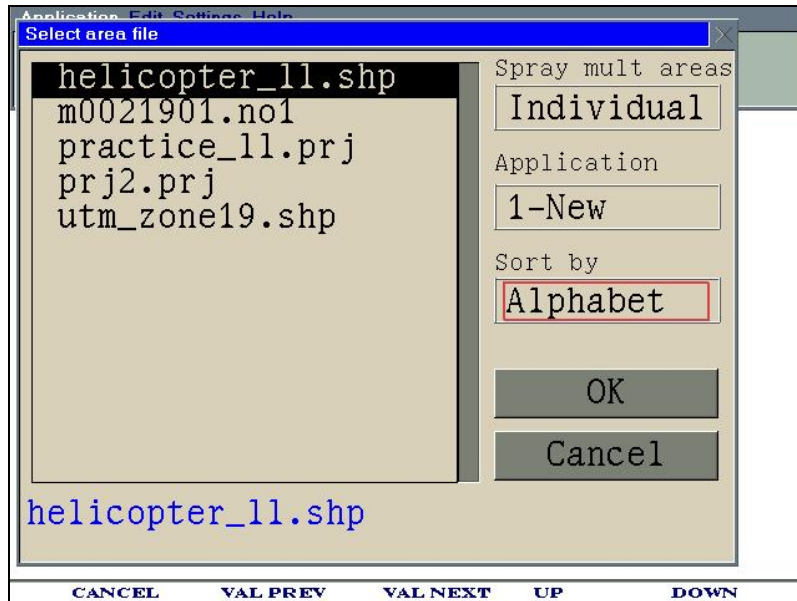


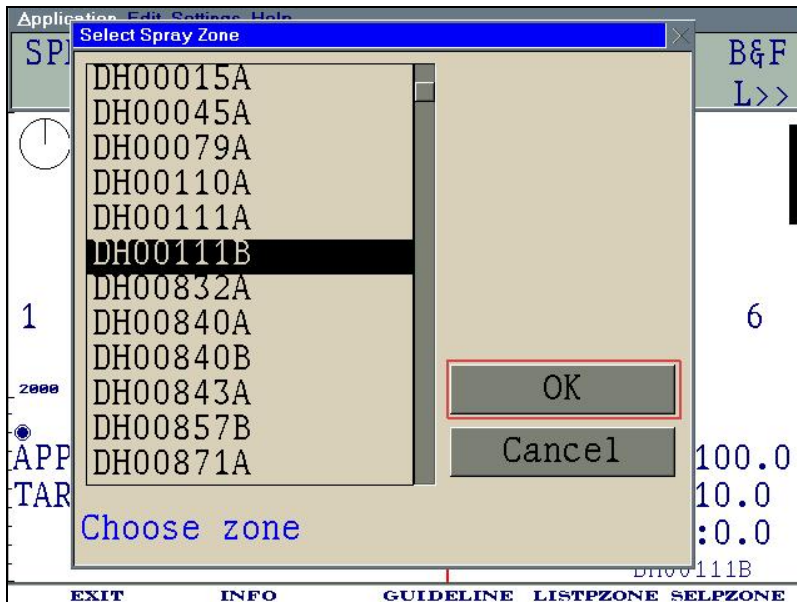
Guía Software Releases

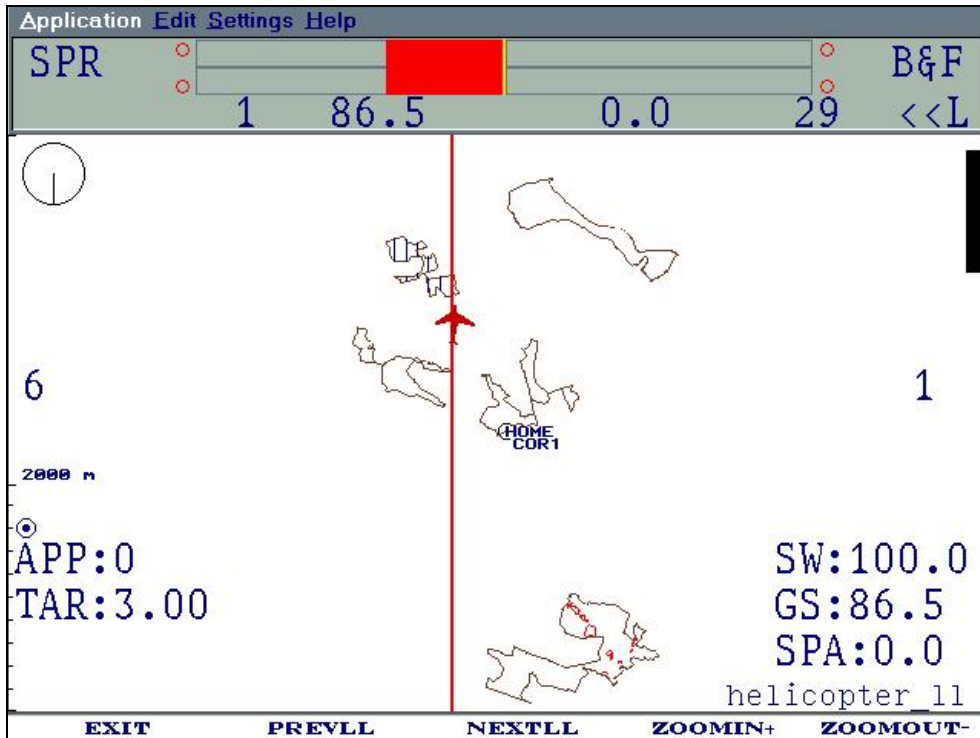
New Features and Changes in Release 1.6.0: (June 2010)

1. Area File Sorting: When flying old areas, the list of areas is shown with big font. The files can be sorted in alphabetical order or chronological order (date and time).

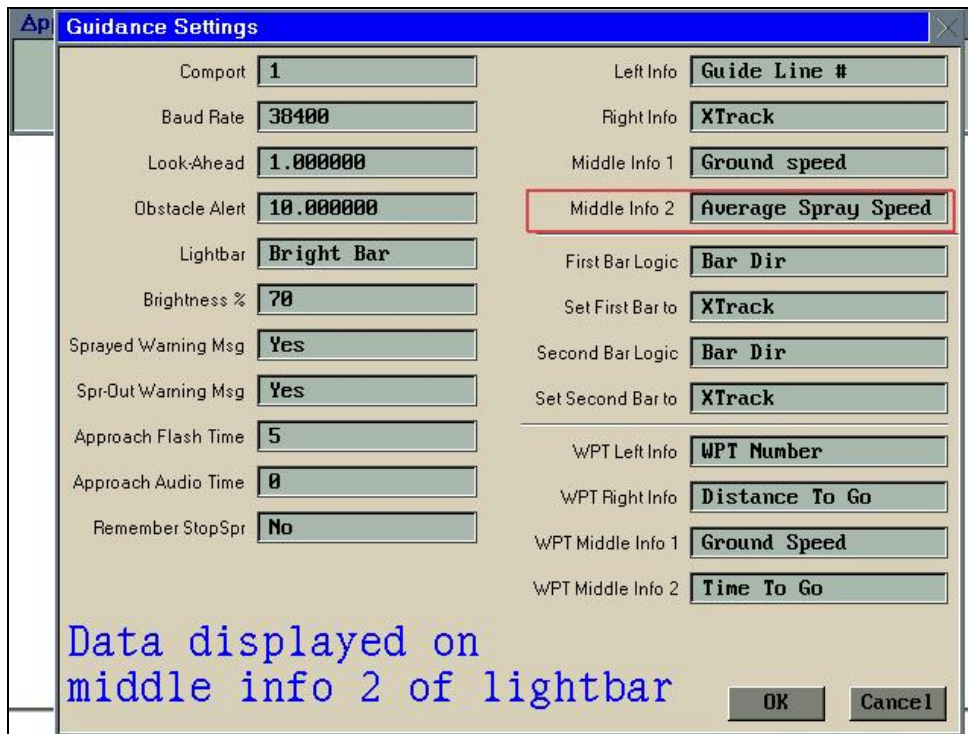


2. Zone List: When flying multiple zones in a shape file, the zones are listed by alphabetical order. Note that the dbf file of shape file must have the column "NAME" to show spray block or zone names.

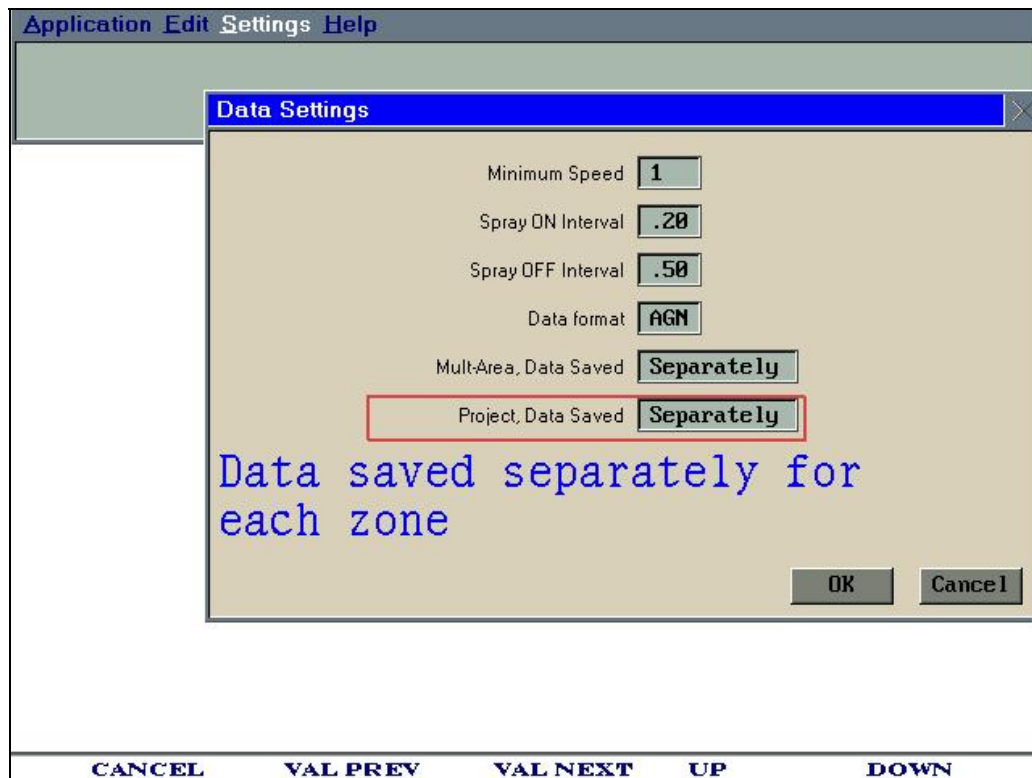




3. Average Spray Speed: Average spray speed of the current flight can be selected to be displayed on the lightbar or on main screen. Select Settings → Guidance, then select "Average Spray Speed" for info on lightbar. Select Settings → Display, then select "\$SP" for info on main screen.



4. Spray-Out Warning: If by accident you spray outside the spray area in Waypoint or Map mode, Guia will give you the warning “**Spray Outside**” on screen and lightbar. Note in previous version, the warning is given in Spray mode only. To turn on warning, select Settings → Guidance, then select “Yes” for Spray-Out Warning Msg.
5. Flight Data Saving: When you select to fly a project or multiple zones in a shape file. You can select to spray the zones individually or together. If you spray the zones individually, you can select to save the data separately for each zone or block. To do this, select Settings → Spray Data, then select **Project File, Data Saved “Separately”**. When on this setting page, check the data format. Note that even though you fly multiple zones or spray area in a shape file, you can select to save the flight data in **Shp** or **Agnav** format.

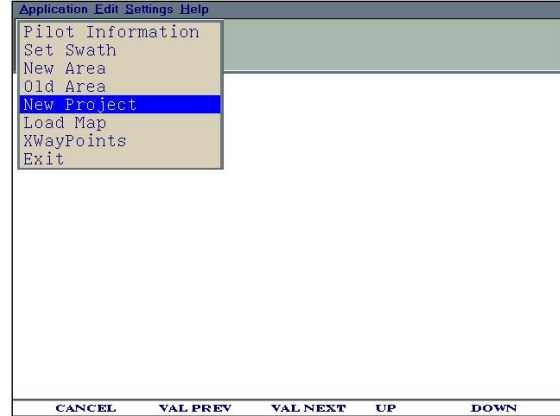


6. Altitude Recording: When altitude above ground is available, it will be recorded to file in place of GPS altitude. This way you can view altitude above ground in NavviewW or SprayView.
7. Spray Acreage Display: A new function was implemented to allow pilot to reset Spray Acreage to zero. When you spray, Guia normally show the total spray acreage “SPA” on screen. If you fly multiple areas and want to know the spray acreage on each area, you can reset SPA to 0 when switching from one area to another. If you want to do this, you should add the function **ResetSPA** to one of the Control Menus of Old Area.
8. Tower Name Display: When you are approaching a tower and get into the warning range, the tower name will be shown on screen. A tower is named by “T” and its index number.

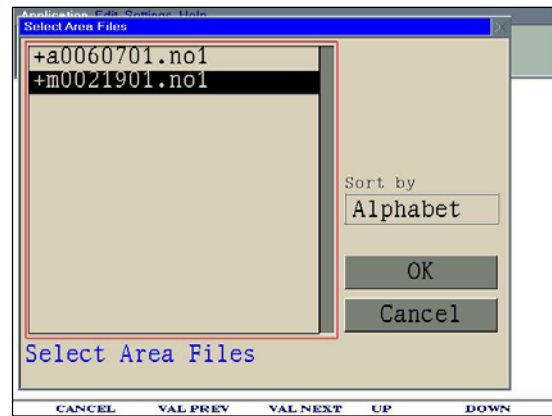
For example “T1” is the name of the first tower read in the **agnav.pup** file, “T5” the fifth tower defined in the file.

- 9. New Project Generation: You can make a new project by combining several single area files *.no1 together. To do this,

Select “New Project” in the Application menu.

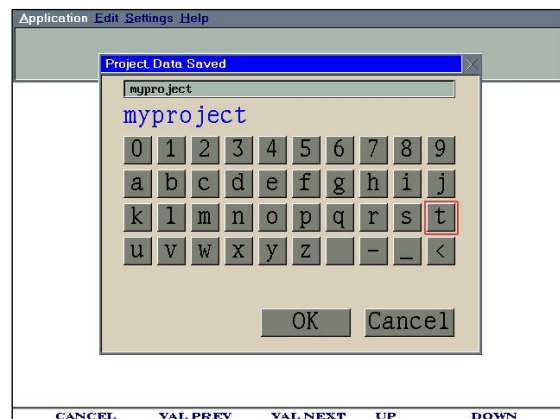


A list of no1 files is displayed. Select or tag the files you want to combine into a project.



A project name is given to the project based on date and project number generated on the same day, for example “a0062101”. If you want a different name, enter the desired project name. Note that the file extension “.prj” is added automatically.

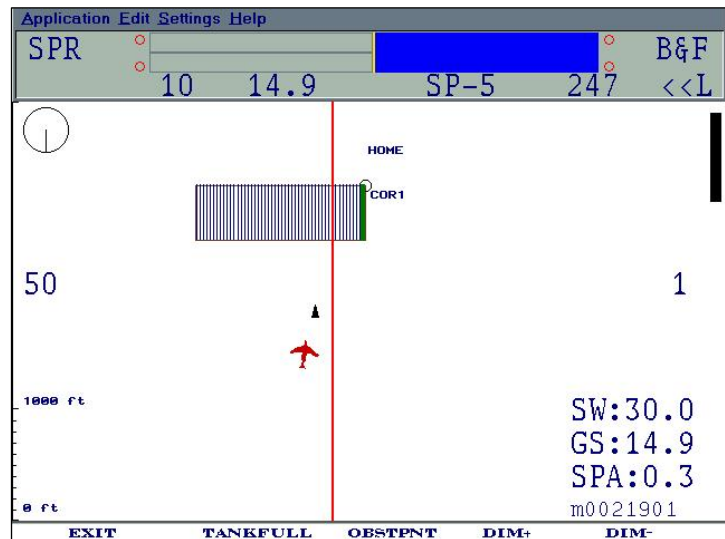
To fly the new project, select “Old Area” and select the project from the list of areas and projects.



- 10. File Manager: Able to copy data files in subfolders of spray zones or blocks in a project or shape file.

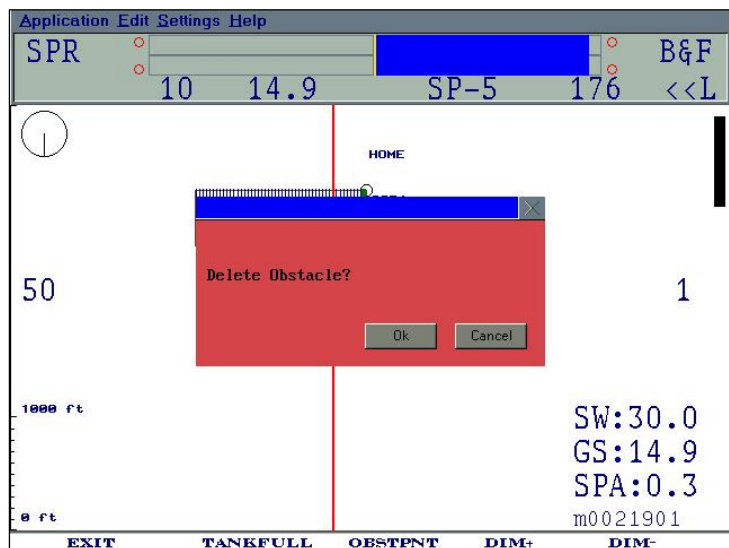
New Features and Changes in Release 1.5.2: (February 2010)

11. Zoom Scale: When zoom in or out, the screen scale will be changed by 1.5 times, not 2 times as before. This will make it easier to set a desired scale for your spray areas.
12. More Information: Guia shows more information at the top of the main screen. The info includes flying mode (Spray, Waypoints, Map), 4 pieces of information selected for lightbar, and spray pattern. Even though you use a brightbar, you can select 4 pieces of information in Settings → Guidance. The information displayed at the bottom right corner of screen remains the same.
13. Mode and Control Menu Display: For pilot's safety (not having to look on screen to check control menu) and for avoiding pressing a function key by mistake, you can select to show the flying mode and control menu number on screen and lightbar. The indicator will be "SP-n" where n is the control menu number in Spray mode, "WP-n" is control menu number in Waypoint mode. Spray mode has total 6 control menus, Waypoint mode has 4. To have flight mode to be displayed on lightbar, select Settings → Guidance. Select "**Flight Mode**" for one of the four pieces of information to be shown on lightbar.
14. Deleting Towers: You can delete an unwanted tower. To do this, fly close to the unwanted tower, when the alert is on (lightbar flashing) press <ObstPnt>.

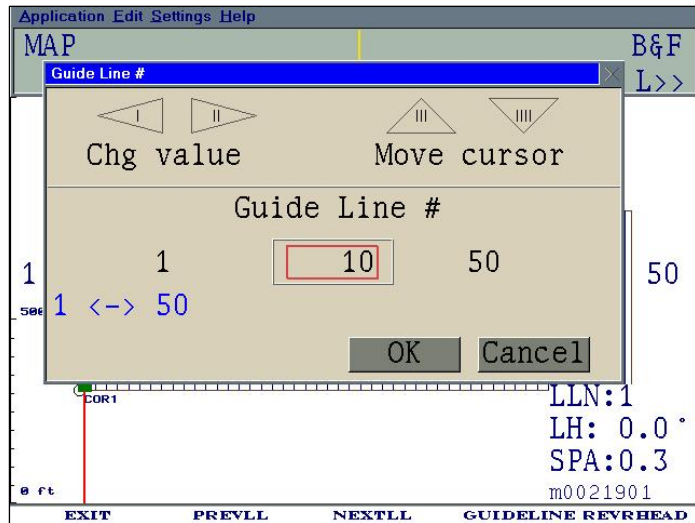


Guia will prompt you to confirm if you really want to delete the tower. Press <Enter> to select OK. The tower will disappear.

You can use the Training to delete a tower. You can fly the airplane by keyboard.

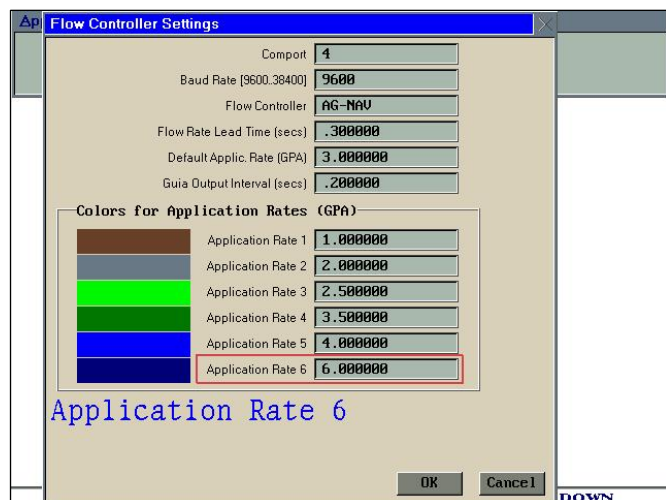


15. Entering Locked Line Number: If you know what line to spray, you can enter the line number for guidance. To do this, go to the Map mode <MapMode> so that you can see the area, then select <GuideLine>. In the dialog, enter the desired line number. Guia will lock to this line and give you guidance to fly it in Spray mode.



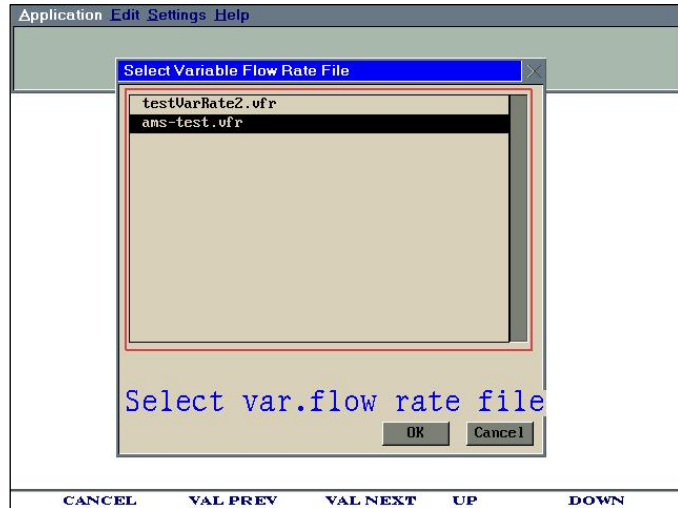
16. Lightbar Display: To confirm lightbar working before you fly and to help you adjust the intensity of lightbar, Guia always sends information to lightbar even when speed is 0. In previous version, lightbar display is not updated when speed < 1.0 km/h or 0.6 MPH.
17. XTrack Display: When XTrack value is greater than 999 meters or feet depending on selected unit, the value will be converted into km or miles and shown with a decimal point on lightbar. You will see the XTrack change to be much slower.
18. Sprayed Volume Display: When using a flow controller, you can select to show the total sprayed volume at the bottom right corner of screen. To select this info, go to Settings → Display. Select “VOL” for sprayed volume.
19. Altitude Display: Guia can interface with the AgLaser altimeter via comport 3. When using a laser altimeter, you can select to show the altitude above ground “AGL” on screen and lightbar. When altitude above ground is available, the GPS altitude (Mean Sea Level) will be replaced with the AGL. When AGL is not available, Guia will show “MSL” on screen and lightbar.
20. OverSpray: Overspray checking is good for automatic spray (autobooms). It’s also good to show pilots where overspray happened. The locations where overspray happened are painted red. However it uses lots of computer resources and may slow down the system. If overspray checking is not necessary, or you find the system slow when spraying a big project, you should turn overspray checking off. To do this, go to Settings → Display and select “No” for Check OverSpray.

21. Spray Display: If you use an AGNAV or AutoCal flow controller, you can select to show spray data in different colors depending on the applied application rate. This will help you know if the application rate is right on the spray area(s). There are 6 colors for different ranges of flow data in Settings → Flow Controller. If you don’t want

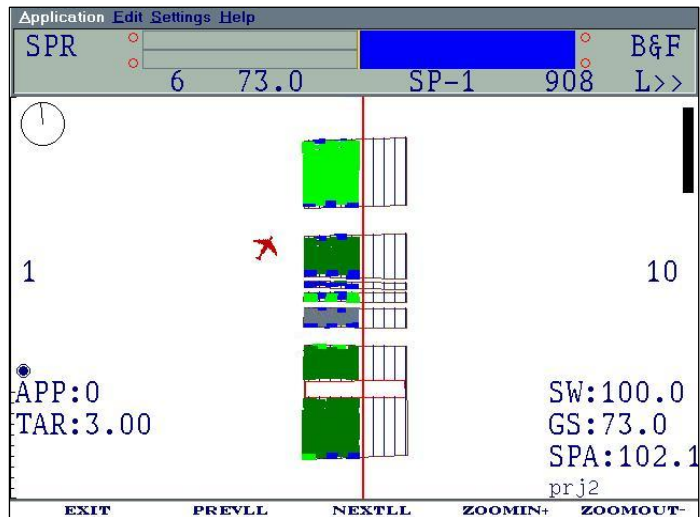


to show different colors, set all values to 0. The color defined for spray data in Settings → Color will be used for all rates.

22. Variable Flow Rates: If you use an AGNAV flow controller, you can spray an area or project (multiple areas) with different application rate on each part of the area or project. You can use SprayView to depict the boundary for each rate and make a prescription file *.vfr. Copy this file to a USB key and load it to the Guia. In Guia, run Application → **Load Variable Rates**. Select the desired *.vfr file. During flight, Guia will check a/c position and send appropriate flow rate to the flow controller. Note that you still define the default application rate in Settings → Flow Controller. This default rate will be used for areas that are not defined in the *.vfr file.



Variable Flow Rate Display:
Multiple areas with different application rate on each area.



23. New Area Generation – Area Left/Right: When making a new area by spraying the AB line, if you made a mistake on the side of area, just press **<ABFlip>** to flip the area to the other side. For example, if the spray area is supposed to be on the right side of AB line, but you made the area on the left, you can press **<ABFlip>** to flip the area to the right. The AB line won't change. Make sure you have this key in one of the Control Menus for Old Area.
24. AGNAV GPS Receiver P500: Support the new GPS receiver P500 manufactured by AG-NAV. A regular receiver model can output data up to 10 Hz. For precise navigation, a better model can output position data up to 20Hz. You can select to configure P500 in **GPS Configuration → Agnav-P500**. You can test this receiver in **Test → GPS**.

GPS configuration

Comport Baud Rate

Baud Rate GPS Rate SBAS CDGPS Frequency Omnistar Frequency

EXIT VAL PREV VAL NEXT UP DOWN

25. File Manager: Allow you to copy the variable flow rate file *.vfr to Guia.

New Features and Changes in Release 1.5.1: (October 2009)

1. File Manager – BackUp: The BackUp function is used to back up all files in the data folder to a USB key. The files include all areas, projects, shapes, settings, xwaypoints, towers and all related data files.

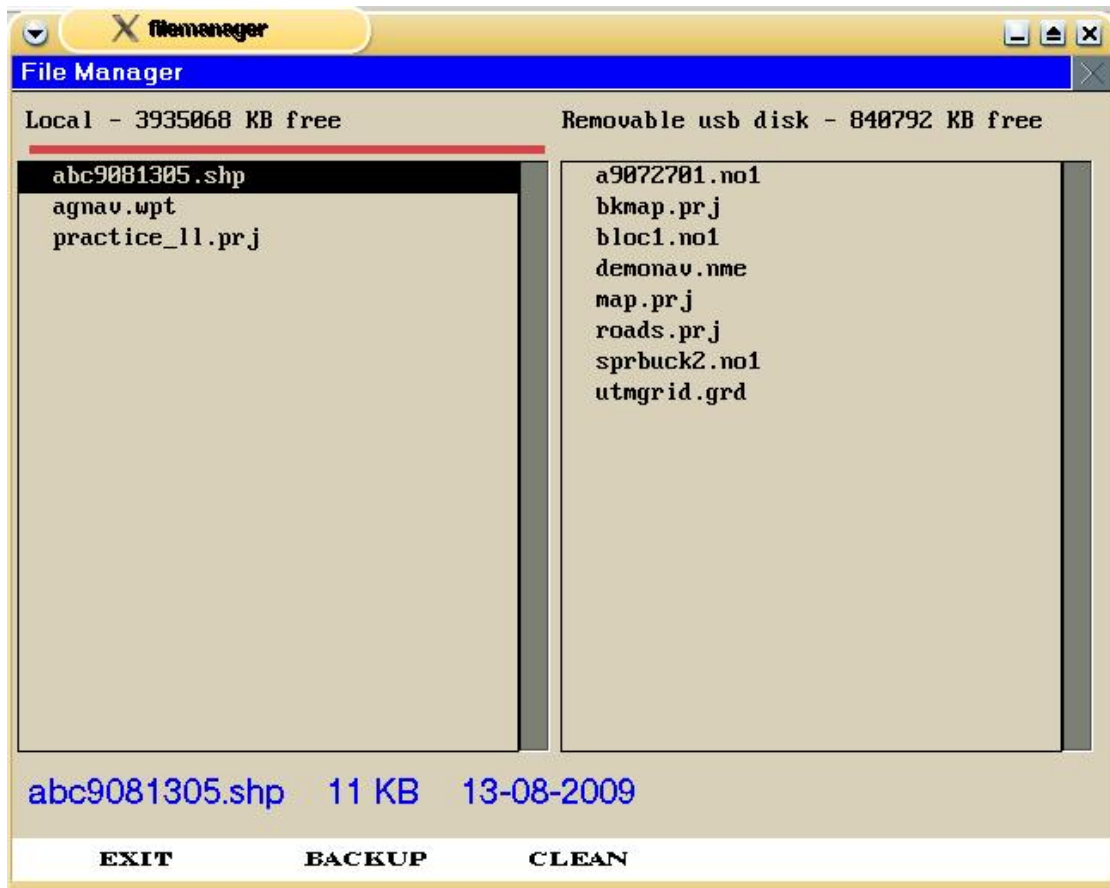


Figure 1: File Manager – BackUp and Clean

2. File Manager – Clean: The Clean function is used to clean up the Guia hard drive. It will delete all files in the data folder. The files include all areas, projects, shapes, settings, xwaypoints, towers and all related data files. Note that before you select to clean up the Guia hard drive, you should do the BackUp first. When you are sure that you have all files on the USB key, you can do the Clean up. After cleaning, you can copy the areas you want to fly from the USB key to Guia.
3. File Manager – Move: The Move function is used to move files from Guia to USB key or vice versa. The Move function is the combination of Copy and Delete. **To avoid deleting files by accident, the Move function is removed from File Manager. The first Control Menu of File Manager is changed as shown in the following picture.**

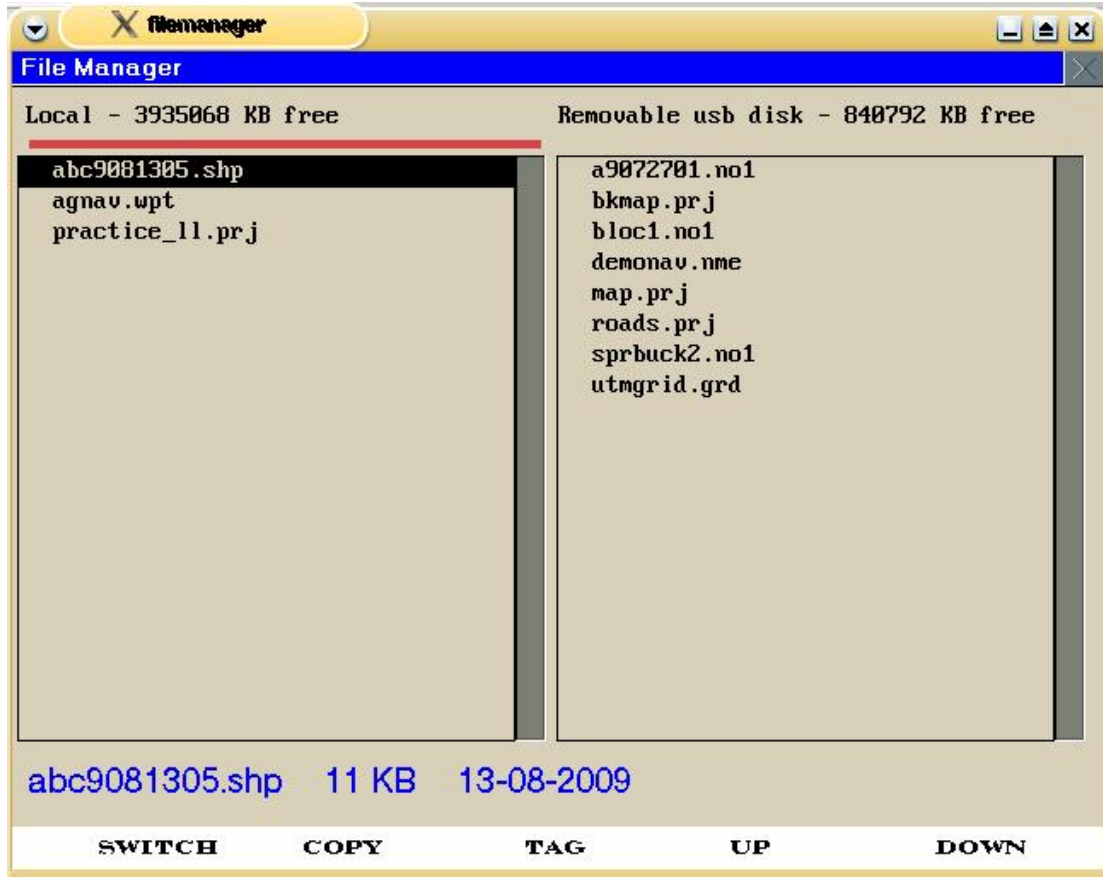


Figure 2: File Manager – First Control Menu

4. Spray Pattern – Expand: The Expand spray pattern is the reverse of Squeeze. This pattern starts from the center of spray area and expands to the sides. This pattern is the most useful when you spray a pivot or circular area.
5. New Area – Pivot – Expand: To make a pivot or circular area with Expand spray pattern, select New Area. Then select “Make Area by” “AB & C”, select “Option” “Pivot”. Fly to the area and spray the AB line. The AB line defines the diameter of the pivot area. Turn the aircraft and spray the next line or just push the <NextPt> key. The spray or <NextPt> key determines point C or the next line you want to spray. If you spray for point C, the line next to the AB line and closest to point C will be locked for guidance. If you push <NextPt>, the next line on the left of AB line will be locked.
6. Map Display: If you want to display a map background on screen during flight, select “Load Map” in the Application menu. From the list of map and area/project/shp files, select the files that have the map entities, for example no fly, rivers, roads, airport. These files will be loaded and displayed as map background during flight.

To define the color of polygon in an *.no1 file or color of all polygons in a *.prj file, select to “Edit Area” in SprayView or NavviewW. Add the following line the end of the file:

300 <color>

Where <color> indicates the color code. Below are the color codes you can enter.

0 – Black	1 – Blue	2 – Green	3 – Cyan
4 – Red	5 – Magenta	6 – Brown	7 – Light Gray
8 – Dark Gray	9 – Light Blue	10 – Light Green	11 – Light Cyan
12 – Light Red	13 – Light Magenta	14 – Yellow	15 – White

For example, if you want to show Red polygons for No Fly areas, enter “300 4” to the end of the no1 or prj file. Then save the file.

If you define a color for each entity, you can select to fill the polygon with the defined color as shown in the figure below.

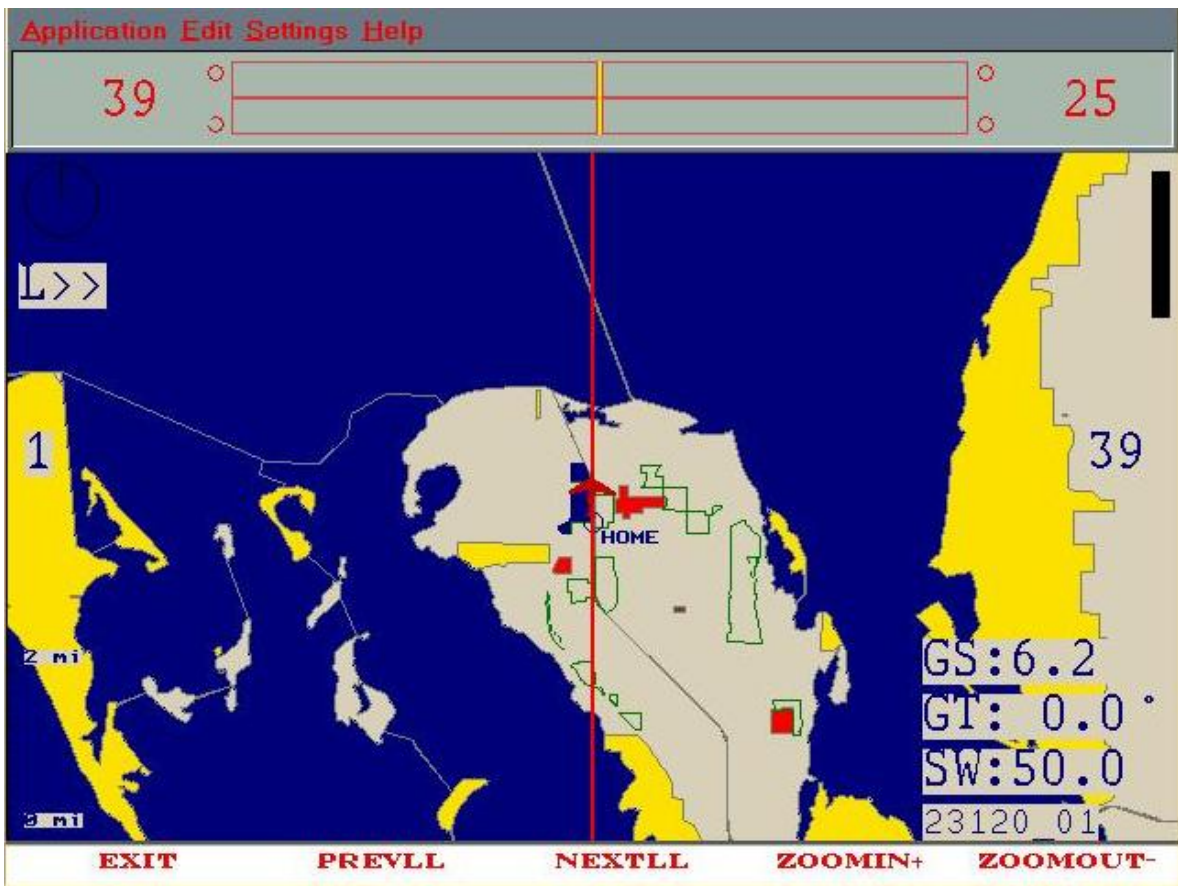


Figure 3: Map Display with Color Fill

The green polygons are spray areas.

To fill the map polygons with predefined colors, select Settings → Color. Select “Yes” for Fill Background Map. Select “No” if you don’t want to fill. The default is “Yes”.

If you have a shp file, there is no color code for the polygons. In this case, the color of Map Background in Settings → Color will be used.

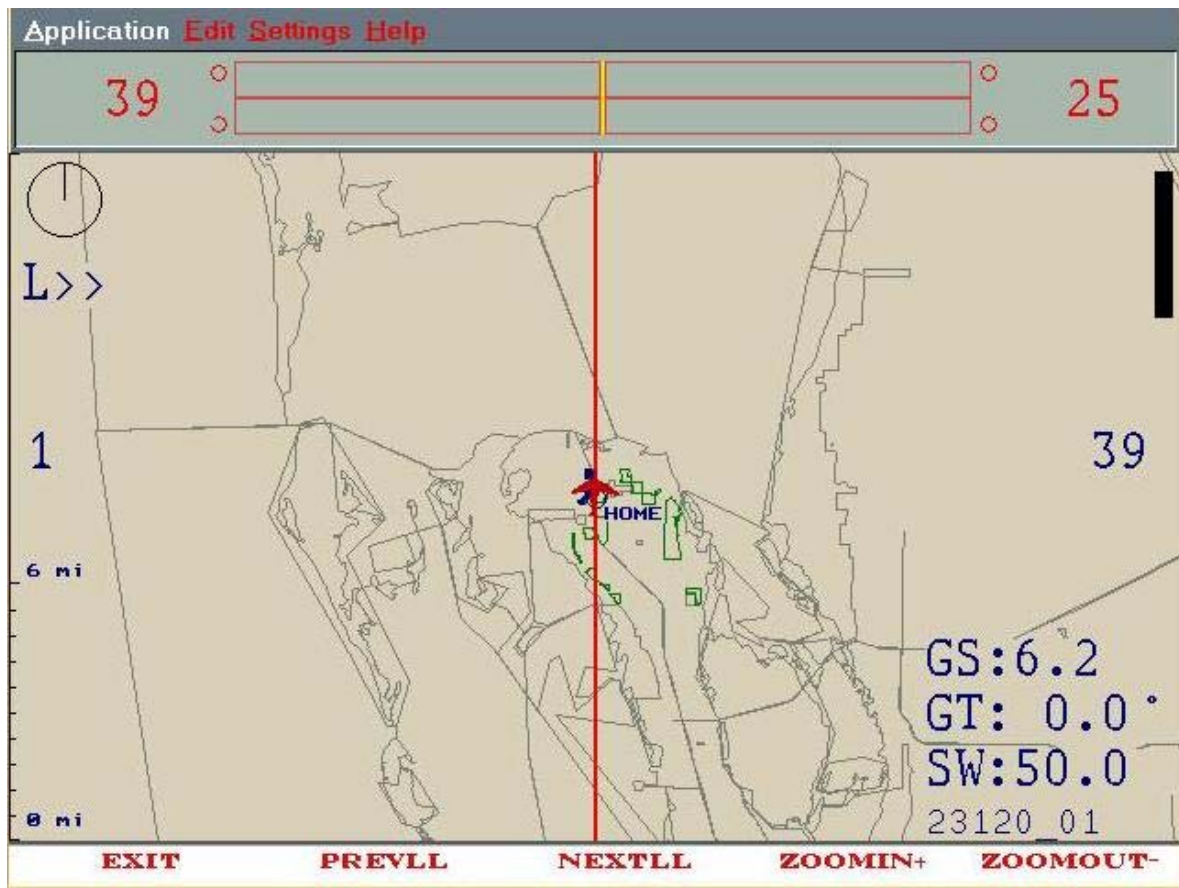


Figure 4: Map Display with No Color Fill

7. Map Display On/Off: After the map is loaded, Guia will show the map when you fly a new area or old area. You can turn the map display on/off during flight. To do this, push <Enter> until you see the function <MapDisp>. Press this key to turn off/on the map display. Note: Before flight, make sure you have this key in one of the Control Menus of Old Area.
8. Control Menu Display: During flight, the first Control Menu is normally the mostly used one. After changing the Control Menu to do a certain task, for example <ClosestLn>, you may want to go back to the first control menu again. To do this quickly, you can push and hold the <Enter> key for 2 seconds.
9. Central Meridian Help: When moving to a new state or region for a new job, the central meridian of the new spray areas may be different from that of previous areas. You should go to Settings → Geodetics to check the Central Meridian (CM). To help you know the right CM in the new area, use key <I> or <II> to toggle through the CM values. The Help will show the range of Longitude values assigned to the CM shown on screen. You just need to know the longitude of your spray area to find the CM. For example, when **CM = 279**, the Help will be "**Longitude between [78 .. 84] W**". Note that if you use a shape file, you must enter the correct CM for Guia to load your shp file correctly.
10. Fly Multiple Areas – <Sel\$Area>: When you fly multiple areas by selecting more than one *.no1 file, you can spray the first area. When done, fly to another area, select it and spray.

You can use the functions <PrevArea> and <NextArea> to select an area to spray. However to make it easier for you, you can fly to the area you want to spray, when you are about 5 seconds to the area, Guia will display the boundary of that area in Red and show the area name on it. If that is the area you want to spray, push the key <Sel\$Area> to select it. Make sure you have this key in one of the Control Menus of Old Area.

11. Common Exclusion Zones (XCLs): If you have common XCLs for all spray areas, you can define the XCLs in the file **agnav.xcl**. This file will be loaded after you select old areas to fly. This feature is mostly used in Mosquito Control application. The wind drift may cause the spray chemical to deposit inside the common XCLs. The offset guidance will reduce this effect when you use the FlightMaster.
12. FlightMaster – Multiple Areas: Also for FlightMaster, multiple areas are offset and work properly in this version. Auto booms work well as well. When you have many areas to fly, you can turn on/off the display of target areas to make a clear display of spray areas and guide lines.
13. Overspray Display: During flight, when the pilot sprays over the location that was already sprayed, Guia will show the overspray in different color. The default is Red. You can define the overspray color in Settings → Color. When using auto-booms, Guia will turn off spray when aircraft is flying over the already sprayed location.
14. Lightbar Problem Fixed: When using automatic settings for XTrack bar, the XTrack bar of NavBar was very sensitive, no matter what Maximum XTrack was defined. This sensitivity problem was fixed.

New Features and Changes in Release 1.5.0: (August 2009)

1. Main Menu: Check hard disk. If free space for data is less than 15%, “Application” program will be disabled to avoid problem in recording data when there is not enough space on the hard disk. When there is less than 15% of free space left on hard disk, the pilot must back up and delete areas that are not needed to keep in the Guia.
2. New Grid Generation <NewGrid>: When generating new grid lines, the locked line can be outside the spray area where the aircraft is. This works similar to the <Alt F3> function in the AGNAV2.
3. Closest Line <ClstLn>: This function can lock to a line outside the spray area when the aircraft is flying beyond the boundary of spray area. This works similar to the <F7> function in AGNAV2.
4. Editor: Editors for “Set Swath”, “ChgHead”, “Corners” and “Waypoints” are changed to show big font and have more friendly way to edit data.
5. Control Menu Display: When you press <Enter> to change the Control Menu, Guia will display the Control Menu as remote keys on screen. This helps you to see the function names easier and know what key on the remote switches you should press. When you find the function and know what key to press, just press the desired key. The Control

Menu display will disappear and the task is done. To turn off the Control Menu display without doing any function, press <Enter> twice quickly within half a second to turn off the Control Menu display.

6. To turn on/off the Control Menu display with big font, select Settings → Display → Display Big Control Menu. Enter “Yes” or “No” to turn on/off the Control Menu display with big font. The default is “No”.
7. StopSpr Point: If the boundary of spray area shown on screen is not the same as the physical boundary, the StopSpr point used to remember where spray was turned off may not work properly, especially when you select AutoAdvance Locked Line. To turn off StopSpr point, go to Settings → Guidance. Select “No” for “Remember StopSpr”. The default is “Yes”.
8. Work Waypoint: This is similar to the WORK waypoint in the AGNAV2. This function “WORK” allows you to enter the coordinates of a waypoint on-the-fly. The WORK waypoint is saved as a cross country waypoint which you can load and select to fly to in the next flight. Make sure you have the function <WORK> in the control menus of any mode (Grid, Waypoint or Map).
9. Change Application Rate: If you have an AGNAV flow controller, you can select to change the Application Rate when making a new area or flying an old area. Make sure you have the function <AppRate> in the control menus of New Area.
10. Spray Pattern Change: When you change spray pattern on-the-fly, the locked line is kept the same. For Race Track pattern, when you change the Race Track number, the locked line will be kept the same.
11. File Manager: The virtual keyboard used for renaming files has big font and keys.
12. File Manager: Can handle spaces and CAPITAL letters in filename.
13. Tower (Obstacle) Display: Guia shows the towers in all modes (Spray, Waypoint and Map)
14. Lightbar Dim +/-: The lightbar <Dim/+> function can be done in the Waypoint or Map mode. In the Map mode, the BriBar and NavBar will show Ground Speed on the left side and Ground Heading on the right side. The pilot indicator will show coordinates, ground speed and heading of aircraft.
15. AgLaser Altimeter: If you use the AgLaser altimeter, you can connect it to the Guia to get the altitude above ground. The settings for AgLaser is in Settings → Data Input. By default, it should be comport 3 and baud rate 9600. In data recording, the altitude input from the laser altimeter will be save in place of GPS altitude. For the interface between the AgLaser and Guia, please contact AG-NAV for the cable.
16. Altitude: Altitude “Alt” can be selected to show on screen and lightbar. If you use a laser altimeter, “Alt” will show the altitude above ground (AGL). If you don’t have a laser altimeter, “Alt” will show the altitude above mean sea level (MSL).
17. Ground Speed in Knots: You can select to show ground speed in Knots on the lightbar.

18. Distance To Go and Sprayed Acreage: You can select to show on the lightbar: Distance To Go, i.e. distance from aircraft to the boundary of spray area along the locked line, and Sprayed Acreage.
19. Multiple Areas – PrevArea: When you fly multiple areas *.no1 or *.shp, Guia makes a list of selected areas for you to select what area to spray. The function <NextArea> is used to select the next area in the list. While toggling through the list, if you miss the desired area, you can use the new function <PrevArea> to select the previous one in the list.

New Features and Changes in Release 1.4.1: (May 2009)

1. Aircraft Icon Display: The aircraft icon is **RED** when outside spray area or inside exclusion zones, **BLUE** when inside spray area.
2. Spray Off Point: When only part of a grid line is sprayed, the location where spray turned off is marked “**StopSpr**” and remembered. When pilot comes back to spray on the same line, the SprOff point will be used for guidance (distance and time to go). This works very much like the AGNAV2.
3. AGNAV2 Data: Spray data generated by AGNAV2 can be displayed in Guia.
4. Grid Line Heading: One more way to change grid line heading is to enter the heading manually. This will help when two or more pilots work together on the same area using exactly the same line heading to have seamless application on the area. To do this, make sure you have the key <ChgHead> in one of Control Menus of Map mode. To enter heading, go to Map mode and select <ChgHead>. A dialogue will be present for you to enter the heading.
5. Reverse Heading: In some cases, you want line 1 to be on the opposite side of area so that you can start spraying from line 1 and using <NextLL> to shift the locked line. In this case, you can use <RevrHead> to reverse the line heading. If you want this function, make sure you have the key <RevrHead> in one of Control Menu of Map mode. To reverse line heading, go to Map mode and select <RevrHead>.
6. To Area: If you want guidance to fly to the spray area, go to Waypoint mode and select <ToArea>. If you fly single area, you can select “COR1” in Waypoint mode or just press <ToArea> key. If you fly multiple areas by selecting multiple area files (no1), in software version 1.4.0 and earlier, you may have many “COR1” waypoints and don’t know which “COR1” to select. In version 1.4.1, you can press <ToArea> to get the right waypoint to fly to. Make sure you have the function <ToArea> in one of Control Menus of Waypoint mode.
7. Home Waypoint: The coordinates of HOME waypoint are saved permanently for all flights. When the HOME waypoint exists, Guia will use this HOME until it is changed. If the HOME waypoint does not exist, the first coordinates of aircraft will be used for HOME waypoint. To change the location of HOME waypoint, go to the Waypoint mode and press <HOME>. Make sure you have this key in a Control Menu of Waypoint mode. Note that always check HOME waypoint when you make the first flight of a day.

8. Blank Control Menu: A Control Menu with all 4 blank functions defines the last Control Menu. For example, in Spray mode or Old Area you can have 6 sets of Control Menus. If you need only 3 sets, you can assign blank to set 4. During flight, Guia will toggle Control Menus 1 – 2 – 3 – 1.
9. Aircraft and Application Tracking: You can track aircraft position and application via satellite image on internet by enabling the TrackerNav feature in Guia. An Iridium or GSM modem must be connected to the Guia. Please contact AG-NAV if you want this feature. If you don't have the modem, select "No" in Settings → TrackerNav → TrackerNav On.
10. Tank Gauge: If you have a flow controller, the actual applied flow rate will be used to calculate how much material you have left in tank. This will be shown on the tank gauge. The Flow Rate entered in Settings → Spraying will be used when you don't have a flow controller.
11. Exit: The "Exit" key is made available for all modes: New Area, Grid, Waypoints and Map.
12. Info: The "Info" key is made available for all modes: New Area, Grid, Waypoints and Map.
13. Prefix: Problem related to Prefix containing only digits for new area filename was fixed.
14. Training: Problem related to South Hemisphere in Training program was fixed.
15. Split – Center: Problem with locked line after new area generated was fixed.
16. Line Generation: Problem related to line generation was fixed. The problem sometimes happens when boundaries of exclusion zones overlap or are too close to the boundary of spray area.
17. Common Parameters: To avoid problem or conflict between settings in area files and settings in the Guia, the following parameters will be taken from Guia: Max XTrack, Booms Switch, Auto Advance, System Lag, Relay On, Relay Off and Unit. The Swath Width is controlled by the parameter "Common Swath Width" in Settings → Spraying. If "Common Swath Width" is "Yes", the swath width will be read from Guia settings. If "No", the swath width will be read from selected area file. If you have different swath widths for different areas, you should enter "No" for "Common Swath Width".

New Features and Changes in Release 1.4.0: (December 2008)

1. AgNav Connect: This item in the Main Menu is now enabled. This is used for wireless data transfer from your Guia to laptop or PC called office computer. A wireless router is needed to set up a temporary network. The network setup includes:
 - a. ESSID: Network name defined or set up in the router. For example "Agnav-Connect".
 - b. Mode: Select "Managed" if network is managed by an office computer. Select "Ad-hoc" if network is formed between 2 or more Guias without office computer.

- c. IPADD: IP address of Guia in the temporary network. For example, 192.168.0.15. The first 3 numbers in the IP address of Guia must be the same as the first 3 numbers in the IP address of router. For example “192.168.0”. The last number must be different for each unit.
- d. MASTER: Set to “False” if using office computer or this Guia is not the Master of ad-hoc network. Set to “True” if this Guia is the Master of the ad-hoc network.

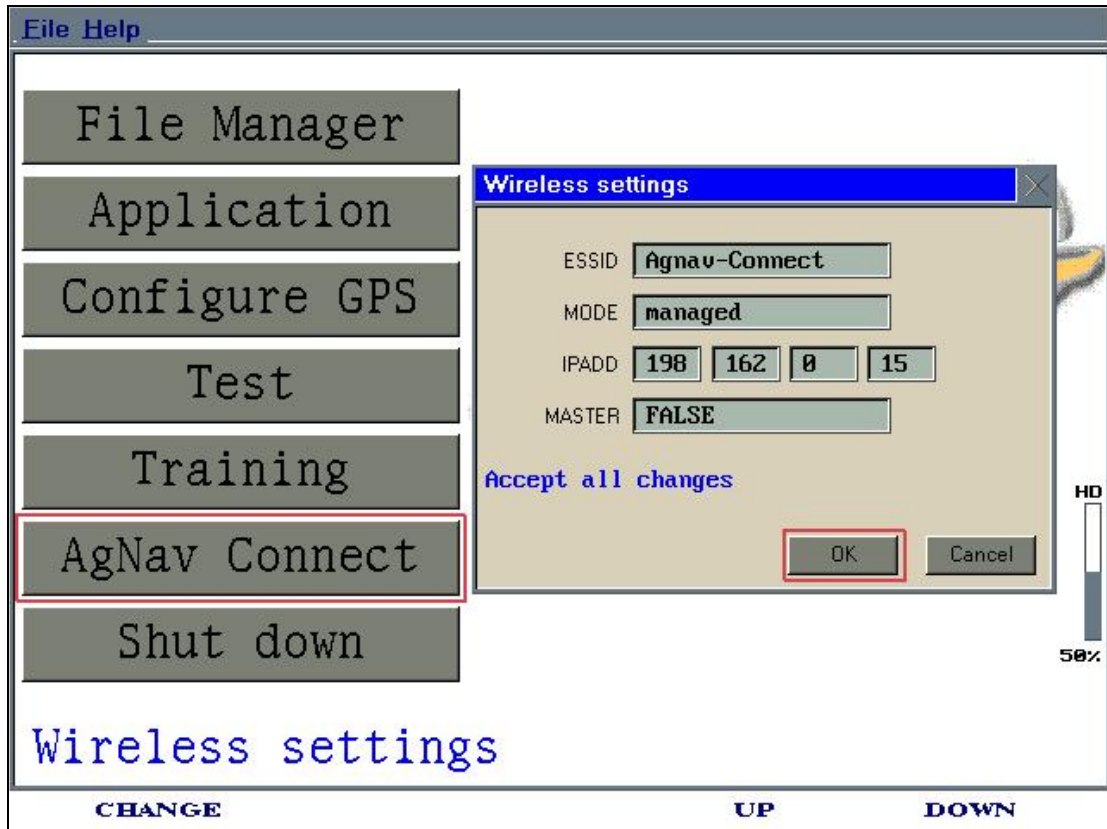


Figure 5: AgnavConnect Settings

Note that for this wireless communications to work properly, your Guia must have additional driver. Please contact AG-NAV for this option and software to run in your office computer.

2. New Area Generation: After making the first area on-the-fly, if you want to make another area, you can use the function “NewArea”. When doing this in version 1.4.0, you can change the way or method to make the second area. For example, if you make the first area by spraying the AB Line, you can select to make the second area by Split - Boundary, the third area by Mark. To do this, you have to put the desired options in the Control Menu. Check Settings → Keys → New Area to see the default options. Change them as desired.
3. Data Save – Together or Separately: When flying multiple areas and spray individually, you can set the Guia to save the spray data all together or separately for each area. The parameter controls this feature is in Settings → Spray Data → Mult Areas, Save Data. Select “Together” for saving data altogether. Select “Separately” for saving data separately for each area.

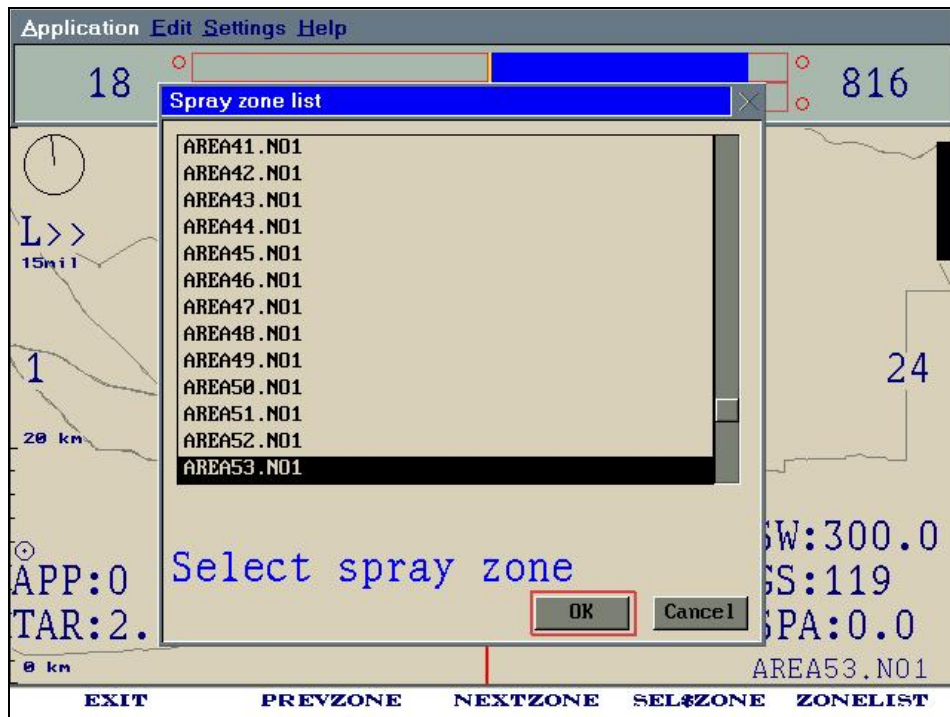
4. Common Swath Width: This new parameter is in Settings → Spraying, used for swath width. By default, Guia uses the same swath width for all areas. This swath width is defined in “Set Swath” of Application menu. However in some special cases, you may have different swath widths for different areas. For example area1 has swath width of 60ft, area2 55ft, area3 50ft. If you want Guia to use the swath width defined for each area in the area files (*.no1, *.prj, *.dbf for shp), you should select “NO” for Common Swath Width.

Note that when you make a new area, the swath width defined in Set Swath or common swath width is always used.

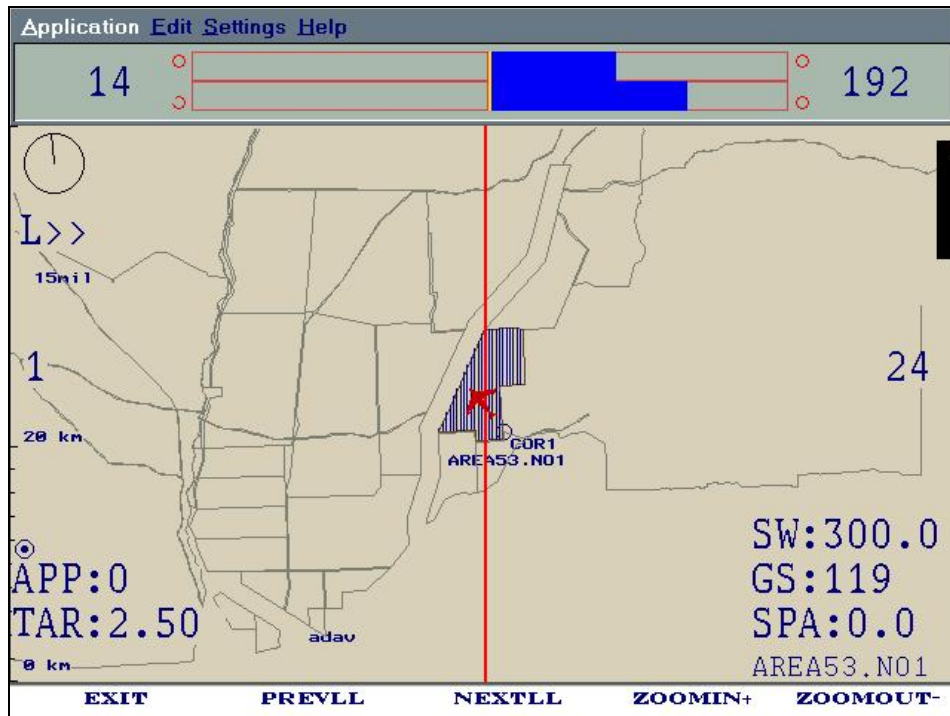
5. Bug fix: Fixed a problem in new area generation when flying a project.

New Features and Changes in Release 1.3.7: (Oct 2008)

- 1) Multiple areas – Spray Individually: You can select to fly multiple areas with boundaries saved in a *.shp file or *.prj file. If you select to spray the areas individually, you can choose a spray zone from a list of zones saved in the *.shp or *.prj file. To do this, make sure you have the function “ZoneList” in one of the Control Menus of Old Area. During flight, press the key <ZoneList> to bring up the list of all spray zones defined in the *.shp or *.prj file. The use key <I> or <II> to move the highlight bar to the desired zone, then push <Enter>. When a spray zone is selected, new grid lines will be generated on the zone. The previous line direction is used for the new grid lines. You can use <NewGrid> to change the line direction. Note that if the *.shp or *.prj file does not have zone names, the zone number will be used for name, i.e. “1” for the first zone in file, “2” for second zone.

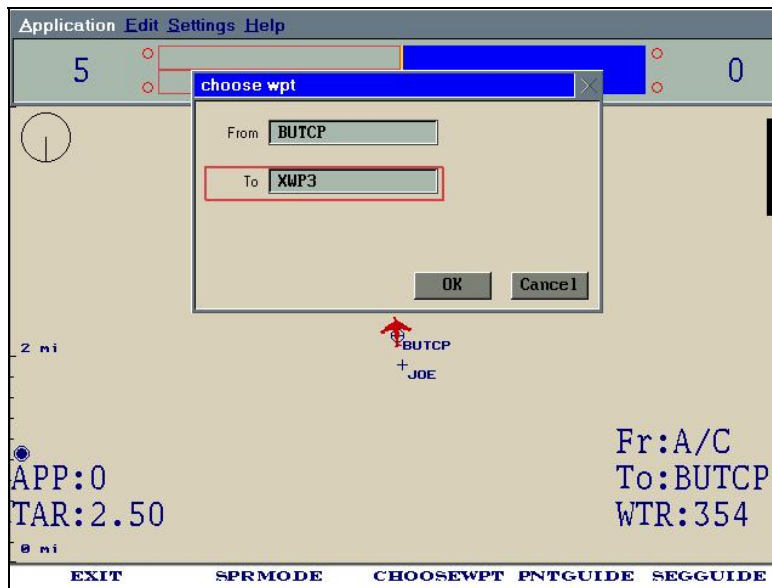


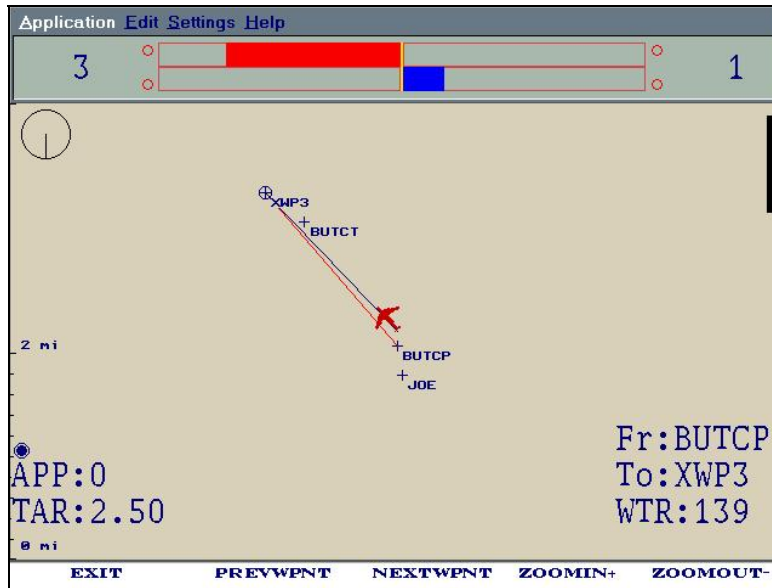
- 2) Multiple Area Display: The selected spray zone and other zones can be plotted in different colors. For example, the spray zone can be plotted in Green, other zones in Gray. Only spray zone has grid lines, other zones are for display only. This way you can easily see the spray zone amongst other zones. You can define the colors in Settings → Colors. The non selected zones are defined as “Displayed Polygons”.



- 3) Area Left/Right Indicator: When you make a new area by spraying an AB line, to remind you the option selected for area, the left/right indicator will be shown at the top left corner of screen, just below the compass. “<<” means the new area will be generated on the left of AB line. “>>” means the area will be generated on the right.
- 4) Split – Center/Edge: When generating a new area by Split – Center or Edge, the spray pattern can be extended to outside the spray area. The same number of lines will be generated for you to continue the application outside the area.
- 5) Tower or Obstacle Display: The tower or obstacle points are displayed on top of spray data so that you can always see the towers. In previous version, if the spray or drift data is over towers, the tower display will be wiped out by the spray/drift display.
- 6) Tower/Obstacle Alert Time: The warning time for tower/obstacle alert when aircraft approaching tower points is increased from 30 to 60 seconds.
- 7) Line Numbering: The grid line numbering is changed to make it consistent with the line numbering in the AGNAV2.
- 8) Flight Master – Drift Offset: When using <NewGrid>, the existing drift offset is used for the new grid lines.

- 9) Flight Master – Wind Grid: When your preference is NO map rotation, using <WindGrid> to change grid lines will keep the same NO map rotation.
- 10) No Map Rotation – Center on Map or Aircraft: When selecting NO map rotation, you can choose to center display on the spray area or position of aircraft. The selection is in Settings → Display. Note that when you select Map Rotation, the display is always centered on position of aircraft. When using NO map rotation, the option for Vehicle Up should also be “No”.
- 11) Waypoint Mode: In waypoint mode, you can choose the From waypoint (FrWpt) and To waypoint (ToWpt) independently. To do this, make sure you have the function “ChooseWPT” in one of the Control Menus of Waypoint mode. During flight, press <ChooseWPT> when you want to select waypoints. A dialogue will be displayed for you select the FrWpt and ToWpt. The guidance will be the line between the FrWpt to the ToWpt. This is helpful when you fly along power lines. The <NextPt> key will change both FrWpt and ToWpt to the next points in the list of waypoints. To reverse the sequence, press <ChooseWPT> and swap the FrWpt and ToWpt. If you want to get guidance to fly from aircraft to a waypoint, press <PntGuide> key and use <NextPt> to select the ToWpt.





12) Optimal Angle of Intercept (OAI): For pilots who use OAI in AGNAV2, the OAI in Guia is working the same now.

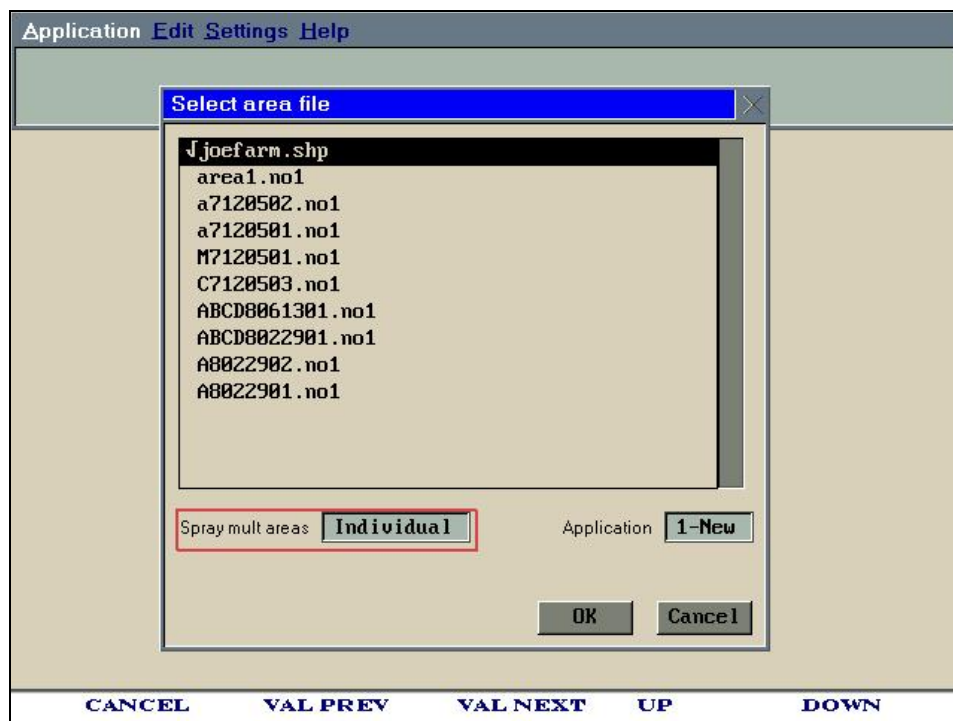
13) Local Time: To use the local time for data filenames, enter the correct Time Offset in Settings → Display. Time Offset is the difference between GPS or UTC time and local time. The formula is **Time Offset = GPS Time – Local Time**. The unit of Time Offset is hours and value in range <-12.0 .. 12.0>. Note that after entering Time Offset, you must exit “Application” and run “Application” again for Time Offset to be effective. You can see the local time in <Info>. Before you use the local time, you should make sure the Date and Time are correct. To check Date and Time, select **Test → Check Date**. Note that the Training always uses local time.

14) Change Swath Width: If you have to change the swath width during flight, select <SwWidth>. The current swath width is shown. Press key <III> to move the cursor up and use key <I> or <II> to change the value. Press <Enter> twice to accept the new swath width. Note that to be able to change the swath width during flight, make sure you have this <SwWidth> key in one of the Control Menu of **Settings → Keys → Old Area**. The new swath width will be saved in settings and used as default for next flight.

15) Flight Data Format: If you use *.shp file format for area boundary, by default the flight or spray data will be saved in Shape file format. In this version, you can select to save the flight data in Shape file or AGNAV binary format. Select AGNAV format if you want to replay flight data in NavviewW or SprayView. If you select *.prj or *.no1 file for area boundary, the flight data will be saved in AGNAV format. To choose the format for flight data, select **Settings → Spray Data**.

New Features and Changes in Release 1.3.6: (July 2008)

- 1) Restore Settings: After updating your Guia software with version 1.3.6, to restore previous good settings, select Application → Settings → Load Settings. Then select “MySettings.ini” from the list of setting files. For the settings to be effective, you have to exit Application to the Main Menu, then run Application again. **Note that if you have a problem running the Guia before update, do not restore the old settings. You should check and change the settings manually.**
- 2) Cross Country Waypoint Problem: The problem happened when you select to fly Xwaypoints, the coordinates of waypoints were deleted if you did not make a new waypoint on the fly. This problem was fixed. Always make sure you enter the coordinates of waypoints properly. Check the bounding direction of coordinates: “N” for North, “S” for South, “E” for East and “W” for West.
- 3) Exit Function: The “Exit” function is used to exit an area. Normally you use key <0> on the Guia console to exit. If you can not reach the Guia console when flying, you can add the “Exit” function to a control menu so that you can use the thumb switch to exit the area.
- 4) Multiple areas – Spray Individually: You can select to fly multiple areas with boundaries saved in a *.shp file or *.prj file. You can select to spray the areas together or individually. To spray the areas individually, select Application → Old Area. Then select the *.shp or *.prj file. On the same page, select “Individual” for “Spray mult areas” parameter.



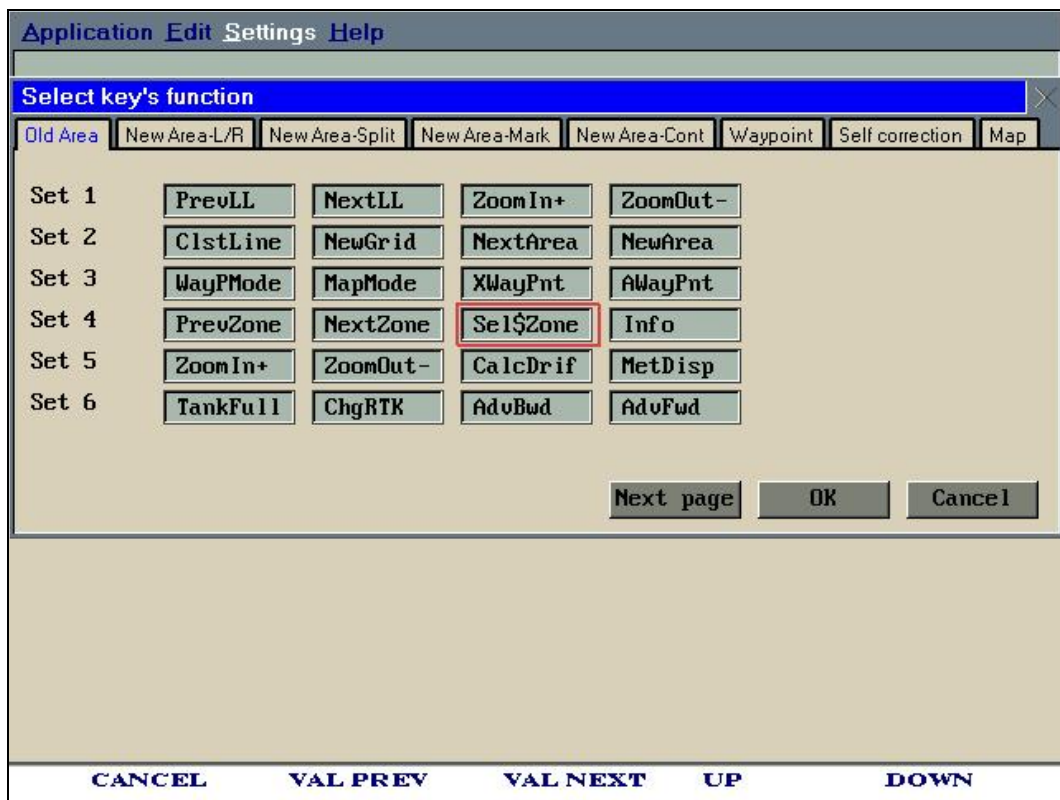
The following features are for flying multiple areas and spraying individually:

- 5) Names of Spray Areas in *.shp file: For the Guia to know the names of the spray blocks in the shp file, the attribute file *.dbf must have the identifier “NAME”. If this identifier is not found, the spray blocks will be named by its number in the shp file. For example, if you

have 5 spray blocks in a shp file, the first block defined in the shp file will be named “1”, the second named “2”, and so on.

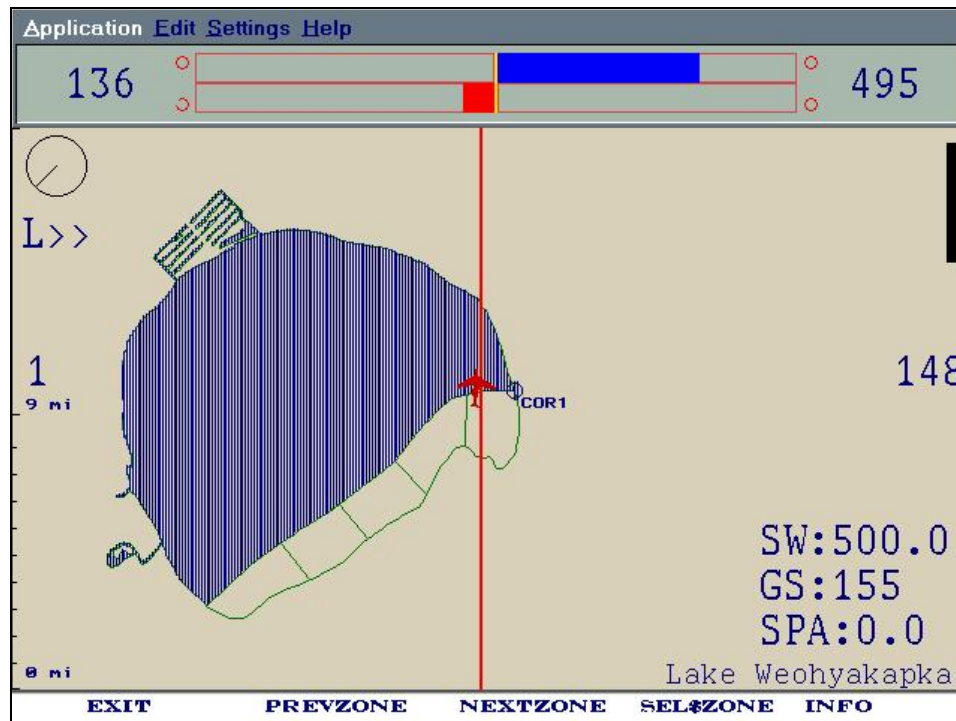
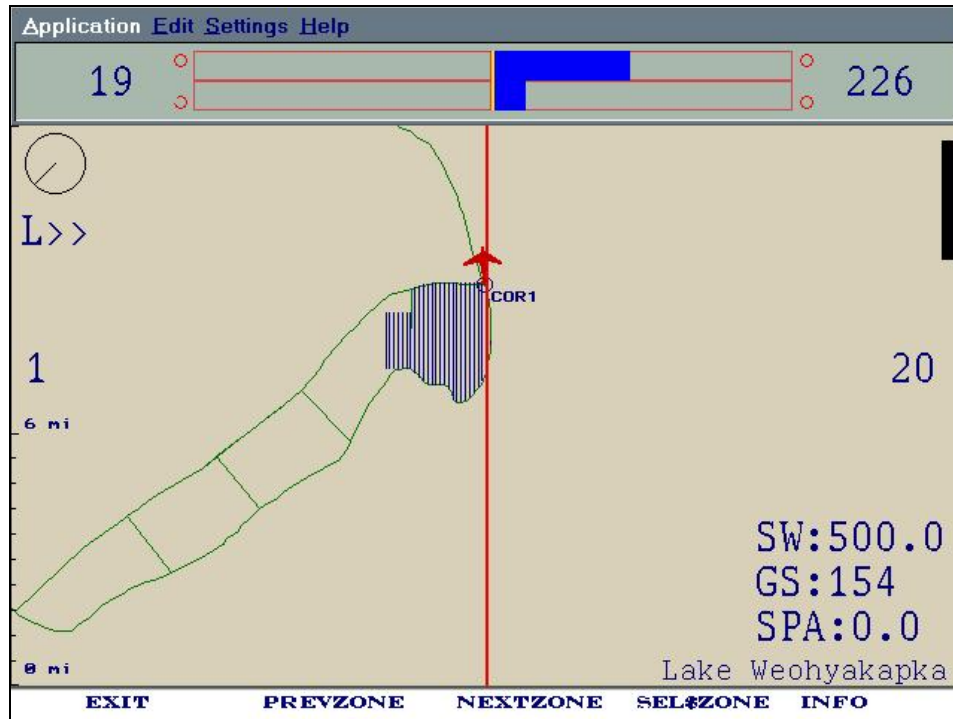
- 6) Select Spray Zone: A spray block in a shp file is called a spray zone. By default, when you select a shp file, the first spray zone is selected. You can select another spray zone by:
 - i. Flying into the desired area and push the key <SelZone>.
 - ii. Push the key <PrevZone> to select the spray zone described before the current zone in the shp file.
 - iii. Push the key <NextZone> to select the spray zone described after the current zone in the shp file.

Make sure you have these keys in the Control Menus of Old Area.



Note that:

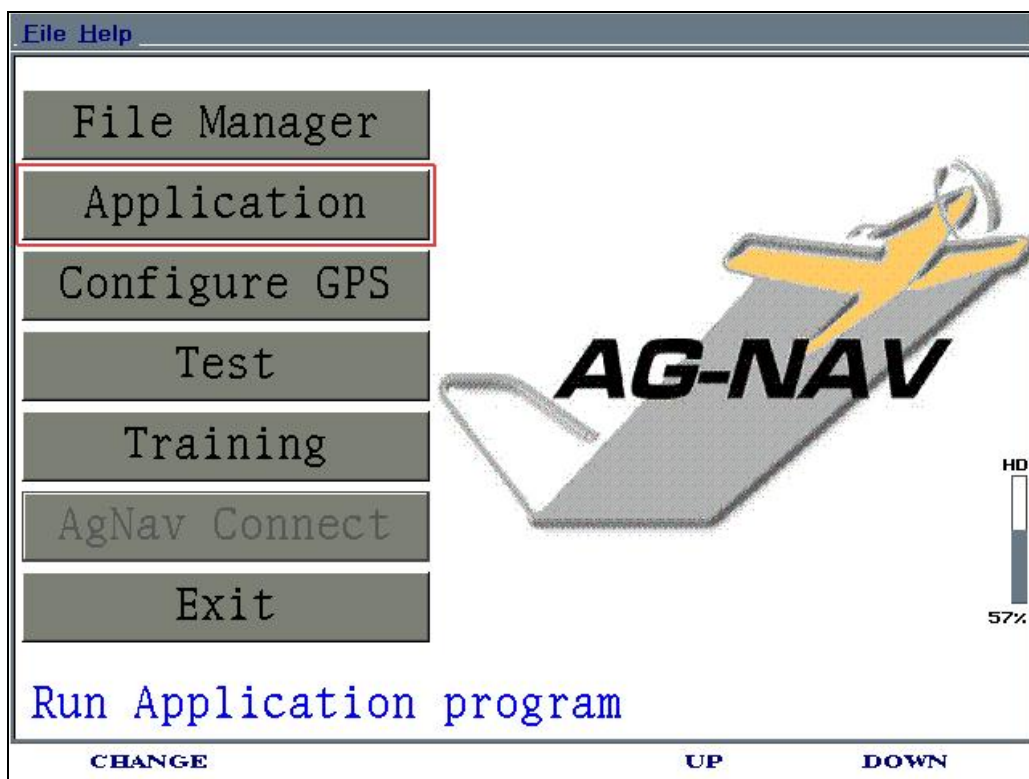
When you select to spray areas individually, only the selected spray zone has the grid lines. The inside/outside indicator on lightbar and recorded in data is related to this zone.



All flight and spray data are recorded to one file even though you select different zones to spray.

New Features and Changes in Release 1.3.5: (June 2008)

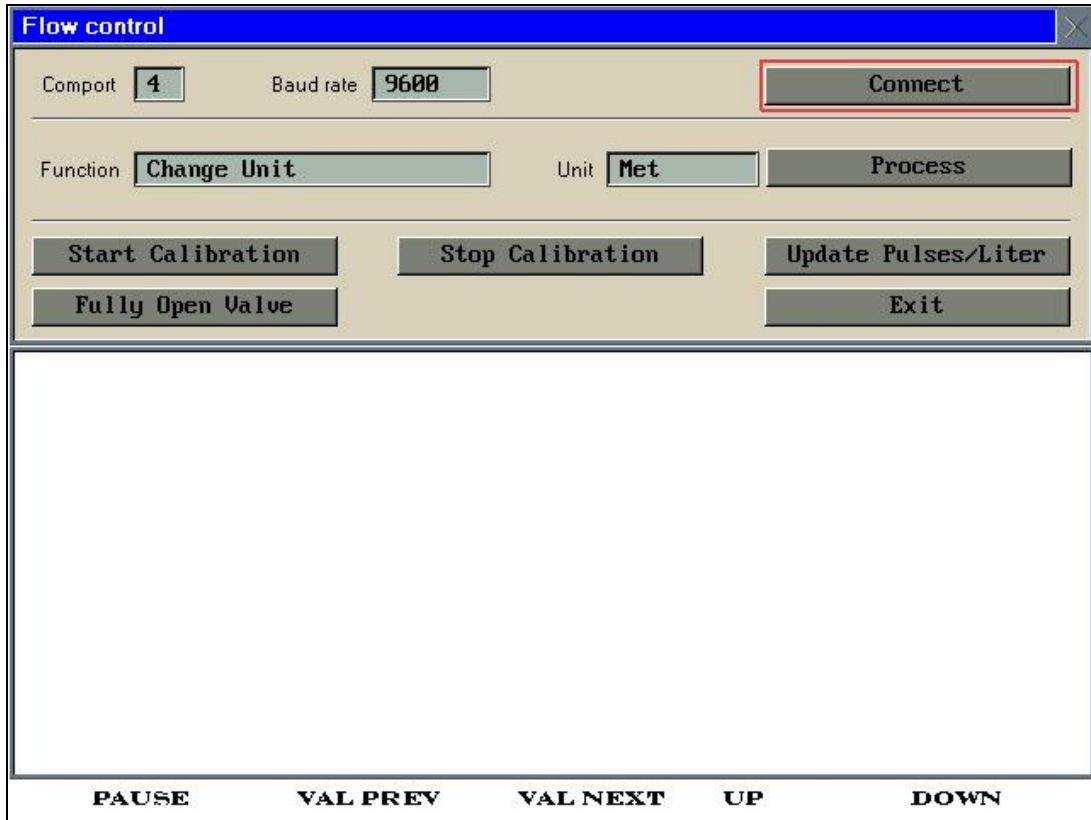
- 1) AGNAV Connect: With the Guia system, now you can use wireless communications to transfer files directly from Guia to your office computer, or from your computer to Guia. To do this, you must have a USB modem plugged to the Guia. "AGNAV Connect" helps you set up the parameters for the communications.
- 2) Display Disk Gauge: For the Guia to perform well, it is recommended that the system be maintained regularly. The maintenance includes backing up areas and projects to a USB key and deleting the old areas and projects. To show you how much space the Guia hard disk has left, the Main Menu displays the hard disk gauge as a vertical bar at the right edge of the screen. The number at the bottom of the bar shows how many percent of disk is free for data.



New Features and Changes in Release 1.3.4: (May 2008)

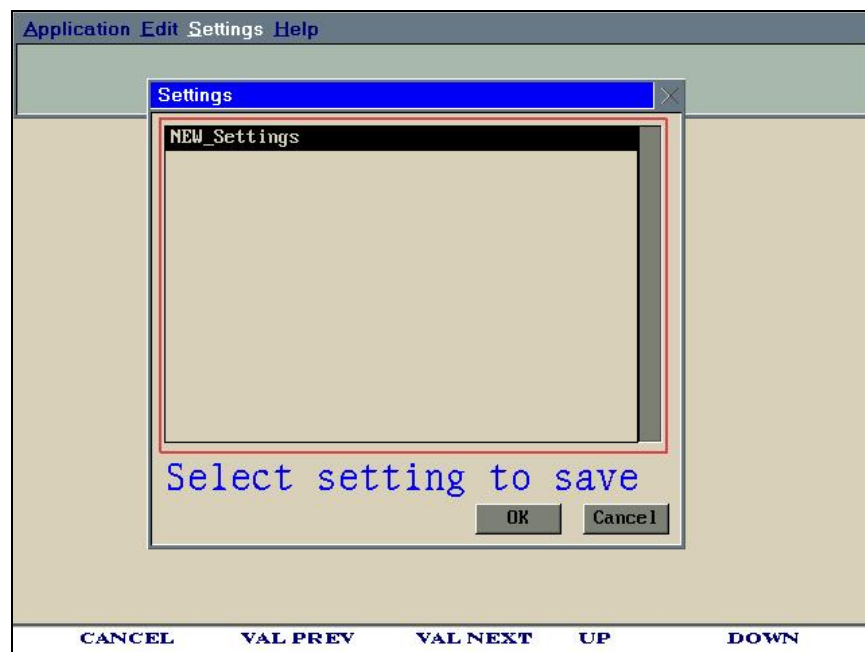
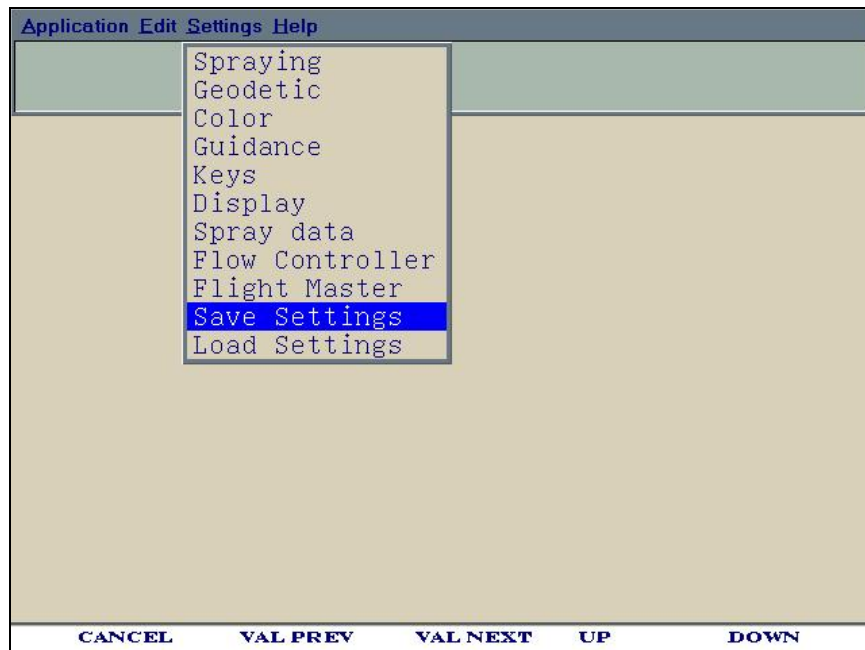
- 1) Test and Calibrate AgNav Flow Controller: If you have an AGNAV flow controller, you can test it and calibrate it by using Tests → Flow Controller. Before running this test, make sure that the Settings → Flow Controller has Comport "4", Baud Rate "9600", Flow Controller "AG-NAV", Flow Lead Time "0.5", Guia Output Interval "0.2". The Default Application Rate should be your target rate in Gallons per Acre (GPA) or Liters per Hectare (LPH). To run the Flow Controller test, use key <Illi> or <F4> to move the cursor to the

button “Connect” to initiate the communications with the flow controller. If the communications is OK, the flow controller will run the Self Test. You can select Functions such as Open Valve, Close Valve, Edit Pulses/Liter, Calibration. To run the select function, move the cursor to the button “Process” and press <Enter>.

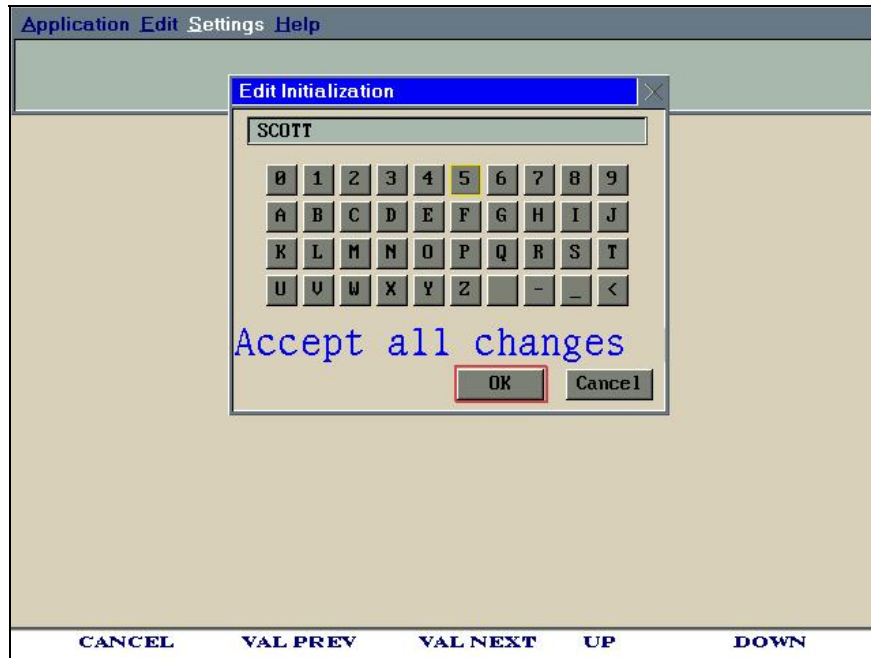


To calibrate the flow controller, enter the volume of water you use for calibration by selecting “Calibration Volume”. Depending on unit selected, the volume can be gallons or liters. Then select “Start Calibration”. Let water run through the valve. The total pulses count from the flow sensor will be shown on screen. When all water (the amount entered for Calibration Volume) passing through the valve, select “Stop Calibration”. The final results will be shown. You can compare the new or calculated pulses/liter with the current setting in the flow controller. If the new result is acceptable, select “Update Pulses/Liter” to update the flow controller with the new setting.

- 2) Save Settings: After setting all parameters correctly, you can save your own settings to a file and back up this file to a USB key. To do this, select Settings → Save Settings.



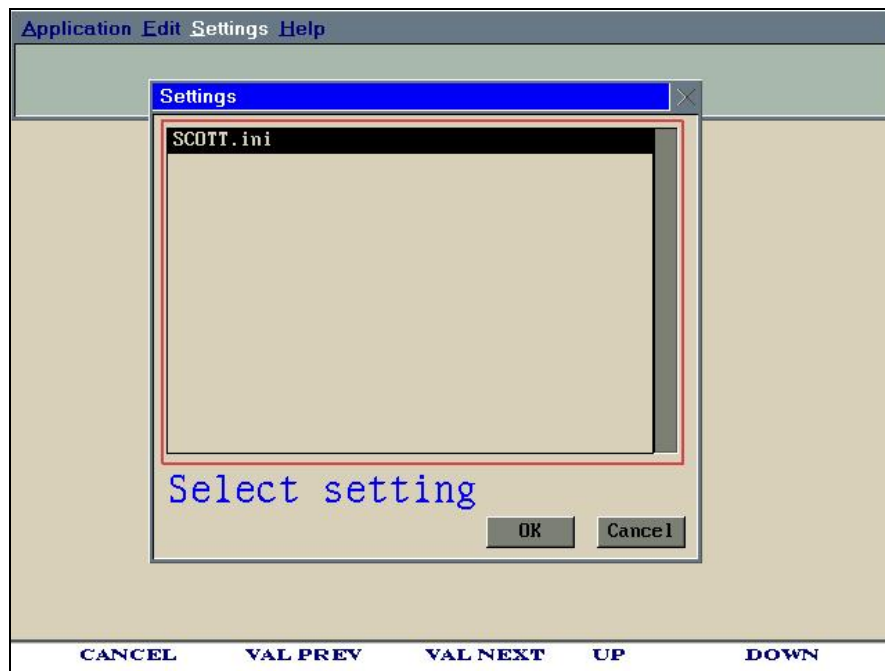
Select the filename or select "NEW_Settings" and enter a new name for your settings.



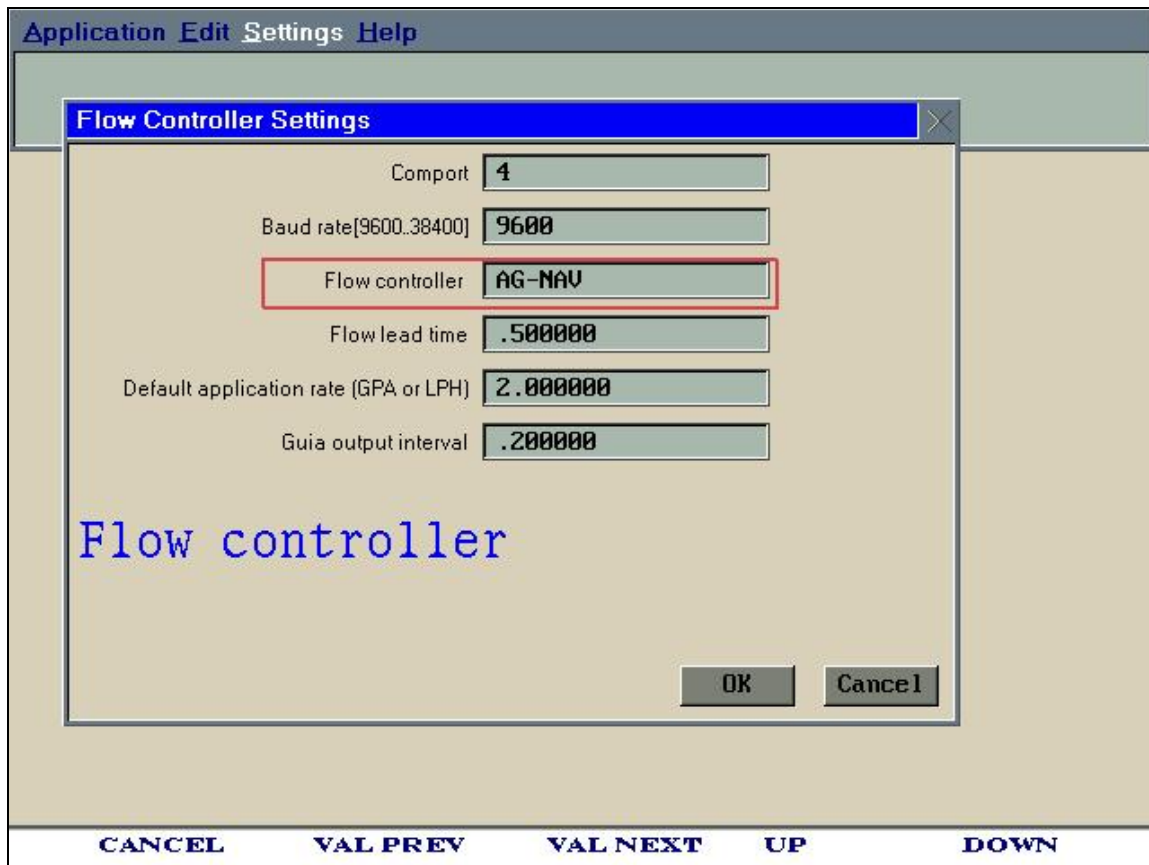
Use the virtual keyboard to enter the filename. The extension “.ini” will be appended to the filename, for example “SCOTT.ini”, so you do not have to enter the file extension. When done, select “OK” to accept the filename.

To copy this “*.ini” file to a USB key, use the File Manager.

- 3) Load Settings: To restore your settings, select Settings → Load Settings. Then select the filename from the list.



- 4) Wind Grid: If you use the FlightMaster, for the best effectiveness of application, you can select “WindGrid” to generate the grid lines perpendicular to the wind direction. Make sure you have this function in one of the Control Menus.
- 5) Default Scale: In version 1.3.3, the default scale for display is calculated based on the area size. However the pilot can set the default scale and Guia will use this as default for all areas. To do this, select Settings → Display. Enter the desired scale for Default Scale in meters, kilometers, feet or miles depending on preferred unit measurement.
- 6) Audio Warning: The warning of boundary approaching can be flashing lights or time line on the lightbar, or audio beeping on a speaker or head phone. To set the audio warning, select Settings → Guidance. Enter the time in seconds for Approach Audio Time. If the Approach Audio Time is 3 seconds, Guia will generate a buzzing sound 3 seconds before the aircraft or vehicle crossing the spray area. The pitch of sound is raised when the aircraft or vehicle is about 1 second from the boundary.
- 7) Grid line display: The grid lines generated by the AGNAV2 or NavviewW can be used in Guia.
- 8) Flow Controller: The Gold software supports AGNAV flow controller. When using with the AGNAV flow controller, the Settings → Flow Controller should have “AGNAV” for Flow Controller Type. The Default Application Rate should have the right value in Gallons per Acres (GPA) if US measurement system used or Liters/Ha (LPH) if metric system used.



- 9) Display: When AGNAV flow controller is used, the bottom left corner of screen will show APP for applied application rate in gallons/acre or liters/ha, and TAR for target application rate in the same unit. In normal case, the 2 numbers should match within 1 second.
- 10) File Manager: The File Manager shows information about the highlighted area at the bottom of screen in bigger font. Also the keys <III> and <IIII> are used to bring the highlight bar up and down respectively.
- 11) File Manager - Rename: The Rename function is implemented into File Manager. This is used to rename an area.
- 12) File Manager – Duplicate: The Duplication function in File Manager is used to make a copy of an area file *.no1 on the same disk (USB key or hard disk). The purpose of this function is for the pilot to practice on the duplicated area without changing the settings in the original area file.

New Features and Changes in Release 1.3.3: (March 2008)

- 1) Pilot Indicator: Guia version 1.3.3 supports Pilot Indicator as a type of lightbar. A pilot indicator is a backlit LCD which has 2 lines to show information. The top line is used for XTrack. The Spray On is indicated by the \$ symbol in the middle of bar. The bottom line is for numerical information. You can select 4 pieces of information to display. Also on the second line, the mode (Grid or Spray, Map and Waypoint) is shown at the beginning of line, and the indication of vehicle inside or outside the spray area is shown at the end of line.
- 2) Total Spray Time (TST): The Total Spray Time can be selected for information to be shown at the bottom right corner of screen. To do this, select Settings → Display. Then select “TST” for either Info1, Info2 or Info3. The Spray Time is in seconds at first. When the time is more than 59 seconds, the value changed to minutes. The Spray Time resets to zero when you exit the area.
- 3) Line Advance: For line advance, you can select to advance the locked line forward or backward. Advance Forward (ADVFWD) will advance the locked line from line 1 to the end of area. This is the default for all new areas. Advance Backward (ADVBWD) will advance the locked line from the end of area to line 1. This works for all spray patterns: Back & Forth, Race Track, Split, Skip and Squeeze. For Squeeze, when you select Advance Backward, the spray pattern works like Expand pattern. For Race Track, you don't have to change the Race Track Number to negative. To change the advance sequence, you must have the functions “**ADVFWD**” and “**ADVBWD**” in a Control Menu of Old Area. Use Settings → Keys → Old Area to assign these functions to the Control Menus.

During the mission, if you want to start spraying from the end of area to line 1, move the locked line to the end of area. Push the <Enter> key until you see the functions “**ADVBWD**” and “**ADVFWD**” in the Control Menu. Press <**ADVBWD**> to select advance backward. If you selected “AutoAdvance” in the settings, after spraying a line, the locked line will be shifted backward automatically. If you use locked line manual, you can use the <**NextLL**> key to advance the locked line. To remind you what direction the locked line will

move, the line advance indicator is shown at the top left corner of screen. The Advance Backward selection is saved for the current area only, not as a default for other areas or new areas.

To change from advance backward to forward, press the <**ADVFW**> key. A whole sequence of lines is changed.

- 4) Test: The problem in the Test → Comport (Com3 and Com4) was fixed.

New Features and Changes in Release 1.3.2: (February 2008)

- 1) Training: The Main Menu now has the “Training” item. This is used to train pilot how to run Application. You can fly the airplane or tractor by using the arrow keys on the keyboard. The Up/Down arrow keys are used to change speed, the Left/Right keys to change heading. The “S” key is used to turn on/off spray. This is very much like the AG-TRAIN in the AGNAV2 system.
- 2) Fixed Map Display: Able to display spray areas fixed in the center of screen, select Settings → Display. Then select “**No**” for “**Rotate Map**” and “**No**” for “**Vehicle Up**”.
- 3) Auto Zoom: This feature automatically zooms the display so that you always see the airplane/tractor and spray area. To do this, you must have the function “**AutoZoom**” in one of the Control Menus of Old Area. This feature only works if you use Fixed Map Display. **It’s not working when you select “Yes” for Map Rotate or Vehicle Up.**
- 4) Local Datum: Problem related to local datum was fixed. In previous version, problem was found in recorded UTM X/Y data.
- 5) Solid Paint Spray Display: Fixed small gaps when painting spray data during flight.
- 6) Display Selections: You can select to display on the screen and lightbar:
 - a. The amount of material left in the tank (Tank LeFt or TLF)
 - b. The number of lines left to spray (Line LeFt or LLF)
- 7) Display in Map Mode: The 3 pieces of information shown at the bottom right corner of screen in the Map mode are Locked Line Number (LLN), Line Heading (LH) and SPray Acreage (SPA).
- 8) Menu Text: Bigger font size for text (items) in menus.
- 9) Airplane Icon: Solid red airplane icon.
- 10) Aircraft/Tractor display is updated 5 times per second. It used to be 2 times/sec in previous versions.

- 11) Guidance and Information on lightbar are updated 5 times per second. It used to be 2 times/sec in previous versions.
- 12) Tower/Obstacle Display: The towers or obstacles are displayed with a new symbol. When the aircraft is approaching a tower within warning range, the tower is highlighted with a bigger image on screen.
- 13) FlightMaster: You can turn on/off the display of target area on screen. To do this, you must have the function "**TAreaDisp**" in one of the Control Menus of Old Area.
- 14) Lightbar Settings: The XTrack setting for LEDs on the lightbar can be 0.5 feet or meters for the first light, 1.0 for the second, etc... The increment is 0.5 feet or meters.
- 15) AutoAdvance Time: When using AutoAdvance the locked line, you can set the time when the locked line should be shifted to the next after you finish spraying a line. The default is 3 seconds. If you spray multiple areas and the locked line crossing more than one area, you can increase the AutoAdvance Time so that the locked line remains the same when you fly from one area to the next.
- 16) Next Page Key: For your convenience, a new key called "**Next Page**" is implemented to the Settings → Keys. This key is used to go to the next setting page (Old Area, New Area, ..., Map Mode) quickly.

To move from one page to the next, you just highlight the "**Next Page**" key and press <Enter>. The Control Menus of the new page is shown for you to check or edit. Push <Enter> again to move to the next page. If you want to edit a key, use keys <I>, <II>, <III>, <IIII> as usual.

New Features and Changes in Release 1.3.1: (December 2007, used at NAAA show 2007)

- 1) Cross Country Waypoints (Xwaypoints): Xwaypoints are not deleted when making a new area. When flying Xwaypoints, the flight data is saved in the **agnavwpt** folder.
- 2) Closest Locked Line: When in Map mode, the <ClstLine> function will lock to the grid line closest to the vehicle. This line can be already sprayed or unsprayed. This works the same as in the AGNAV2 system. Note that in Spray or Grid mode, the unsprayed line closest to vehicle will be locked.
- 3) Tower Points: When a tower point (obstacle) is entered by <ObstPnt> function, the point will be plotted on screen as a triangle in the color assigned to exclusion zone. Warning will be displayed on lightbar when pilot is approaching the point.
- 4) System Lag: Default System Lag is 0.8 seconds. System Lag is saved to binary data for use in NavviewW.
- 5) Spray Replay: When using solid paint to plot spray data, gaps caused by data reading are fixed.

- 6) Setting Restore: Restore function in Application → Help can restore the last good settings saved in the data folder. If you want to use the manufacturer's settings, you have to delete the file **navigate.ini** file by using File Manager. After deleting **navigate.ini**, you can use Application → Help → Restore to set all parameters to manufacturer's settings.

New Features and Changes in Release 1.3.0: (November 2007)

- 1) Line Generation: Changed algorithm to generate grid lines for multiple areas. For NEWGRID function, the new algorithm can run up to 20 times faster than the old one.
- 2) Hemisphere: Fix problem related to areas crossing equator. The Guia will always use the hemisphere setting in the Settings → Geodetics for new areas. The Guia will read the hemisphere setting in the area file (no1, prj or dbf for shape) for old areas.
- 3) FlightMaster: Guia supports the FlightMaster for wind drift offset navigation. During flight, the meteorological data (MET) and wind drift offset will be read from the FlightMaster system. The drift is used for navigation to bring spray material to the target area. The MET data is shown on screen. The wind speed, wind direction, temperature, humidity, drift and deposit offsets will be saved to the flight data files. If you have a FlightMaster system, you can turn on the FlightMaster feature in the Settings → Flight Master. Guia uses comport 3 to communicate with the FlightMaster. Also make sure in the Settings → Keys → Old Area, you have the controls "METDISP" and "CALCDRIF" in one of the control menus. The "METDISP" turns the MET display on or off. The "CALCDRIF" sends a command to the FlightMaster to calculate drifts for use in navigation.
- 4) Change Race Track Number: If you are using the race track pattern for spraying, you can change the race track number if necessary. Before using this function, make sure you have the function "CHGRTK" in one of the Control Menu in the Settings → Keys → Old Area. During flight, to change the race track number, push <Enter> until you see the control "CHGRTK" in the control menu displayed at the bottom of screen. Then push the appropriate key to open the Race Track dialogue. Push <III> to move the cursor (red rectangle) up to the Race Track number box. Use key <I> to decrease and key <II> to increase the race track number. When done, push key <IIII> to move the cursor down to the "OK" button. Push <Enter> to accept the value and continue the program. Note that Guia will recalculate the sequence for line advancement based on the new race track number. The sequence will start from the same line that the previous race track sequence started, not from the current locked line. For example if the previous race track sequence started from line 5 and the current locked line is 11, the new race track sequence will start from line 5 and the locked line will be 5. At the moment, Guia does not accept negative race track number.
- 5) Automatic Booms On/Off: The Relay On and Relay Off in Spraying parameters work properly for automatic booms on/off.
- 6) DTG and TTG: When vehicle is moving away from the target line, the DTG shows the right distance. The TTG shows the right time to go but in negative. Note in previous version, when vehicle is moving away from area or target line, the DTG and TTG are always -1.
- 7) TTG: The Time To Go shown on lightbar and screen is in minutes. When the value is less than a minute, the display shows value in seconds.

- 8) New Update Files: Starting from version 1.3.0, the update package includes the following 4 files: “p151upd_g.tgz”, “p151upd_s.tgz”, “p151upd_r.tgz”, and “update”. The Main menu program will display a gold airplane, a silver airplane or a tractor depending on what type of unit you have. If you run the wrong software, the “Application” program will display a warning to let you know this. After successful installation, you should remove the USB key and push <Enter>. Guia will reboot to use the new software. **DO NOT TURN OFF GUIA.**
- 9) File Manager: The new File Manager program can manage area and project files in upper case or lower case. When it copies files to Guia, the file extensions will be changed to lower case for use in other programs.

Software Update Procedure

Important notes:

- The software update will load the new settings to your Guia system. Therefore before updating software, please record the current settings for use after update.
- The USB key that you use as an update disk for the Guia system must be formatted with FAT32 so that it can hold long filenames.
- Make sure you know what type of system (Gold, Silver, Ground) you have. If you do not know the type, select Help → About. In version 1.3.0 and later, the Gold system will show a gold airplane on the Main menu, the Silver will show a silver airplane, and Ground will show a tractor.
- Download the right software update to the hard drive of your computer first. Do not copy it to the USB key used for update.
- When you are ready, you can do the following:

1) Make Update Disk:

- a) Make sure the USB key is empty.
- b) Make sure you have the right update file for your Guia system, i.e. Gold, Silver or Ground. If you do not know what system you have, check it by selecting Help → About. Never use the wrong software update.
- c) Unzip the Guia Update Zip file that you download from email or internet to a USB key. An example of update zip file is **guiagoldengnorth130.zip** for Gold system.
- d) Check if your USB key contains the following files (assuming that USB key is seen as drive H):

For version 1.3.0 and 1.3.1:

H:\update
H:\p151upd_g.tgz
H:\p151upd_s.tgz
H:\p151upd_r.tgz

For version 1.3.2 and later:

H:\update
H:\p151updg.tgz
H:\p151upds.tgz
H:\p151updr.tgz

- e) Unplug USB key from your computer after copying the files. Plug it to your computer again and check if the above filenames remain on the USB key.

2) Update Software in Guía:

- a) Once the update files are on the USB stick, turn the Guía on.
- b) Select "**Help**" from the System menu: Press key <0>, <IIII> to highlight "**Help**", then <Enter> to select it.
- c) Select "**Update**" from the Help menu by using key <IIII> and press <Enter>.
- d) Plug the USB stick to Guía USB port, **wait for 10 seconds** then press <Enter>.
- e) If everything is OK, the message "**update successful**" will be displayed on screen.
- f) Press <Enter> to close the message then remove the USB key. If the current software version is 1.2.15 or earlier, turn off the Guía and on again. If the software version is 1.3.0, system will reboot after a few seconds. **Do not turn off Guía**.
- g) After rebooting, run "**Application**".
- h) Check the version of the program: Select "**Help**" → "**About**".
- i) If you got the message "**update failed**" at step e), unplug the USB stick from Guía and repeat the procedure from step 1d. Make sure you get all the update files described in 1d.

Normally the software update will load the new settings and overwrite the current settings in your Guía system. Before flying with the new software, please check all settings in Application → Settings.

For further help or information, please contact AG-NAV staff at:

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