Mobile Mapping Application for Updating AGRG Weather Station data

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AGRG
Applied Geomatics Research Group

- ArcPad combines both mobile mapping and geographic information system (GIS) technology together.
- It also provides database access, mapping, GIS, and global positioning system (GPS) integration when you are out in the field via a handheld computer device.
- The following are some of the many functions that you can do with ArcPad:

- Move around your map with navigation tools including zoom and pan, and center on the current GPS position.
- Query your data—Identify features, display hyperlinks, and locate features.
- Measure distance, area, and bearings on your ArcPad map.
- Navigate with your GPS—Connect a GPS and let ArcPad guide you.
- Edit your data—Create and edit spatial data using input from the mouse pointer, pen, or GPS.

- ArcMap has an extension that allows the user to “check-out” data from a project to use with ArcPad in the field
- Then bring it back into the project when completed. This function known as “disconnected editing” is great for updating an existing database and project with out having to create a new one each time.
- It also allows you to bring a subset of the data you need and not the complete data sets, allowing you to save disk space.
- Although ArcPad is designed to be flexible and easy to use, it is still important to customize interface to reflect our own preferences.
- Customization of ArcPad is done using the ArcStudio program.
- All customization is performed on the PC and deployed to ArcPad on the mobile device. Some of the customizations possible are:

- Creation of new toolbars with built-in and custom tools.
- Design of custom forms to streamline data collection in the field.
- Write scripts that automate tasks and interact with ArcPad software's internal objects.
- Build applets to accomplish your organization's unique goals.

File View ArcPad Tools Window Help

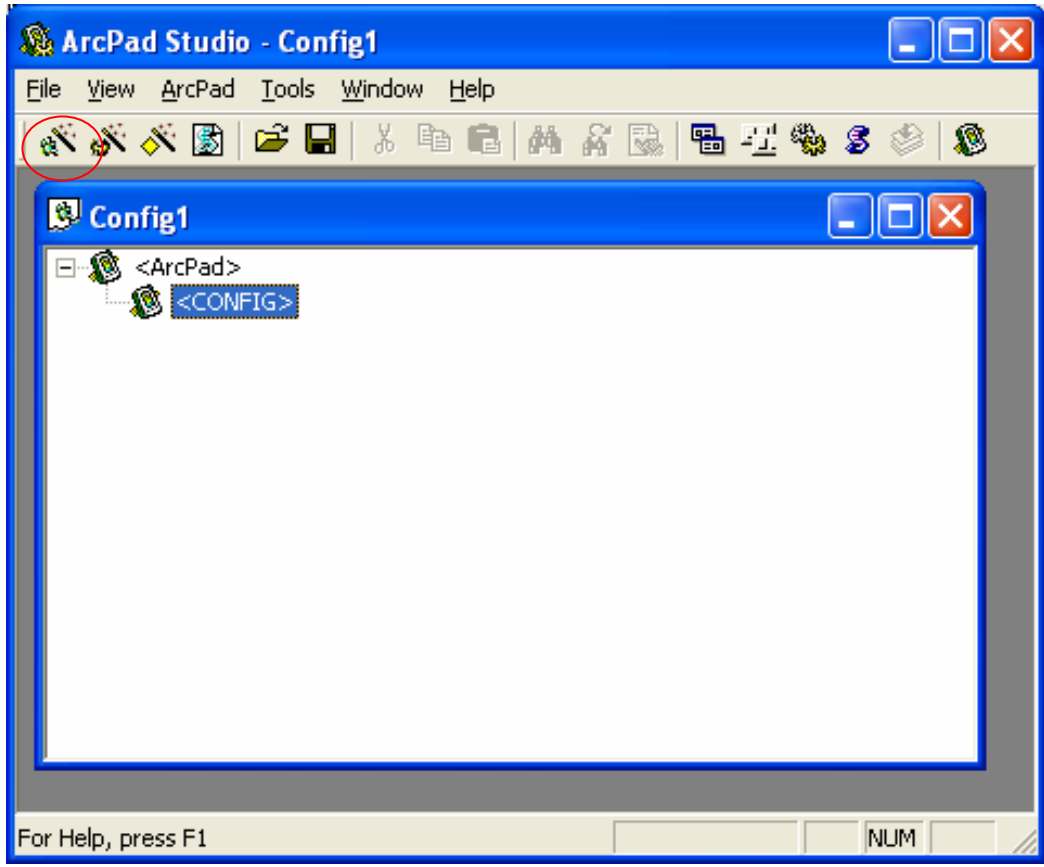
Open ESRI ArcPad Studio

For Help, press F1

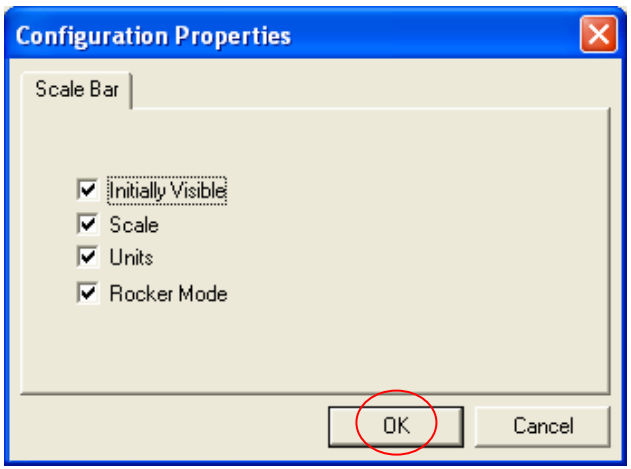
NUM

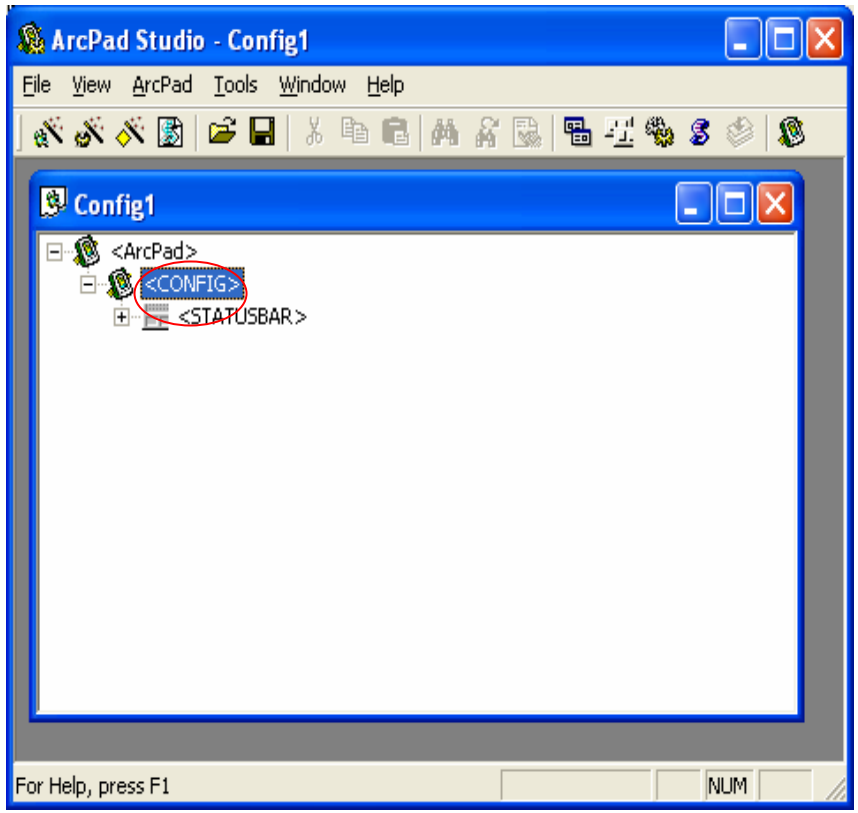
Create a default Configuration file

- Click the **NEW CONFIGURATION** icon
- A Config window will appear displaying **<ArcPad>** and **<CONFIG>** elements



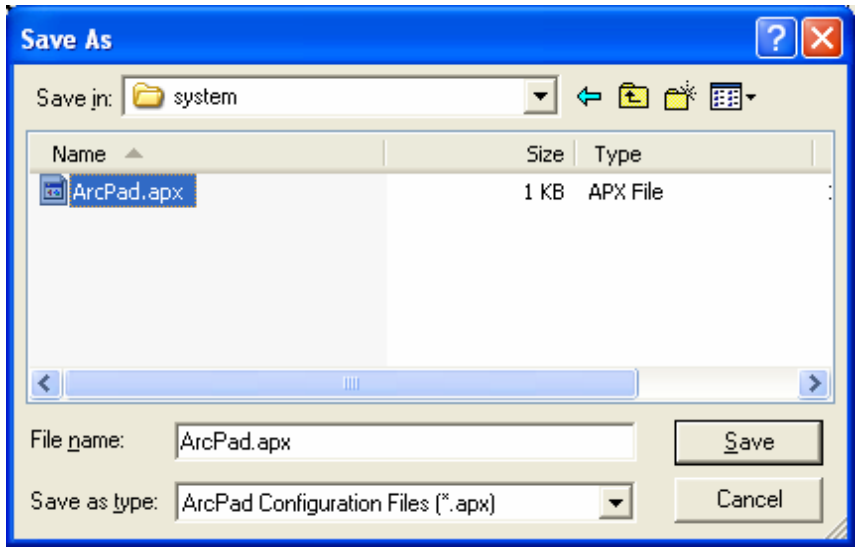
- Double Click <CONFIG>
- Select the Configuration Properties
- Select OK
- <STATUSBAR> will be added





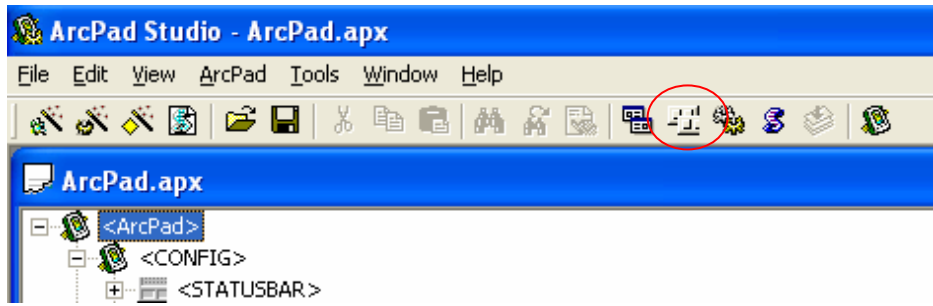
- Save the configuration file

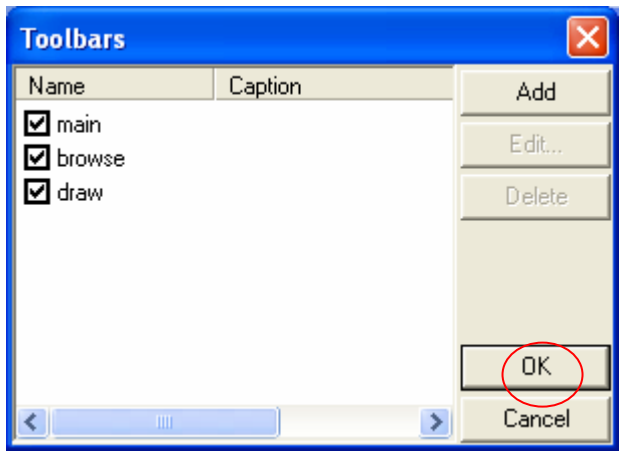
- Note: The default file must be called ArcPad.apx and must be placed in the System Folder in order for ArcPad to load the file upon start up.



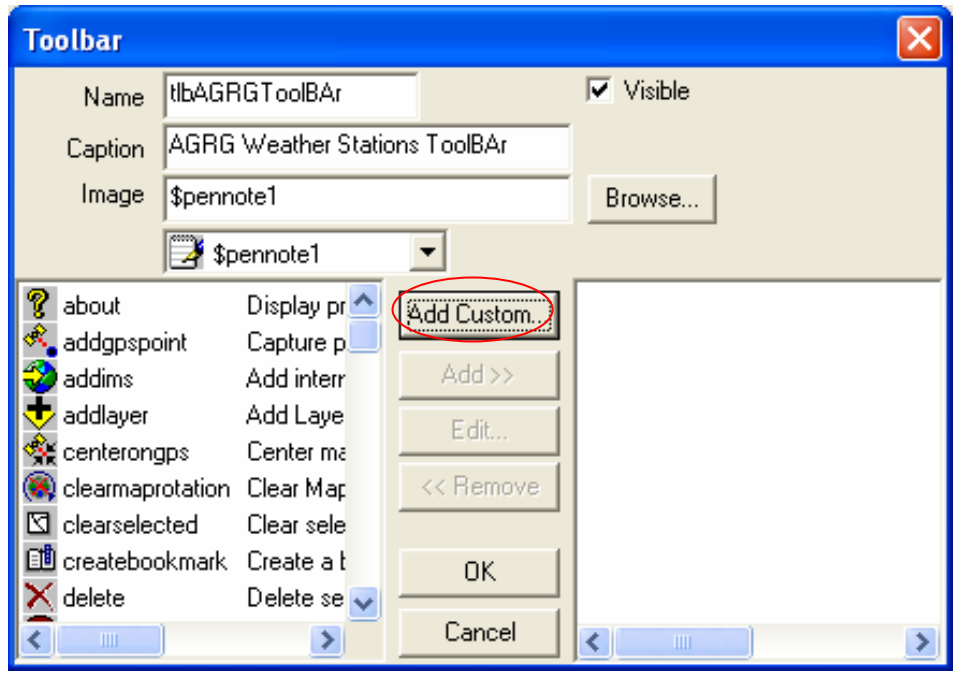
Create a Custom Toolbar

- Click the **TOOLBARS** icon
- Click **Add**
- Click **OK**

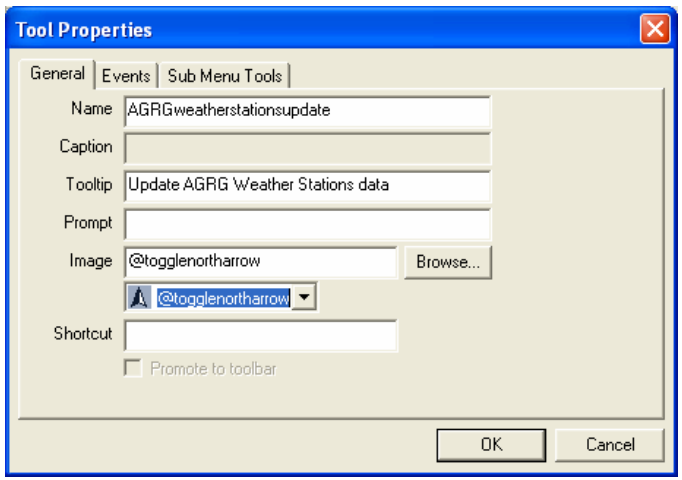




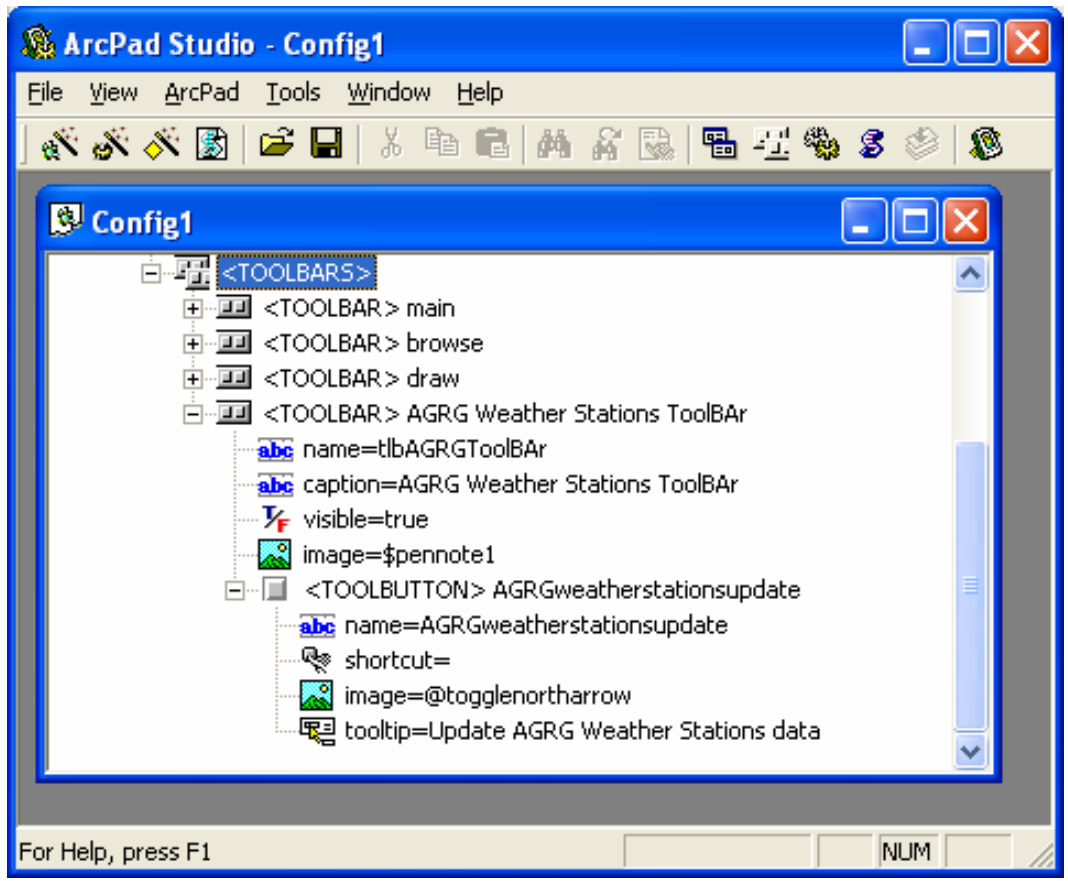
- Enter a **Name**
- Enter a **Caption**
- Select an **Image**
- Select **Add Custom…** button



- Enter **Name**, **Tooltip**, **Prompt**, and select an **Image** for the button



The details of your new toolbar and button will then be displayed in the CONFIG tree



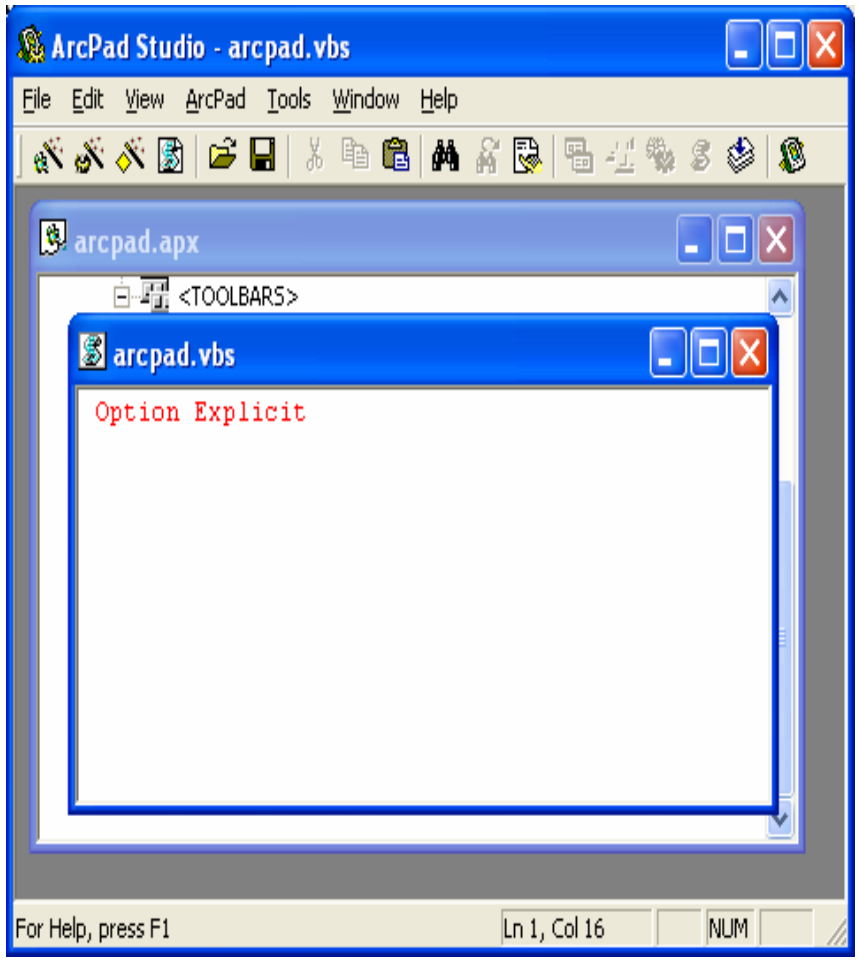
Write a Script for the Custom Tool

- First make a simple plan of what you want the new tool to perform
  - Check to see if layer is present
  - Set layer to an editable layer if it is not already
  - Find the coordinates of the point that the user selected
  - Add a new point feature to the layer
  - Initiate the form to collect attribute data
  - Return the button back to its original state

- Click the **Edit Script** icon to open a new VB Script window where your ArcPad.vbs script will be written

- Start with **Option Explicit** at the top and then begin writing your code below

- (Note: You can write your code in any preferred text editor)



Start with a header section

```
'==========================================================
'----------------------------------------------------------------------------------------
‘                       ArcPad.VBS
'                       November 25, 2003
'
' Mobile Mapping application used to assist in recording information collected
' during a visit to one of the AGRG weather stations or when using the
‘ handheld weather station. This tool will provide information about the existing
' stations as well as collecting information. This file must accompany the
‘ ArcPad.apx file and be stored in the system folder.
'----------------------------------------------------------------------------------------
'==========================================================
```

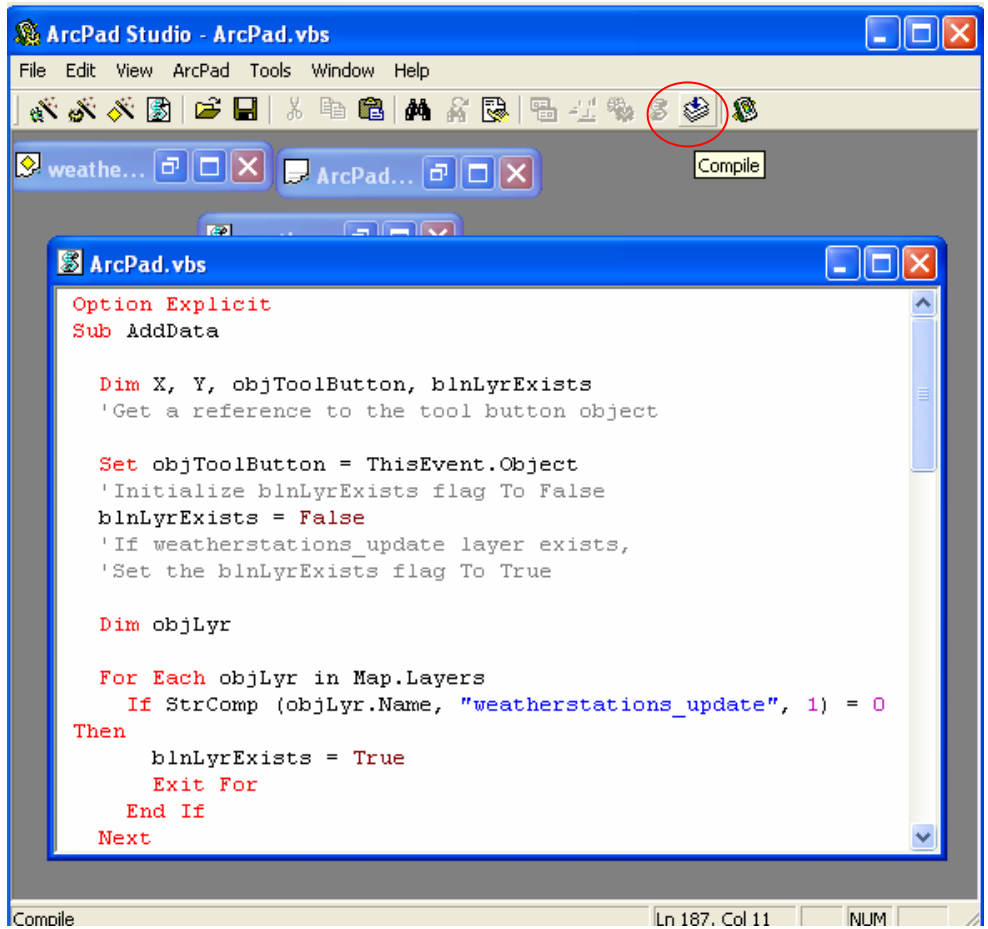
Then continue with your code …

ArcPad.vbs

```
'=====================================================
' AddData: Adds data to an existing layer called  weatherstations_update
'=====================================================

Sub AddData
  Dim X, Y, objToolButton, blnLyrExists
  'Get a reference to the tool button object
  Set objToolButton = ThisEvent.Object
  'Initialize blnLyrExists flag To False
  blnLyrExists = False
  Dim objLyr
  'Check Map Layers for weatherstations_update.shp
  For Each objLyr in Map.Layers
    If StrComp (objLyr.Name, "weatherstations_update", 1) = 0 Then
      blnLyrExists = True
      Exit For
    End If
  Next
  'Notify the user if weatherstations_update.shp layer does not exist
  If Not blnLyrExists Then
    MsgBox "The weatherstations_update.shp layer is not selected.", vbExclamation, "Layer not present"
  'Return the tool button to its original state, and then exit
    objToolButton.Click
   Exit Sub
  End If
  'If the weatherstations_update.shp layer does exist:
  'Get the coordinates of the spot where the user clicked on the map
  X = Map.PointerX
  Y = Map.PointerY
  'Get a reference to the weatherstations_update.shp Layer object
  Dim objLayer
  Set objLayer = Map.Layers("weatherstations_update")
   'If the layer can be editable, then make it editable
   If objLayer.CanEdit Then
   objLayer.Editable = True
   'Check to see if a point already exist at the specified XY location ...
   If Not Map.SelectXY(X,Y) Then
   'If no point exists then add a new point at the clicked location
   Call Map.AddFeatureXY(X,Y)
   'Return the tool button to its original state
   objToolButton.Click
    Else
      Msgbox "Hey Dude, there is already a point there."
      Call IdentifyXY(X,Y)
    'Return the tool button to its original state
          objToolButton.Click
    End If
   'Return the tool button to its original state
   objToolButton.Click
   End If
```

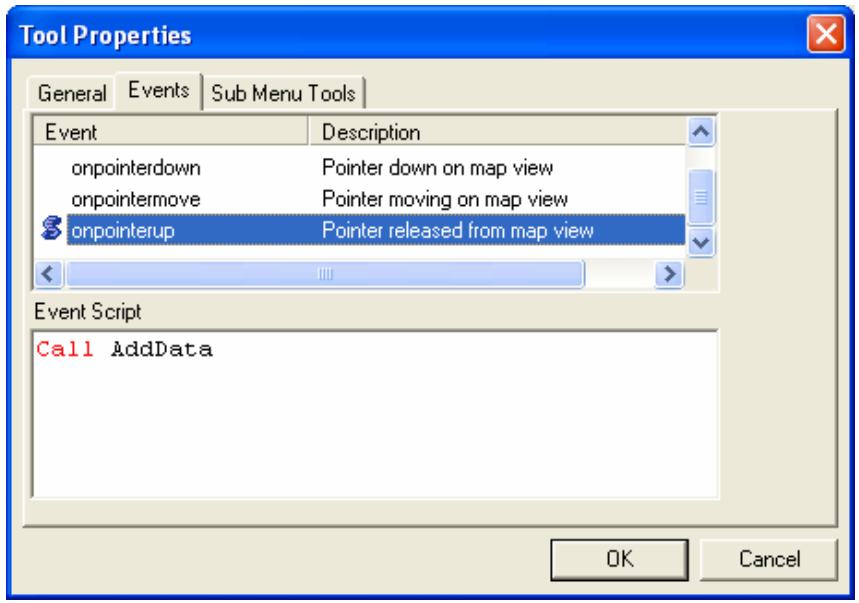
- After you have finished writing your script, click the Compile icon check for any syntax errors
- Your script will be compiled if you hear a beep after clicking the icon
- Save your script



Assign Script to the Tool Bar

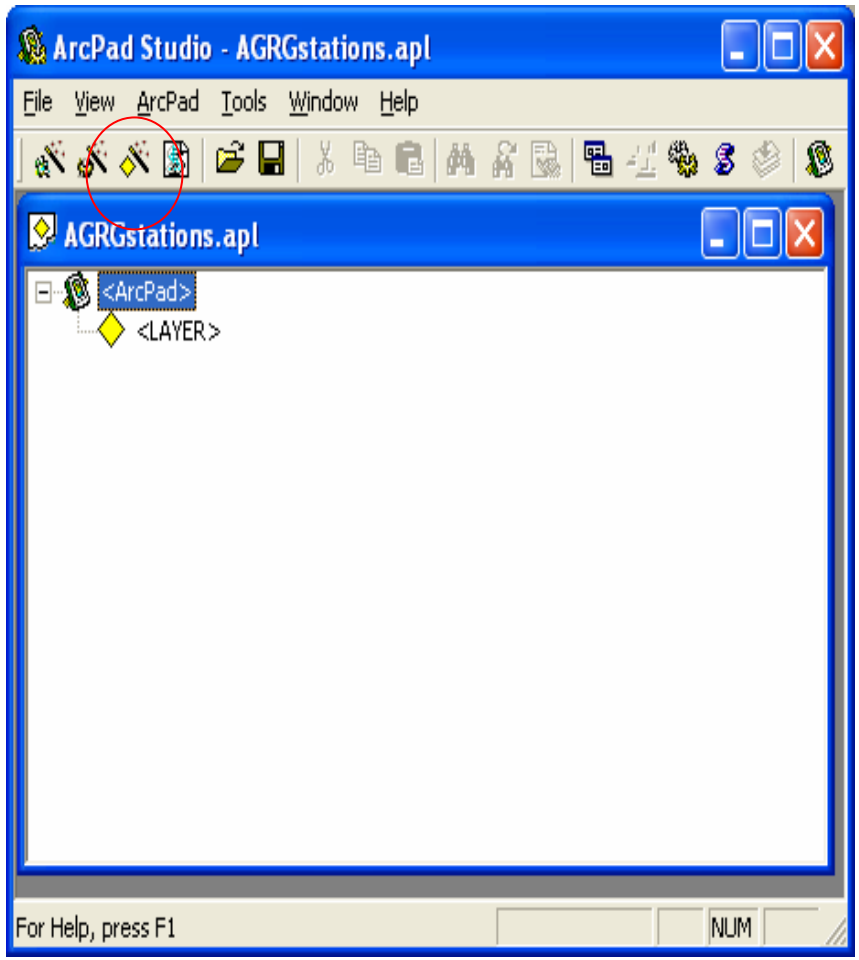
- Click the Tool Bar icon
- Select the toolbar that you created
- Select the custom icon and then click Edit to open the Tool Properties window
- Select the Events Tab
- Select **onpointerup**
- In the bottom frame of the window add code that will refer to a section of the script

  Call AddData
- Click Ok



Create the Form

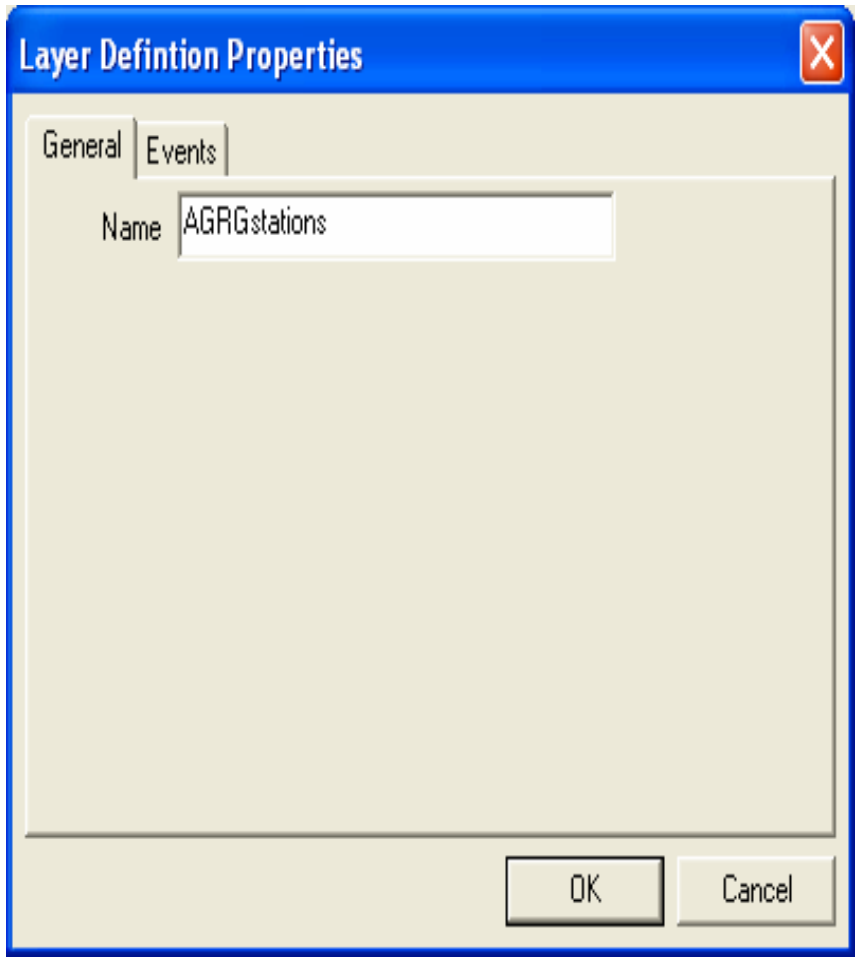
- Open **ArcPad** Studio
- Select the **NEW DEFINITION** icon and then choose the shapefile that you wish to use as a layer file.
- This will create a new layer definition file **(.apl)** with the same name as the shapefile



- Double click **<LAYER>** from the .apl window to set the properties of the layer definition file.

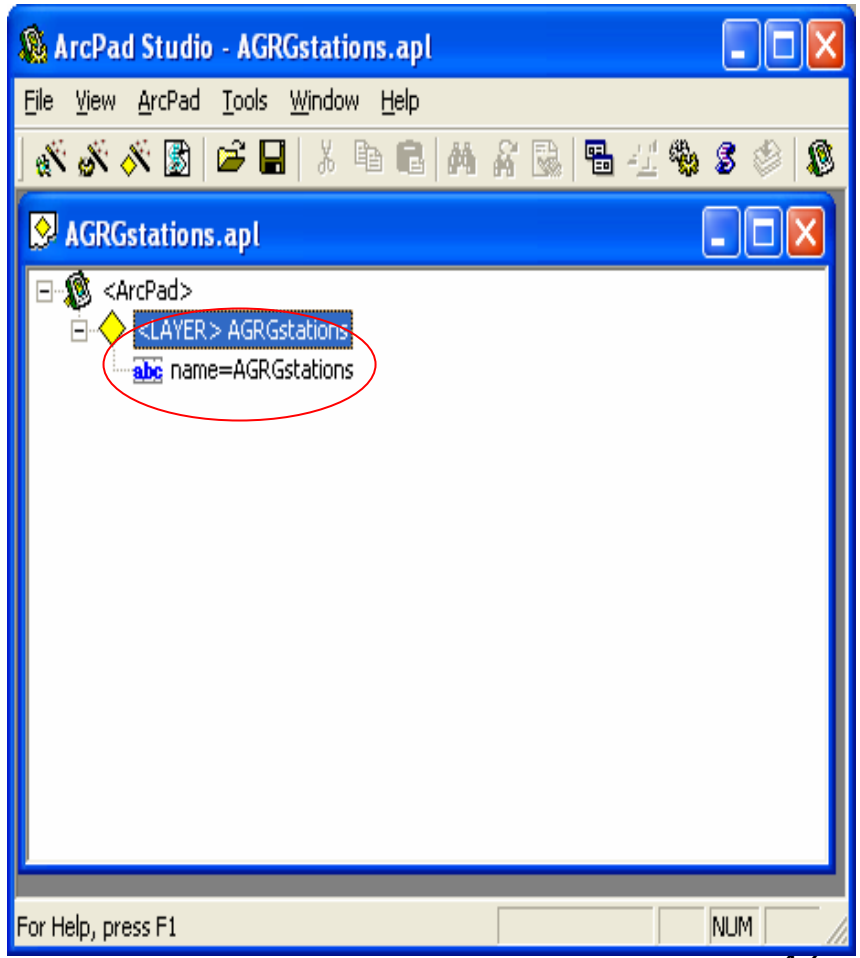
- Enter a name for the Layer into the Name text box

- Click OK.

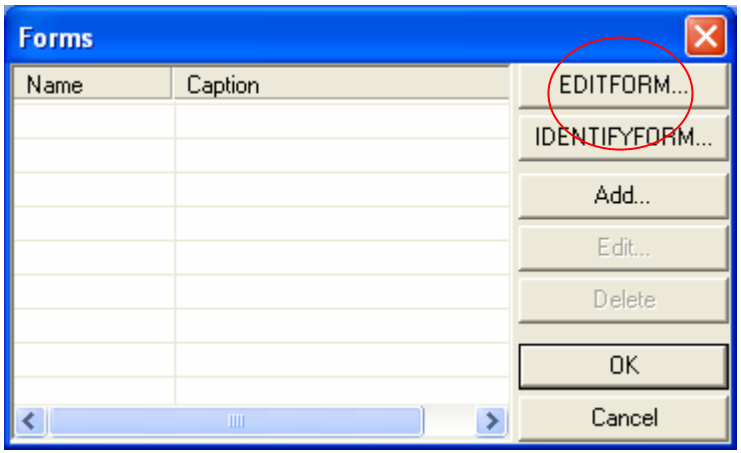


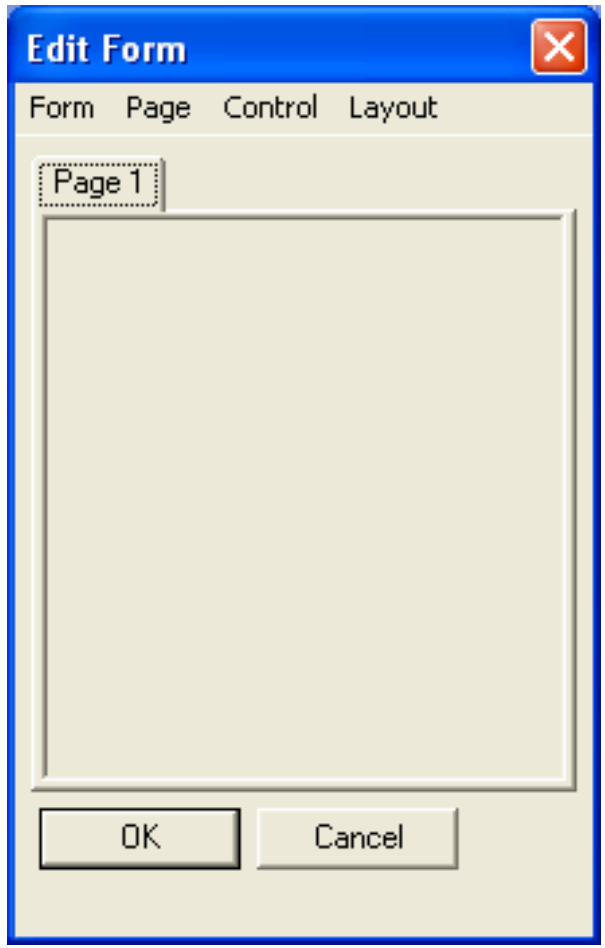
- The name will appear below <LAYER>

  as **name = AGRGstations**

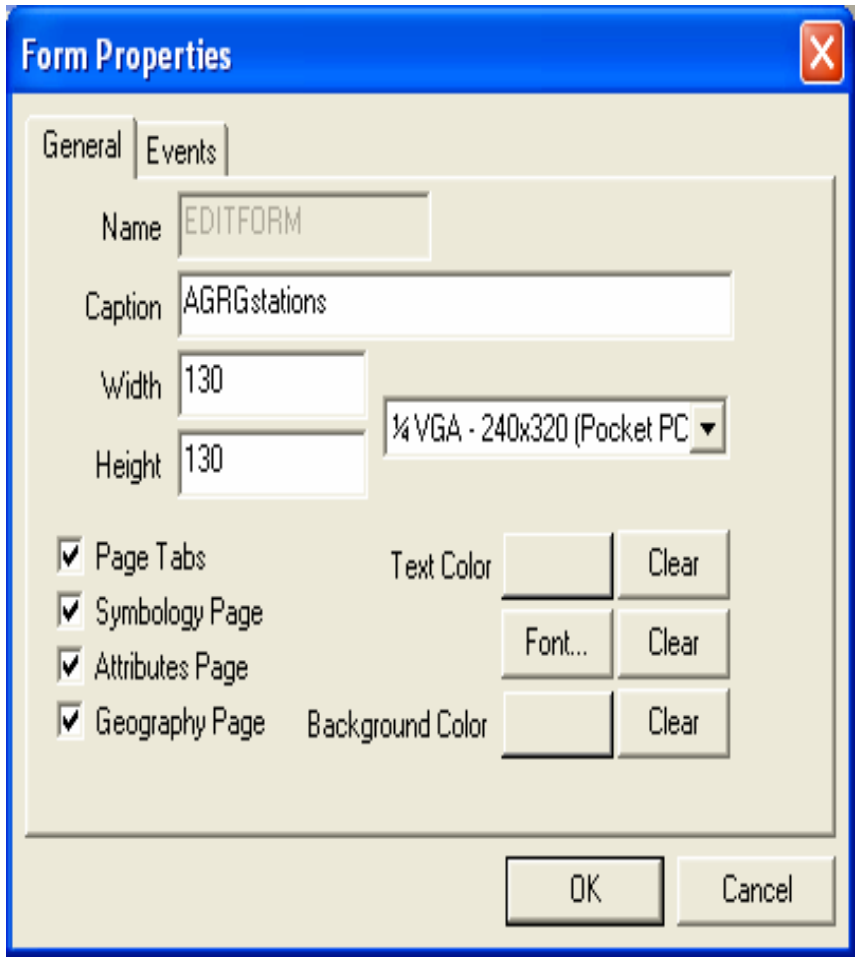


- Select the **FORMS** icon to open the **Forms** window
- Select the **EDITFORM** button and a new blank form will appear

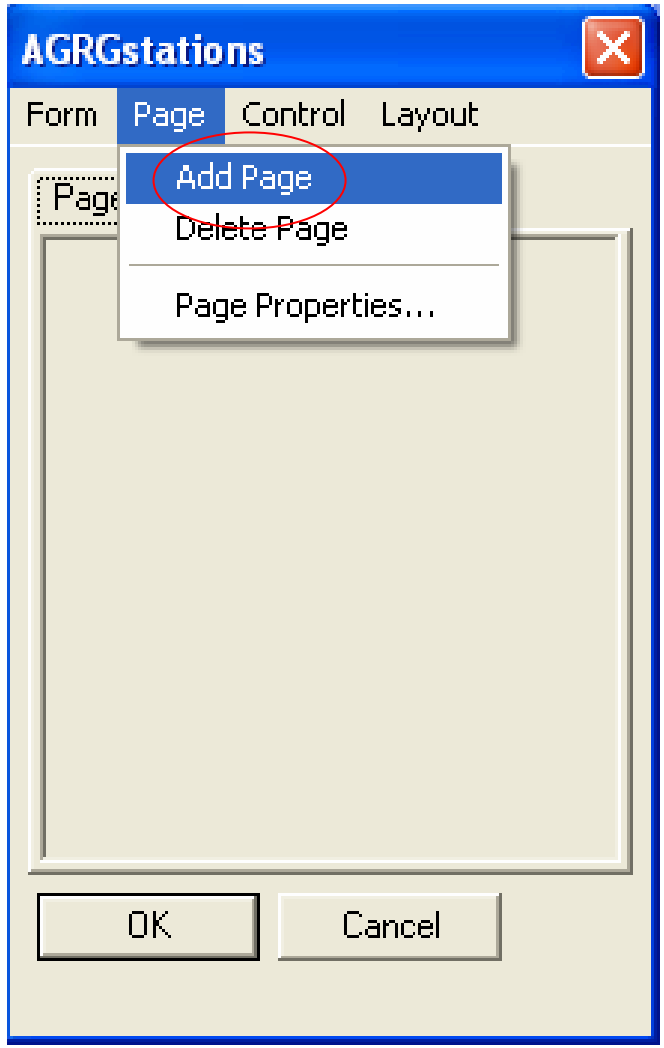




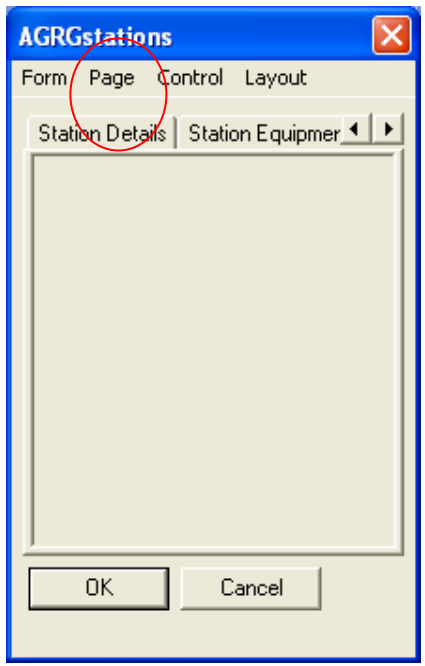
- Choose **Form Properties** from FORM in the main menu
- Enter a name for the **Caption**
- Leave as the default width and height
- Make sure all of the boxes are selected
- Change Colors if desired

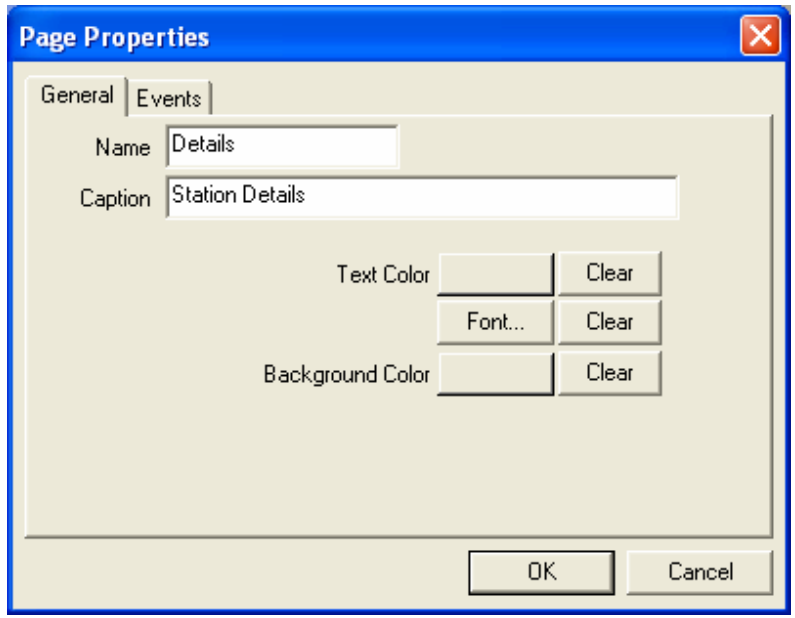


- Choose **PAGE** from the main menu
- Choose **Add Page** to add a second page, then repeat to add a third and fourth page



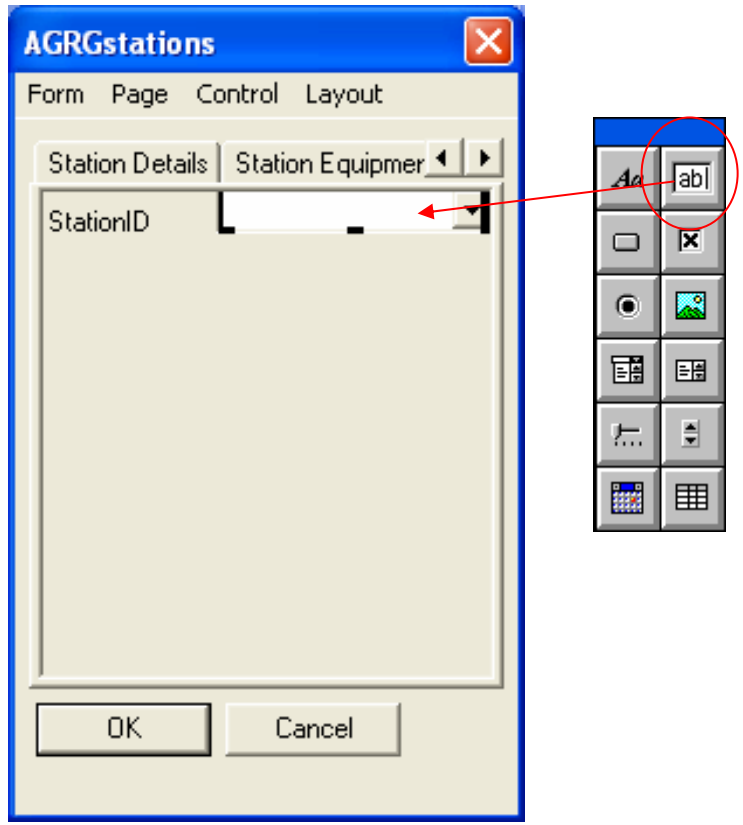
- Rename the Pages by selecting **PAGE PROPERTIES** from **PAGE** in the main menu



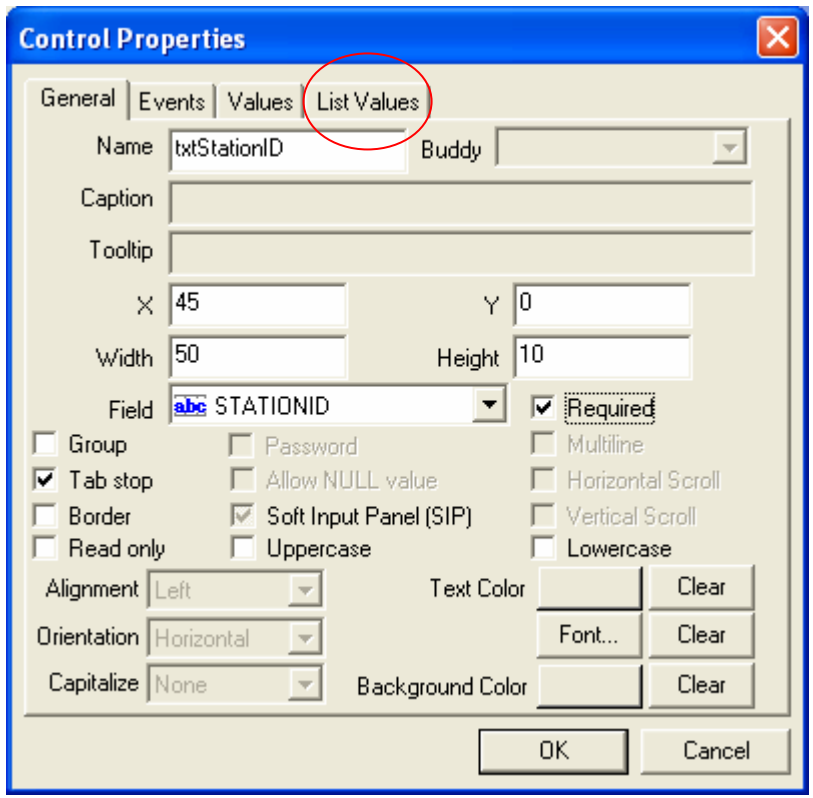


Add Controls to the Form

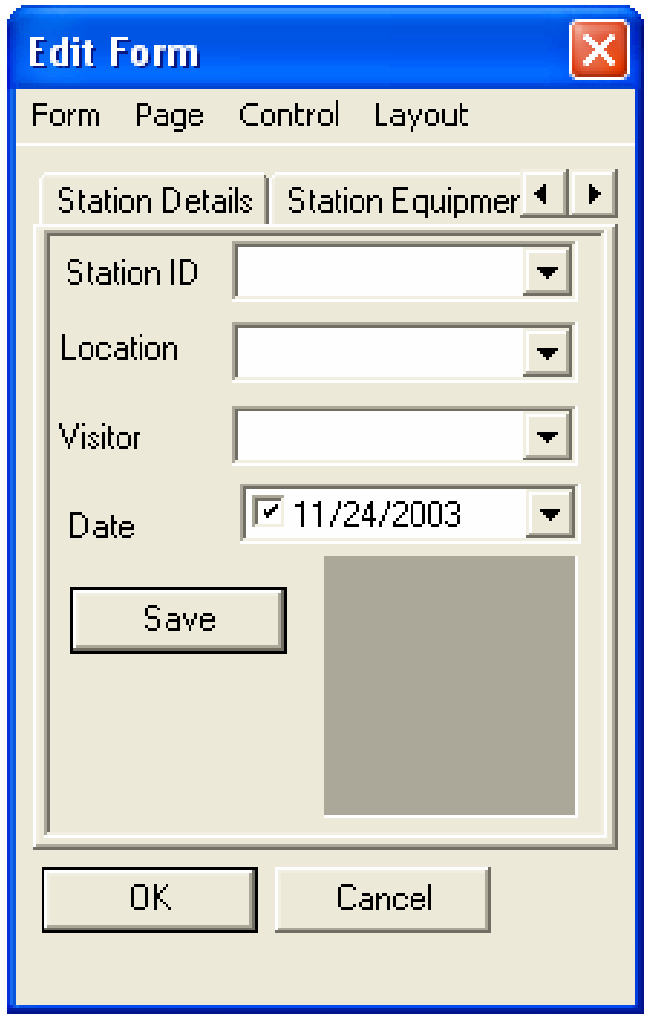
- Click and drag the control icon that you wish to add to your form
- The **Control Properties** window will open up allowing you to set all the properties for the new control item



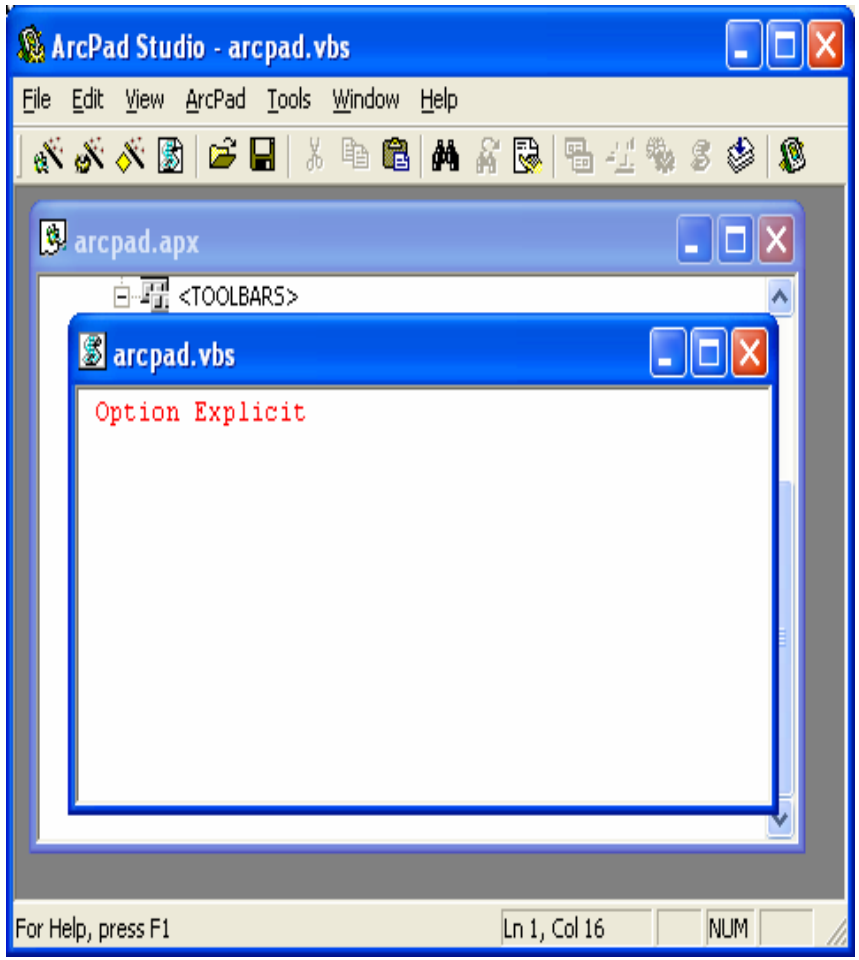
- Give the control a name
- Select the **attribute field** if you wish the value to be written to the main shapefile
- Select **LIST VALUES** tab to add choices to your combo box



- Continue adding all of the controls and setting their properties until your form is complete



- Click the **Edit Script** icon to open a new VB Script window
- Start with **Option Explicit** at the top and then begin writing your code to go with your .apl file below
- (Note: You can write your code in any preferred text editor)



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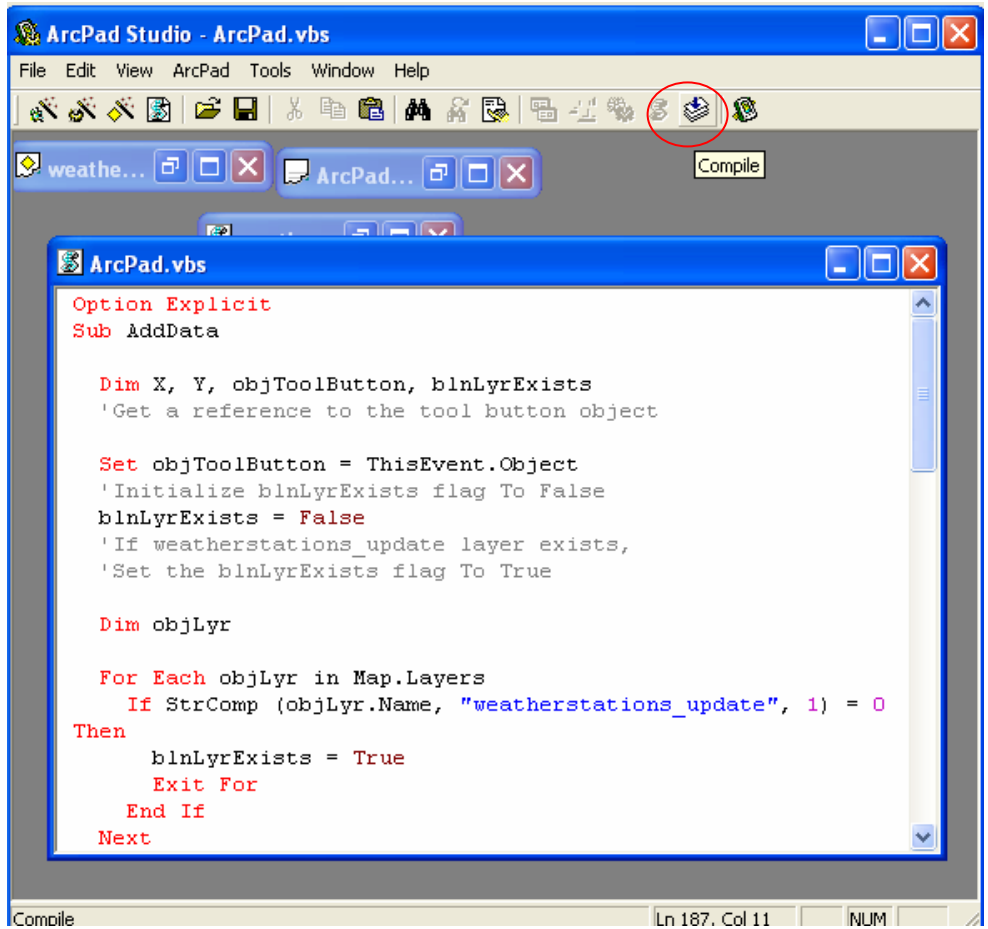
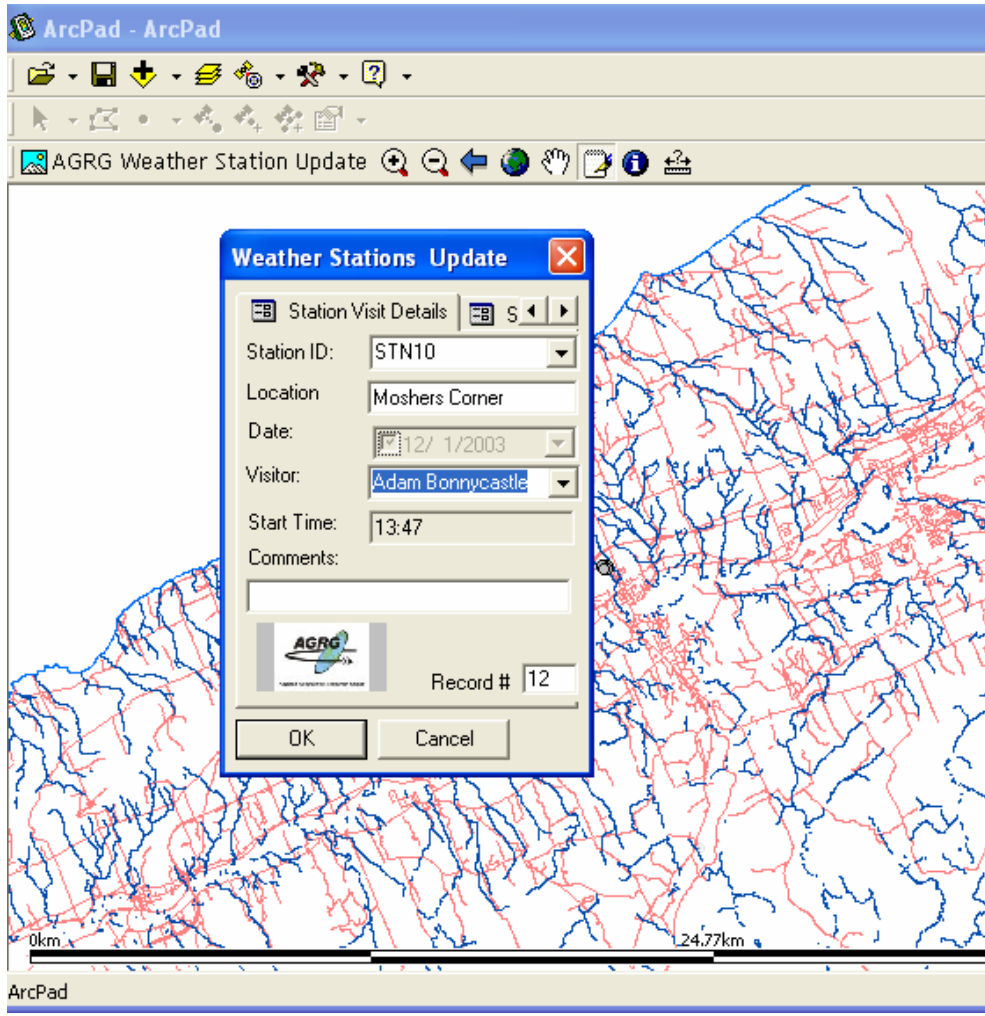


- Load your application in ArcPad and test out your form, then go back to ArcStudio and fix any bugs that you encounter



- Now you can transfer your files to the portable device

- The following are the control name variables used to create the VB script file

CONTROL NAMES

StationID

cboLocation

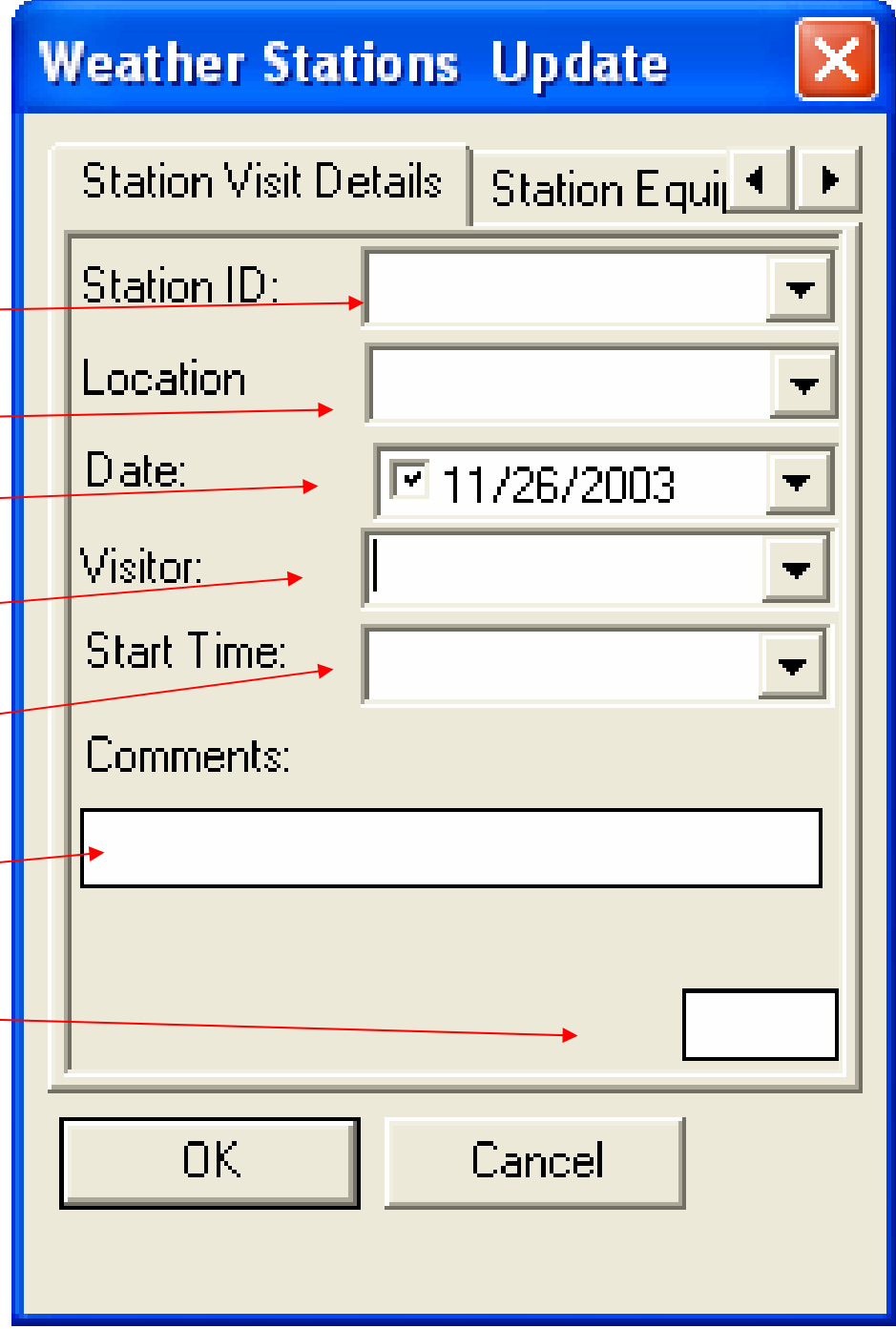
dtpDate

cboVisitor

cboStartTime

txtComments

txtFID

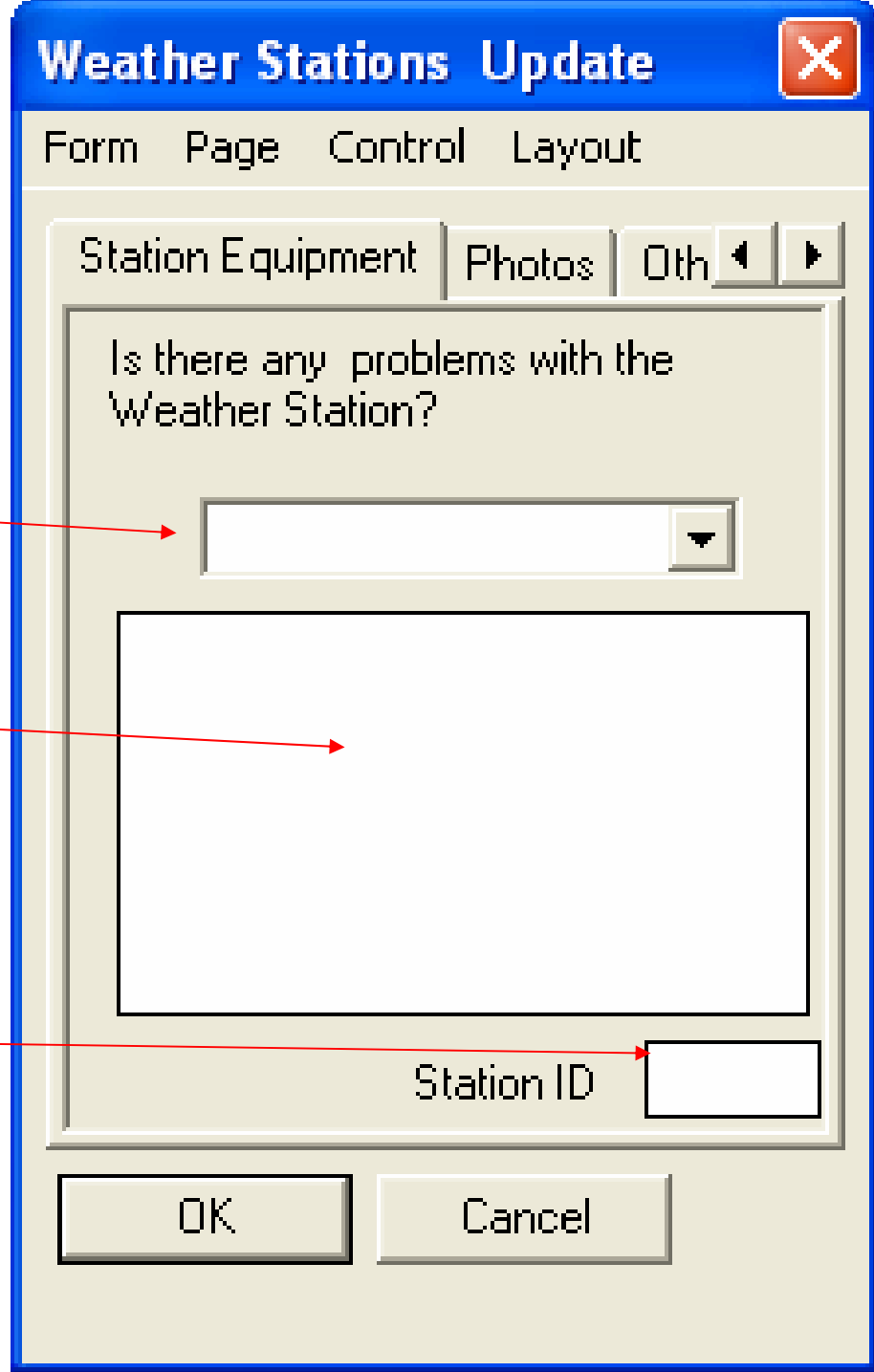


CONTROL NAMES

cboEquipment

txtEquipmentNotes

txtStationID



CONTROL NAMES

txtPhotoName

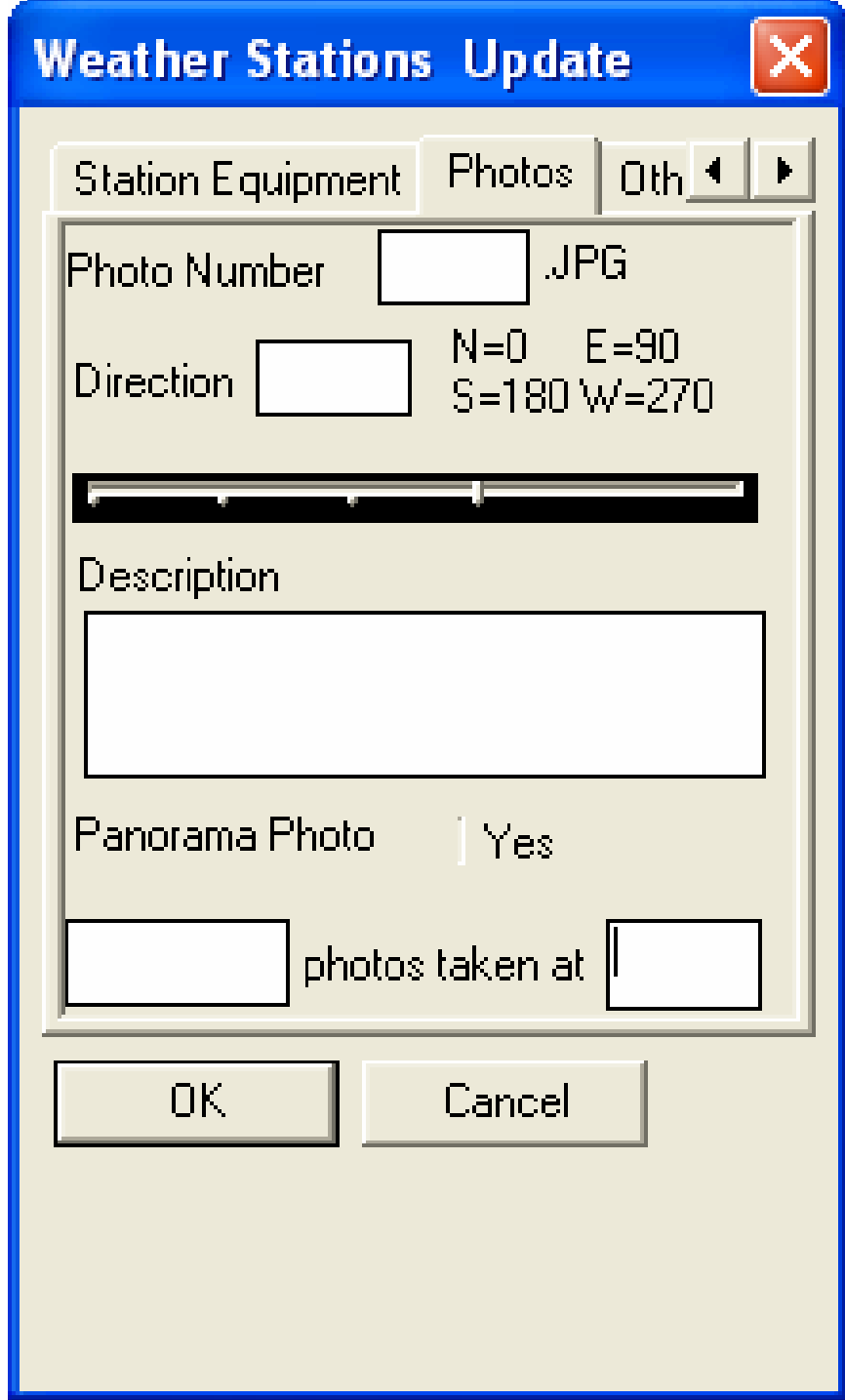
txtDirection

sldDirection

txtDescription

txtStationID

txtNumPhotos



CONTROL NAMES

txtOwner

txtPhone

txtAddress

txtDirections

txtStationID