zone** is clicked, the **Mission Creation Wizard** window will appear allowing the user to add another Zone.

When all Zones have been placed, click **Finish**. The **Mission Creation Wizard** window will close. Mission Planning is now complete.

Manual Mission Planning (Without the "Mission Creation Wizard")

Mission Planning can also be performed manually without using the Mission Creation Wizard by clicking the **Zone** icons located on the Mission Planning toolbar.

To start Mission Planning manually, click the **Create New Mission** icon on the Mission Planning toolbar (**Figure 50**).
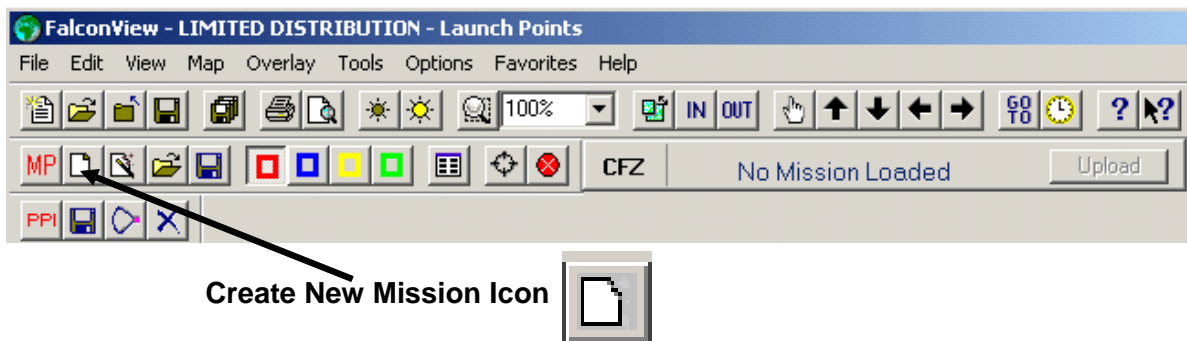

Create New Mission Icon

Figure 50. Create New Mission Icon

The **Mission Region Center** window will appear (**Figure 51**) prompting the user to select a **Mission Region Center**. The Center of the Region can be entered as coordinates, or by clicking **Read From Map** so the coordinates may be obtained by clicking on the map.

NOTE

> Clicking Apply may be used to test the position of the Operations Area before clicking OK to enter it. A map magnification of 10% may be required to see the Light Blue lines on the map, with a map resolution of 5m. Other map resolutions will require different zoom selections. Clicking Cancel will cancel the Mission Region Center window and delete all selections made up to this point. Click Create New Mission to start over.
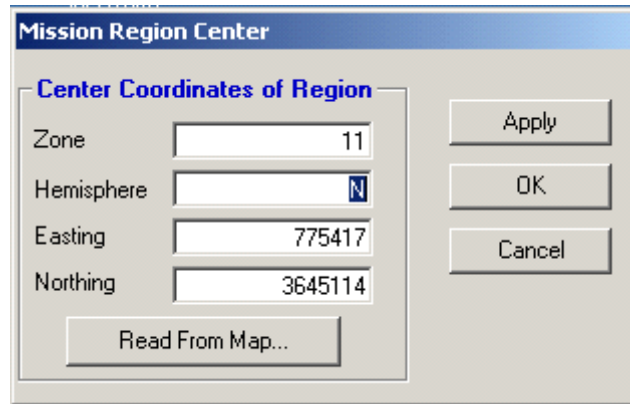
Figure 51. Select a Region Center

To enter the coordinates using the Read From Map feature:

1. Click **Read From Map**. The **Mission Region Center** window will disappear when OK is selected.

2. Click the cursor on the **Region Center** on the map

3. The **Mission Region Center** window will re-appear.

4. If the Region is correct, click **OK**. If the Region is not correct, repeat Steps 1-3 until the correct Region appears, then click **OK**.

5. The Region of Operations is now defined.

To enter the coordinates manually:

1. Enter the **Zone**, **Hemisphere**, **Easting**, and **Northing** Coordinates in the **Mission Region Center** window.

2. To check the Center coordinates, click **Apply**. The Region will be shown on the map. This may require the field of view percentage to be "magnified out". Usually, a 10% map magnification will show the Region.

3. If the Region is incorrect, repeat Steps 1 and 2 until the Region of Operations is correct.

4. Click **OK** to accept the coordinates and exit the **Mission Region Center** window.

The mission Region is defined as a 50 km x 50 km Area of Tactical Operations. The LCMR Radar software limits placement of the LCMR to a 30 km x 30 km area within the 50 km x 50 km Area of Operations. Two Light Blue boxes (**Figure 52**) are used to the display the limits of the Area of Operations. These boxes may only be visible when the map magnification is decreased to approximately 25% with a map resolution of 5m. Other map resolutions will require different zoom selections.
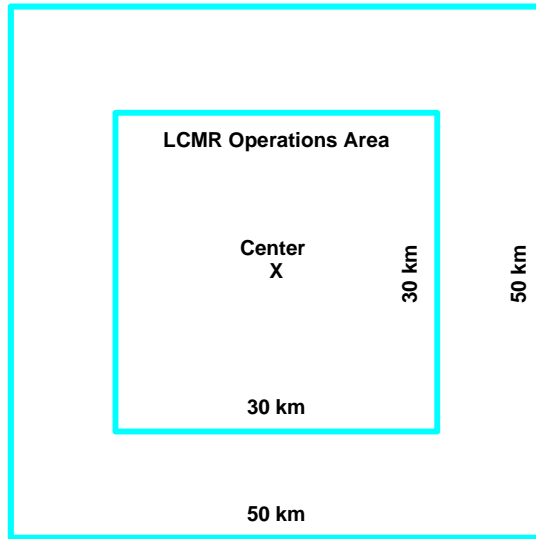
Figure 52. Definition of Tactical Operations Region

When creating a mission manually, the Zones are added by clicking the **Zone** icons located on the Mission Planning toolbar (**Figure 53**). There are four possible Zone types, as described in **Table 1**. Each Zone is color-coded and has an acronym assigned to it. The **Add Zone** icon must be clicked before adding Zones on the map, and the **Close Zone** icon must be clicked to close the last side of the Zone on the map.

Anywhere from three to six corners can be used to define a Zone. To form a triangle, click three of the corners, then click **Close Zone** to close the last side of the Zone. Click **Close Zone** to close a Zone for three, four, or five clicks; on the 6th click, the Zone automatically closes.
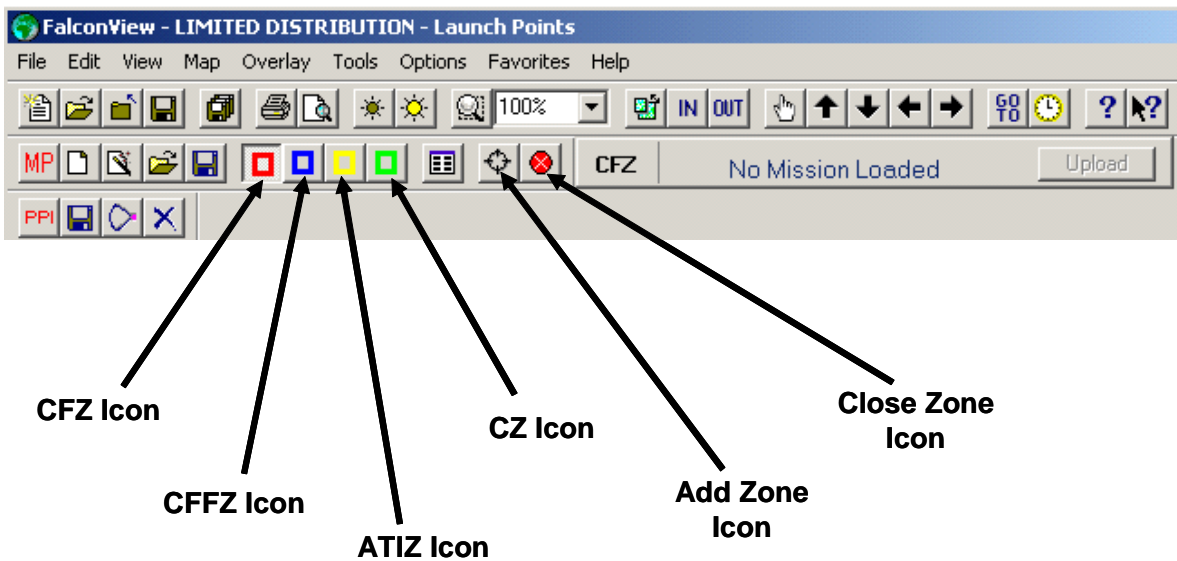
Figure 53. Zone Icons

**To enter a Zone on the map using the mouse:**

1. Click the desired **Zone** icon on the Mission Planner toolbar.

2. Click **Add Zone**.

3. Click three to six locations on the map to define a Zone area.

4. Click **Close Zone** to close the last side of a Zone.

5. If the same Zone type is to be added, click **Add Zone** to add another.

6. If a different Zone type is to be added, start back at Step 1.

Manual Zone Entry

Zones can be entered manually when all corner points are known in UTM coordinates. Any of the four Zone types can be entered in this manner, and only the Zones that have not been assigned will be able to be added.

For example, to add a CZ-2 Zone:

1. Click the icon for the desired Zone on the Mission Planning toolbar. For this example, click **CZ Zone**.

2. Click the **Manual Zone Entry** icon on the Mission Planning toolbar (**Figure 54**).

Manual Zone Entry Icon
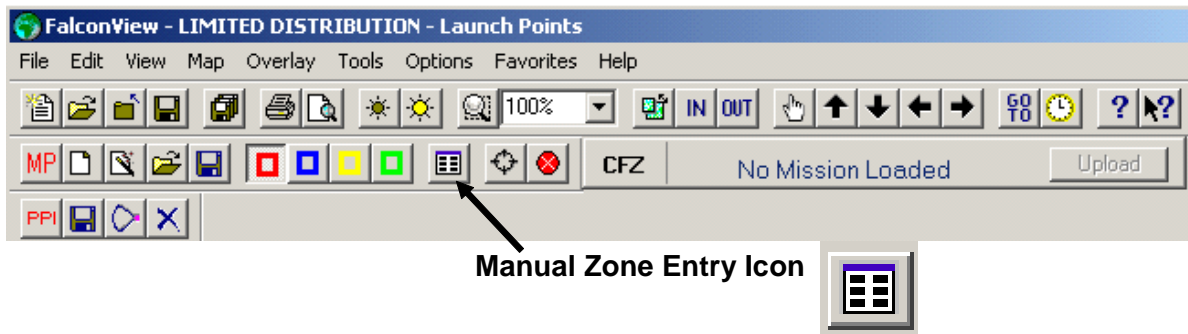
Figure 54. Manual Zone Entry Icon

3. The **Add Zone – Manual Entry** window will appear (**Figure 55**).

4. The Zone name will be displayed in the upper right corner of the window, ("CZ "for this example) and the drop-down box can be used to select the desired Zone number.

5. The Zone End Points must be entered in sequence from 1 to 6.

Figure 55. Manual Zone Entry Window

6. Click the **Easting** or **Northing** value to enter the value, and then hit the **ENTER** key. The cursor will jump to the next value to be entered.

7. Enter the next value, hit the **ENTER** key, and repeat.

8. When all desired points have been entered, click **Apply** to view the proposed Zone placement (**Figure 56**).

NOTE

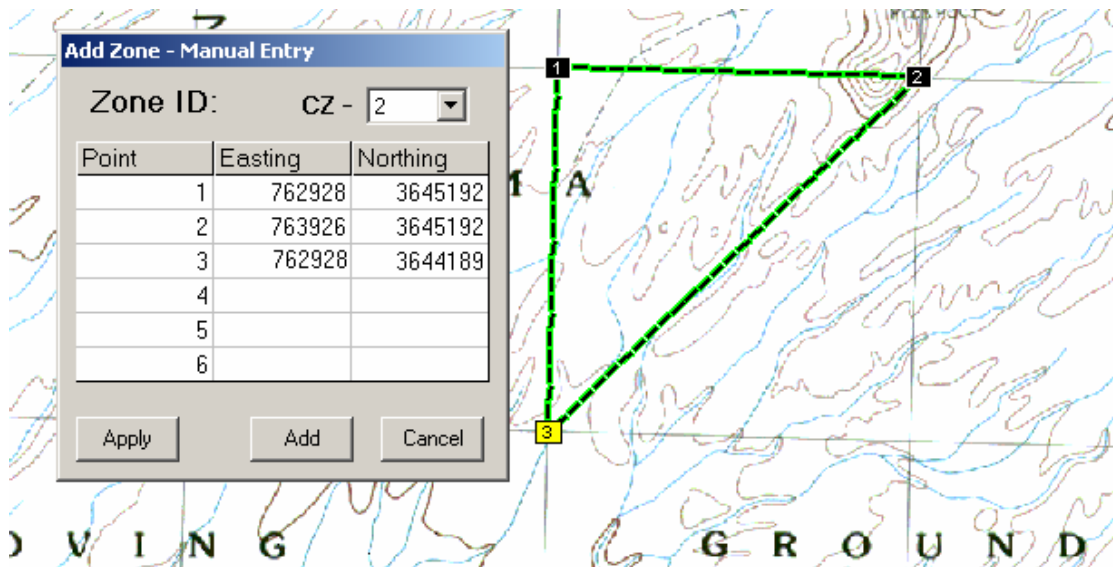Zones CANNOT be entered manually when the Mission Creation Wizard window is active.

Figure 56. Manual Zone Entry Apply Button

9. Clicking **Add** will cause the **Add Zone – Manual Entry** window to disappear, and the defined Zone will be placed on the map.

10. To place more Zones, repeat the manual entry procedure starting at Step 1.

SAVING A MISSION

When Mission Planning is completed, the mission must be saved to a file before it can be "uploaded" to the Radar. Click the **Save** icon on the Mission Planner toolbar to save the Mission to a file (**Figure 57**).
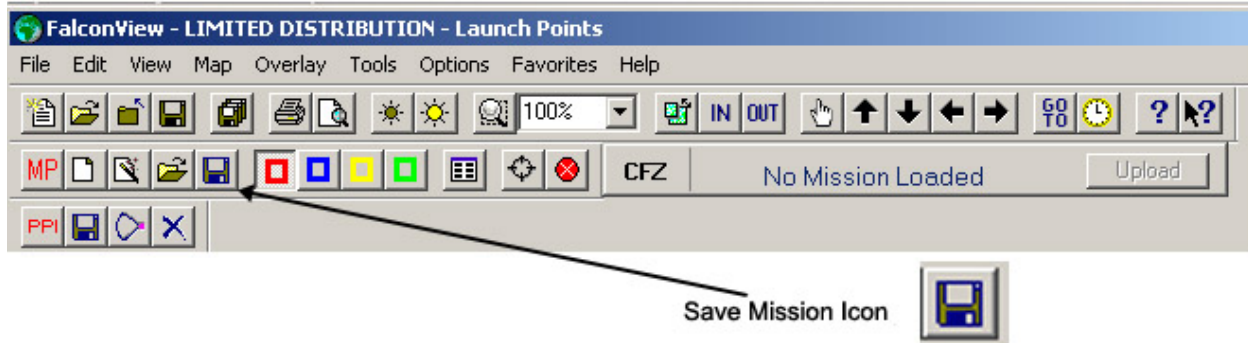

Figure 57. Save Mission Icon

The **New Mission File** window will appear (**Figure 58**). The **Save in** drop-down list is used to select the directory where the Mission Plan should be saved. In this example, the file is saved in the c:/mission directory. However, the user may decide to create other folders for specific operations.

Click the **File Name:** field and type the desired name of the Mission Plan.

Click **Save** to save the mission file to the directory previously specified in the **Save in:** drop-down box.
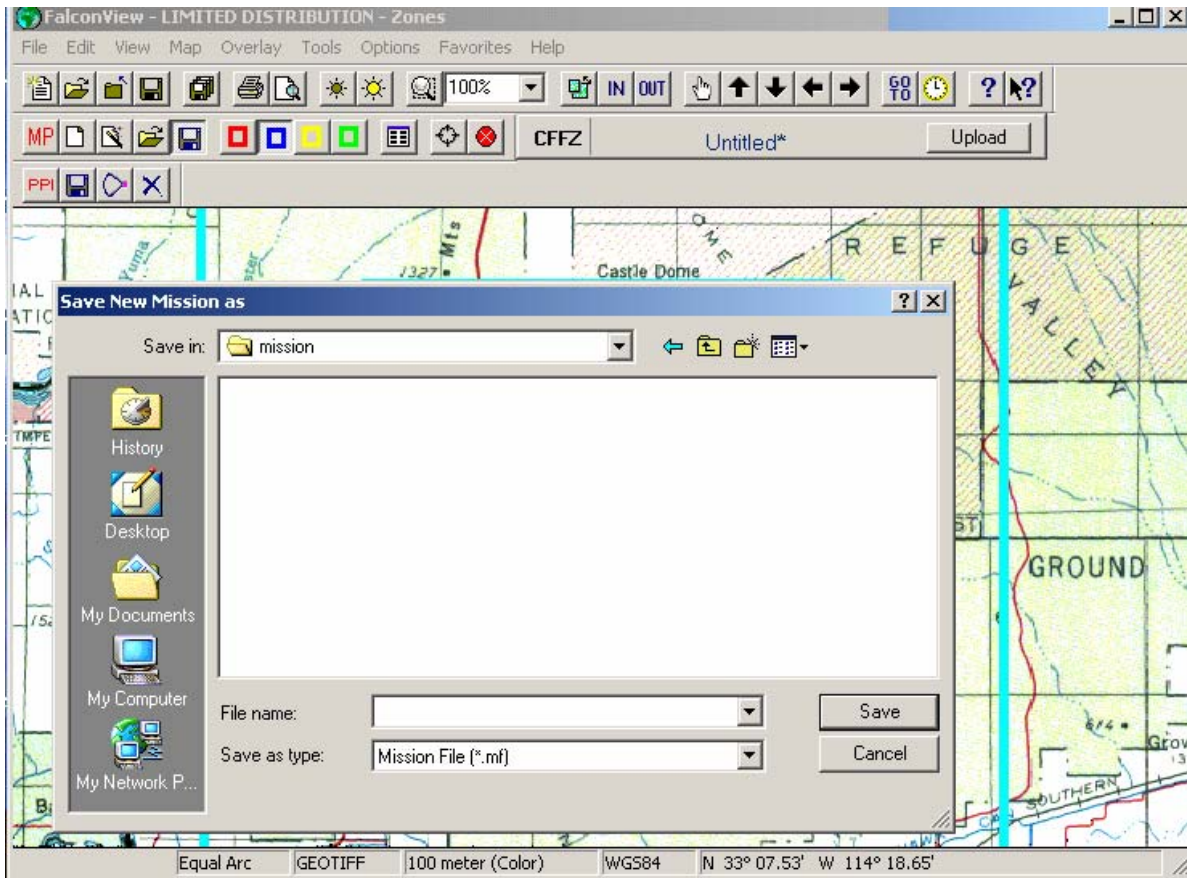
Figure 58. Save New Mission to a File

If the map used has no DTED data, a message box will appear indicating that no DTED data was found (**Figure 59**). If this window appears, acknowledge it by clicking **OK**.

If this window appears, the user should close the LCMR Radar software and load the DTED data for the Area of Operations. The LCMR will not identify the LPLs correctly if the elevation corrections are not made based on the DTED data.
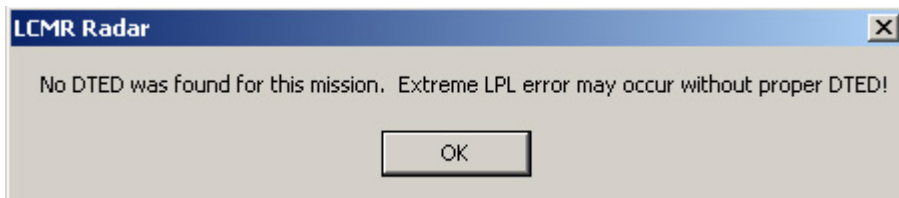
Figure 59. Save Mission Plan with No DTED Data

MISSION PLANNING PROCEDURES 0007 00

Mission File Name in Mission Planner Toolbar

The Mission file name is shown on the Mission Planner toolbar and can be used to indicate the state of the Mission Planning session.

1. The Mission file name will indicate **No Mission Loaded** when Mission Planning has not been started, and no Mission Planning file has been opened (**Figure 60**).

Figure 60. Mission Name is "No Mission Loaded"

2. The Mission file name will indicate **Untitled** when no Area of Operations center has been defined (**Figure 61**).

Figure 61. Mission Name is "Untitled", Without a Star (*)

3. The Mission file name will indicate **Untitled*** when a mission Operation Area Center has been defined, but the Mission Planning session has not been saved to disk. The Mission Zones can still be added, deleted, or edited before it is saved to disk (**Figure 62**).

Figure 62. Mission Name is "Untitled*", with a Star (*)

4. For this example, the Mission File is named m1. The file name will not include a star (*) when the Mission Planning file has been loaded, and has not been modified (**Figure 63**).

Figure 63. Mission Name Loaded into the Mission Planner
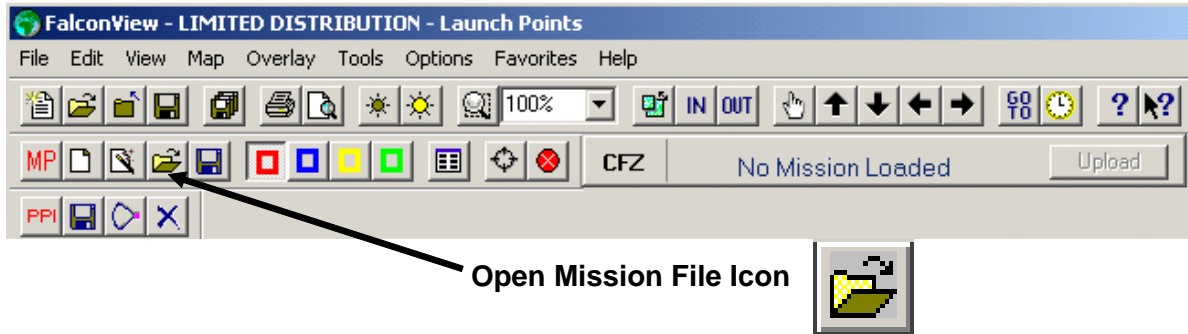
5. The Mission File Name will have a star (*) after it, if a Zone has been added, deleted, or edited after the file was loaded (**Figure 64**).

**Figure 64. Mission Name with a Star (*)**

OPENING AN EXISTING MISSION

To open an existing Mission Planning file, click the **Open File** icon (**Figure 65**).

Open Mission File Icon

Figure 65. Open a Mission Planning File

If a **Save Mission** window appears (**Figure 66**), there is a Mission Plan in progress. Click **Yes** to save the mission that is currently in progress. To close the current mission without saving any changes, click **No**.
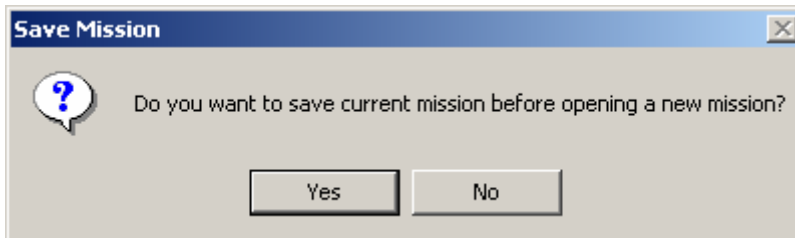
Figure 66. "Save Mission" Window

If **Yes** was selected in the **Save Mission** window, the **Open** window will appear (**Figure 67**).
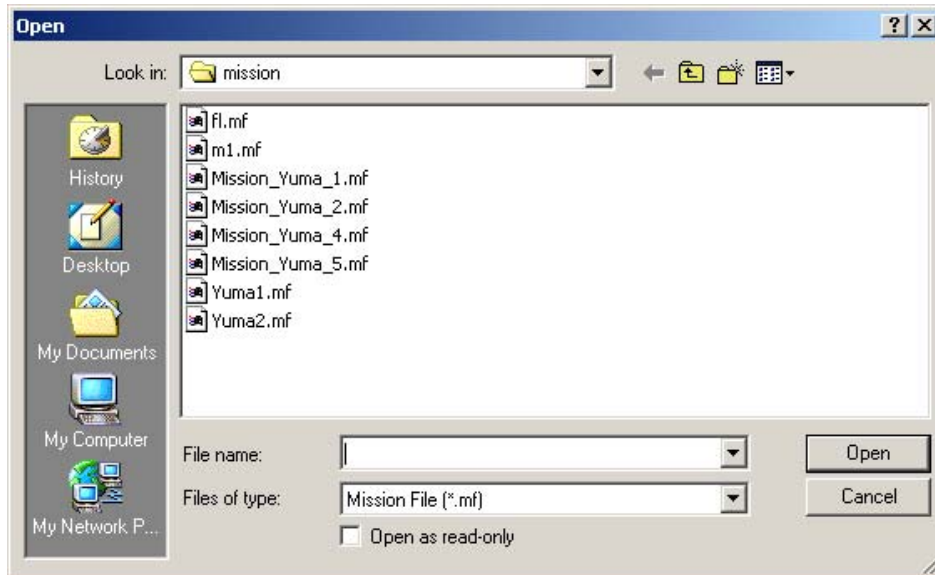
Figure 67. File "Open" Window

MISSION PLANNING PROCEDURES **0007 00**

The **Look in:** dropdown list can be used to locate the directory where the Mission Planning files are stored. Mission Planning files will have an ".mf" extension. The c:\mission directory is the default directory.

All available Mission Planning files will appear in the **Look in:** drop-down list.

There are three ways a file can be opened:

- Double left-click on the file in the list.

- Click on the file in the list, and it will appear in the **File name:** dialog box. Then click **Open**.

- Type the file name into the **File name** box, and then click **Open**.

Either way, the **Open** window will disappear, and the Mission Plan, its Area of Operations, and its Zones will be shown on the map.

MISSION PLANNING PROCEDURES **0007 00**

MISSION EDITING

Editing Existing Zones

Any Zone on the map can be deleted and redrawn if changes need to be made to it. However, small changes in Zone boundaries can be done manually and accurately as follows:

1. On the map, click on the Zone boundary or on the Zone name. When the Zone is selected, the cursor will change from a target symbol to an arrow symbol.
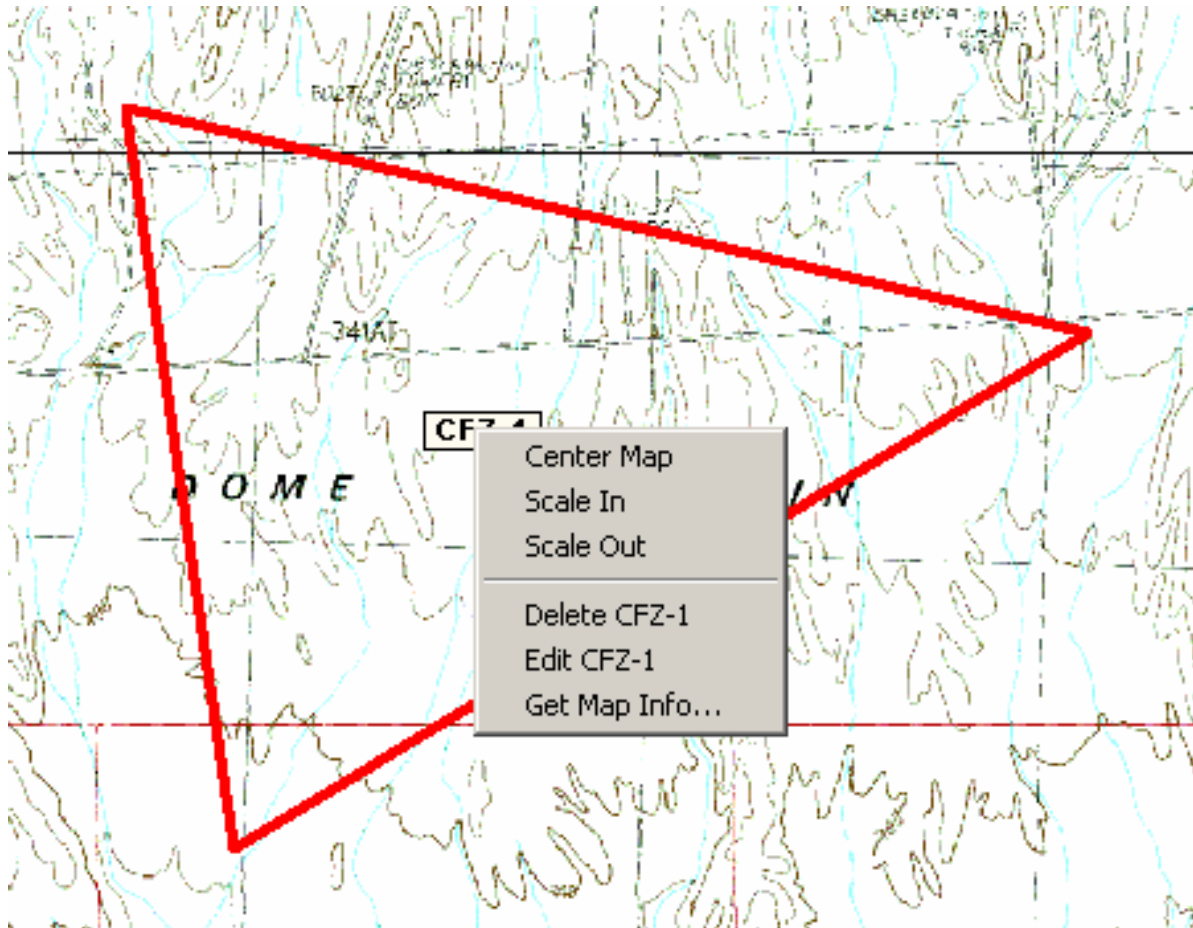
2. Right-click to bring up the drop-down menu shown in **Figure 68**.

Figure 68. To Edit a Zone, Select "Edit CFZ-1"

3. Select **Edit CFZ-1** in the drop-down menu to access the **Edit Zone – Manual Entry** window (**Figure 69**).
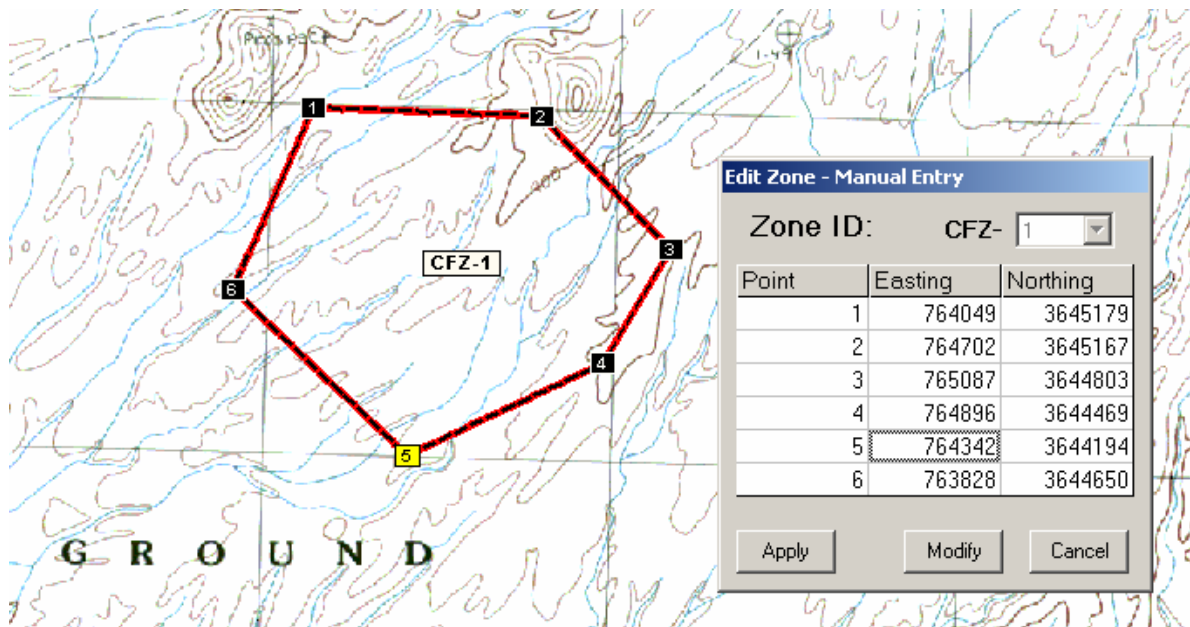
Figure 69. The "Edit Zone – Manual Entry" Window

4. Double left-click on the desired portion of the coordinate to change **Easting** or **Northing** (the number will be highlighted on the map as illustrated in **Figure 70**).
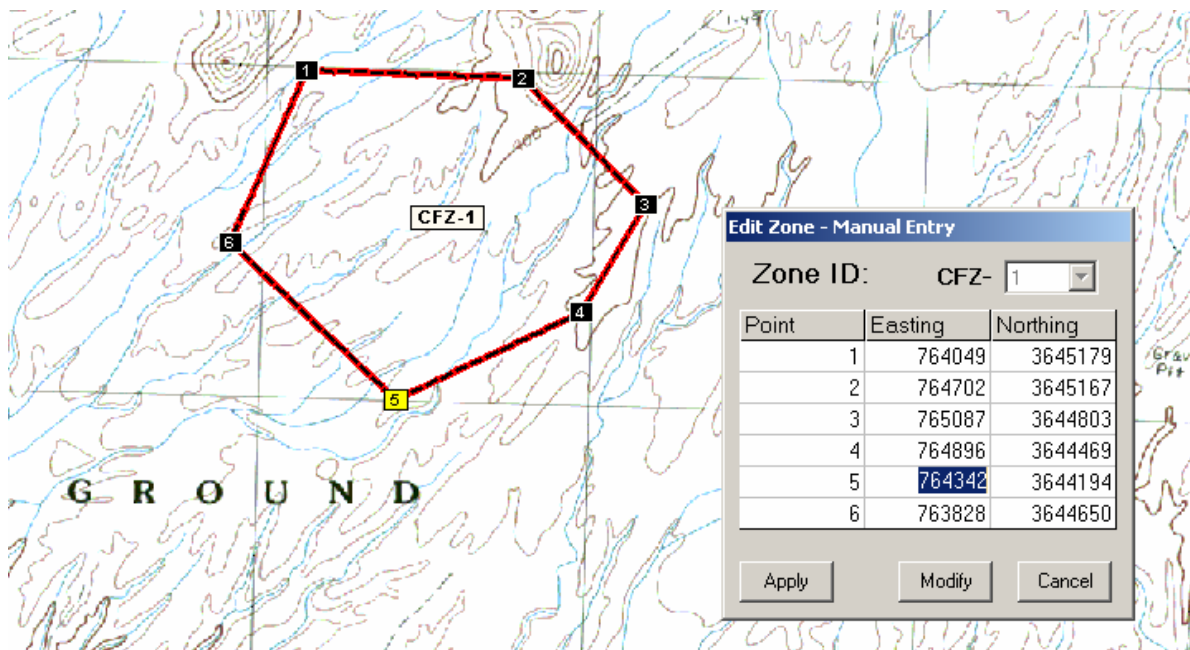

Figure 70. Double-Click on Coordinate to Change

5. This will allow the number to be retyped. If a single value is to be changed in the coordinate number, click twice next to the number. The **BACKSPACE** or **DELETE** key can be used to change one digit of the number.

6. After changing the entry, hit the **ENTER** key to incorporate the change into the mission.

7. When completed, click **Modify** to make the window disappear.

8. To view the effect the change may have on the Zone boundaries, click **Apply**. The proposed change to the Zone will be shown in dotted lines, as shown in **Figure 71**. The Zone will not be changed until **Modify** is clicked. The endpoint is shown at the new location with dotted lines showing the connection to the other corner points. All values may be modified repeatedly and changes viewed before clicking **Modify** and implementing the Zone boundaries.
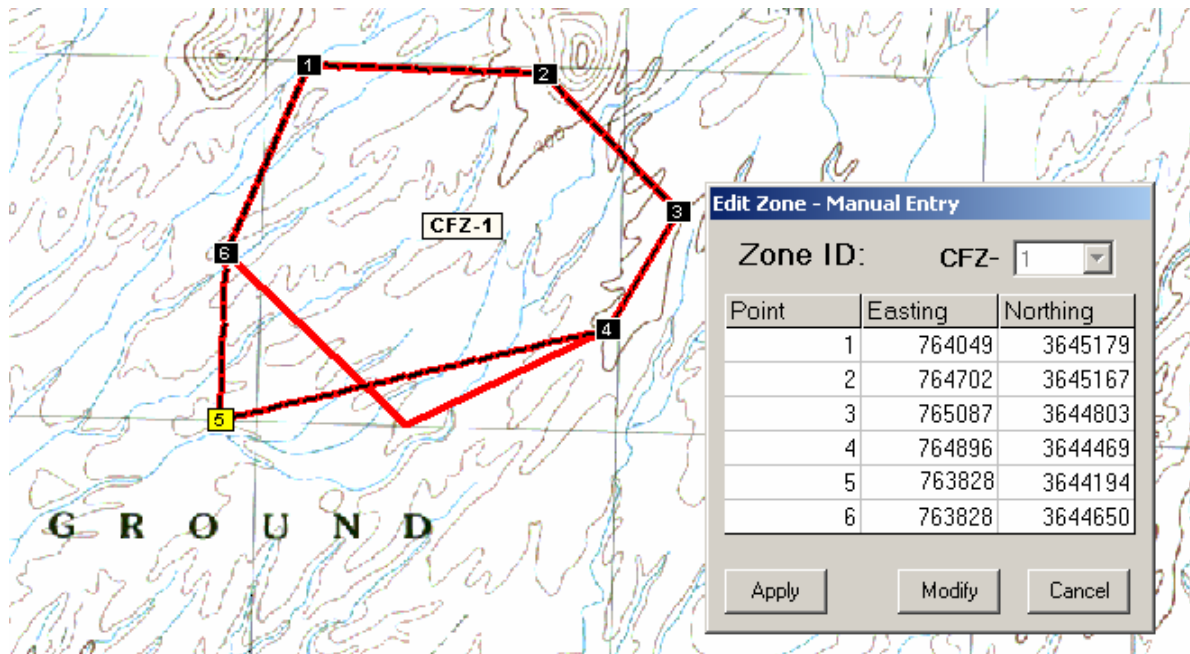
Figure 71. Apply Change to the Zone Area

9. When all changes are completed, click **Modify**. However, if more changes are required, return to Step 5.

10. Click **Modify** to exit this window, and enter the Zone on the map. Clicking **Cancel** will cancel any changes made to this Zone, and return the Zone to its previous shape.

Deleting Zones

A Zone can be deleted by right-clicking over any side of the Zone or the Zone name to be deleted. The cursor will change from a target symbol to an arrow symbol.

When the arrow symbol appears, right-click and the menu selection to delete a Zone will appear (**Figure 72**). Select **Delete CFZ-1** in the drop-down menu to delete the Zone. The menu window and the Zone will disappear.

NOTE

This method to delete a Zone will ONLY work when the Mission Creation Wizard is NOT being used to add Zones. If the Mission Creation Wizard is being used, click Undo to delete or undo a Zone.
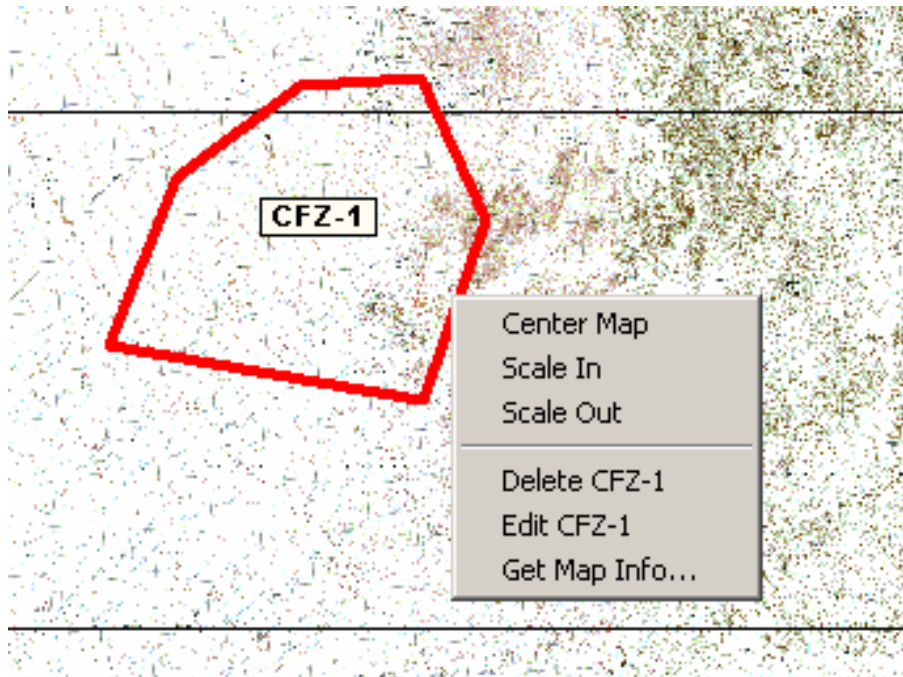
Figure 72. Right-Click to Delete a Zone

MISSION PLANNING PROCEDURES 0007 00
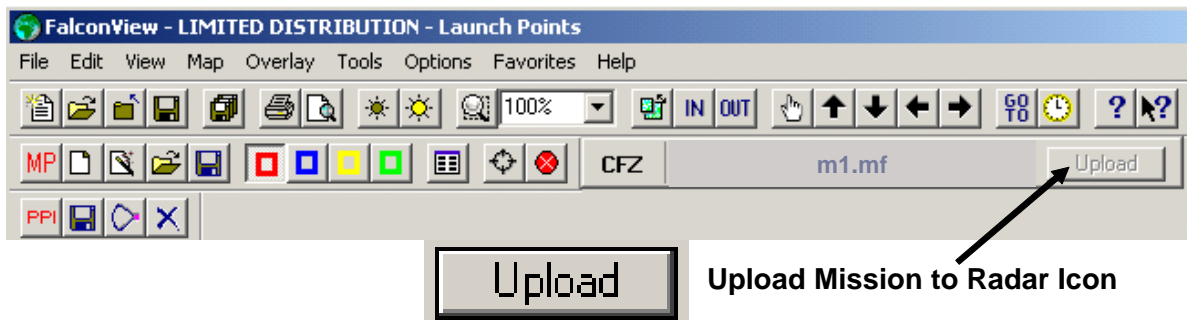
UPLOADING A MISSION TO THE RADAR

If the mission has been saved with its corresponding DTED data, the Mission may be uploaded to the Radar. To send the mission to the Radar, click **Upload** (located on the far right side of the Mission Planner toolbar) (**Figure 73**).

<u>CAUTION</u>

The user MUST wait until the "Upload Complete" dialog box appears. Disconnecting, or turning off the Radar or the Laptop prior to the completion of the mission upload will create a corrupted DTED file that will prevent the radar from operating.

NOTE

Only the DTED data for the 50 km x 50 km Area of Operations is sent and stored on the Radar. The GeoTiff data is NOT sent to the Radar.

Upload Mission to Radar Icon

Figure 73. Upload Mission Icon

When the data is uploaded to the Radar, it may take up to 30 seconds before the **Uploading Mission Files** window may appear (**Figure 74**). Or, depending on the speed of the transfer, the **Uploading Mission Files** window may come and go too quickly to be seen if no DTED data exists.

Acknowledge the **Upload Complete** window by clicking **OK**.

Cycle power to the Cylinder so the selected mission is loaded onto the Cylinder.

The mission is now in the Radar and the LCMR is ready for use.
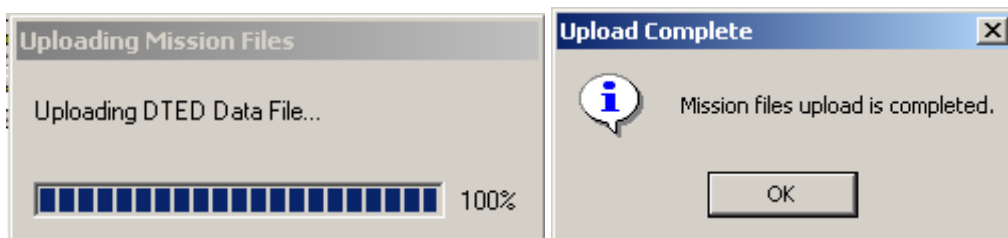
Figure 74. **DTED Data Loaded to the Radar**

NOTE

Once mission upload is completed, the Cylinder power must be cycled to make newly created mission active.

To exit the LCMR Radar Software, click the "**X**" in the upper right corner of the R-PDA GUI, or click **Menu** and select **Exit** (**Figure 75**).
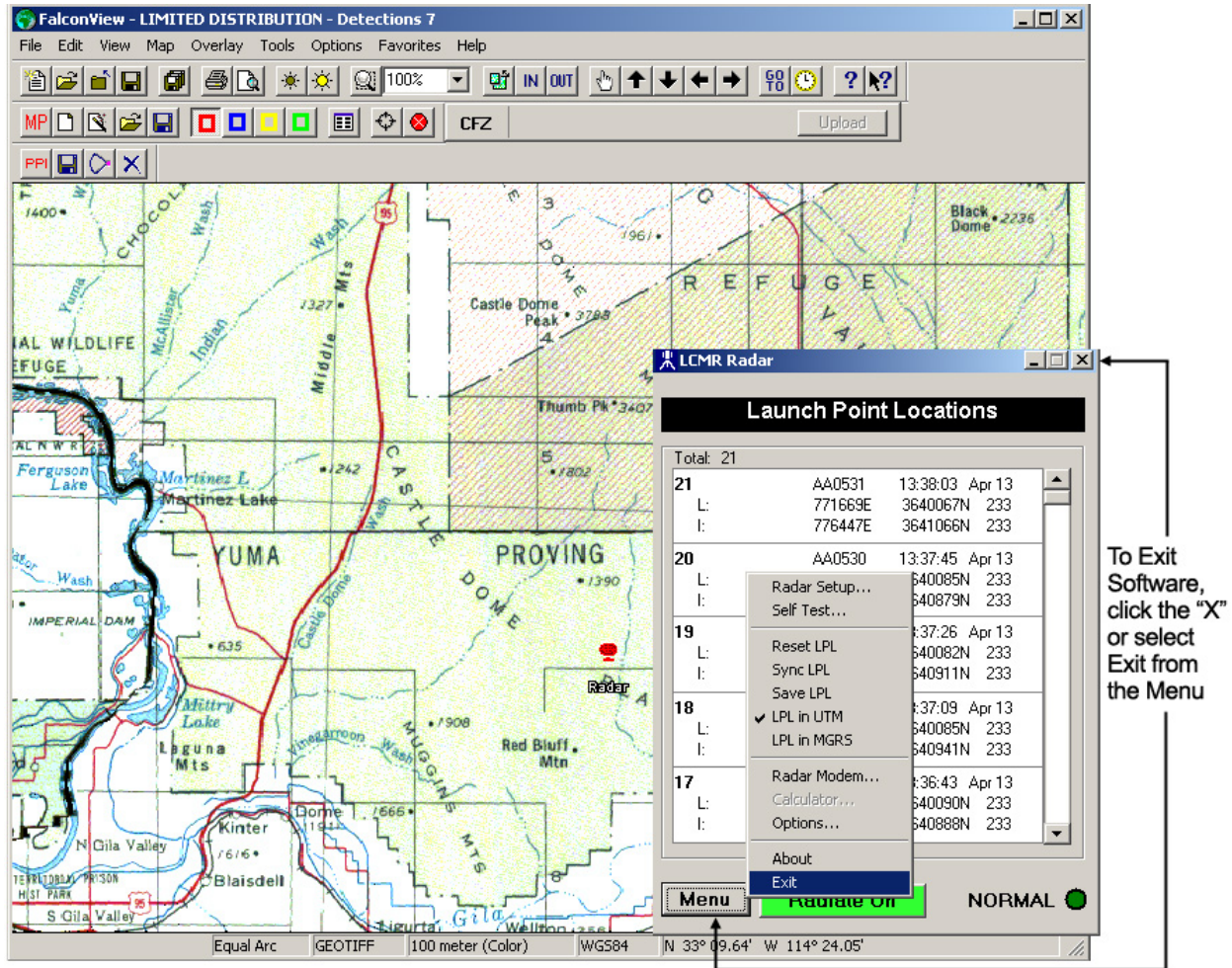

Figure 75. Exit LCMR Radar Software

SETTING RADAR RADIO MODEM CHANNEL

The communication link between the Radar and the R-PDA can be set to one of seven channels (0, 1, 2, 3, 4, 5, or 6). Each Radar Cylinder and R-PDA pair are initially programmed to the same channel in the factory. However, on occasion it may be necessary to set the Radio Modem in the Radar Cylinder to a different channel if the R-PDA has been damaged or a different R-PDA is being used.

The Radar Radio Modem Channel may be changed using one of two methods:

- R-PDA GUI on the Laptop (in the Mission Planning and Operation mode)
- Express Mission Planning mode (Refer to the "Express Mission Planning" section within this WP).

NOTE

The Ethernet Cable must be connected to the Laptop and Cylinder prior to changing the Radar Radio Modem Channel.

NOTE

The Radar power must be recycled after changing or resetting the Radar Radio Modem Channel.

To change the Radar Radio Modem Channel using the R-PDA GUI:

1. Click **Menu** on the R-PDA GUI and select **Radar Modem** (**Figure 76**). A progress window will briefly appear indicating **Connecting to Radar** and **Getting Current Modem Channel**.
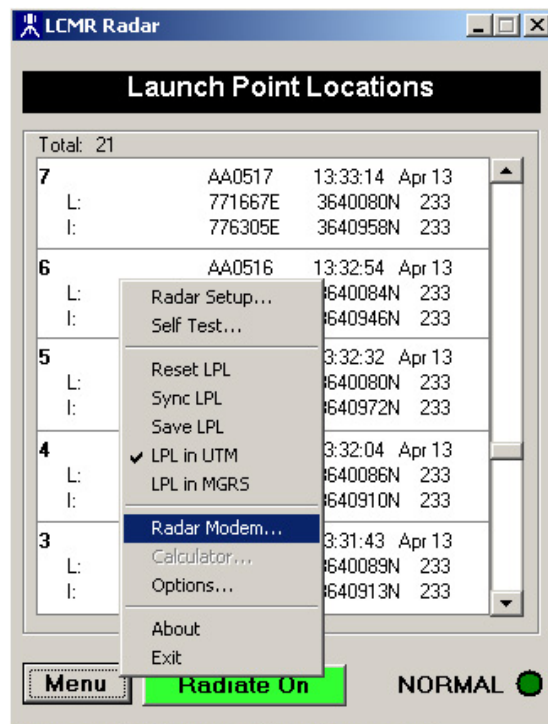

Figure 76. Radar Modem on R-PDA GUI

2. In the **Radar Radio Modem Channel Number** window, click the **New:** drop-down list and select the desired modem channel (**Figure 77**).

3. Click **Change**.
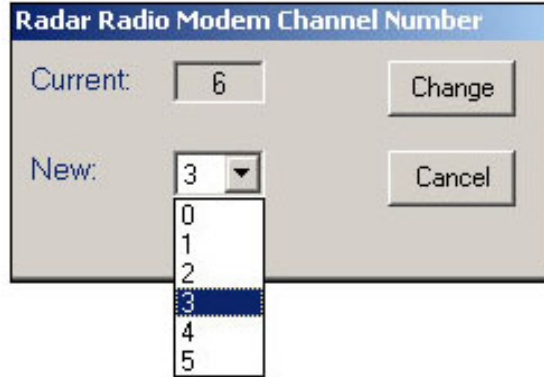
Figure 77. Radar Radio Modem Channel Number

4. Click **Yes** at the **Reconfigure Radar's Radio Modem** prompt (**Figure 78**) to change the Radar Modem Channel, click **Yes** to accept the new channel; click **No** to cancel and keep the previous channel.
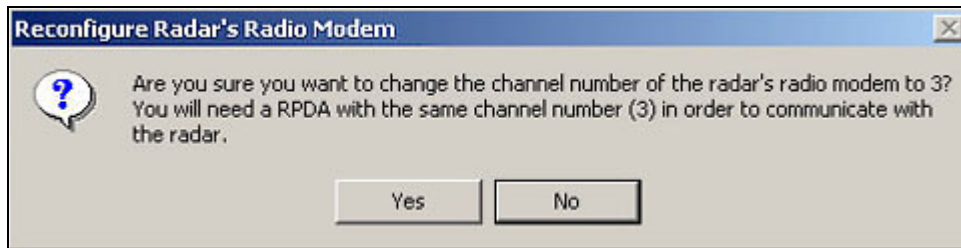
Figure 78. Reconfigure Radar's Radio Modem Prompt

5. An **Upload Complete** window (**Figure 79**) will appear to inform the user that the new radio modem setting has been uploaded and prompt the user to recycle the Radar power.
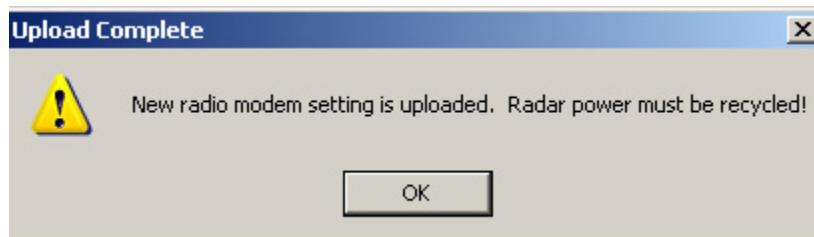
Figure 79. Radio Modem Setting Uploaded

EXITING LCMR RADAR SOFTWARE

When performing mission planning, the R-PDA GUI must be used to exit the LCMR Radar Software. Click **Menu** and select **Exit**, or click the "**X**" in the upper right corner of the R-PDA GUI (**Figure 80**)**.**

    1.   Click **Exit** in the **Exit Program** window (**Figure 81**).

NOTE

> When performing mission planning using Express Mission Planning, the LCMR Radar Software will automatically close after performing the selected task.
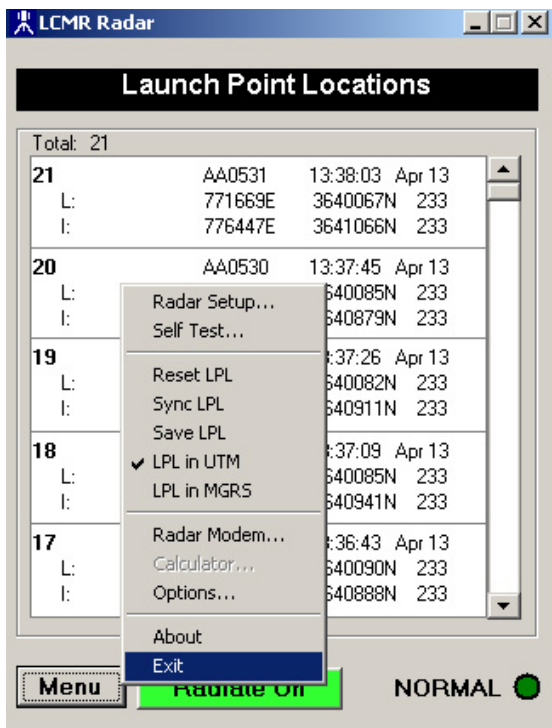

Figure 80. Exiting LCMR Radar Software
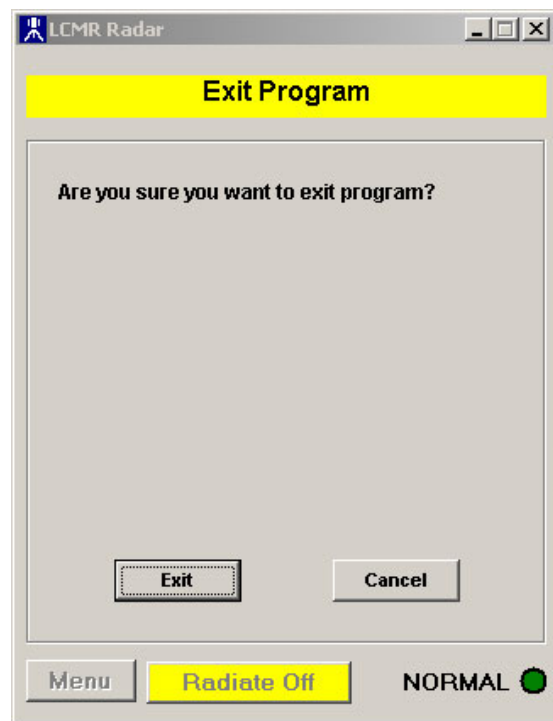
Figure 81. Exit Program

EXPRESS MISSION PLANNING

1. Click the **Express Mission Planning** option button in the **LCMR Radar** window and click **Start** (**Figure 82**).
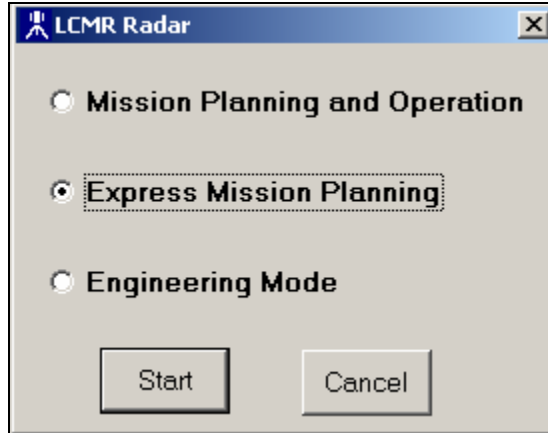
Figure 82. Express Mission Planning

In the **Express Mission Planning** mode, the user may (**Figure 83**):

*   Change the Radar Radio Modem Channel

*   Create/Upload a New Mission (DTED only)

*   Upload an Existing Mission

Change the Radar Radio Modem Channel

1. Click the **Change Radio Modem Channel** option box and then click **Start** (**Figure 83**). A progress window will appear for a few seconds indicating **Getting current radio modem channel** (**Figure 84**).
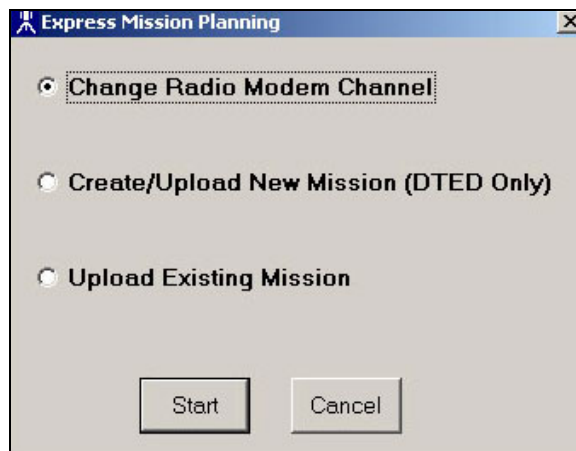
Figure 83. Change Radio Modem Channel
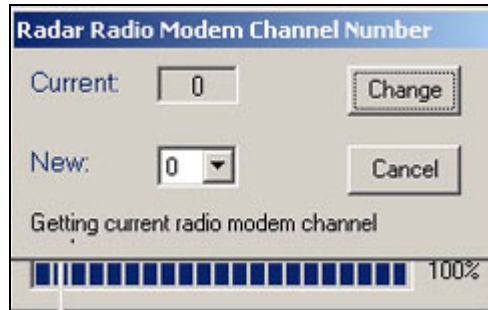
Figure 84. Connecting to Radar

2. Click **New** in the {Radar Radio Modem Channel Number} window and select the desired modem channel from the drop-down list (**Figure 85**).
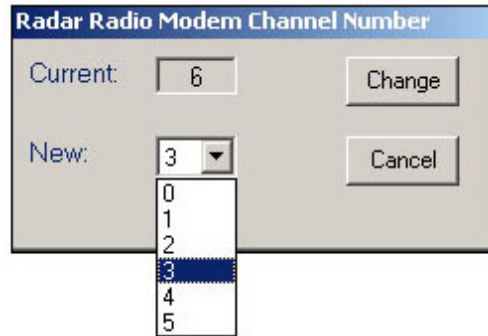

Figure 85. Select Radar Radio Modem Channel

NOTE

To change the R-PDA Radio Modem Channel, refer to WP0010 00-7.

3. Click **Change**.

4. Click **Yes** at the **Reconfigure Radar's Radio Modem** prompt (**Figure 86**) to set the modem to the new channel; click **NO** to keep the previous Radar Radio Modem Channel. A confirmation window will appear confirming the new modem channel upload is complete (**Figure 87**).
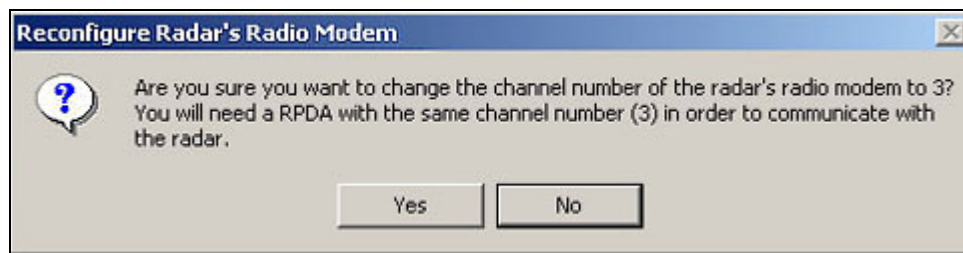
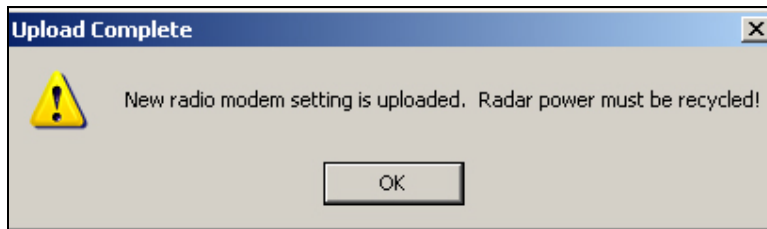**Figure 86. Reconfigure Radar Radio Modem**

Figure 87. New Modem Channel Uploaded

Create/Upload a New Mission (DTED Only)

1. Click the **Create/Upload New Mission** option box and then click **Start** (**Figure 88**).

2. Enter the Center Coordinates of the Region in the **Mission Region Center** window and click **Upload** (**Figure 89**).
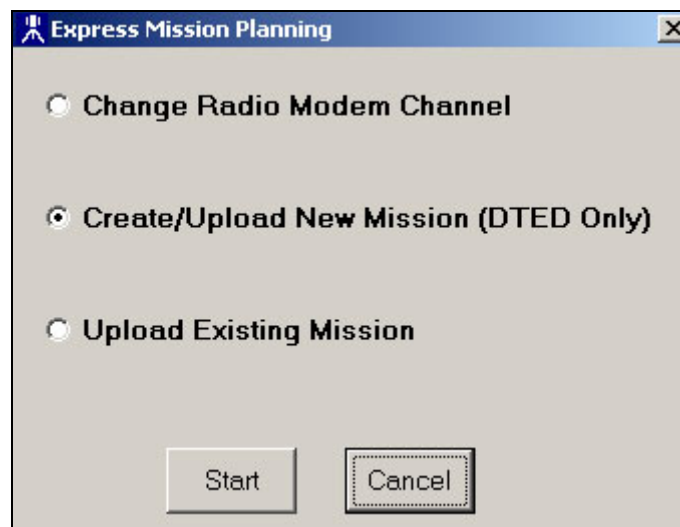

Figure 88. Create/Upload New Mission (DTED Only)

3. The **Save New Mission As** window will appear prompting the user to name and save the mission file (**Figure 90**). Enter the mission name in the **File Name** field and then click **Save**.

4. A series of prompts will appear (each for a few seconds) indicating **Extracting DTED Data, Connecting to Radar, Uploading Mission Description File,** before the final prompt indicating the **Mission Files Upload is Completed** (**Figure 91**).

5. Cycle power to the Radar Cylinder so the selected mission is loaded onto the Cylinder.
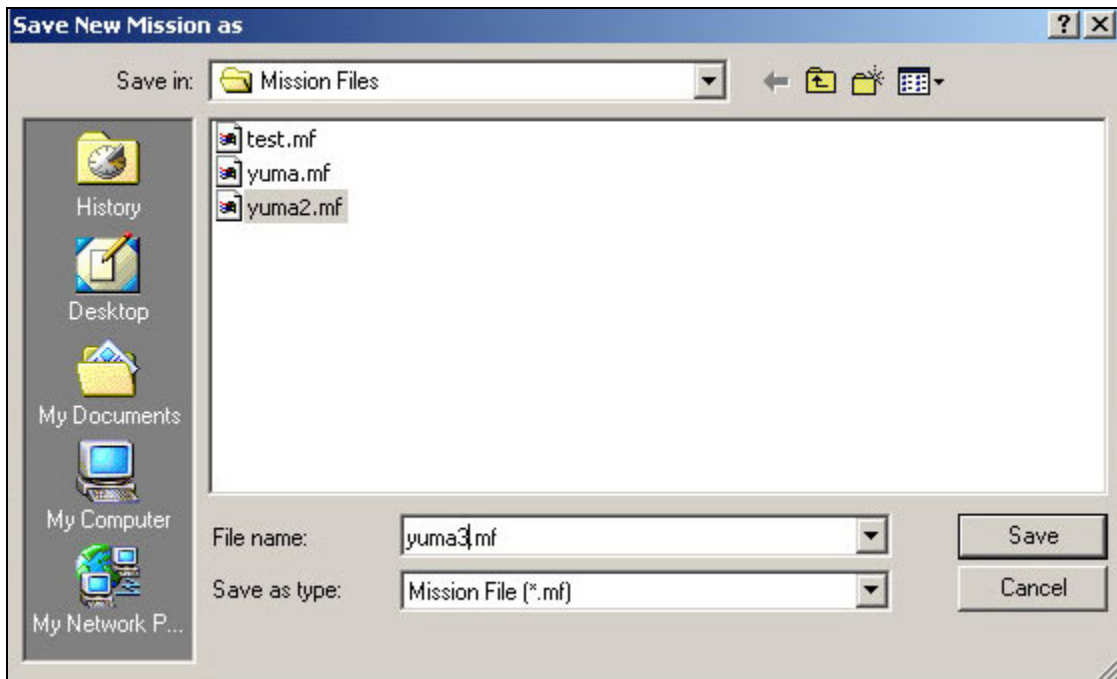
Figure 89. Mission Region Center

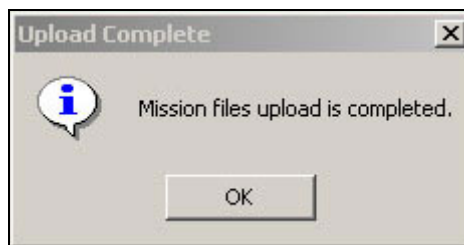**Figure 90. Save New Mission**

Figure 91. Mission Upload Completed

Upload Existing Mission

1. Click the **Express Mission Planning** option button in the **LCMR Radar** window and click **Start** (**Figure 92**).

Figure 92. Upload Existing Mission

2. Click the **Upload Existing Mission** option box and click **Start (Figure 93).**

3. Select the desired mission in the **Open** window and click **Open (Figure 94**).

4. Click **Start**.
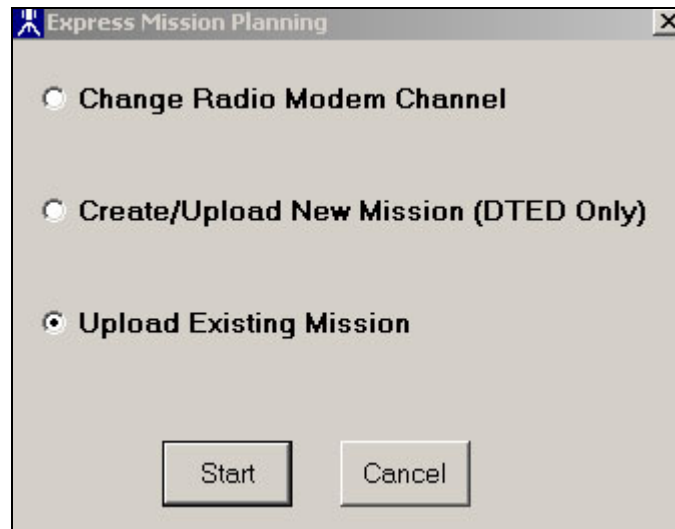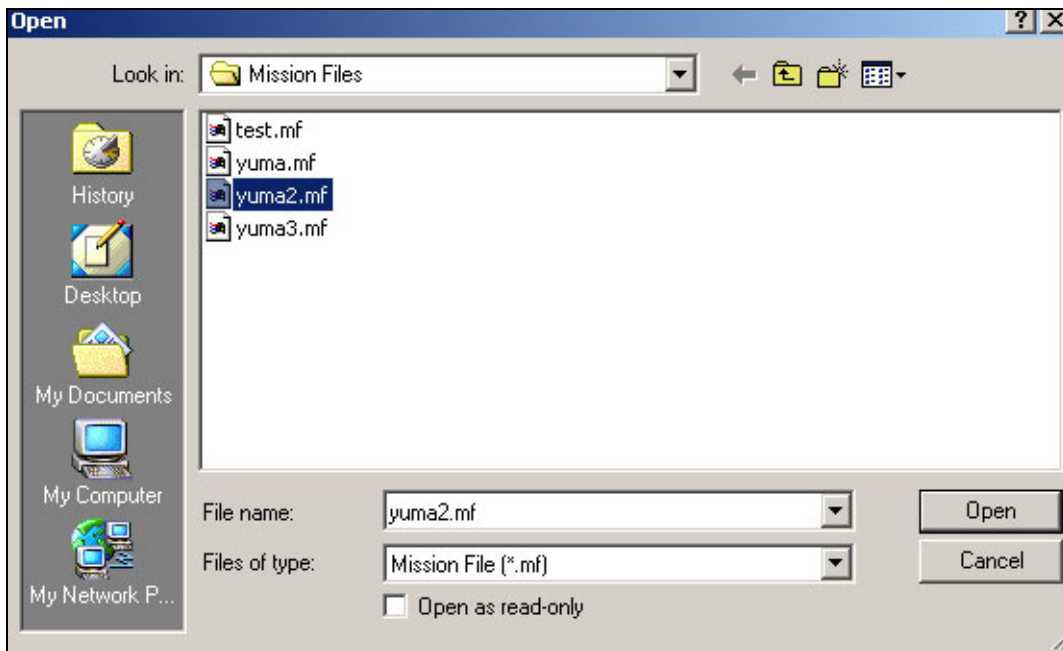

Figure 93. Upload Existing Mission

Figure 94. Select Mission to Upload

1. Review the **Mission Parameters** (Mission Name, Mission Center, Mission Area, and Number of Zones) and click **Upload** (**Figure 95**)**.**
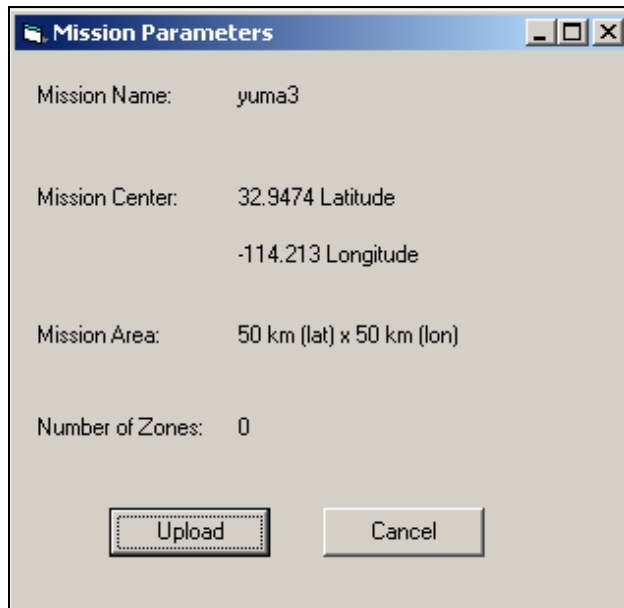

Figure 95. Mission Parameters

2. Cycle power to the Radar Cylinder so the selected mission is loaded onto the Cylinder.

END OF WORK PACKAGE