

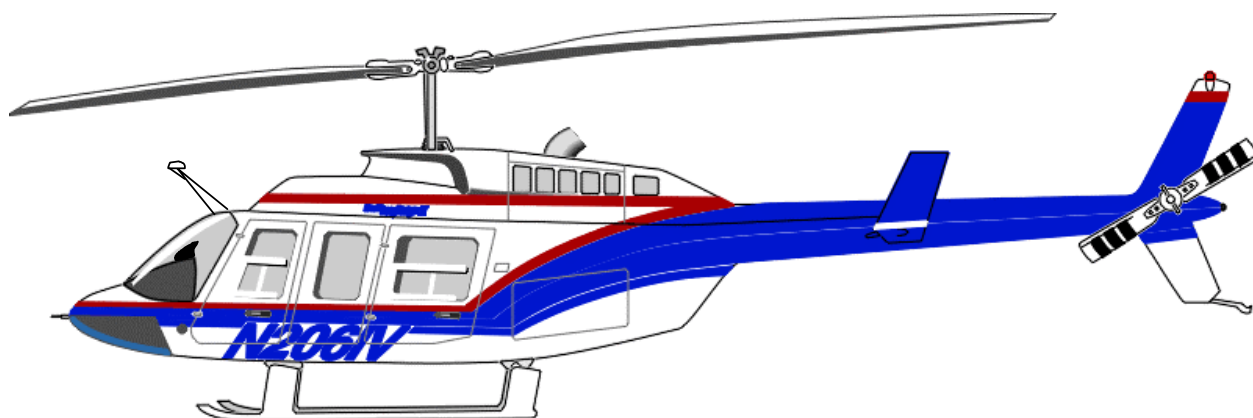
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**THIS MANUAL CONTAINS INSTRUCTIONS FOR:**

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# Operation of AirAg Office™

AirAg Office and Forest Office Management system



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# Overview of the AirAg Office™ with Forestry software:

## What does it do?

**AirAg Office is your management and reporting tool to do the following:**

- Create customers for use in the Airborne system
- Review the jobs done by the airborne system complete with analysis tools.
- Create printed or export digital reports of the jobs completed.
- Create and manage navigation points for customer fields, etc.

**Forestry is a management tool that is an added option to AirAg Office for the following:**

- Import GIS and Google Earth polygons for managing and creating application areas.
- Create jobs from these polygon areas

## What is the simulator mode?

You may run the software in simulator mode for practice as well as working with the DynaFlight-AirAg Simulator for training.

The AirAg Office Simulator uses the actual software but is run in Simulator mode to link to the DynaFlight-AirAg simulator Aircraft software that runs on the Office computer. In simulator mode, it will not couple to the aircraft PC Card but only to C:/ drive where a separate database for the simulator mode is used. When you have become comfortable with the method of operation of the simulator, you will easily become familiar with the actual operations in the Aircraft.

## Software Installation Instructions:

The following are the instructions for the installation of the DynaNav software using the downloaded DynanavAgCompleteFullInstall.exe. *Note: After installation run the AirAg Office software first before running the AirAg Simulator - 'Start – Programs – Dynanav Ag – AirAg Office'.*

Download our “DyanavAgCompleteFullInstall.exe” by going to our website [www.dynanav.com](http://www.dynanav.com) and select “Support” – “Downloads” – “Dyanav Software” then click on [AirAg Complete Install \(Including Aircard install\)](#).

**Save** the “DyanavAgCompleteFullInstall.exe” to your Desktop or any other place that you can recall to run it.

Right Mouse click on the icon and select “Properties” and be sure the you “Unblock”. Click OK. Run the “DyanavAgCompleteFullInstall.exe” and step through the wizard to install.

After this is finished, the programs will be installed as a normal windows application and will be available run by using ‘Start – Programs – Dynanav Ag – AirAg Office, etc.’ The installation includes AirAg Office, AirAg Simulator, AirAg Tuneup, Synchronize Air Card, all the manuals.

## Cautions:

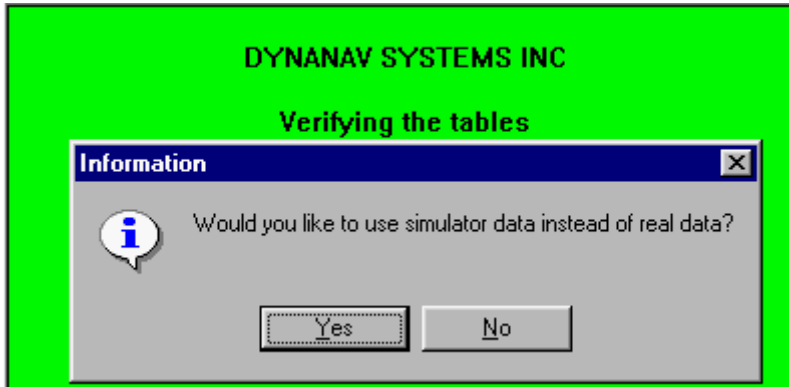
You have to be running Windows 95, 98, 2000, XP, NT, Vista or Windows 7 for this software/simulator to work. For Vista and Windows 7 users, contact Dynanav’s support team to install if you are having problems.

# AirAg Office Instructions

## AirAg Office Startup

### When AirAg Office software is launched

Upon startup of the AirAg Office software, you will be asked, "Would you like to use simulator data instead of real data?" If you want to run the software in simulator mode for practice as well as working with the DynaFlight-AirAg Simulator for training, then select **Yes**. If you want to run the software in real operational mode, then select **No**.



The next window is a confirmation that you are operating AirAg Office software and it's version, at this time select **OK**.

## Menu Selections Descriptions AirAg Office

### File



**Re-index Tables** is to only be used if there appears to be a problem with files not appearing or improper start up of the program. **IMPORTANT:** It is highly recommended that you contact Support at DynaNav before proceeding with this.

**Exit** is to quit or exit the AirAg Office program.

### Edit



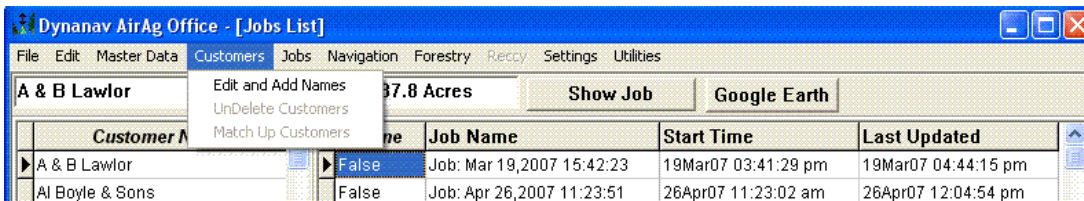
**Undo** is a standard Windows command that will work on some operations.

## Master Data



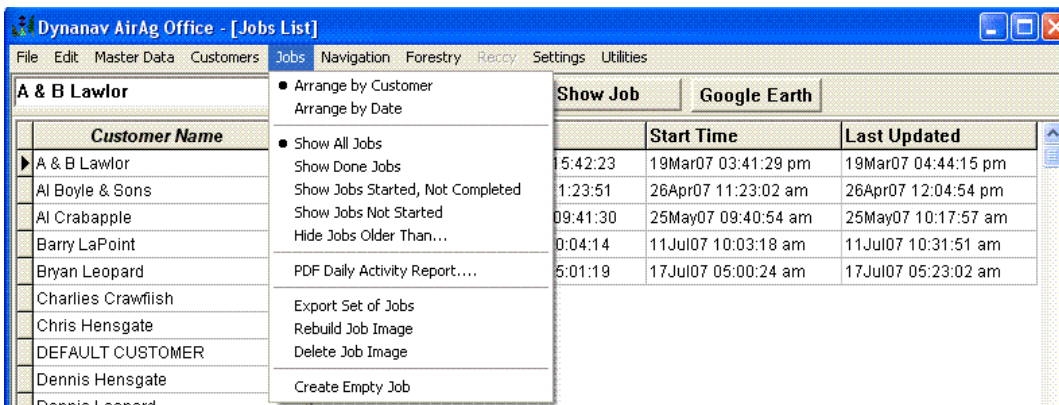
**Make Essential Backup** makes a complete backup of all of the data for the AirAg Office. This can be stored on any removable media including an USB Thumb drive for safe keeping or to transfer to another computer.

## Customers



**Edit and Add Names** is to add new customers to the list or to change the name of the existing customers. Also if the pilot adds a NEW CUSTOMER in the aircraft, it is named with the exact date and time of the creation. This name can then be edited to the actual customer name on AirAg Office using this tool. See **“Creating and Managing Customer names”** below.

## Jobs



**Arrange by Customer** shows all of the customers in the left side with that customers associated jobs on the right side.

**Arrange by date** shows all of the jobs arranged by date on the right side with the customer for the selected job displayed on the left panel.

**Show all Jobs** will display all of the jobs stored in AirAg Office either for the selected customer or for all of the customers if the **Arrange by Date** option is selected.

**Show Done Jobs** will display ONLY the Done Jobs in the jobs list.

**Show Jobs Started not Completed** will display ONLY the Jobs started but not completed in the Jobs list.

**Show Jobs not Started** will display ONLY the Jobs Not Started in the Jobs list.

**Hide Jobs Older Than** will give you a calendar date to hide all jobs that are older than the selected date.

**PDF Daily Activity Report** - This will create a PDF report of all jobs flown on a particular day. This report gives Customer, Job Name, Pilot, Acres (Hectares) Flown today, Total Acres Flown as well as acres covered, Coverage Required (if Polygon is there) and Area of original polygon.

**Export Set of Jobs** - This is to export the Shape files or Google Earth files of a group of jobs flown to a single file folder to give to your customer. Rather than exporting a single Job at a time, this is wizard the select many jobs for export. See - **“Exporting Set of Jobs”** in **“Forest Office Instructions”** Below.

**Rebuild Job Image** - This tool is to rebuild the Job View image if it does not show all of the sprayed area. After the Job View image has been rebuilt it will put in Default Customer, it can be sent back to the Air Card if the Air Card is not correct.

**Delete Job Image** - This tool is to Delete a Job Image that does not appear to be correct and then can be Rebuilt as above.

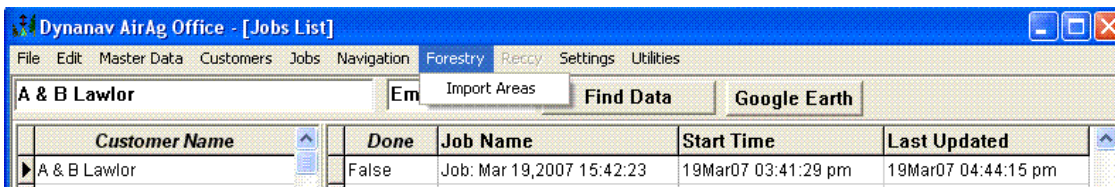
**Create Empty Job** - This is to create an empty job to put in a Lat Long for pilot navigation to that field. The name can be quite descriptive if required.

## Navigation



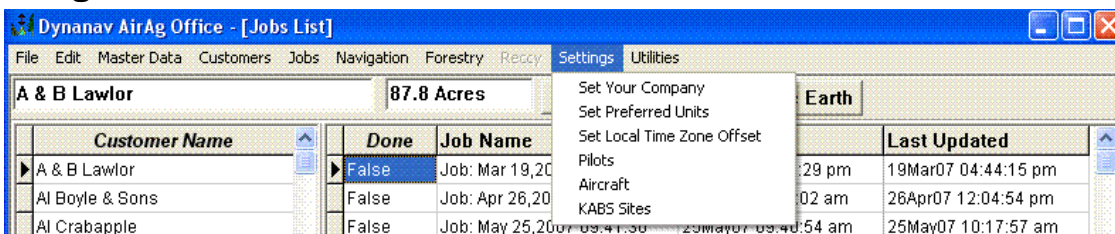
**Edit Nav Points** is to give you a tool to add or edit Navigation points such as customer fields and strips as well as for your own operations. If you have already sprayed a customer's field in the past, you can call it up to create a navigation point to go back to that field. See - **Creating/Editing Navigation Points** below.

## Forestry



**Import Areas** is for any users, including Forestry users. This selection brings you to the Forestry module for importing polygons into customer Areas and then creating jobs from these polygons. (see **Forestry Ground Instructions** below)

## Settings



### Set Your Company

Enter your company name here. This will turn on any Special features the DynaNav has customized for your operation.

### **Set Preferred Units**

Set the units for Area, Length and Speed units that are displayed in your AirAg Office software. This does not change the units on any of the Air Cards – Any changes to the Air Card should be done by “Change Pilot Settings”.

### **Set Local Time Zone Offset**

This Changes the times for Start Time and Last Updated time to local time from GMT. Normally this will update automatically if your computer time is correct for your local time. West of GMT uses negative numbers. Example Western USA is -7 in the summer.

### **Pilots**

You add all of the Pilot Names here. The Air Cards are always assigned a Pilot Name. Enter the name and click the “Add” button.

### **Aircraft**

You add all of the Aircraft registrations (Tail Numbers) here. In the Aircraft the pilot is asked to select the Aircraft Registration name created from this list. Enter the name and click the “Add” button.

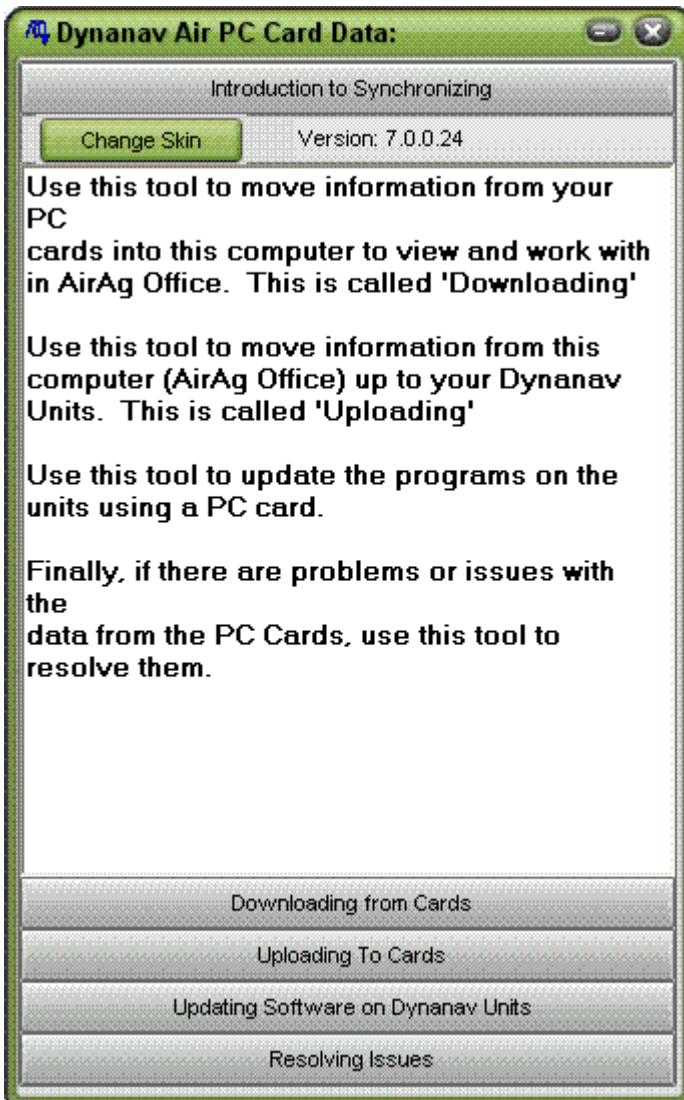
### **KABS Sites**

This is for special cases only, for importing Nav Point Shape file for sites.

## Synchronizing Aircraft Card with AirAg Office Software

### Synchronize Air Card

While the Aircraft PC Card is inserted in the Office computer you can Go to and click on **“Start – All Programs - Dynanav Ag – Synchronize Air Card”** Downloading the latest jobs from the aircraft card, Uploading all the AirAg Office Jobs to be done, Creating New Card, Updating the Air Card software and Resolving any issues with the Air Card and it’s data. This operation will also automatically test for latest software on the Air Card as well as Back Up the Air Card. During the Synchronizing operation, you will be prompted to enter the Pilot Name. All cards are identified by their Pilot Name.



### Downloading from Card

This operation will transfer all of the Job information from the Air card to the AirAg Office software. It also creates a backup image of the Air Card and stores the Pilot Settings as well. You will be prompted to enter the Pilot Name. it also informs you if the software is not up to date after the latest “Check Web For Updates”

### Uploading to Cards

It will New Card Image” then the “Upload Card” button will highlight and you can then Upload the Card image to the Air Card. You will be prompted to confirm the Pilot Name.

## Updating Software on Dynanav Units

At any time you can try updating the Air Card using this. If there is an update that has been downloaded during the “Check for Updates on the Web”, then it will prompt you to Update during download. You will be notified, if trying to update, that the Software is Current.

## Resolving Issues

ReSync information from a recent backup – Uses a latest Backup of an Air Card to reload the flown data onto AirAg Office. This is used in case the data did not properly download to the Office data.

## Creating and Managing Customer names

### Creating and re-naming customers

Original Customer Name:	Edited Name:
A & B Lawlor	
Al Boyle & Sons	
Al Crabapple	
Barry LaPoint	
Bryan Leopard	
Charlies Crawfish	
Chris Hensgate	
DEFAULT CUSTOMER	
Dennis Hensgate	
Dennis Leopard	
Fry Farming	
Gerry Fry	
Hunter Brothers	
Jim Hunter	

New Customer Name:

Region

Show Only Customers Not Deleted   
  Show Only Deleted Customers

With this window you can re-name, delete or add new customer names:

- To add a new customer name, type in the customer name in the box under **New Customer Name** and then click the **Add** button.
- To **Edit Selected Customer Name** – click on on customer name to highlight then type in the new customer name on click **OK**.
- To delete a customer name from your selection list, select the customer name with your mouse and then click the **Delete Selected Customer** button. NOTE: You are not actually deleting the customer, you are simply moving him from the visible list to an archived list.

- For each Customer, you can also add a **Regions**. Use the same **New Customer Name** and then put in the different Region and **Add**. This makes it easier to have jobs that relate to a particular region for the same customer.

## Reviewing, Re-Naming and Reporting Jobs

### Re-Naming the jobs

If the Job has been created in the aircraft as a NEW JOB, the name given to the job is the exact date and time of the job, e.g. 2002/10/21 15:27:25 (in GMT Time). This name can be edited on the ground to better reflect the field name or any other method you desire.

This is done by, selecting and highlighting the Job then right clicking your mouse and a Edit Name pop up window will appear to type the name into. This may be important to identify the field for your customers printed report.

The screenshot shows the 'Jobs List' window in the DynaNav software. The window title is 'DynaNav Ag Ground - [Jobs List]'. The menu bar includes 'File', 'Edit', 'PC Card', 'Time Zone', 'Customers', 'Jobs', 'Navigation', and 'Forestry'. Below the menu bar, there are fields for 'Al Gray & Sons', '110.9 Acres', and a 'Show Job' button. A table lists jobs with columns: Customer Name, Done, Job Name, Start Time, and CalcLa. The job '2000/04/22 15:27:58' is selected, and a context menu is open over it with 'Edit Job Name' highlighted. Below the table, a 'Change Job Name To:' dialog box is open, showing the text 'Grape Section 7' in the 'Name:' field, with 'OK' and 'Cancel' buttons.

Customer Name	Done	Job Name	Start Time	CalcLa
2000/09/02 14:48:07	False	2003/06/14 12:27:00	00h:mm:ss AMPM00 07:	00h:mm:
2000/09/27 12:22:15	True	2000/04/22 15:27:58	00h:mm:ss AMPM00 07:	22Apr00
Al Gray & Sons	True	2000/05/17 14:43:59	00h:mm:ss AMPM00 07:	17May00
Billy Cromwell	False	2003/06/14 10:05:12	00h:mm:ss AMPM00 07:	14Jun03
Billy Stien	False	2003/06/14 10:14:08	00h:mm:ss AMPM00 07:	14Jun03
Blair Miller	False	2003/06/14 11:47:44	00h:mm:ss AMPM00 07:	14Jun03
Bob Barker	False	2003/06/14 12:00:17	00h:mm:ss AMPM00 07:	14Jun03
Chuck Reinier	False	2003/06/14 13:30:05	00h:mm:ss AMPM00 07:	14Jun03
DEFAULT CUSTOMER	False	2003/06/14 18:22:51	00h:mm:ss AMPM00 07:	15Jun03

### Changing Job Status Done/Not Done

If the pilot has marked a JOB DONE, then it will be removed from his selection of jobs in the aircraft system. If you want to reverse this so the pilot can return to the job for completion, etc. then change the 'True' to 'False' in the **Done** column by selecting and Changing. Also the reverse can be done as well if the pilot has not marked a JOB DONE when it is completed. After "Synchronize Air Card" the Air Card will be updated to show the Job to be done.

## Reviewing and Reporting the Jobs

### Selecting the Job to Show in Review Map or Google Earth

**DynaNav AirAg Office - [Jobs List]**

Edit PC Card Customers Jobs Navigation Forestry Reccy Settings

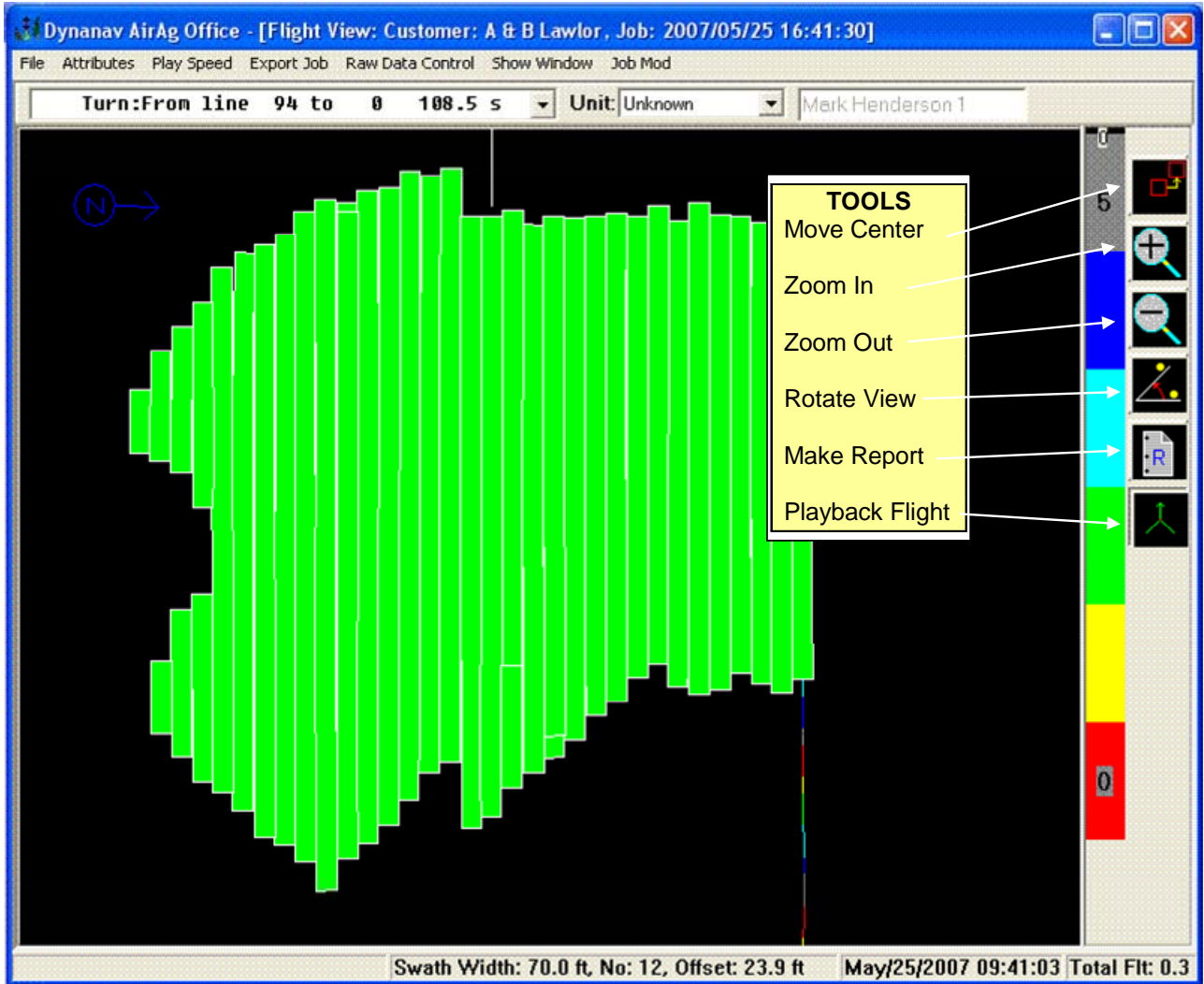
4-F Farms 66.6 Acres Show Job Google Earth

Customer Name	Done	Job Name	Start Time	Last Updated
▶ 4-F Farms	False	South East Corn Field	28Jun08 05:31:54 pm	29Jun08 03:50:59 am
A & L Lawson	False	North East Corn Field	24Jul08 09:18:37 am	24Jul08 09:20:59 am
Al Cranter	False	Section 38	24Jul08 09:20:33 am	24Jul08 09:22:16 am
Al Frey & Sons	False	Section 12	24Jul08 09:24:49 am	24Jul08 09:26:25 am
BJ Frey Farms	False	Summer Wheat field 20	24Jul08 09:25:34 am	25Jul08 08:20:53 am
Barry LaCasse	▶ False	Summer Wheat field 18	25Jul08 08:20:04 am	25Jul08 10:20:15 am
Billy Crochet	False	South West Corn Field	25Jul08 08:28:43 am	26Jul08 05:48:39 am
Bryan Lennards	False	North West Corn Field	26Jul08 05:49:29 am	26Jul08 05:54:22 am
C & Christian Hensgens				

Select Customer - Select Job - Push Show Job or Google Earth

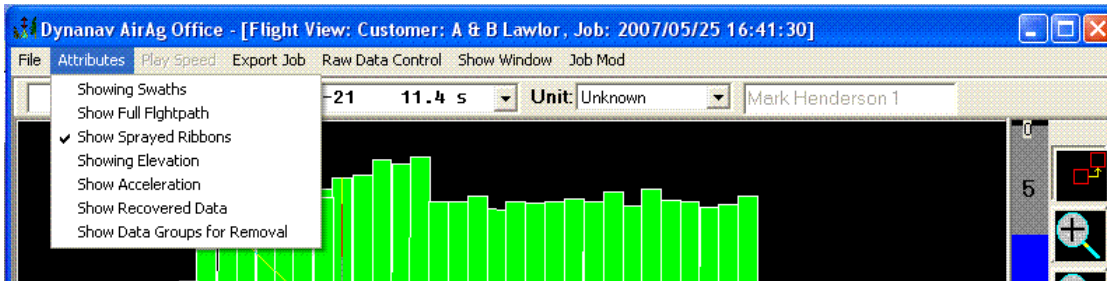
In the main window (above), select the customer on the left and then select the job you want to review, If you click the **Show Job** button the Job Review window (below) will show. If you push the **Google Earth** button, then Google Earth will be launched and the Flight lines and Sprayed lines will zoom and show on Google Earth (you must have Google Earth software installed for this feature to work).

# Review Tools

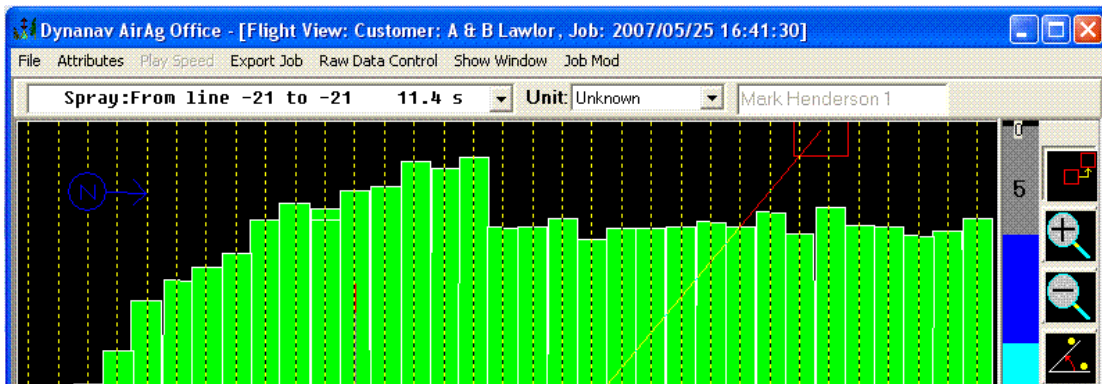


## Menu Selections

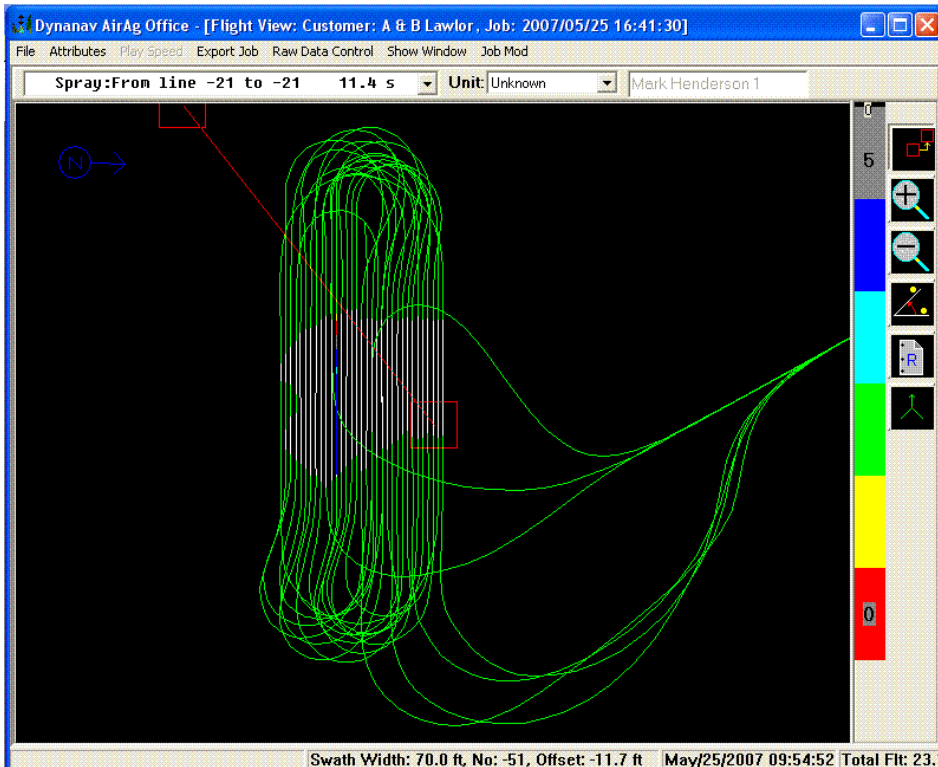
### Attributes



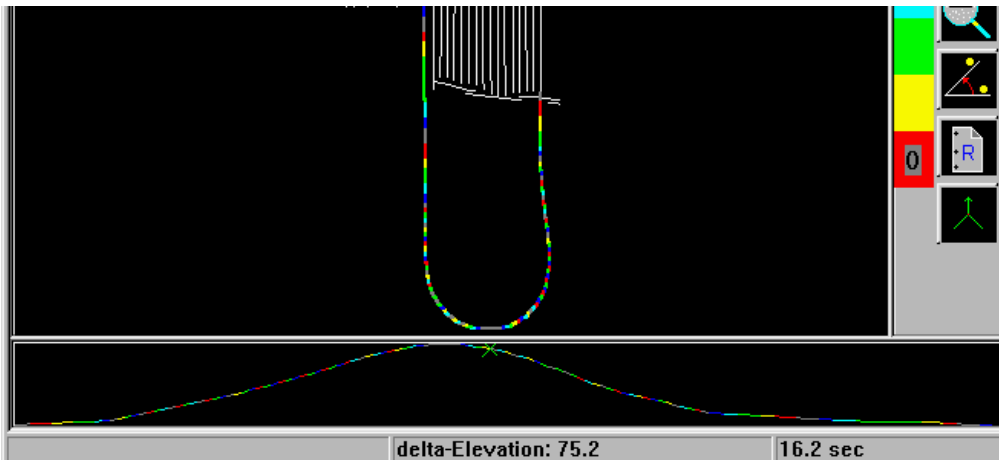
**Showing Swaths** is to turn on the Targeted Swath lines used for guidance by the pilot. These are dashed yellow lines. If you turn off “Sprayed Ribbons”, the actual flight path of the aircraft will be displayed. If you put the mouse cursor exactly over the flight path, the distance off the Targeted Swath will be displayed on the bottom of the screen.



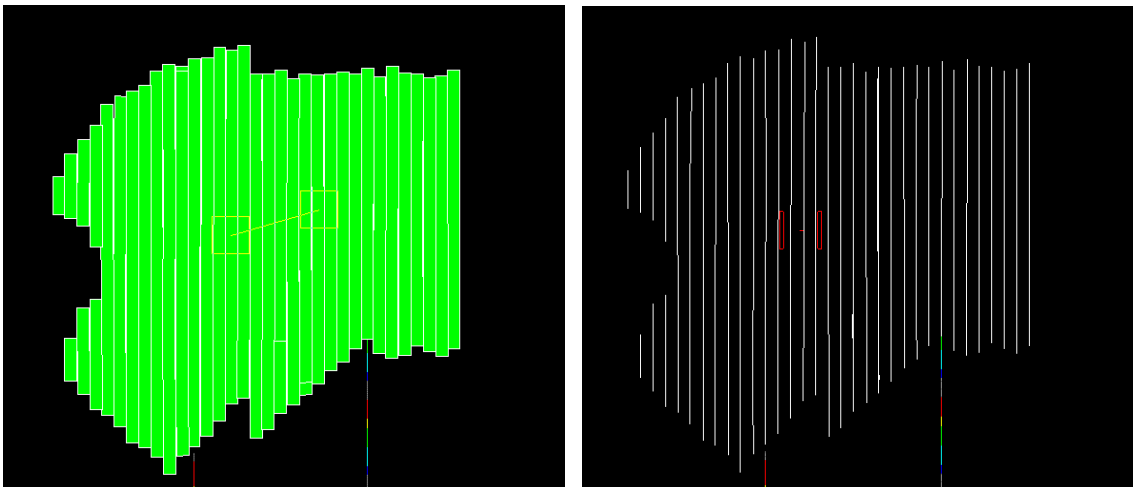
**Show Full Flightpath** toggles on and off the full flight path of the aircraft during that selected job.



**Showing Elevation** shows the delta (change in) elevation (in meters) of each leg of the flight path, e.g. from spray on to spray off and the turn from spray off to spray on. This is displayed on a lower segment. The delta elevation is shown on the bottom of the window relative to the mouse cursor position on the display line.



**Show Spray Ribbons** Paints a green swath along the sprayed flight path of the exact width of the swath Width set in the aircraft for this job. This makes it easy to see if you have any misses or gaps on your job. With the **Show Spray Ribbons** “off”, the screen will show the actual Sprayed Flight Path lines.



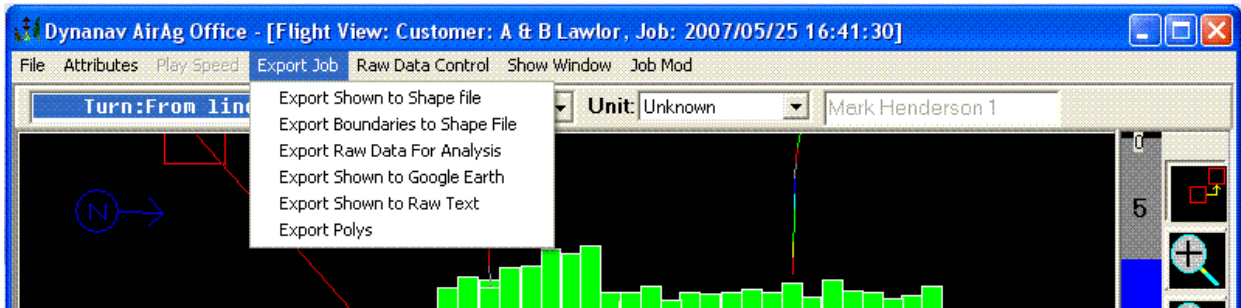
**Show Recovered Data** - If the Job Data Flight Lines do not show up, this Utility will step you through a wizard to recover the data from the downloaded files.

**Show Data Groups for Removal** –

**Play Speed**

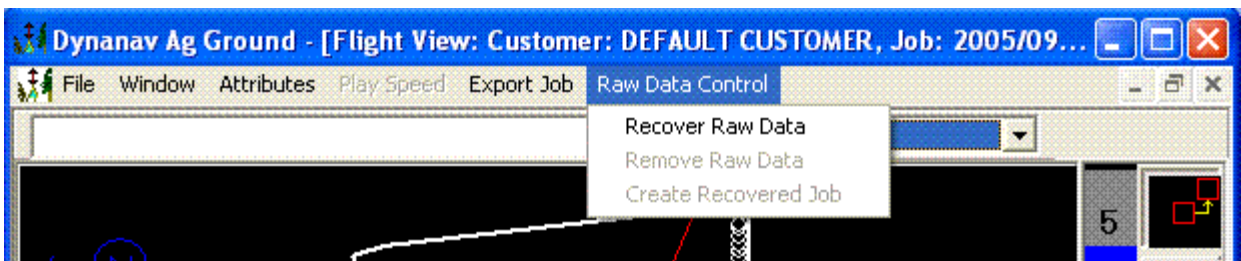
Is to set the playback speed of the Playback aircraft Flight. 0 – Stopped, 1 – at actual speed, 2 – twice the speed, etc.

## Export Job



**Export Job** is to export Sprayed Flight Path or the complete Flight Path in many formats for the selected job as well as the Boundaries created by the Pilot while flying. (See: Below **Exporting Completed Job File Data to Customer.**)

## Raw Data Control



**Recover Raw Data** is to recover the flight path from the raw data files if they do not show up in the Job View and the Flight View windows. The **Air Card** must be backed up first, as the Raw Data will be recovered from the Air Card information. This will take you through a few steps:

- 1/ Make sure that you have Synchronized the Air Card.
- 2/ Select the proper Backup with a mouse click in the left hand upper panel
- 3/ Select the day that you want to recover the data from (use mini calendar)
- 4/ Then click OK to recover. This will recover the data for this job on that date and bring you to the Job View window.

## Show Window



**Jobs List** is selected to go back to the main window to select Customer and Jobs.

**Job View** is to show the Job View as seen in the aircraft review window (See Job View Window below).

## Flight View Tools

### Move the Center of View



Select this button (default button) and you can move the center of the view window by moving your mouse cursor to the spot that you want the center of view to be and clicking.

## Zoom in to window

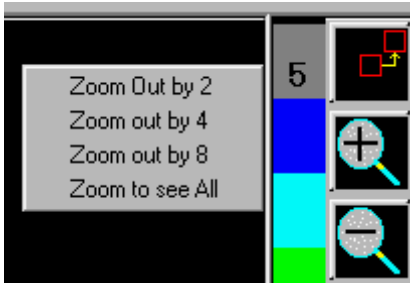


Select this button and you can zoom in by clicking and holding the mouse at the upper left point at your desired zoom area and dragging to the lower right of your desired zoom area and then release the mouse button.

## Zoom Out



Upon selection of the Zoom Out button, a small window will pop up giving you the options for zooming out.



## Rotate View



After selecting this button you can rotate the orientation of the flight lines for viewing at any angle. Simply move the mouse to move the red cursor line in the direction you would like the orientation. *NOTE: The reference is straight up.*

## Make Report



After Selecting this button Select an area you want to print by clicking and holding the mouse at the upper left point at your desired area and dragging to the lower right of your desired area and then release the mouse button.

At this time a window called Report Company Header will pop up for you to enter your company information. This information is stored for recall next time. The report is displayed as a PDF document for printing or saving and sending to your customer.

## Playback Flight



When you select this button an aircraft icon will travel along the display flight line at the selected **Play Speed** (Menu Selections above). You can start at any point on the flight path by clicking the mouse on that point.

## Job View Window

The Job View window, which is the exact view that the pilot sees to do his job review in the aircraft. *NOTE: This window will be larger than what the pilot sees, as he has a smaller screen.*



You can cursor around this screen by mouse clicking on the location that you want to be in the center of the screen. *NOTE: The Latitude and Longitude are displayed on the bottom of the screen (wherever your mouse cursor is on the Job).*

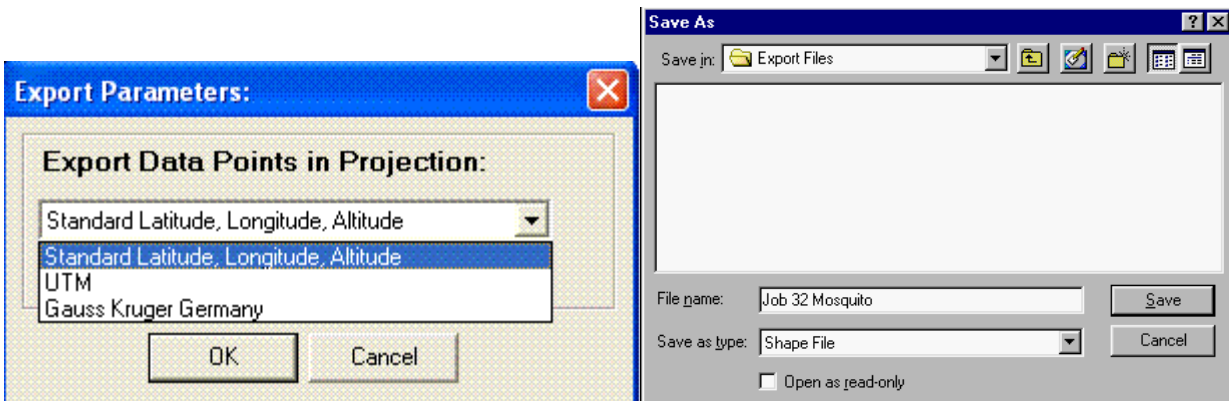
**Scale of View** – has 2 views of Job View, Zoomed In and Zoomed Out (the same as seen in the aircraft Job View window).

## Exporting Completed Job File Data to Customer

### Export Shown to Shape

Select **Export Shown to Shape** file under the **Export Job** menu item. NOTE: If you only want to export Sprayed Flight Path, then make sure the **Show Full Flight path** is unchecked under the **Attributes** menu. The opposite of this is available. You will get a prompt window to remind you of this.

At this time you will get a prompt for **Export Parameters** and then a Mini-Browser window to name the export file, to select the destination file or disk and hit the Save button.



### Export Boundaries to Shape File

This tool is to export a Shape File of the polygon or boundary of the treatment area that the pilot has flown to create his own treatment area. *Make sure you select the Customer and Job for export and you have selected the **Flight View** under the **Window** pull down menu.*

### Export Raw Data for Analysis

If there appears to be a problem with the job being presented properly on the AirAg Office software, then you can select **Export Raw Data for Analysis** and save the file to be Emailed to DynaNav Systems Inc. for analysis to find the problem.

## Creating/Editing Navigation Points:

This feature is to have a complete set of JOB RELATED navigation points. From the Flight View map you can create Nav Points for strips or customer fields from jobs that have already been done. As well you can enter new Nav Points as follows.

### Using Navigation - Edit Nav Points menu pull down

When you select **Edit Nav Points** in the **Navigation** pull down menu, an Add/Edit window will appear. In this window you can add or edit existing navigation points. *NOTE: Navigation points are associated with Customers and Jobs; therefore you can add a point that is for All Customers or a specific customer and then for All Jobs or a specific job. Normally the point would be for a specific customer and All Jobs.*

## Adding a Navigation Point

The different steps in this window are as follows:

- Select All Customers or a specific customer name in the **Cust. Name** field.
- Select All Jobs (for specific customer) or a specific job name in the **Job Name** field.
- Rename the **Point Name** to suit the best description.
- Select the **Display Format** that you have for the Latitude/Longitude (normal is Deg Min Sec)
- Enter the Latitude and Longitude with the exact format that is displayed (pay attention to world quadrant North, South, East, & West)
- Click the **<Add Point** button.

## Editing Navigation Point

- If you would like to rename an existing Nav Point, go to **Edit Nav Points** in the **Navigation** pull down menu.
- Find the Nav Point you want to edit by selecting the specific customer or all customers as well as the Job Name or all jobs.
- Double-Click on the Nav Point in the lower list to highlight and then rename the Nav Point in the Point Name field
- You can also change the Latitude and Longitude at this time.
- Click the **<Rename** button

## Using Flight View window

Using the mouse cursor, you can **RIGHT click** on a specific location on the map window in Flight View and an edit window will pop up with the actual Latitude and Longitude of the clicked location.

At this point you can take the following actions:

- Select All Customers or a specific customer name in the **Cust. Name** field.
- Select All Jobs (for specific customer) or a specific job name in the **Job Name** field.
- Rename the **Point Name** to suit the best description.
- Click the **<Add Point** button.

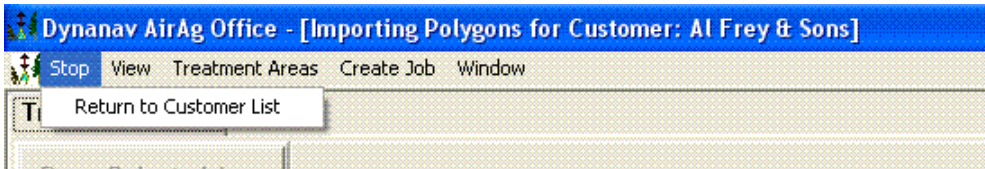
# Forestry Instructions

## Overview

Forestry is part of AirAg Office for the import of Geographic Areas from the client (Forest companies, AgriSmart, AgSync, etc.) for creating planned jobs for the aircraft. The AirAg Office can export a digital file, back to the client, the flight path with the attribute data, during and after the job and the Polygons created by the pilot of a treatment area.

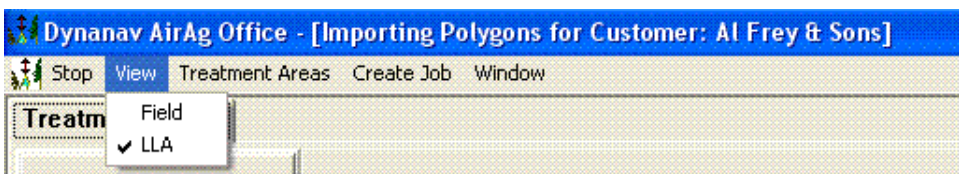
## Menu Selections Descriptions Forest Ground

### Stop



After completion of importing polygons and creation of jobs, **Return to Customer List** brings you back to AirAg Office for customer and job management.

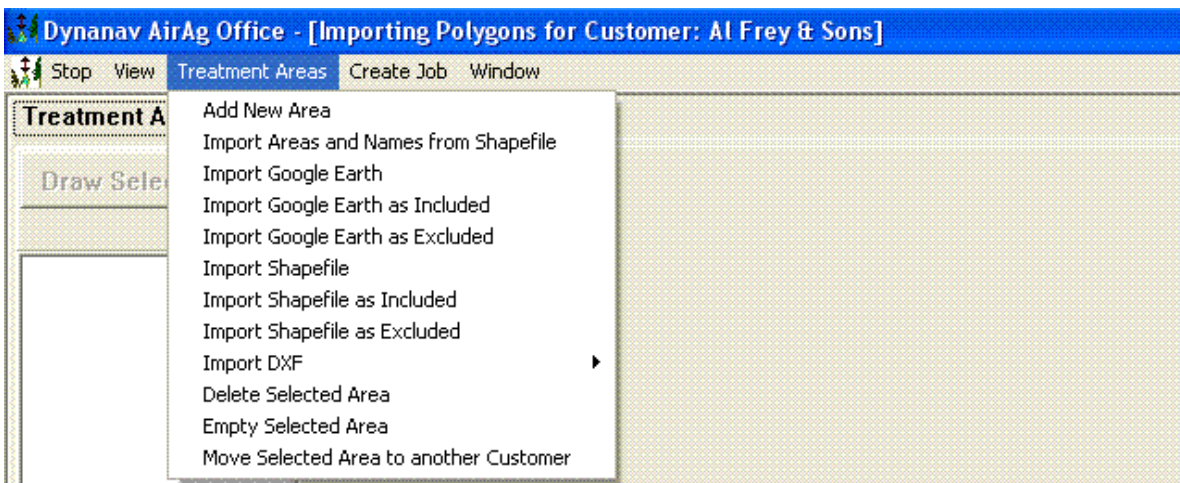
### View



**Field View** shows the Area with the swaths

**LLA** shows the Latitude and Longitude with the mouse cursor of the area being viewed.

### Treatment Areas



**Add New Area** is to add and name a new area to import polygon files into.

**Import Areas and Names from Shapefile** is to import the polygons as well as the names of the polygons as separate treatment areas for the specific customer selected.

**Import Google Earth** is to import the polygons created in Google Earth as separate treatment areas for the specific customer selected.

**Import Google Earth as Included** is to import the polygons created in Google Earth as separate treatment areas for the specific customer selected as included areas only.

**Import Google Earth as Excluded** is to import the polygons created in Google Earth as separate excluded areas for the specific customer to add to the included areas created above.

**Import Shapefile** is the standard form of polygons for import used by most clients. Make sure the client supplies the Shape files with the “.prj” projection files for ease of import.

**Import DXF** is for users/clients using AutoCAD or equivalent. The **Included** and **Excluded** areas must be imported separately.

**Delete Selected Area** is to delete a selected area that you have either made by mistake or do not use any more.

**Empty Selected Area** is to remove all of the polygons that have been added to this area.

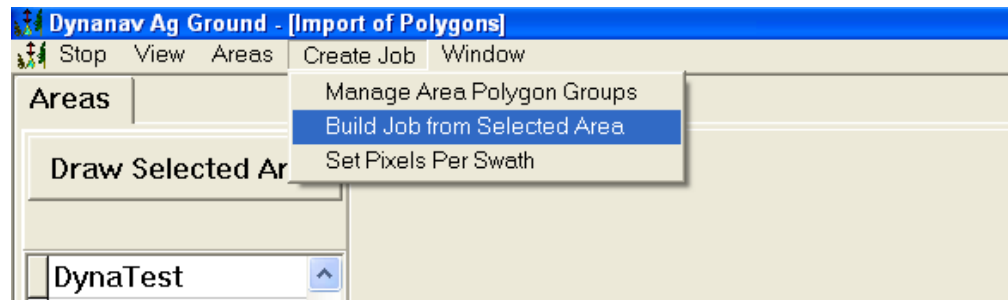
**Move Selected Area to another Customer** is to move all of the polygons that have been added to this area to another Customer.

## Create Job

### Manage Area

#### Polygon Groups

is to be used once you have selected a Customer in AirAg Office and created an area



and imported all of the polygons into it. This will let you create groups of the polygons into areas for best efficiency in the aerial application See – *Managing Area into Polygon Groups* below.

**Build Job from Selected Area** is to be used once you have a Customer and have an area with polygon(s) created and selected. See - *Creating Jobs from Areas* below.

**Set Pixels Per Swath** is to set the number of pixels used to display the unsprayed and sprayed area on the computer screen. See *Creating Jobs from Areas - Pixels per Swath* below.

## Window

### Cascade, Tile, Arrange Icons and Minimize

All are all standard Windows commands.

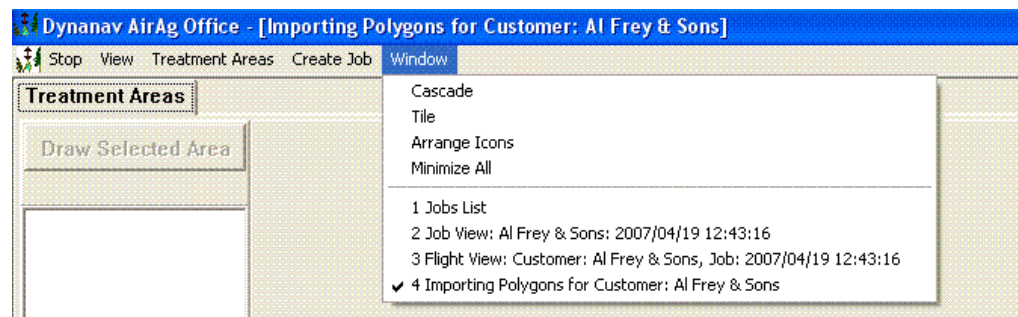
### Job List

will bring you back to the AirAg Office main window for customer and job management and reporting.

**Job View** This window gives the exact view that the pilot sees to do his job review in the aircraft.

**Flight View** This window is to review the flight path flown for the job including the sprayed lines. Also for exporting or creating printed reports.

**Import of Polygons** is the current window that you are in now to create areas and jobs for customers using polygons.



## Importing Polygons to create Areas

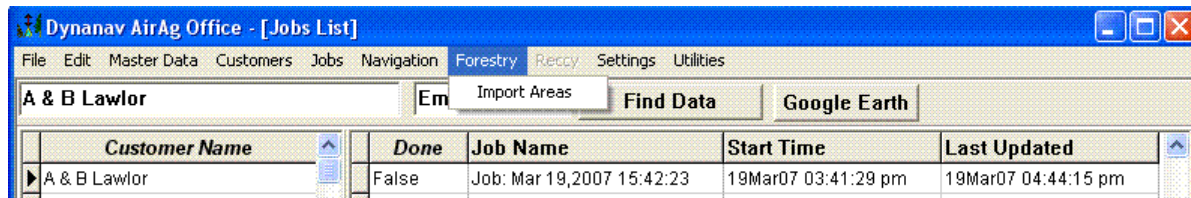
### Selecting Customer

Before going to Forestry Module (Forestry), select the desired name of the customer from the **Customer Name** list in the AirAg Office Window.

### Creating Areas

#### Select Forestry Module

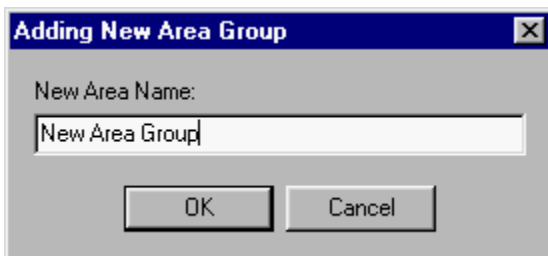
In the main window on AirAg Office select the **Forestry** menu and select the **Import Areas** item.



#### Importing polygons into area

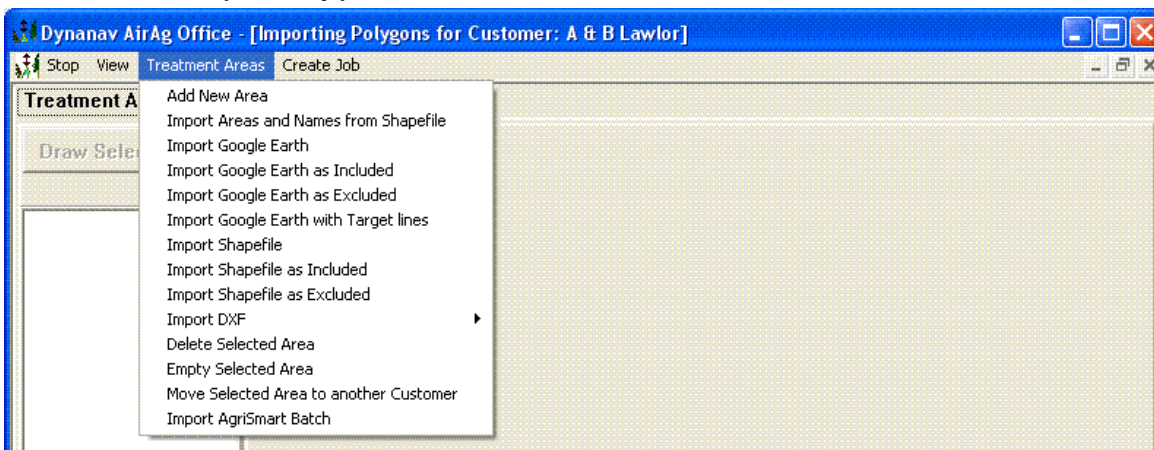
##### Adding New Area Group or Selecting Previous Area Group

At this time you can select a previously created area if this is the area you are working on or you can select the **“Add New Area”** under the **Treatment Areas** pull down menu and fill in the name desired for this area. The name can be any name you would like that best describes the area.



These **Area Groups** can contain as many polygons as you like from which you will then select specific or groups of polygons to create jobs.

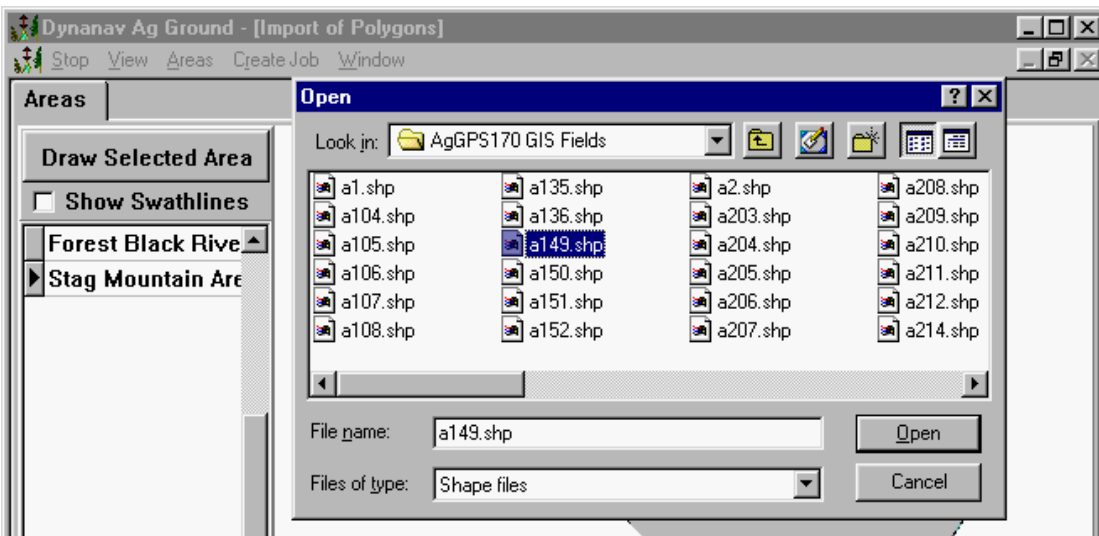
#### Select the Import Type



Under the **“Treatment Areas”** menu item, select the Import type that you have the files for. If the Shape files for the excluded areas are given as a separate file, then use the **“Import Shapefile as Excluded”** to import into the same area as the included.

### Importing files to Selected Area

First you must select the Treatment Area Name from the list on the **“Importing data into Area”** window. You will then have a mini-browser to search and select the file(s) you want to import into that area. Select the file in your mini-browser and click **“Open”**. *Note: If you have these files on a floppy disc, transfer them to a file on your C:\ drive first to reduce the possibility of a file transfer error.*







You can import as many of these polygons or groups of polygons into this area as you would like. During creation of the job(s) these polygons can be selected separately or grouped to create job areas.

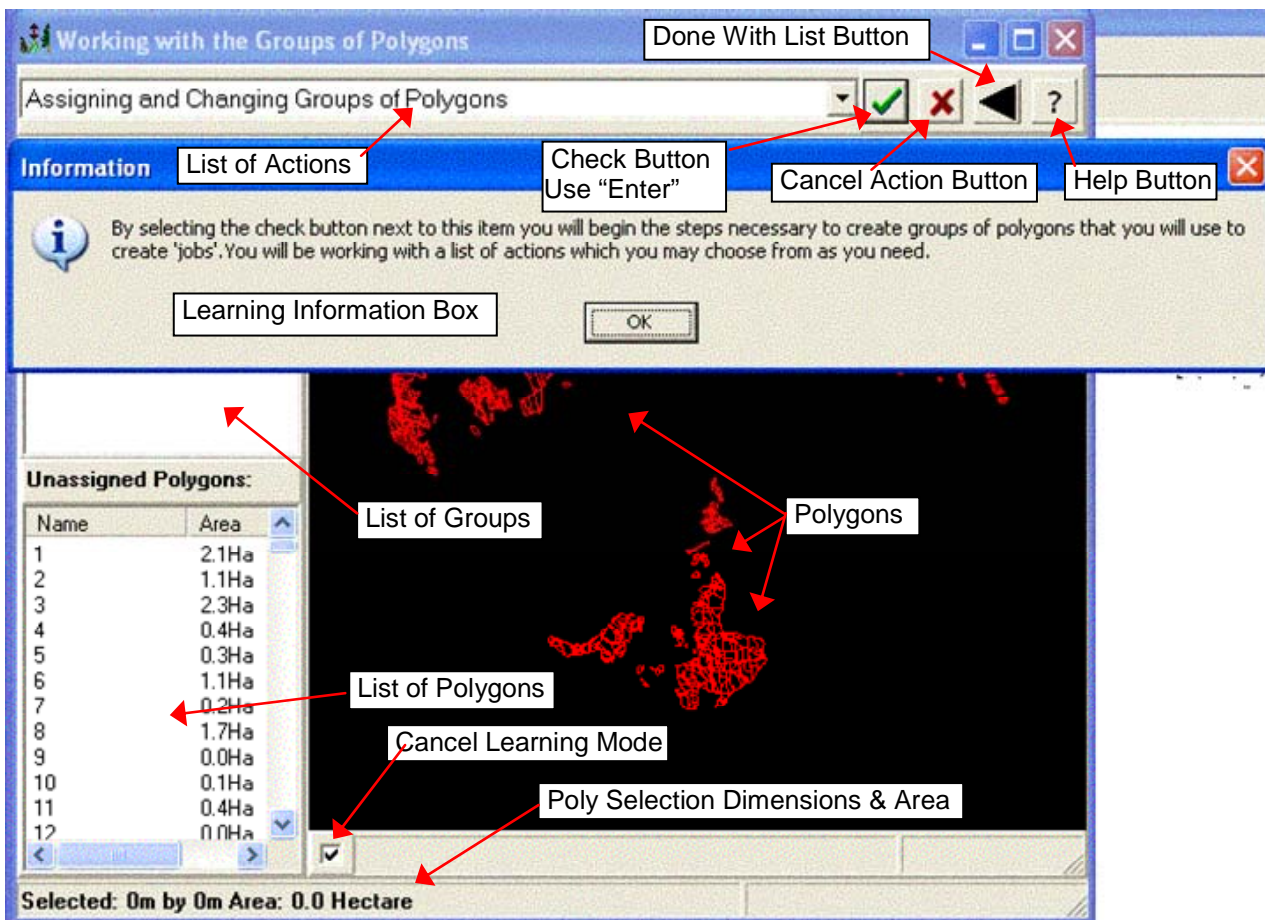
After importing the polygons, click the **“Draw Selected Area”** button to draw all the polygons on the screen for viewing.

## Managing Area into Polygon Groups

Select “**Manage Area Polygon Groups**” from the **Create Job** pull down menu which will bring up the “Working with the Groups of Polygons” Window. This window is for selecting the polygons into sub-groups of polygons or single polygons to create single jobs (treatment areas) for these sub-groups. ***The purpose of this management tool is to create individual jobs for the pilot that will give him highest productivity of the application while maximizing the safety of the application.***

This Management window will step you through creating Groups by using the “List of

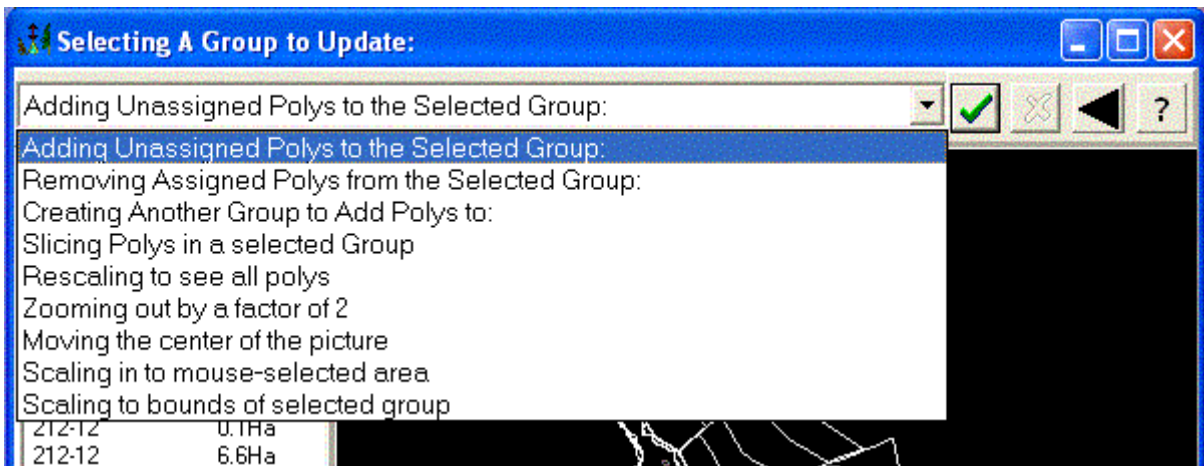
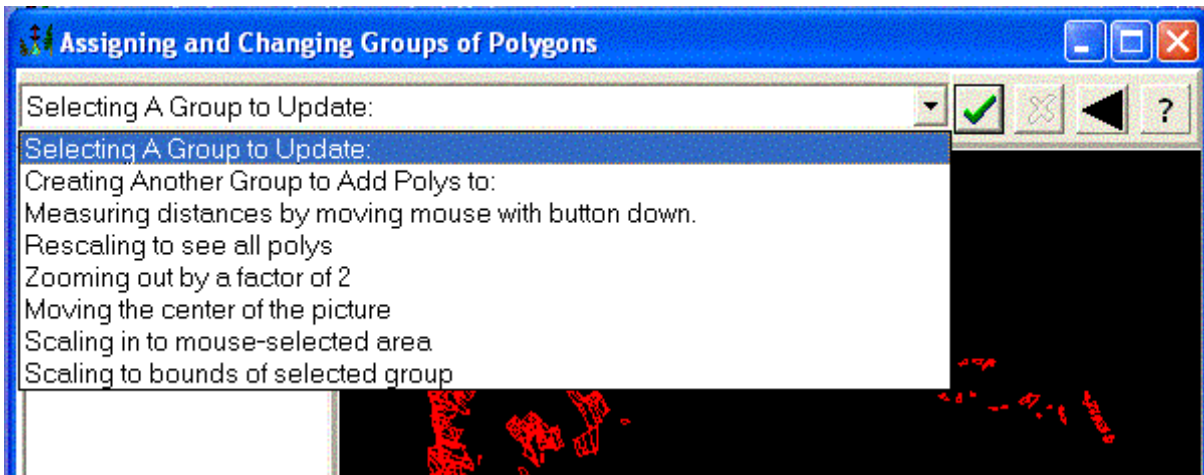
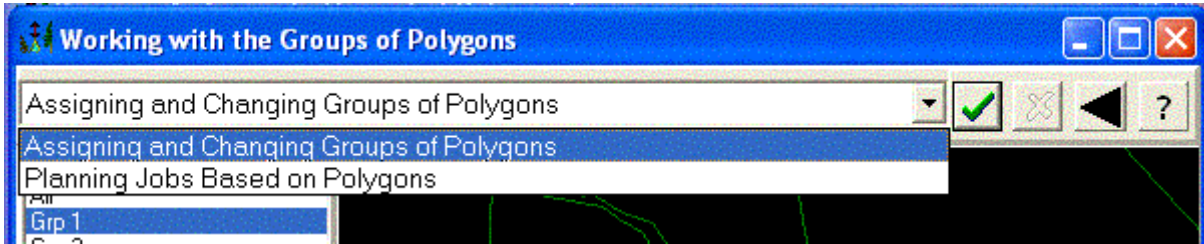
Actions”, , the “Check Box” , the “Done with List/Step Back” button  and the “Help” Button 




While working with the Groups of Polygons, the colors of the polygons will let you know their status; RED shows Polygons that are not assigned; GREEN shows selected polygons ready for assignment; and WHITE shows polygons that have been assigned.

### Action List Explanation


While working with the groups of Polygons, with “Learning Mode” is on, “Information” windows will pop up describing what the particular “Action List” selection will accomplish. In most cases, continuing with the “Check Button and taking the “Action” as described in the Information window, will give you the desired results.



## Assigning and Changing Groups of Polygons

After selecting this action, mouse click the “Check Box”  or use your “Enter” on keyboard to go to the next list of actions.

**Information** ✕




Jobs are created based on all the polys in one selected Group. Therefore, you must create groups of polys that "make sense" as a single job. A group may have one or many polys. If polys are too large, they may be cut into smaller polys. Polys can be added to then later removed from any group. This flexibility allows you to solve most problems that may arise in the field. You may create any number of "jobs" from the same group. This may be especially helpful if you are planning apply more than one layer. To begin, though, you must select a group to work on, or create a new one. To create a new empty group, select that action from this list. To select a group now, just click on the group number in the list, then push the "check button" to the right of the activity list.

## Planning Jobs Based on Polygons

This planning tool is to create jobs from the Groups you have created that will require calculation of application area versus tonnage per acre/hectare and application speed. This type of job creation is for heavy application such as Lime, Fertilizers, and Seeds. See: **Swath and Layer Calculator** section below.


**Information** ✕



By first selecting an existing group, then using the mouse to "click and drag" a proposed baseline for the job, you will begin steps to plan the best grouping of polys.


Remember: If the grouping isn't working out you can always re-do you groupings for a better fit, including cutting some polys into smaller regions using the tools provided under the other choice in this list: "Assigning and Changing Groups of Polygons"

## Selecting A Group to Update

**This action is used for adding or removing polygons to an existing Group that you have already created. Once selected mouse click the “Check Box”  to go to the next list of actions and select what you want to do.**

## Adding Un-Assigned Polys to the Selected Group:

**Information** ✕




First Select the polys in the list below. This is done by EITHER pointing to the poly in the window, OR clicking the item in the list. If more than one poly is to be selected, click and hold the mouse down on the window, then drag the mouse to form a box around the polys you want to transfer. Alternatively, in the list you may continuous range of polys by selecting the first poly in the list, then holding the SHIFT key down and selecting the last poly in the list. Alternatively, you may toggle individual polys as selected in the list by holding the CTRL key down, then clicking on the polys.

ONCE THE POLYS ARE SELECTED, you can transfer the polys to this group by pushing the "Check Button" to the right of the Activity List.

## Removing Assigned Polys from the Selected Group:

**Information** ✕

 First Select the polys in the list below.  
This is done by EITHER pointing to the poly in the window, OR clicking the item in the list. If more than one poly is to be selected, click and hold the mouse down on the window, then drag the mouse to form a box around the polys you want to transfer. Alternatively, in the list you may continuous range of polys by selecting the first poly in the list, then holding the SHIFT key down and selecting the last poly in the list.  
Alternatively, you may toggle individual polys as selected in the list by holding the CTRL key down, then clicking on the polys.

ONCE THE POLYS ARE SELECTED, you can REMOVE the polys from this group by pushing the "Check Button" to the right of the Activity List.


## Creating Another Group to Add Polys to:

**Select** Creating Another Group to Add Polys to: **and mouse click the "Check Box"**



**to add another group in the list.**

**Information** ✕

 Jobs are created based on all the polys in one selected Group.  
Therefore, you must create groups of polys that "make sense" as a single job. A group may have one or many polys. If polys are too large, they may be cut into smaller polys.  
Polys can be added to then later removed from any group. This flexibility allows you to solve most problems that may arise in the field.  
You may create any number of "jobs" from the same group. This may be especially helpful if you are planning apply more than one layer.  
To begin, though, you must select a group to work on, or create a new one. To create a new empty group, select that action from this list. To select a group now, just click on the group number in the list, then push the "check button" to the right of the activity list.


## Slicing Polys in a Selected Group:

See: **Managing Area Tools - Slicing Polys into Smaller Polygons:** further in the manual.

## Measuring distances by moving mouse with button down

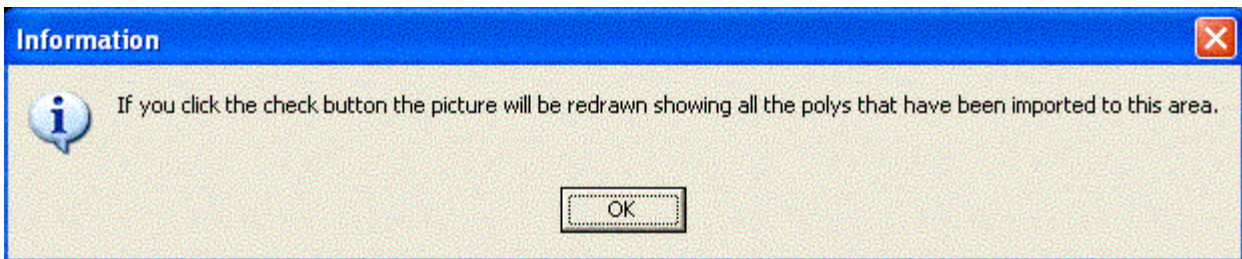
**Select** Measuring distances by moving mouse with button down **and mouse click and drag to show the distance in the lower right panel.**

**Information** ✕

 If you move the mouse to the start point of your measurement, then push and hold the mouse down while you move the mouse to the location you want to measure to, the distance from the start point is shown as you move the mouse in the little bar at the bottom of the field picture. Repeat this process to measure any distance.

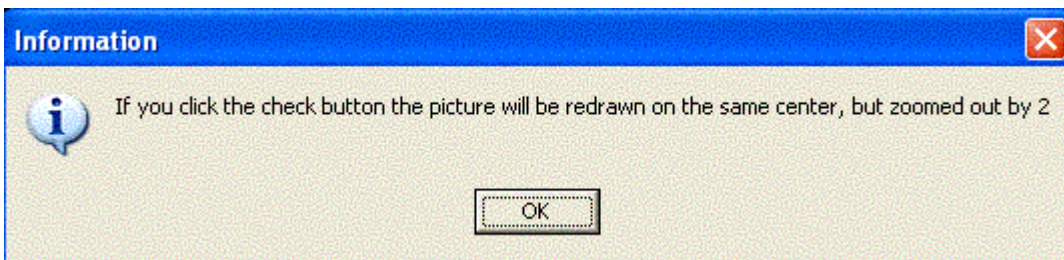
## Rescaling to see all Polys

Select Rescaling to see all Polys and mouse click the “Check Box”  to zoom out to include of all polys imported into the area.




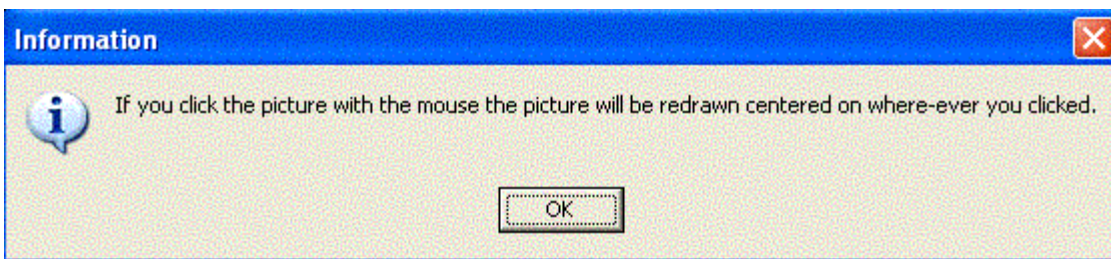
## Zooming out by a factor of 2

Select Zooming out by a factor of 2 and mouse click the “Check Box”  to zoom out by 2 times.



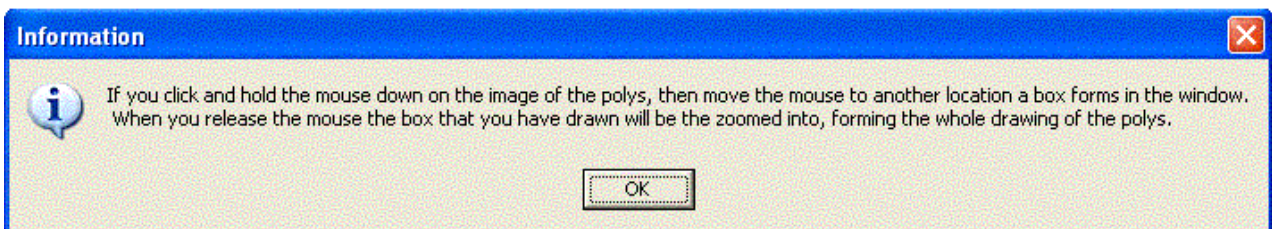
## Moving the centre of the picture (map)

Select Moving the centre of the picture and mouse click the “Check Box”  to zoom out by 2 times.



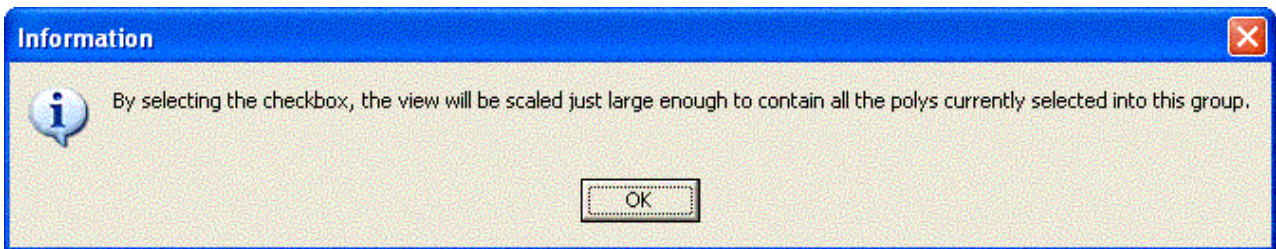
## Scaling in to mouse-selected area

Select Scaling in to mouse-selected area and mouse click and drag to create a box for the new map window boundary.




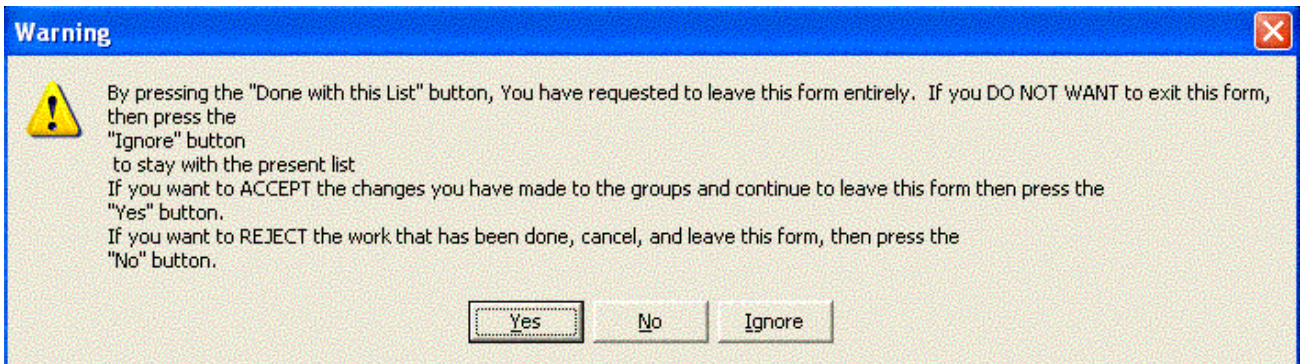
## Scaling to bounds of selected group

Select Scaling to bounds of selected group and mouse click the “Check Box”  to zoom into outer bounds of the polygons of the currently selected group.



## Completing the Managing Area into Polygon Groups

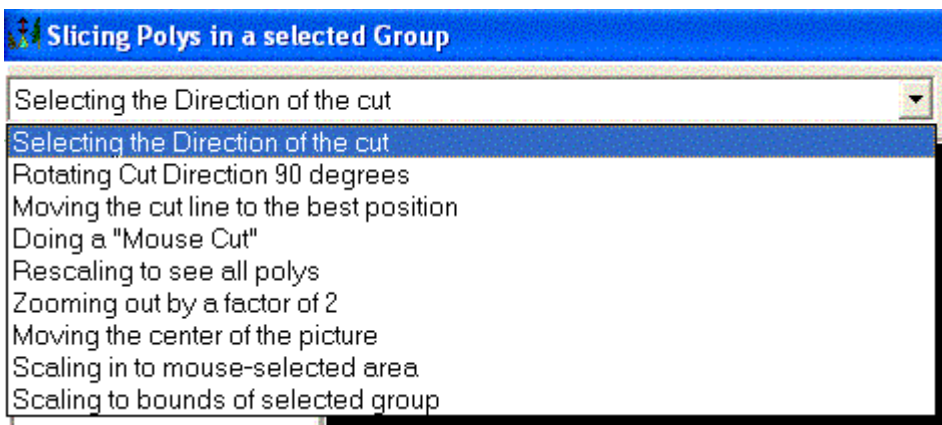
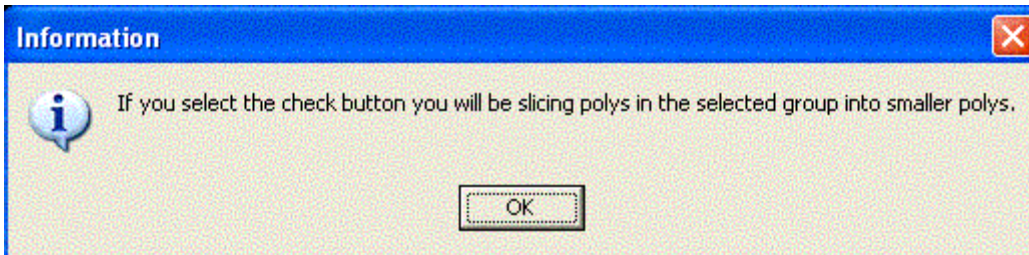
When you have completed the Grouping the polygons into job specific areas, you can complete this by backing out of the tools using the “Done with List” button  until the Information “Warning” window pops up as follows:



## Managing Area Tools

### Slicing Polys into Smaller Polygons:

Sometimes the single polygon area (or the length of run) is too large or long for the type of application being applied per load, such as fertilizer pellets. The following tools will guide you through the slicing of these large polygon areas into smaller ones. You must first create a Group that has this large polygon in it, then you can select this Group to slice it into smaller polys.

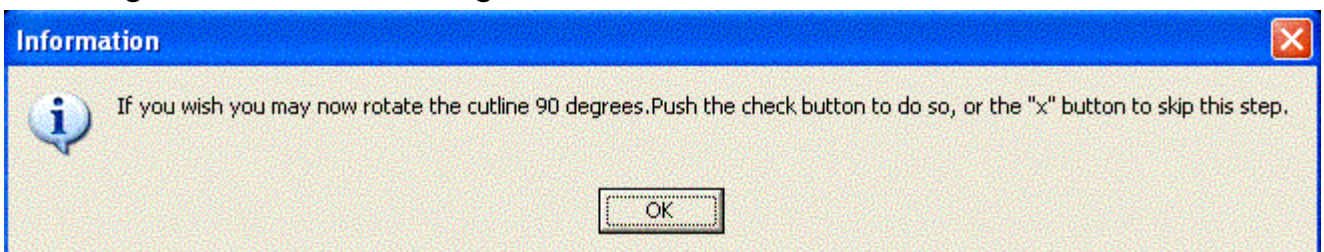


### Action List

### Selecting the Direction of the line




### Rotating Cut Direction 90 degrees



## Moving the cut line to the best position

**Information** ✕




Now set desired position of the cutline. Start by pressing and holding the mouse button down at a point you would like to measure from during the placing of the cutline.


As you move the mouse the distance from your selected start point is shown at the bottom. When you release the mouse the field is given a "Test Cut" and the size of the new polys is shown in the list. When you are ready to commit to the cutline, just select the check button. Instead, you may hit the Reject "X" button to remove the last cut and place a different cut line.

The left-pointing arrow gets out cutting the polys when you are finished and returns you to grouping the polys into usable groups. Remember: each job is one and only one complete group.

## Doing a "Mouse cut"

**Instead of Slicing the polygon by using the "Selecting the Direction", "Rotating", and "Moving" as described above, you can simply select the "Doing a "Mouse cut" action then mouse click the "Check Box"  to slice the poly as follows:**

**Information** ✕



Cut the Area(s) by drawing a line with the mouse. Start by pressing and holding the mouse button down at a point OUTSIDE the poly you want to cut.

When you have moved the mouse on the line you want to cut ALL THE WAY through the polys to outside the polys on the side, then release the mouse. The size of the new polys is shown in the list. When you are ready to commit to the cutline, just select the check button. Instead, you may hit the Reject "X" button to remove the last cut and place a different cut line.

The left-pointing arrow gets out of cutting the polys when you are finished and returns you to grouping the polys into usable groups.

Remember: each job is one and only one complete group.

## Swath and Layer Calculator

The purpose of this calculator is primarily for calculating loads that are high in weight per Acre/Hectare such as Forestry liming or granular fertilizing. It is automatically called up when you have “Planning Jobs Based on Polygons” selected in the Action List and then draw a proposed base line for your job. Make sure the base line is drawn to the typical length for crossing the field.

**Swath and Layer Calculator**

**Total Selected Area: 37 Ha**      **183 Buckets**

**Target Line length: 396m**

Tonnes per Hectare: 3.0

Bucket Capacity (tonnes): 0.6

Min Swath (m): 8      Max Swath (m): 12

Bucket Average Time To Empty (s): 12.8

Average Speed (knots): 60

Fixed    **937m field width:**

**Area Covered: 37.2 Hectar** Passes: 2

Swath width: 10.3

**Create Job**      **Cancel**

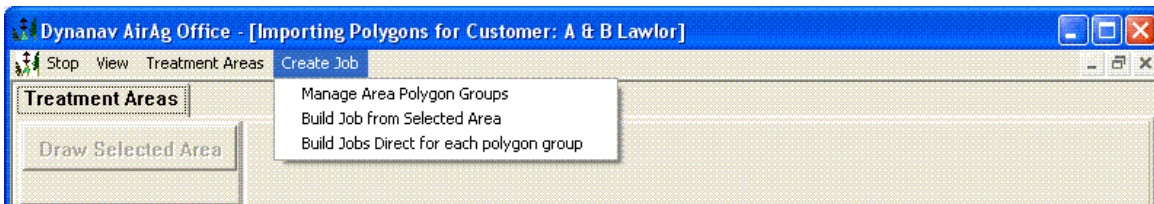
The following are the steps to using the Calculator to plan the job for your area group. This calculator works in either the “Manage Area Polygon Groups” or the “Build Job from Selected Area” windows under the Create Job menu. For

- In the “Manage Area Polygon Groups” window, select “Planning Jobs Based on Polygons” from the Action List.
- Or in the “Build Job from Selected Area” window select “Choose an existing group for this job:” and then select “Planning Jobs Based on Polygons” from the Action List.
- The first thing to do is select a group to do the job planning on which will bring up only the polys for that group in the map window.
- Select the ‘Job Planning’ button.
- Create a base line by left click and dragging the mouse in the position, direction and length desired for the base line and let go of the mouse button. This will pop up the Swath and Layer Calculator. Note: *make sure that the length is representative of the typical run length across the field.*

- At this time the Area and the swath line length are calculated. Now enter (select) the Tonnes per Hectare, the Bucket Capacity, and the Minimum and Maximum Swath Width (this is determined by the parameters of the spread pattern of your bucket).
- After this you can vary the speed (knots) desired for best flight operation and the time it will take to fly the length of the baseline will be displayed.
- Now vary the 'Swath Width' to match the Total Selected Area: ()ha' with the 'Area Covered: Hectares'. You may have to change the number of passes to find a optimum Swath Width to match the areas. *Note: The number of passes is the number of times to apply over the same area to get the Tonnes per hectare required.*

## Creating Jobs from Areas

### Creating Jobs from Area Groups



#### Build Jobs Direct for each polygon group

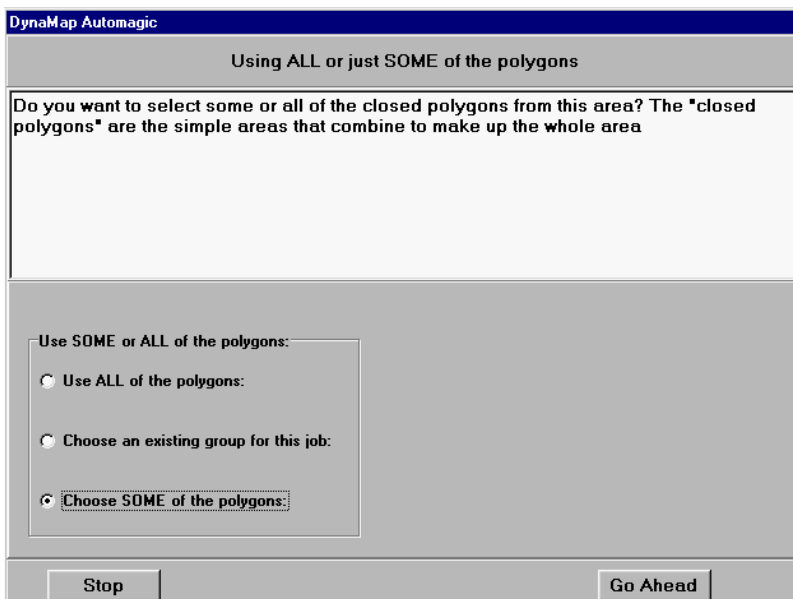
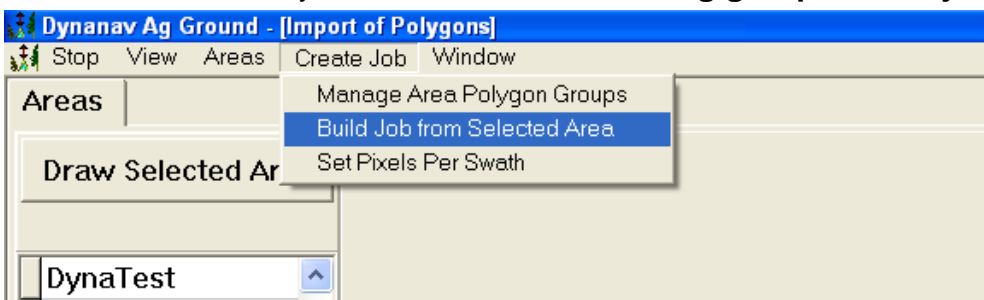
This will create a job from each polygon

#### Building Job from Selected Area

First select the Area Group Name from the Areas list on the main Forestry window.

Then select the “**Create Job**” menu item and then select “**Build Job from Selected Area**”. From here you will step through the procedures to build jobs from selected polygons for transfer to the aircraft/helicopter.

You now will decide whether to select ALL of the polygons from this area, to select SOME of the polygons or to Choose an existing group for the job (If you do not have any groups created for this area yet, the “**Choose an existing group for this job**”: will not be visible).



#### Use ALL of the polygons

If you choose to “Use ALL of the polygons” for the selected area, it will proceed directly to creating the swath width and setting of Baseline (below).

### Choose an Existing Group for the job

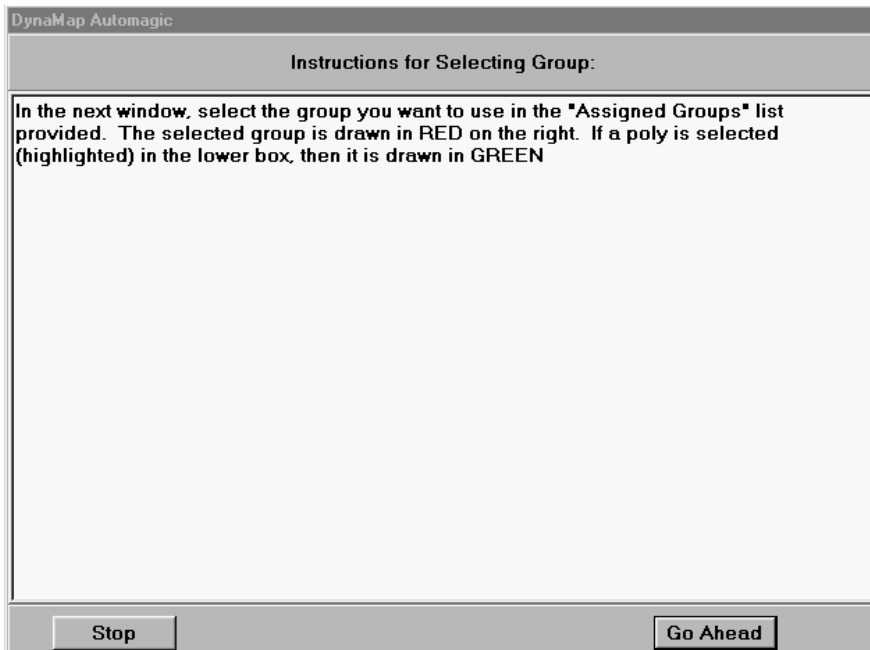
If you choose “Choose an Existing group for this job” it will step you through to select a group, then hit “Done” to create a job and step through the setting of the swath width and baseline (below).

### Choose SOME of the Polygons of an area

If you select “**SOME of the polygons**” will bring you to the “**Managing Area into Polygon Groups**” as described above.

### Choose an existing group for this job

If you proceed with “**Choose an existing group for this job**”, it will step you through the selection of that group as well as the Review of assigned Job Groups (in section above).



After selecting the Group (Grp1 or Grp2 or Grp3, etc.), you will be directed to Setting Swath Width as described below.

### Setting Swath width

The next step is to select the swath width either in feet or in meters.

**DynaMap Automagic**

**Building a Job: Setting Swathwidth**

First, we have to establish the swath width to be used. Enter the swath width below, and select the units your swath width is measured in:

Selecting the units for the Swath width:

Swath width in Meters:

Swath width in Feet:

Swath Width:

### Setting a Baseline

The next step, if you have already created a Baseline for this area, is to either use a Baseline from one of the existing jobs created or to set a new Baseline.

*NOTE: If you intend on setting a Baseline in the field for this job, you still must set a proposed Baseline at this time and when you transfer the job to the aircraft card, you will be asked whether you would like to set the Baseline in the air.*

**DynaMap Automagic**

**Selecting a Baseline from Existing Jobs**

There are jobs that already use the area.  
Do you want to copy the baseline from one of these jobs, or do you want to set a new (different) one?  
To use an existing baseline, select it in the list, then hit the "Go Ahead" button. To make a new baseline, select the button marked "Make a new baseline", then hit the "Go Ahead" button.

Stag Mountain Area 2-2

How to Set the Baseline?:

Use baseline from >

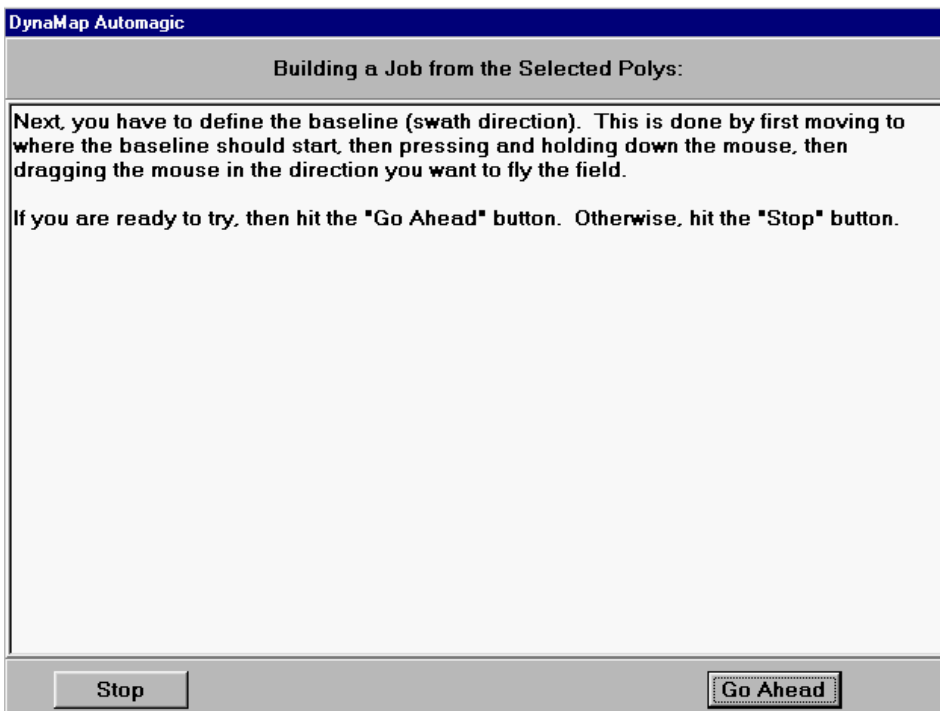
Make a new baseline

**Jobs With Matching Baselines:**

Stag Mountain Area 2  
Stag Mountain Area 2-1  
Stag Mountain Area 2-2  
Stag Mountain Area 2\_sub1

### Setting a new Baseline

The next step, if you are setting a new Baseline is for you to follow the directions on using your mouse to define a Baseline for the polygons you have selected.



### Selecting an existing Baseline

If you choose to **“Use a Baseline from”**, a list of existing baselines for the selected Area or Area Group will show along with a set of instructions. Use one of these Baselines.

### Creating Multiple Layers

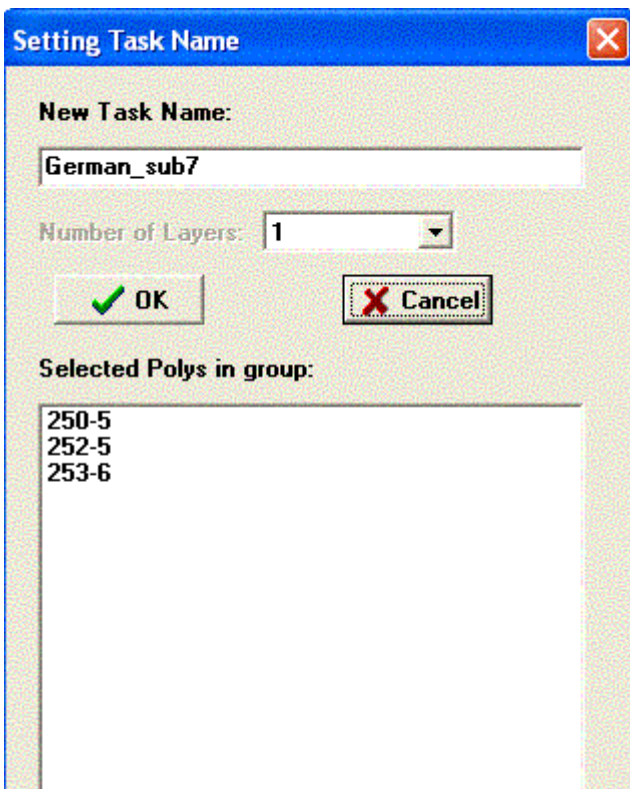
You can create multiple layers for the same Job Area by following the instructions in the **Naming of the Jobs** section as described below.

### Naming of the Jobs

Once you have completed the Baseline, a Job review window will show the Area to be applied with the Baseline set vertically. After confirming the area and the Unsprayed Acres/Hectares, then hit the “Done” button.

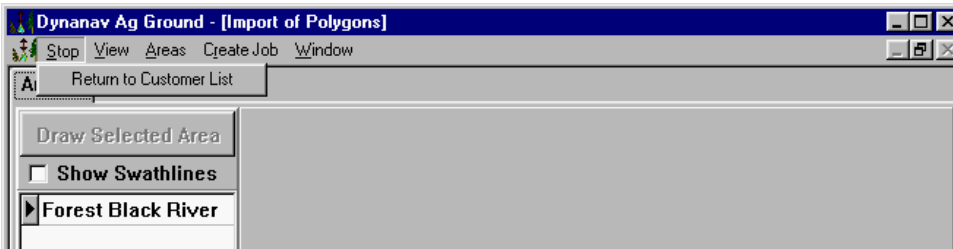
At this point you will be asked to name the job. A default name will appear that will use the Area name, as well as a sub group number. The window also shows the Poly ID’s for the polygons that are include in this group. You can use these ID’s for naming your Task (job).

At this time, you can also create **Multiple Layers**, which will create multiple jobs for the same area to be transferred to the aircraft system.



### Completion of Job Creation

After all of your Jobs (Tasks) have been completed, you should return to the Main AirAg Office page by selecting the “**Return to Customer List**” under the “**Stop**” menu item.



### ***Transferring Jobs to Aircraft Card***

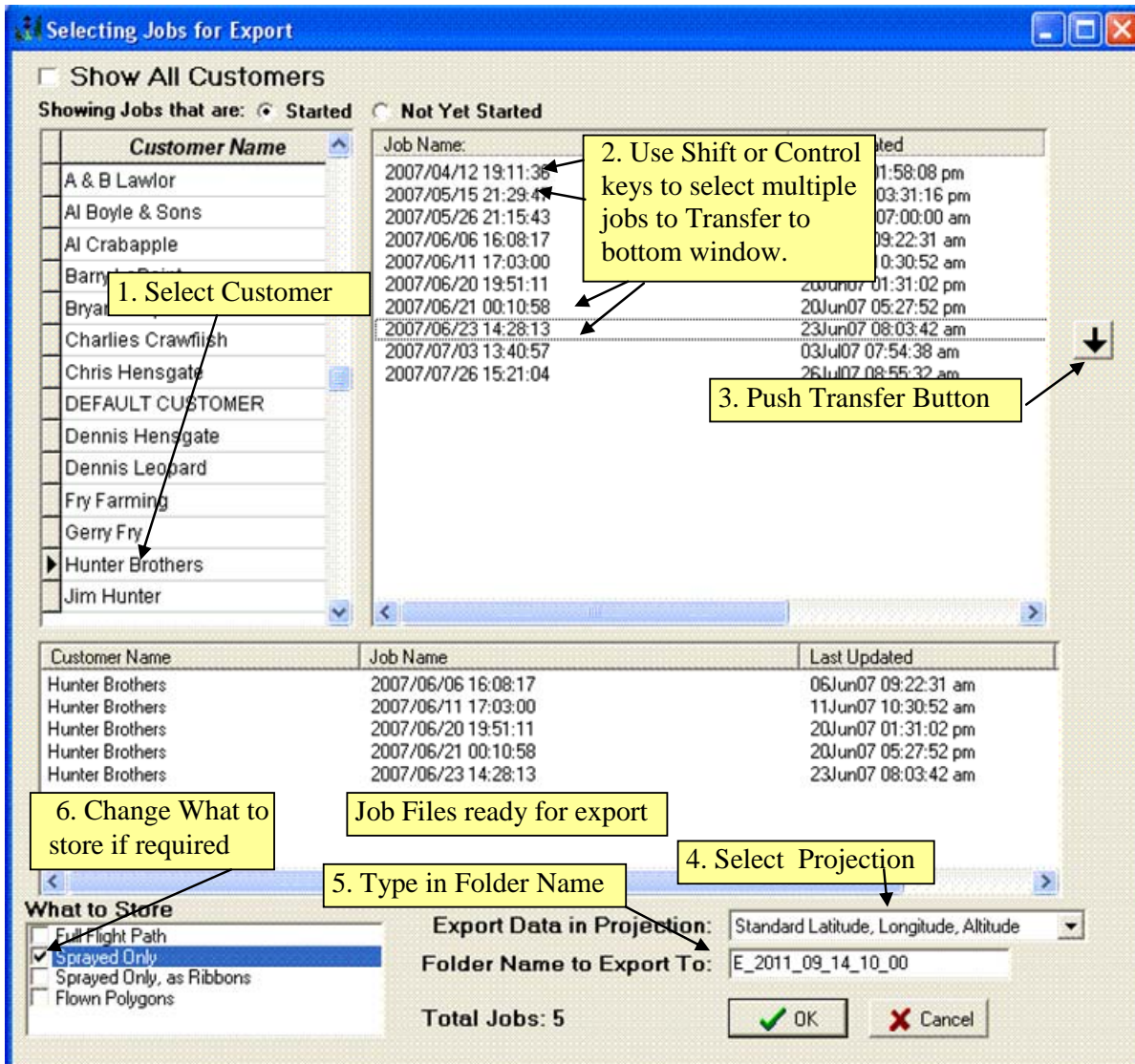
See - **Synchronizing Aircraft Card** above.

### ***Exporting Completed Job File Data to Customer***

See - **Exporting Job File Data to Customer** above.

## Exporting Set of Jobs

This is to export Shapefiles, Google Earth files, Agrismart files for a Group of jobs flown to a single file folder to give or Email to your customer. This stores the file in the named folder in C:\Dynamav\ShapeExport or GoogleExport file folder.



Follow the instructions above. In Step 5 you can leave the default date and time Folder Name if desired.

## **Check for updates on the Web**

### **Connect to the Internet**

Before you “**Check for Updates on the Web**”, make sure your computer is connected to the Internet. As this utility only uploads the changes to the software, it is much faster than downloading the complete software. This is particularly useful when you are connected to the internet with a modem. After connecting, mouse click on “**Check for Updates on the Web**”, and step through the update. If the versions are current then a box will let you know.

### ***Backing up DynaNav Aircard***

The Air Card is automatically backed up when the Air Card is Synchronized. See-**Synchronizing Air Card** above

**Note:** It would be recommended to Synchronize the Air Card on a regular basis.

## Aircard Tuneup Software:

### Accessing the TUNEUP software

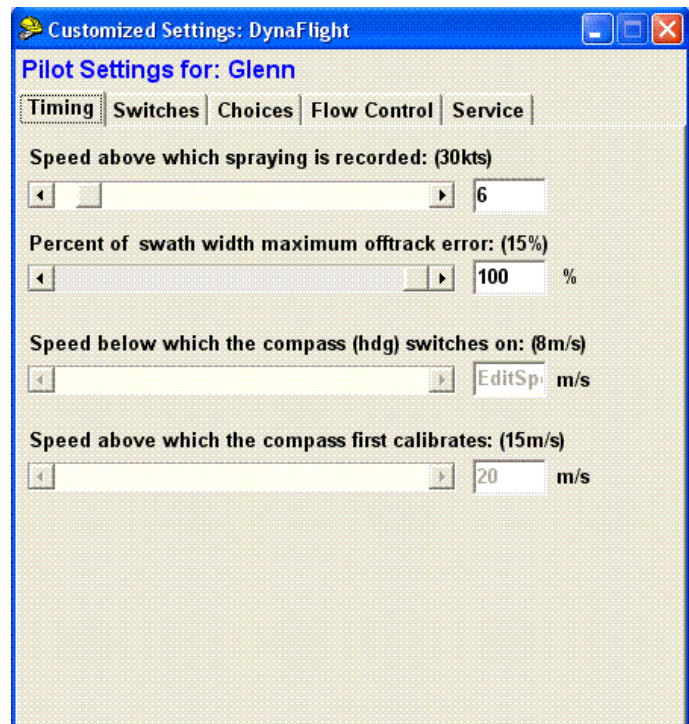
The software is installed as part of the AirAg Office software on the Base Computer. First plug in the aircraft PC Card into the PC Slot on the Office computer, then run "Aircard Tuneup" by using 'Start – Programs – Dynanav Ag – Aircard Tuneup'. Also you can select the Tuneup in AirAg Office by selecting "Adjust PC Card Pilot Settings" in the "PC Card" menu item. When the program is operational, change the drive letter to the letter assigned by the computer for the PC Card of the Aircraft card (for the simulator setup, leave on 'C' Drive). If you are not sure which letter, use your Windows Explorer to see which drive letter assigned. If the drive letter is correct then the green message will appear saying "(PC Card Name) is good".

### Changing the settings on TUNEUP

The following is an explanation of the individual switch settings. The numbers in the brackets show the default values – use these if you are not sure of what is required.

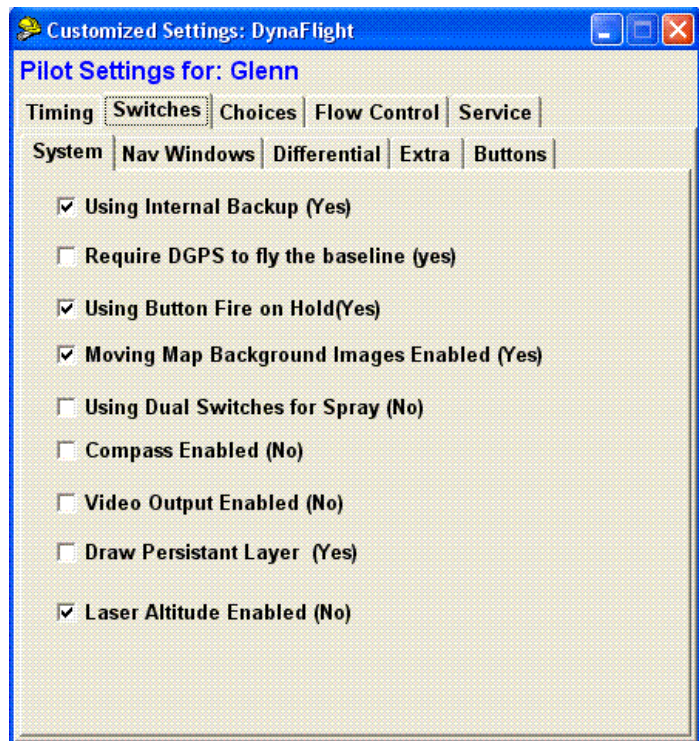
#### Time Items

- **Speed above which spraying is recorded: (30kts)** – Below this speed the DynaFlight will not record any spraying activity. When the valves are opened for testing or flushing on the ground, it will not record this as an application.
- **Percentage of swath width maximum offtrack error: (15%)** – Most Aerial Spraying this will be set for 100%. If during application, you want to re-apply the swath if you are more than a certain percentage offtrack, then change this setting. When you are off track by more than this percentage, the DynaFlight will not record this on the job review map as a valid scoring on this line. This will leave a gap that is painted on the job review map so that you can go back and intercept this line and apply the materials in this gap for complete coverage. This does not have an effect on spraying headlands. For unusually heavy terrain, this should be set high. If using the Rotating Moving Map for application, then set this to 100%.
- **Speed above which the compass (hdg) switches on: (8m/s)** - Not Applicable for DynaFlight-AirAg
- **Speed above which the compass first calibrates: (15m/s)** – Not Applicable for DynaFlight-AirAg



## Switches - System

- **Using Internal Backup (Yes)** – This turns On/Off the internal data storage in the Air unit for data recovery if required.
- **Require DGPS to fly the baseline (yes)** – This is to be turned on if the contract requires that DGPS is to be 100% active. As sometimes your reception of DGPS Satellite may be occluded, you can still spray your baseline without DGPS.
- **Use Button Fire on Hold (yes)** – This option is for the tophat switch action on the Buttons in the display window. When used, the Enter switch is not required for acceptance of the buttons – the pilot simply has to push and hold his desired button and the action will be accepted.

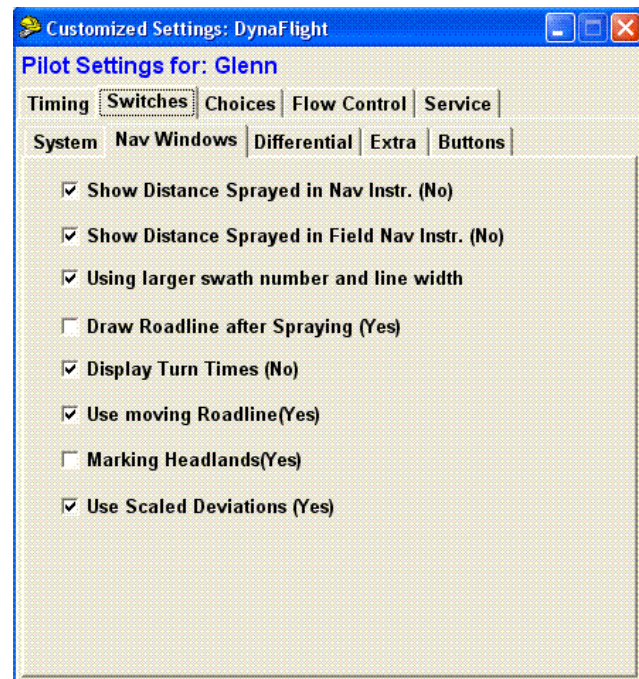


Enter is still used to enter in the desired selection from the list windows.

- **Moving Map Background Images Enabled (Yes)**- This is if there has been a map images for the Moving Map window available and can be disabled if you do not want them to show up.
- **Using Dual Switches for Spray (no)** – This option is used for buckets and other application systems that use a gate that has separate switch actions for opening and closing of the gate. For this option the Spray1 and Spray2 inputs are wired to the separate open and close switches
- **Compass enabled (no)** - Not Applicable for DynaFlight-AirAg
- **Video Output Enabled (No)** - Not Applicable for normal DynaFlight-AirAg operations.
- **Draw Persistent Layer (Yes)** – This creates a dotted boundary around polygons to be able to see the outer boundary even though it has been sprayed off. When the job is completed you will still be able to see the boundary of the polygon (field)

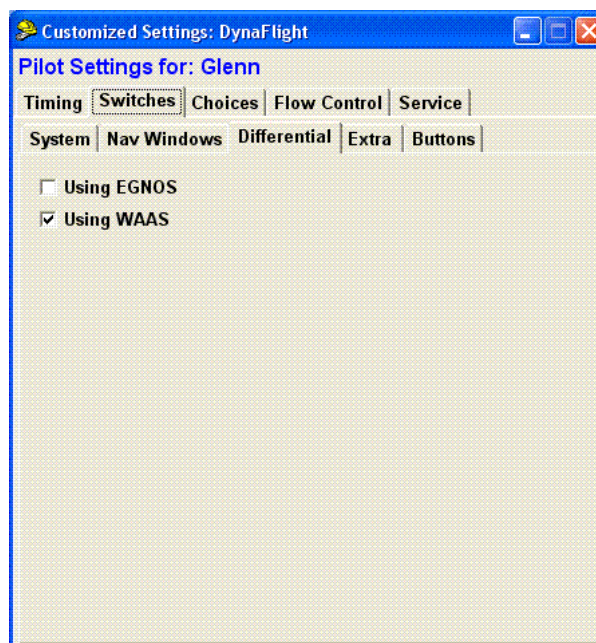
## Switches – Nav Windows

- **Show Distance Sprayed in Nav Instr.** Shows the lineal distance in middle of Roadway Screen of each time you have the Spray turned on. Resets to zero on next spray event.
- **Show Distance Sprayed in Field Nav Instr.** Shows the lineal distance in middle of Rotating Map Screen of each time you have the Spray turned on. Resets to zero on next spray event.
- **Using larger swath numbers and line width (yes)** – If you would like to see larger number and guidance needle width for more visibility.
- **Draw Roadline after Spraying (yes)** draws a white line down the center of the black sprayed area.
- **Display Turn Times (no)** – If you do not want to have the turn times (TT) displayed on the guidance display, you can un-check this option.
- **Use Moving Roadline (yes)** Changes the center navigation needle from a dotted moving line to a solid line.
- **Marking Headlands (Yes)** Changes
- **Use Scaled Deviations (Yes)** – Normal Roadline Needles uses Logarithmic scaling so that the needle is more sensitive as it approaches centerline and less as it moves away from centerline. By un-checking this option, the needle will be linear (you may want to use this if the swath widths are less than 10 meters or 30 feet)



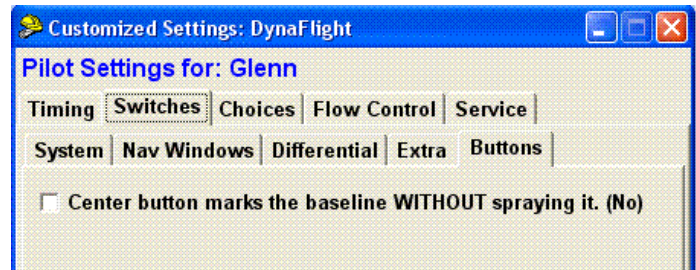
## Switches – Differential

- **Using EGNOS** Should be selected if operating in continental Europe. It selects the European correction satellites as a default if other corrections are not being used.
- **Using WAAS** should be selected if in continental North America. It selects the North American correction satellites as a default if other corrections are not being used.



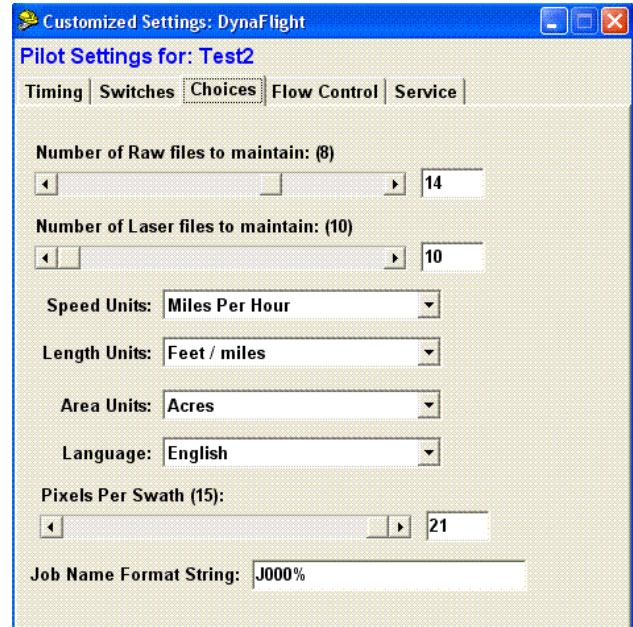
## Switches – Buttons

- **Center button marks baseline WITHOUT spraying it (No)** Should be selected if you need to fly and mark the baseline without having the system record it as being sprayed. An example is using a roadway to mark the baseline while cars are on and not wanting to turn on spray handle.



## Choices

- **Number of Raw files to maintain: (8)** - As each Raw file uses 1 meg of memory on the aircraft PC Card. If the PC Card has lots of memory, then the number of Raw Files can be increased. These Raw Files record the actual flight path as well any event such as the Spray on/off for later recovery.
- **Number of Laser files to maintain: (8)** - Not Applicable for DynaFlight-AirAg
- **Speed Units:** - This is a choice box of the speed units displayed on the Navigation Window. These choices are: Knots; Meters Per Second; and Miles Per Hour.
- **Length Units:** – This is a choice box of the length units that are displayed in the various windows. These choices are: Feet/Miles; Metric; and USA Survey foot.
- **Area Units:** - This is a choice box for the area units in the various windows. The choice is Acres or Hectares.
- **Language:** - This lets you select the language that the DynaFlight-AirAg system will operate in.
- **Pixels Per Swath (15)** – This is the default setting for the # of pixels per swath on the Job Review Map and the Live Map in the aircraft. It will always be an odd number e.g 11,15,17,21 etc. For very large Areas this can be set less so as to see as much of the area in the review window, for small areas this can be increased to see more detail. (recommend 21 pixels for most operations). The Job review and Live Map are zoom able down from this setting (5 smaller zooms)
- **Job Name Format String:** - This is to customize the format for the pilot to enter a Job Order number in the aircraft. Any letter of the alphabet can be entered to relate to your operation. Instead of the “J” (as shown), you could have WAS for Western Ag Service. The number “0” is for entry of a number, so “00000” would allow for 5 numbers to be entered. The “%” allows for a alphabet character to be changed and entered by the pilot, so “%%” would allow 2 Alphabet characters to be entered.



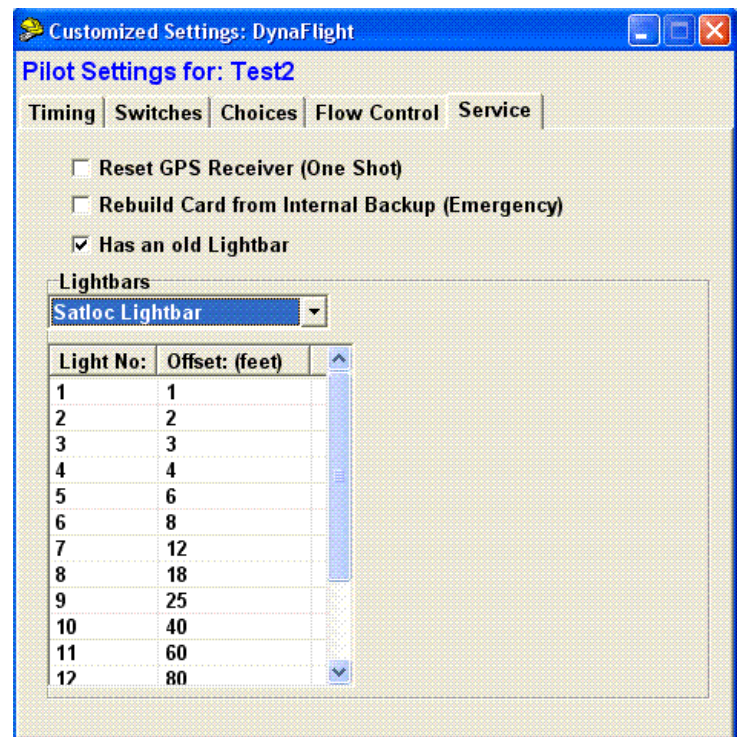
## Flow Control



- **Flow Control – AutoCal** this is used when the DynaFlight-AirAg system is coupled to the AutoCal Flow control system. Turn this on to operate in the Aircraft.
- **Flow Control – Frog** this is used when the DynaFlight-AirAg system is used on the FROG Bucket system from Heli-Alpine.
- **JARBA DIVRA** – Is for outputting GPS data to the JARBA – DIVRA system.

## Service

- **Reset GPS Receiver (one shot)**  
– This is used when the DynaFlight-AirAg system is moved to a new location and the GPS receiver does not want to lock onto the new location. This resets the receiver to look for the new location.
- **Rebuild Card from Internal Backup (emergency)** – If job has disappeared during a bad shut down, this can be used to rebuild the job from the data stored internal in the Air unit.
- **Has an old Lightbar** – The DynaFlight-AirAg-Pro has the capability to drive old Agnav and Satloc Lightbars using a kit that can be purchased. This is used to select and setup the Lightbar being used



## **WARRANTY REGISTRATION for DynaFlight-AirAg and -Forest**

**Company Name:** \_\_\_\_\_  
**Contact Name:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
\_\_\_\_\_  
**City:** \_\_\_\_\_ **State/Province:** \_\_\_\_\_  
**Country:** \_\_\_\_\_ **Postal code:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_ **Fax:** \_\_\_\_\_  
**E-Mail:** \_\_\_\_\_ **Web:** \_\_\_\_\_  
**Product Name:** \_\_\_\_\_ **Ser. #** \_\_\_\_\_

### **WARRANTY POLICY**

DynaNav Systems Inc. (DynaNav) warrants that its DynaFlight™ products are free from defects caused by faulty material or poor workmanship for a period of three (3) years from the date of sale. Date of sale shall mean the date of the invoice to the original customer for the product. Shipping F.O.B. Pitt Meadows.

DynaNav gives full software support for three (3) year from the date of sale for the version of software purchased.

Optional extended warranty packages are available for purchase through the ServicePak program.

Products not manufactured by DynaNav carry the same warranty which DynaNav receives from the manufacturer of the product and no other warranty. All ordered replacement parts or parts replaced during the warranty period assume the un-expired portion of the original parts warranty.

THE WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WRITTEN OR ORAL, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXCLUDED.

DYNANAV SHALL NOT BE LIABLE FOR THE LOSS, DAMAGE OR EXPENSE ARISING DIRECTLY OR INDIRECTLY OUT OF THE PURCHASE, INSTALLATION, OPERATION, USE OR LICENSING OR PRODUCTS OR SERVICES. IN NO EVENT SHALL DYNANAV BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND OR NATURE DUE TO ANY CAUSE.