STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

EFB Desktop
Manual

SURVEYING AND MAPPING OFFICE
TALLAHASSEE, FLORIDA

Contents

Introduction

Florida Department of Transportation (FDOT) Electronic Field Book system (EFB) is designed to meet the specialized operational requirements for highway route surveying. The desktop version of this system is designed to allow the user broader access to data in an office environment, providing a larger viewing area with a quick overview style interface, thereby allowing access to more data at one time than is possible with the handheld device.

The computer platform for office operations is a desktop or notebook PC, operating under Windows. Files may be transferred to any other operating system as desired.

This documentation is intended to specifically describe the operation of the Electronic Field Book system within a windows-based pc environment for office operations. The documentation serves as a supplement to the documentation provided for the EFB handheld device. For more detailed information, regarding the technical operations of the EFB system, please refer to the EFB Mobile documentation.

The American Association of State Highway Transportation Officials (AASHTO) Survey Data Management System (SDMS) Processor module is incorporated as an add-on module to the EFB Desktop. Please refer to its in-application documentation which can be accessed from the Windows Start button, and selecting "FDOT SDMS Processor" from the *All Programs* listing. This will bring up not only the specially compiled version of the AASHTO SDMS application for FDOT, but will provide links to the various SDMS Processor documents.

> ***Note***: Processing the data collected is explained in separate publications.

Application Overview

EFB Desktop **program opens with the llfollowing ldialog box offering the user two choices: open an existing project or create a new project. A project file contains a unit of survey field data that may be processed into coordinates, and was** formerly called a "Segment" in **the previous DOS version of EFB. EFB Survey data is stored in a database format with** an *.SDF* file extension.

The dialog box has three tabs. The (D) Data and (C) CTL tabs functionality will be disabled until an action has been taken in the (F) File tab. **Selecting the (D) Data or (C) CTL tab first will open a dialog message guiding the user back to** the (F) File tab selections.
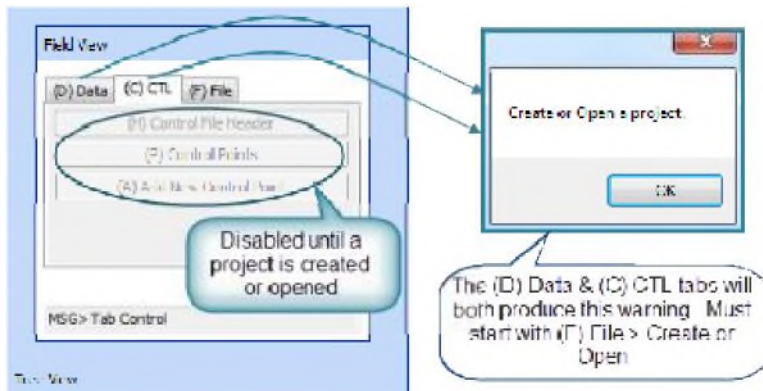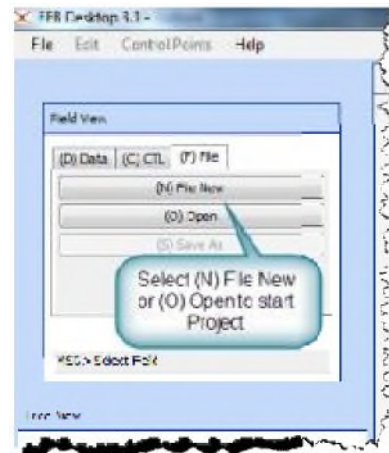
The (F) **File tab has three options: (N) File New, (O) Open or (S) Save As, as illustrated above.**

The (C) **CTL** tab also has th**ree options: (H) Control File Header, (P) Control Points or (A) Add New Control Point, which are shown disabled above.**

The (D) **Data tab is the Switchboard of the** EFB Mobile **device commands, a view of the switchboard is below:**
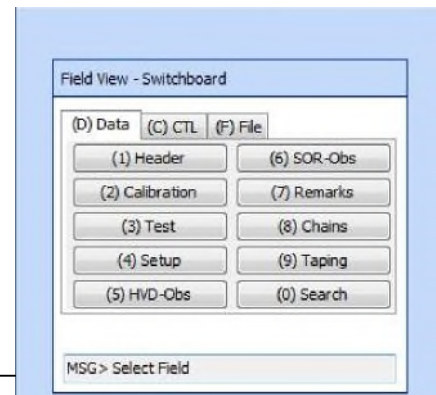
Note: To return to the start up dialog box (Switchboard, Control Points or File menu), type the **Enter** key when the cursor is in the MSG> box.

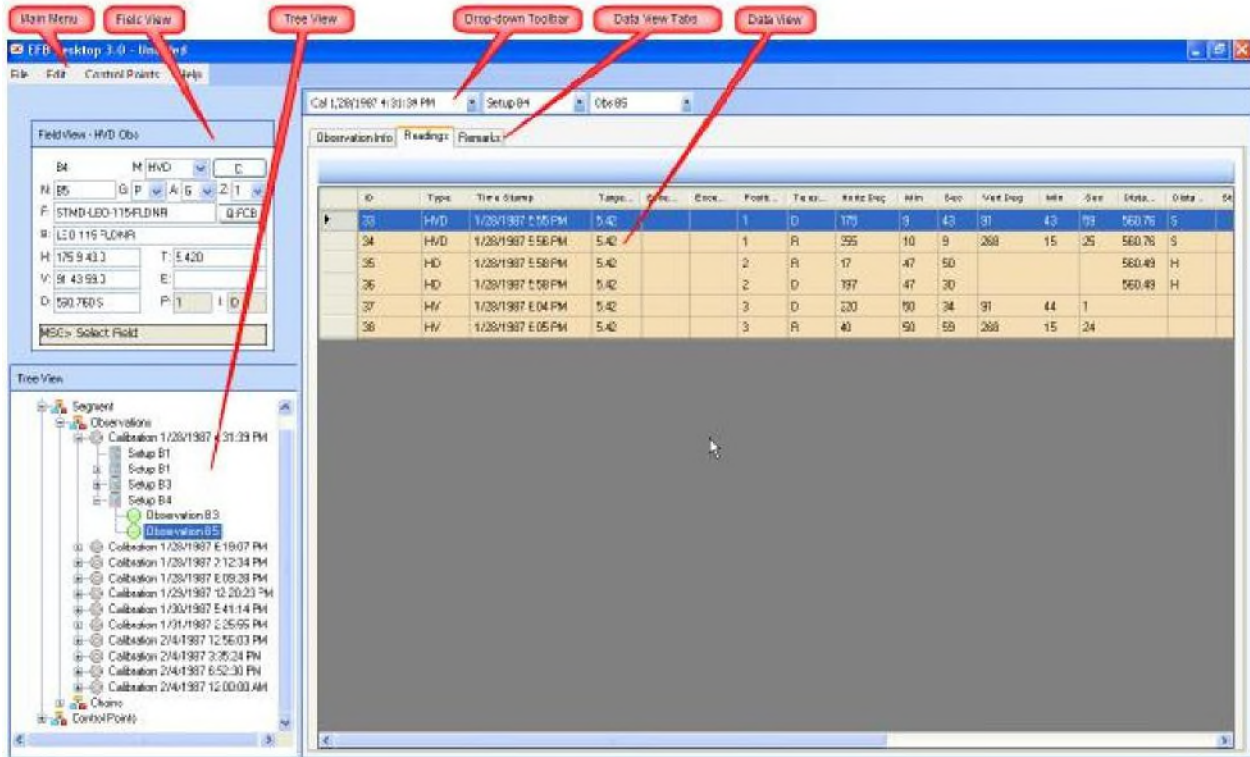Below is a sample screen of the EFB Desktop program with a Project loaded. Note the locations of the *Main Menu, Field View* pane*, Tree View* pane*, Drop-Down* toolbar, *Data View* tabs and the *Data View* pane. This section will provide a general overview of the functionality of each of these components.

Upon startup of the EFB Desktop program a *Startup Log* is created. The log will provide system information about the Name and Location of the EFB Desktop executable, Port names and the operating system parameters of the computer that is being used.

The Windows 7 default location for the *Startup_Log.xml* file would be C:\Users*username*\Documents\EFB folder, where username equals the user login of the computer being used to run EFB desktop. An environment variable is used to locate the user folder. This file may be viewed using a text editor such as NotePad. This log file helps the programmers determine startup errors, and may need to be shared with the Department when debugging startup errors, should that occur.

Main Menu

File Menu

The EFB Desktop *File Menu* **provides** ‖ **all of the same** ‖**functionality that exists** in the **EFB** ‖Mobile File

Menu. **The EFB data is now stored in a database. A database** ‖**file is either created upon startup or an existing database is opened. The** ‖**following operations may be executed to** ‖**manipulate the database file. Records within the datab ase file (project file) will continue to be Recorded (0), Modified (6) or Deleted (3), using the same method as the Mobile device. The illustration below** displays the layout of the **EFB Desktop** *File Menu*.
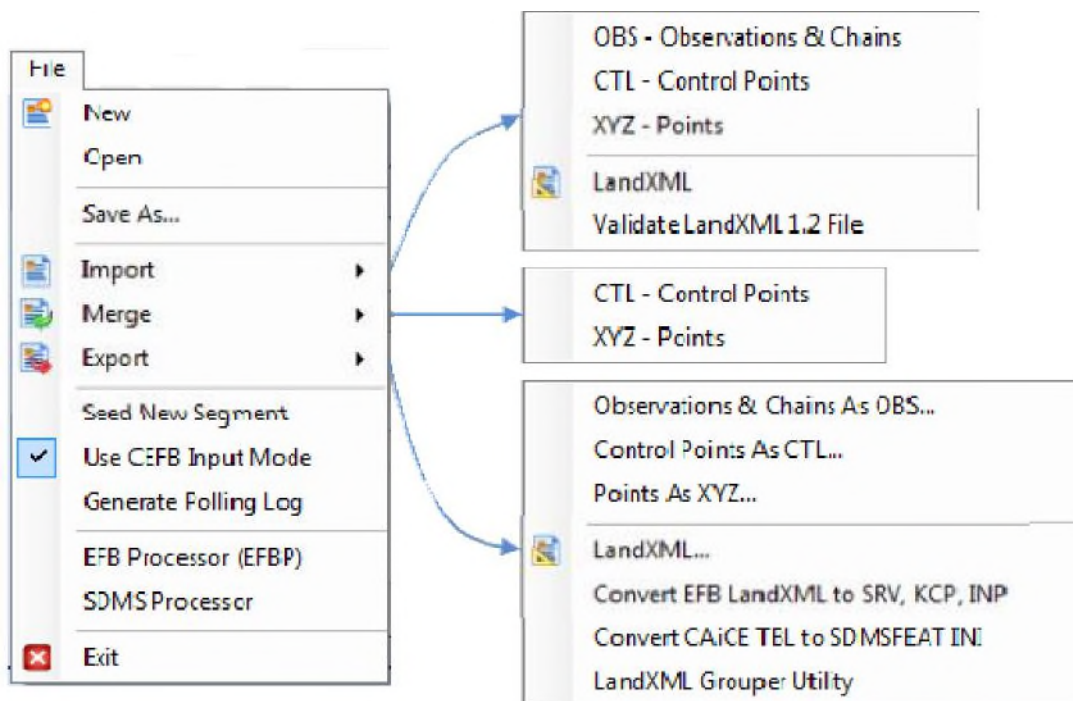
Detailed explanation of each of the File commands:

New: Opens the *Save As SDF*… **dialog box, prompting the user to create a new project name** and location.

Open: Opens the *Open SDF File…* **dialog box, prompting the user to open an existing SDF** project.

Save As: Opens the *Save As SDF…* **dialog box prompting the user to create a new project name and location. It is used to create the filename and storage location in the Windows folder system for the segment of survey data being surveyed. This command would be used when a new project is based off of** data from an existing project.

Import: Allows the user to import existing segment data (OBS & LandXML), Control Points (CTL or XYZ) to be used with the segment being surveyed. It also allows for Validating LandXML 1.2 Files from other applications.

The **segment file may be imported as either:**

OBS – Observations & Chains: With *.OBS* **file extension (from the classical EFB). It contains established Observations and Chains. An *OBS_Chain_Import_Errors.log* is generated and stored in the same folder as the OBS file. It will automatically display when there are mismatches between the** *Shorthand* and *Expanded* **Chain lists coming from the imported .OBS file. It is up to the user to correct any discrepancies.**

Sample Log file:
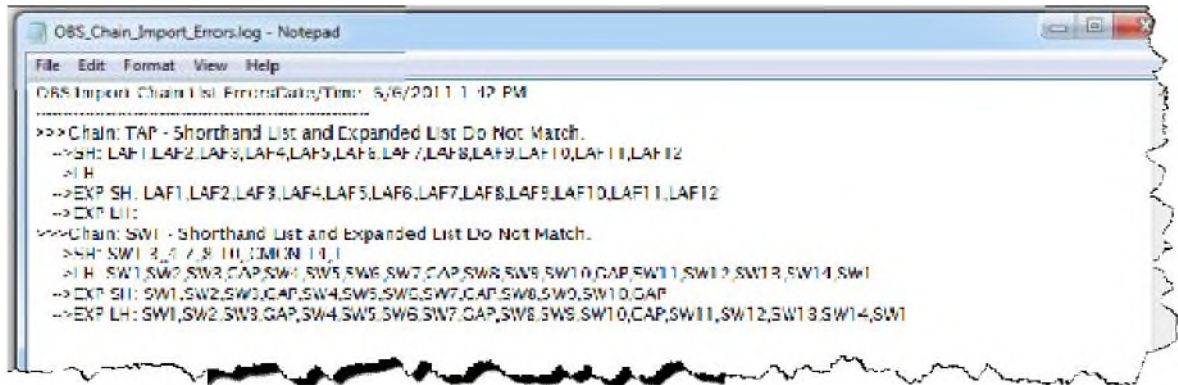
CTL - Control Points: With **.CTL** fil**e extension, it contains established Control Points (.CTL is the same as the classical EFB).**

XYZ – Points: With *.XYZ* **file extension, it contains coordinate values of Control Points (.XYZ is the same as the classical EFB).**

LandXML: With *.XML* **file exten sion, it contains all information (observations, chains and/or control points) that make up a segment. These LandXML files provide portability** to other applications.

   NOTE: Importing data will replace any existing data in the current segment.

*Validating LandXML 1.2 File***: This** command will open the ESCO - **LandXML File Validator** 1.2 **dialog box as illustrated below:**
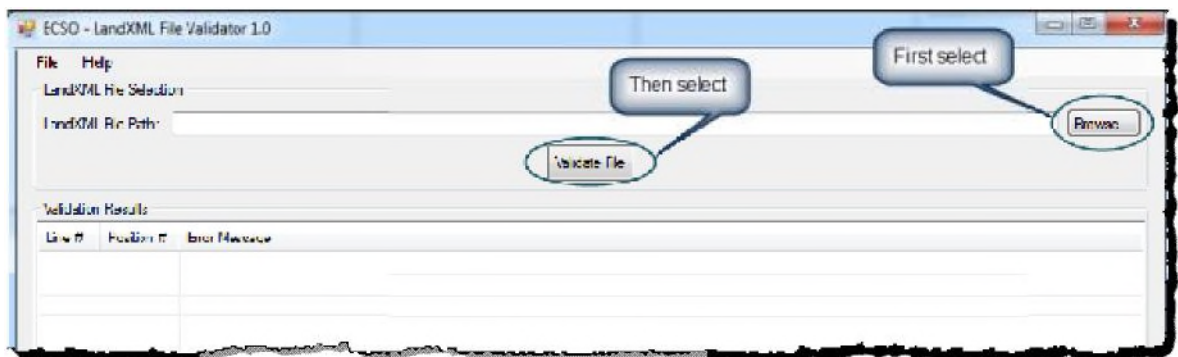
In the dialog box, click the ***Browse* button to locate the LandXML file for validation, and** then click the *Validate File* **button to process. The results will be displayed in the** *Validation Results* **table Line #, Position # and the Error Message will be listed.**

Merge: Allows the user to merge existing Control Points (CTL or XYZ) to be used with the segment being surveyed. This differs from i mport; instead of creating an entire new file,

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only the new information is brought into the current file. The routine compares the existing data with the merged data and for any new point it will merge all of the information associated with that point. For points that are the same name, the only data that will be merged are blank fields in the existing file. The existing information takes precedence.

Export: Allows the user to export the current data to OBS, LandXML Control Points (CTL or XYZ) files or Convert EFB LandXMLdata to CAiCE SRV and KCP (CAiCE Survey and CAiCE Project) / GEOPAK INP (Input file) formats.

The segment file may be exported as either:

Observations & Chains As OBS...: With *.OBS* **file extension, it contains established** Observations and Chains.

Control Points As CTL...: **With** *.CTL* **file extension, it contains established Control Points.**

Points As XYZ...: With *.XYZ* l**file extension, it contains coordinate values of Control** Points.

LandXML... With *.XML* **file extension, it contains all information (observations, chains and/or control points) that make up a segment. These LandXML files provide portability** to other applications.

Each Export type will create a *temp.job* **file within the same folder name embe**dded as **the type file being exported; this file will contain the filename of the file being** exported, and is used by the processor**.**

In addition, the *.CTL* **export will copy the** *.CTL* file to a new file with a *.CCC* **file extension** into the same folder, in ca**se the SDMS version of the processor is used**.

Convert EFB LandXML to SRV, KCP, INP **: This utility is used to convert data from a LandXML file to CAiCE SRV, CAiCE KCP, GEOPAK INP and LandXML Grouped Output.**
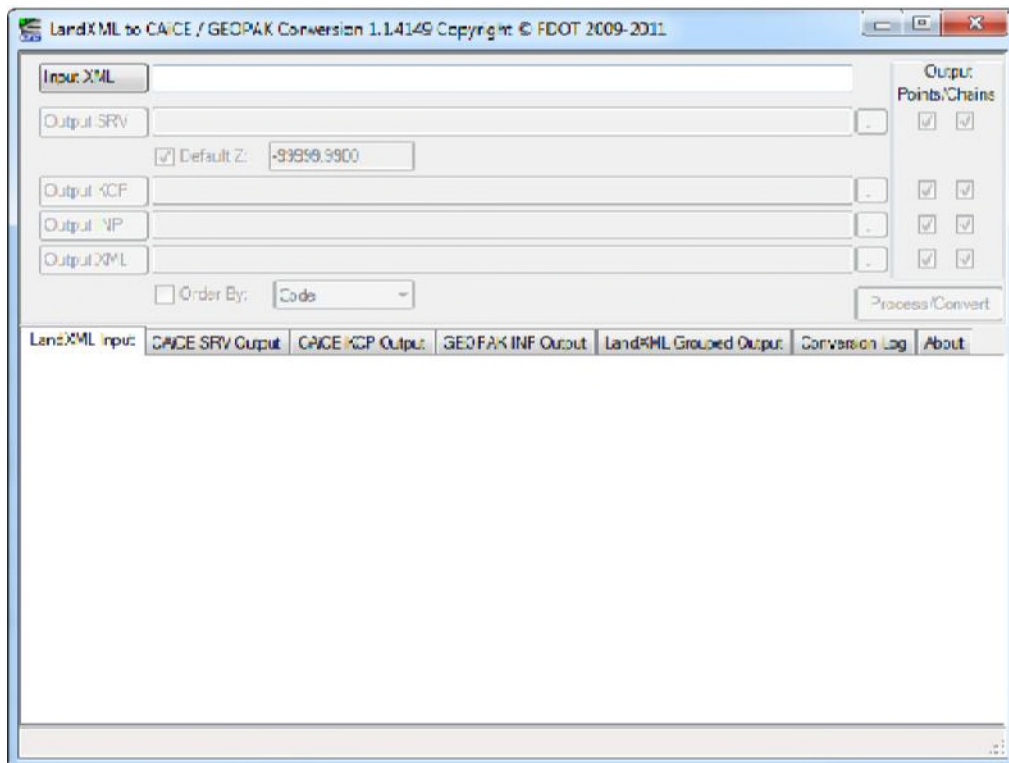
Convert CAiCE table to SDMSFEAT INI : Conver**ts CAiCE feature table symbology table** (.tbl) to SDMS Processor *.ini* **format. This utility is available so non -FDOT standards can display in the SDMS processor for graphical network, point and chain review.**
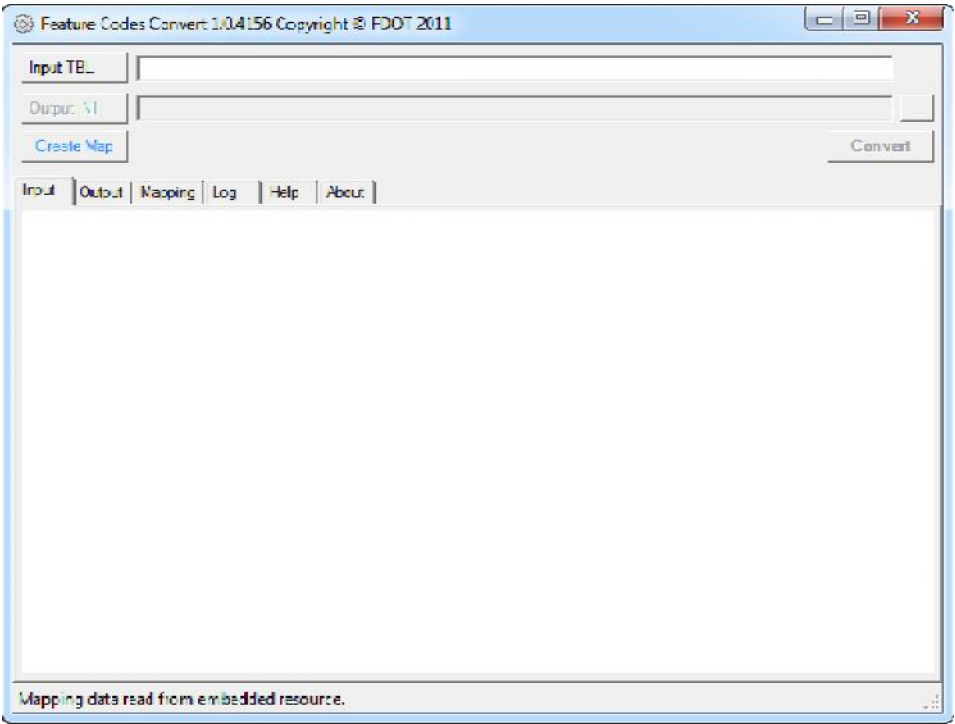
*LandXML Grouper Utility***: This utility** adds point and chain groups in**to LandXML data by defining point or chain groups using filters for name,** feature **code, description, attribute** and zone. Users can a**dditionally refine groups by adding/removing individual points or** chains.
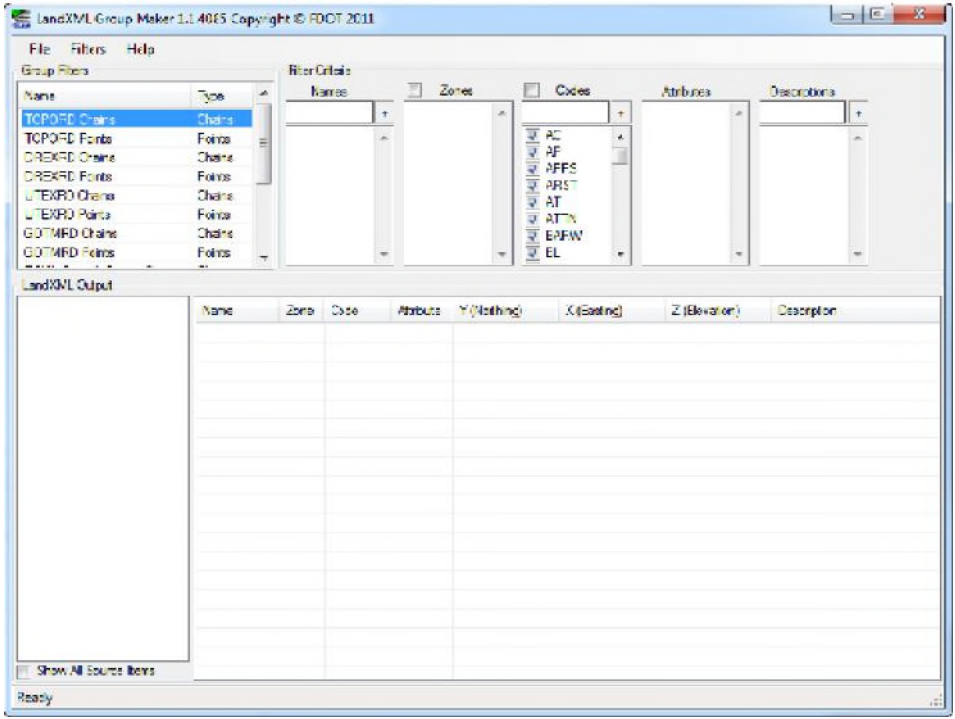
Seed New Segment: Allows the user to seed a new project segment with an existing project's existing points and chain information. The New Segment file will start Point Name numbering where the previous file left off.

Use CEFB Input Mode: When checked, the *CEFB* (C representing Cadastral) ***Input Mode***

feature makes the input mode **feature driven** . This feature is "On" or checked ☑ by default. **See Feature Code section for more information.**

Generate Polling Log: **When checked, the** *Generate Polling Log* **feature creates a log to** cap**ture the sequence of events** <u>while</u> **polling** for instrument measurement **information** . This

feature is "Off" or NOT checked ☑ by default. The log is useful for **troubleshooting polling** errors. Unlike the StartupLog**, which writes to an** *XML* file**, the Polling Log writes to the** internal .SDF database only.

EFB Processor (EFBP): Opens a dialog box used to initiate point data reduction and coordinate processing on the collected field survey data. The process reduces raw measurements to angles and d**istances used to create coordinates and/or elevations for all of the observed/measured points. The processor also generates reports for viewing and/or printing. Processing is performed using** *EFBP.exe* **program written by D. Ray Hintz.** *(See the Point Proce***ssing section for more information and detailed instructions.)**

SDMS Processor: Launches the public domain version of the AASHTO SDMS Processor. The SDMS Processor is a complement to the SDMS field data collection system which provides processing and anal**ysis of survey information into coordinates for import to standard office survey and engineering software systems. The SDMS Processor also uses a slightly** different version of Dr. Hintz's ***EFBP.exe* , that looks for .CCC control files instead of .CTL** control **files. The SDMS processor provides graphical viewing of survey data, and a rich compliment of COGO and other functionality.**

When files are exporting for SDMS processing, each Export type will create a *temp.job* file within the same folder as the type file being exported. This file will contain the filename of** the file being exported.

In addition, the *.CTL* **export will copy the** *.CTL* file to a new file with a *.CCC* **file extension** into the same folder**, so the SDMS version of EFBP.exe can execute**.
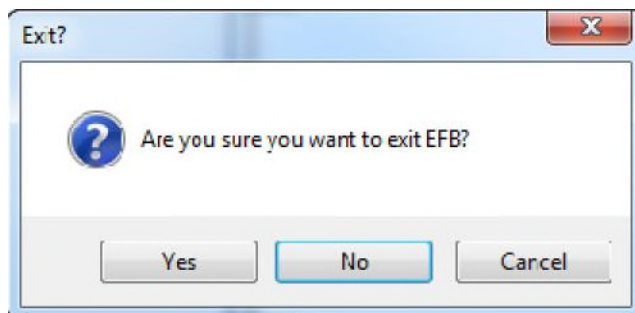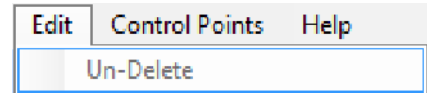
Exit: Closes the program.

Edit Menu

The *Edit Menu* of EFB Desktop provides the functionality to *Un-Delete* records with the following criteria:

- Must be an Observation (HVD or SOR) and
- The highlighted record (reading) in the data grid must be a previously deleted record.

Control Points Menu

The *Control Points Menu* provides a method of managing Control Points in the segment. This is done by establishing the Control Point Settings for the project, adding a point or removing existing control points for an EFB file.
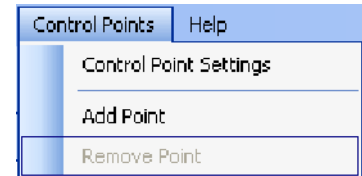
Help Menu

The *Help Menu* provides access to the documentation for both EFB Desktop and EFB Mobile. Documentation for each platform supported by EFB is provided in two forms: *Contents* and *PDF Manual*. The *PDF Manual* provides a format for printing out the selected help manual. *Contents* opens up a hierarchical set of help files (standard compiled CHM file) for either EFB Desktop or EFB Mobile.

About EFB Desktop displays the EFB Desktop version information.
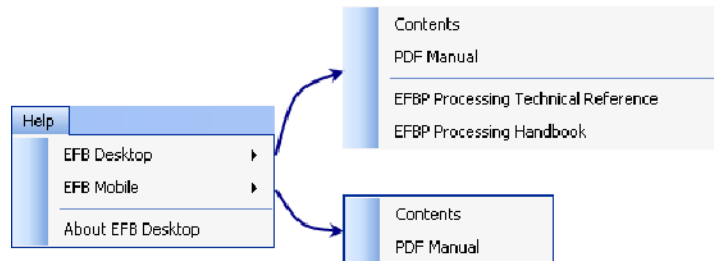
Field View

The *Field View* pane provides **the same** **functionality as the**
interface of EFB Mobile **and matches the** **mobile unit screen
in appearance. Data can be created and modified using** **all of
the same command and navigation keystrokes used by** EFB
Mobile**. For full documentation regarding the available** keystrokes,
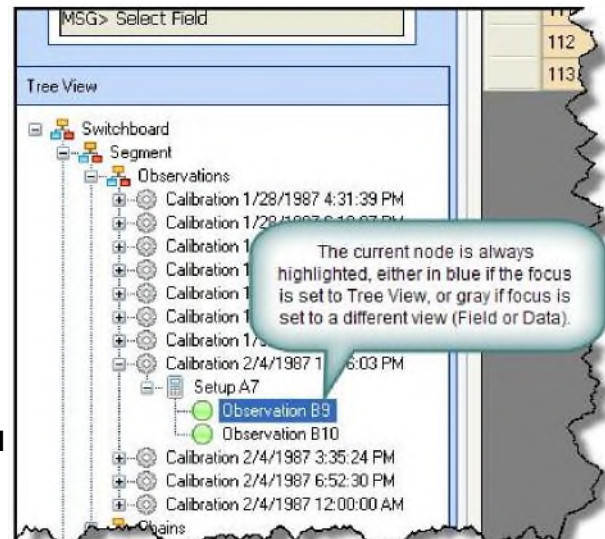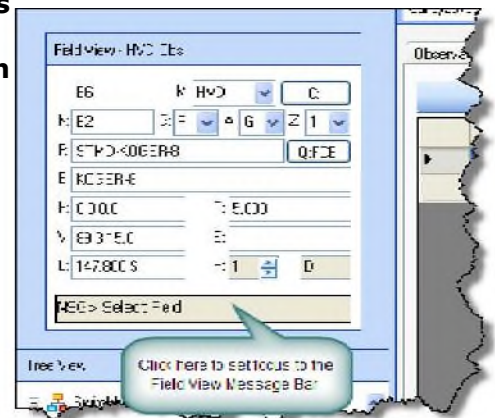please consult the **EFB Mobile** documentation.

As with EFB Mobile**, the Field View message bar (MSG>)
requires focus to accept command and navigation
keystrokes. When the message bar has focus,** a blinking
cursor is visible in the field.

**When saves (record "0"), modifications (modify "6") and
deletes (delete "3") occur in the Field View, the
rest of the Desktop interface is updated to reflect
the change.**

The *Tree View* **pane allows the user to cle**arly
see the hierarchical organization of **data records**,
**allowing for easier and faster access to
information. With this feature, the user is
provided with the ability to easily browse
through all of the EFB data that has been**
collected without having to P**age Back/Forward**
through each individual screen **in the Field View**
pane, as is required on the **EFB Mobile** device.

When the user selects an item in the *Tree View*
pane, the *Field View* and *Data View* **panes are updated
to reflect the item selected.**

When a new item is added in the ***Field View*** pane,
the *Tree View* **pane is also automatically** updated
to reflect the change.

Click here to set focus to the Field View Message Bar

The current node is always highlighted, either in blue if the focus is set to Tree View, or gray if focus is set to a different view (Field or Data).

Data View

Within the *Data View*, all information is read only. The data is shown in raw format and needs to be viewed in the *Field View* to be seen as formatted. When an item is selected, the related information is displayed in the first tab (for example, Observation Info.) If any child relationships exist, additional tabs are added with data-grids that contain the child records.

For example, if the Segment Header is selected, the Remarks tab displays any remarks records associated with the Segment Header.

The *Tree View, Data View*, *Field View* and *Drop-down Toolbar* are always kept in sync. If the user switches tabs, the *Field View* is updated to show the c ontrols used to enter the relevant data.

Drop-down Toolbar

The *Drop-down Toolbar* **contains up to four drop** -down lists depending on the **current page that** has been selected. Belo**w are examples of drop** -down lists **that are available for each da** ta type handled in the interface. **When a new** item is selected in the interface, the *Drop-**down Toolbar*** updates to reflect **the list of data that is available to select from.**

- When the *Switchboard* **page is selected, there are no** *Drop-down Toolbar* **lists available** and the *Drop-down Toolbar* **area is blank.**
- When the *Segment Header* **page is selected, four drop** -**down lists are available:**
    - *Calibrations*, Setup*, **Observations***, and* Chains*.
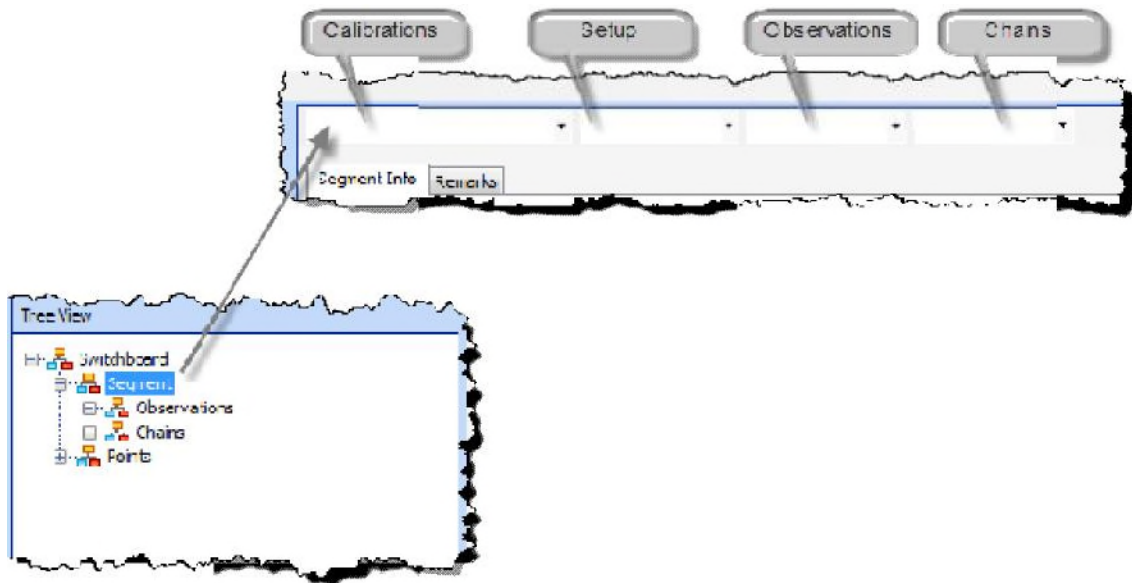
- When the *Control Points* **page is selected, only the** Control Point list **is available.**

> *Note:* The drop-**down lists a** re independent of each other and contain all of the items **available for each of t** heir **data type and are not filtered based on** selections made in the other d**ro** p-down lists.
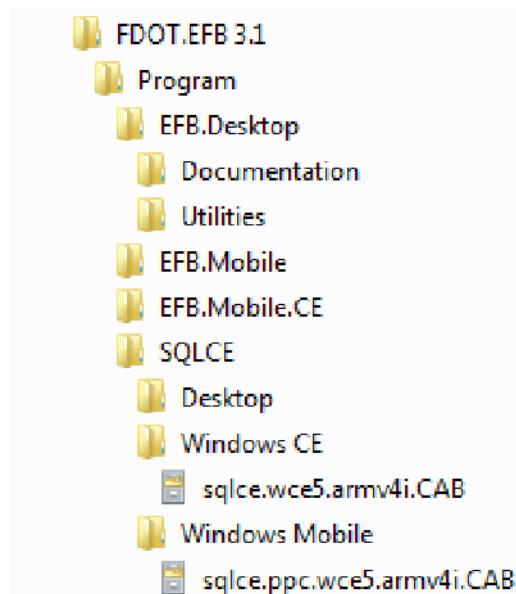
Getting Started

Setup/File Structure

The EFB Desktop install will create the following folder structure in the applicable Program File folder.

An *EFB* folder is also created in the users *Documents* folder. A variable within the program will locate the *Users* folder, accommodating various Windows operating systems. A log file named *Startup_Log.xml* will be created and saved to the users *EFB* folder.

Example folder path: C:\Users*Username*\Documents\EFB

Startup Routine

Upon initial startup of EFB Desktop executable the program creates a working directory in the users *Document* folder. An example folder path would be: C:\Users\lmattor\Documents\EFB. Within this folder an *XML* file is generated called *Startup_Log.xml*. All subsequent uses of the EFB Desktop program write to the *Startup_Log.xml* with the EFB Desktop system information. The file is written over each time the program is loaded.

Open an Existing File

While it is possible to create an OBS or LandXML file from scratch within EFB Desktop, it is much more common that these files will be created on a handheld device using EFB Mobile and then later transferred to a desktop computer running EFB Desktop. One of the methods for transferring files from Mobile devices running Windows Mobile or Windows CE is to use *ActiveSync*, a free program from Microsoft that is used to transfer files between desktop computers and Mobile devices.

Once the files are located on the Windows Desktop computer, the user can open them from EFB Desktop using the *File Menu*. Simply select the *Open* command, select the applicable project file *(.sdf)* and the data will be read into EFB Desktop. The interface will be updated to reflect the new data that has been loaded in.

Data Management

With EFB Desktop a user can view, modify, and create data. The *Field View* pane can be used in the exact same way that EFB Mobile is used. The pane needs to have focus to accept the available command and navigation keystrokes. To make sure that the *Field View* has focus, click inside the Message Bar area and a blinking cursor should appear within the field to indicate that focus is set.

The other EFB Desktop interface components can also be used to navigate and view data, but none of the other components can be used to create or modify data. All data creation and modification is done using the *Field View* pane only, in the same way that EFB Mobile does.

To navigate to a specific segment (observations and chains) or a control point, use the *Tree View* to expand or collapse views.

Saving Data

Saving data to the EFB database is conducted in the same method as with the handheld units. The program forces the user to create an SDF file, or open an existing SDF file prior to enabling any other commands.

Listed below are the commands available to manipulate data in the EFB database.
- **0 for Record** (Place the cursor in the *MSG>* box and the type "0" (zero)). The word "Saved" will appear in the *MSG>* box.
- **3 for Delete** (Place the cursor in the *MSG>* box and the type "3" (three)). A message box will appear asking "Are you sure you want to Delete, Yes/No?"
- **6 for Modify** (Place the cursor in the *MSG>* box and the type "6" (six)). A message box will appear asking "Are you sure you want to Modify, Yes/No?"

An alternative option which allows a user to maintain the integrity of the original file is the command *File > Save As*. This allows a user to save the newly altered file as a new file apart from the original.

Feature Codes

Overview

Feature Codes can be setup in advance for the default values of the point and chain attributes. The default values associated with the following screens: *Setup, HVD-Obs, SOR-Obs, Chains*, and *Taping* along with being integrated into the Control Point menu. The following attributes may be preset*: Point Geometry, Units, Alias, Prompt, DTM Attribute, Zone, Chain name* prefix & *Point* name *Prefix*.

Feature code "builder" will assist the user in the creation of the descriptor of the *feature code* by utilizing a *builder_template* command in the *EFB_Settings.xml* file. This functionality will provide a more efficient method of data entry and result in standardized naming and attribution conventions.

The Administrator of the EFB software will predefine the default values for the point attributes and nomenclature for any given *feature code* by editing the *EFB_Settings.xml* file.

Administration

The *EFB_Settings.xml* file will be located in the same folder as the EFB executable file (typically an EFB folder under Program Files). Use any text editor, such as Notepad, to modify this file.

RECOMMENDATION: Archive existing copy prior to any changes!

Scroll down the file until you find the <FeatureCodes> section, this is where all feature code definitions will be defined. Default values would be placed within the double quotes "" following the field name (attribute) being edited.

The Feature Code Builder can either automatically fill in a standard descriptor, prompt the user to enter a value, or provide the user with a drop down list of values to select from. All feature code parameters are separated with a white space and all parameters are to be assigned within the double quote "", after *builder_template*.

The following syntax is required for the "builder_template" command to function properly:

Lists: [*item1 item2*] Items within square brackets, space delimited, lists down from left to right.

      EX: [Radio TV Tower Cellular] would read: Radio

                                                  TV

                                                  Tower

                                                  Cellular

Prompt: <*prompt*>

    XML restricts the use of less than "<" or greater than ">" signs, which necessitates the use of the Escape code keys ("<" for less than and ">" for greater than).

> EX: <Diameter?> would read: Diameter?

The **value would be keyed in to the open text box in the** Feature Code Builder **dialog box by the** user.

Standard descriptor (literal value): is entered with no other characters at the beginning or end of the value.

> EX: "Antenna" will be placed in the location of the descriptor based on where it is located in the *builder_template*. For example, if it should appear as the first part of the descriptor, it needs to be placed at the beginning of the command line for *builder_template* .

**Next:** ~ (tilde) is placed after a **prompt value and before the** *>* closure.

User

Feature Code Builder **is a function available in the following screens: Setup, HVD -Obs, SOR - Obs, Chains, and Taping along with being integrated into the Control Point menu.**

Feature Code Builder initiation is a**s follows:**

EFB Input Mode (Data input type in the *File Menu*, where *Use CEFB Input Mode* is <u>NOT</u> **checked):**

> **Typically in this scenario, a Point or Chain prefix would** be entered into the *N:* text box.
>
> - Click the `Q:FCB` **button to the right of the** *Feature Code* **field. This will display a list of applicable feature codes for the feature type** (point or chain).
>
> - **<OR> with the cursor in the** *MSG>* **box, type the key Q to initiate the Feature Code Builder.**
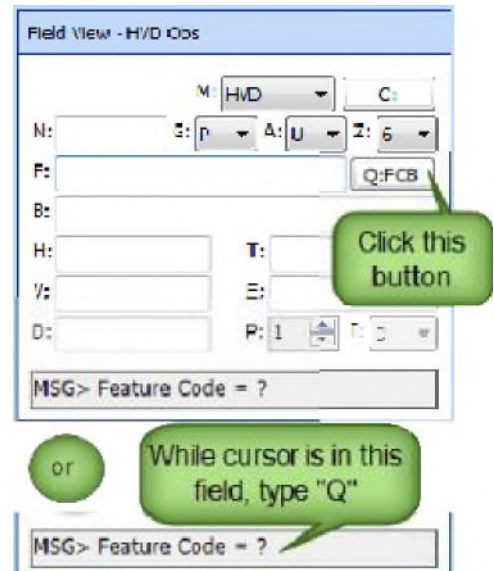
CEFB Input Mode (Data input type in the *File Menu*, where *Use CEFB Input Mode* **IS** checked):

Typically in this scenario, **the Point or Chain Prefix is determined by the Feature Code being used, although it is not required as flexibility is built into** the program.

- In the *Feature Code (F:)* **field, type a known** feature **code (EX: ANT) followed by a dash "** - ". Once the dash is keyed, the** *Feature Code Builder* will initiate.

- <OR> Click the   Q:FCB **button to the right of the Feature Code field. This will display a list of applicable feature codes for the feature** type (point or ch**ain) desired.**

- **<OR> With the cursor in the** *MSG>* box, type the key **Q to initiate Feature Code Builder.**
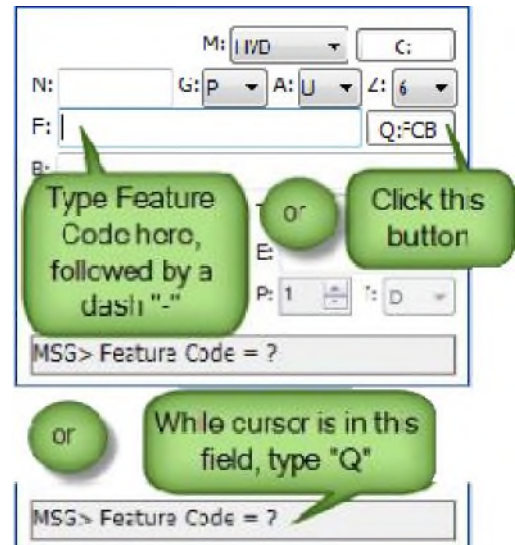
Based on your selection the *Feature Code Builder* will **prompt for the proper settings of the particular feature** selected.

EXAMPLE:

1. Select the applicable **feature code** from the *Feature Code Builder* list:
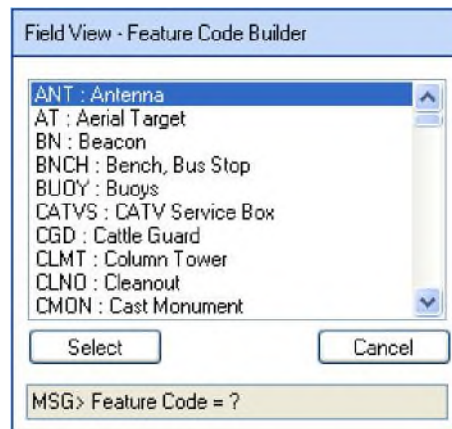
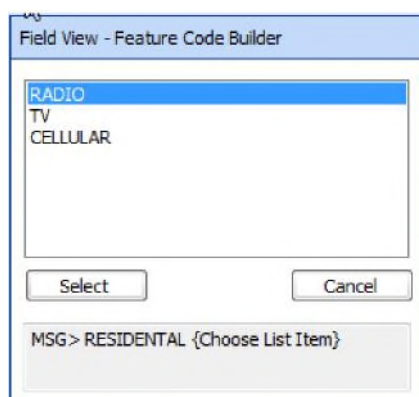2. **Use the up and down arrows or the mouse and cursor to highlight the required feature code**, then click the   Select   button.

Note: Only feature codes that pertain to the geometry type (Point or Chai n) will be presented in this list.

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3. Upon selecting the *feature code* for Antenna "**ANT**", the following dialog box will appear:
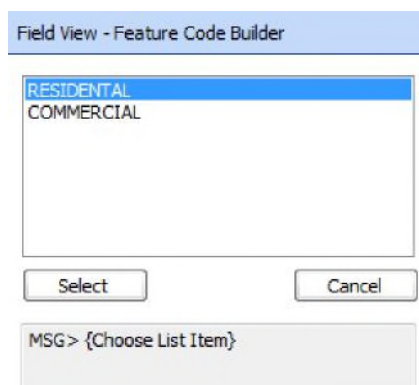
4. Use the up and down arrows or the mouse and cursor to highlight the applicable item and then click the _____ button to accept the selection and to open the next dialog box.

5. Click the [Select] button to accept the selection and to open the next dialog box, in this example all the information required was entered and the builder goes back to the original screen. This will build a Feature-description string of "ANT-RESIDENTAL RADIO ANTENNA". Note that this builder can also embed the literal terms like "ANTENNA" in the description strings it build. This function will help standardize descriptions of objects observed in the field.

Note: This example is in the EFB Input Mode.

6. When in the *CEFB Input Mode* and changes have been made to the Feature Code, point prefix or any of the parameters (Point Geometry, DTM Attribute, Zone, and Chain Name), the *Attribute Update Prompt* dialog box will display prior to returning to the original screen.

7. Select the applicable *action* to be performed and then click the **OK** button to return to the original screen. *(See the Attribute Update Prompt section below for further explanation of its functions.)*

8. When the feature code-description string *exceeds the 18 character* space limitation of the .OBS / .CTL formats, the feature code *descriptor* will automatically be placed in the *Comments* screen. Click the **C:** button to call up the *Comments* screen:

Program Logic – Point and Feature Code Entries

When a point is saved: (EFB or CEFB input mode)

1. The feature code field is checked to see if a value was entered.

2. If a value was entered, the feature code to prefix relationship is added to the internal *FeatureDefaultsListFeature Defaults List* table in the database along with a time stamp.

3. If no value was entered, then it is ignored and the relationship to the other attributes is ignored as well.

When a point is entered: (EFB or CEFB input mode)

1. The *Feature Defaults List* is searched for the most recent use of the point prefix.

2. If not found, the Setting XML feature codes are searched for a point prefix match.

3. If not found, the defaults of Point geomerty, Ground attribute, and Zone 1 are

used. **When a feature is entered: (CEFB input mode only)**

1. The *Feature Defaults List* is searched for a feature match.

2. If not found, the Setting XML, feature codes are searched for an alias match.

3. If not found, the Settings XML feature codes are searched for a feature match.

4. If not found, the defaults P G 1 are used.

Attribute Update Prompt (CEFB Input Mode only):

When in the *CEFB Input Mode*, the user has options available on how the feature code naming and data will be stored. The *Attribute Update Prompt* dialog box will appear when a different value is entered into any of the following fields: *Feature code, Point Geometry, DTM Attribute, Zone,* or *Chain Name*. The *Attribute Update Prompt* dialog box will prompt the user to choose whether to *overwrite any part of*, or *all* of the previously entered information for that object.

Name refers to *Point Prefix (***N:***)* and parameters refer to *Point Geometry, DTM Attribute, Zone,* and *Chain Name*.

The first time a feature code is used, the program will use the Settings XML values for the Point prefix and the parameters for Point Geometry, Units, Alias, Prompt, DTM Attribute, Zone, and Chain Name.

A Feature Code default table is generated with each new SDF file (project file). As feature codes are entered and saved, the Point name and the parameters are stored in this table.
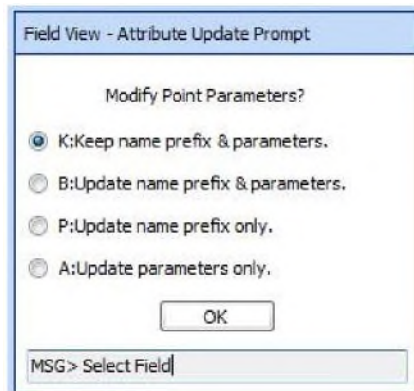
K: Keep name prefix & parameters: This selection maintains the values that were entered in the previous dialog box *(Setup, HVD-Obs, SOR-Obs, Chains or Taping)*. The point prefix or any of the parameters listed above <u>WILL NOT</u> be overwritten. This is the default action.

B: Update name prefix & parameters: This selection changes the values that were entered in the previous dialog box *(Setup, HVD-Obs, SOR-Obs, Chains or Taping)*. The point prefix or any of the parameters listed above <u>WILL</u> be overwritten by the new values entered. The program compares the values to the Feature Code defaults table. If the Feature code is found, it uses the Point prefix and parameter values in the table to overwrite the values entered in the previous dialog box.

If the Feature code is not yet in the table, the program uses the Feature code Point prefix and parameter values from the *EFB_Settings.xml* to overwrite the values entered in the previous dialog box. When the record *(a new point)* is saved to the EFB database, it will also write the new Feature code point prefix and parameters to the Feature Code defaults table. The next time that same feature code is used, it uses the values from this table, if B: Update name prefix and parameters is selected. If different values are required, the changes will need to be made in the Observation (or chains or taping) dialog box.

P: Update name prefix only: This selection changes the Point prefix value that was entered in the previous dialog box *(Setup, HVD-Obs, SOR-Obs, Chains or Taping)*. The point prefix <u>WILL</u> be overwritten. The program compares the value to the Feature Code defaults table. If the feature code is found it uses the Point prefix value in the table to overwrite the value entered in the previous dialog box.

If the Feature code is not yet in the table, the program uses the Feature code Point prefix value from the *EFB_Settings.xml* to overwrite the value entered in the previous dialog box. When the record *(a new point)* is saved to the EFB database, it will also write the new Feature code Point prefix to the Feature Code default table. The next time that same feature code is used, it will use the values from this table, if P: Update name prefix only is selected. If different values are required, the changes will need to be made in the HVD-Obs, SOR-Obs, Chains or Taping dialog box.

A: Update parameters only: This selection changes the parameter values that were entered in the previous dialog box *(Setup, HVD-Obs, SOR-Obs, Chains or Taping)*. The parameter values <u>WILL</u> be overwritten. The program compares the parameter values to the Feature Code defaults table. If the feature code is found it uses the parameter values in the table to overwrite the values entered in the previous dialog box.

If the Feature code is not yet in the table, the program uses the feature code parameter values from the *EFB_Settings.xml* to overwrite the values entered in the previous dialog box. When the record *(a new point)* is saved to the EFB database, it will also write the new Feature code parameter values to the Feature Code defaults table. The next time that same feature code is used, it will use the values from this table, if *A: Update Parameters Only* is selected. If different values are required, the changes will need to be made in the HVD-Obs, SOR-Obs, Chains or Taping dialog box.

	Hint	In a saved point record, if a new feature code is entered and *K: Keep name prefix & parameters* is selected, a point is *modified* and will need to *type 6* to modify & save. If *B: Update name prefix & parameters* is selected, then a new point is *created* and you will need to *type 0* to save.

Note: In all cases, if the Feature Code does not exist in the EFB_Settings.xml an error message will appear in the MSG> text box. EX: Bad Feature Code.

Viewing and Modifying Data

Switchboard

When the *Switchboard* page is selected, the Data View is empty, there are no lists available in the Drop-down Toolbar, and the *Switchboard* screen is shown in the Field View.
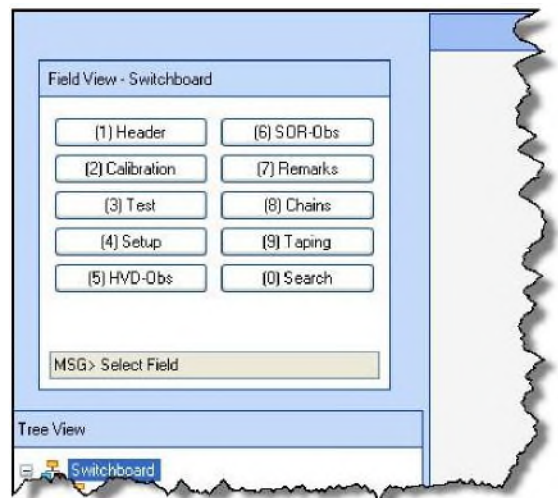
Segment

When the *Segment* page is selected, the Data View displays the information about the current *Segment* (including any associated Remarks), and four (4) drop-down lists are available to select from in the Drop-down Toolbar: *Calibrations, Setups, Observations,* and *Chains*. These are all of the items contained within the current segment.
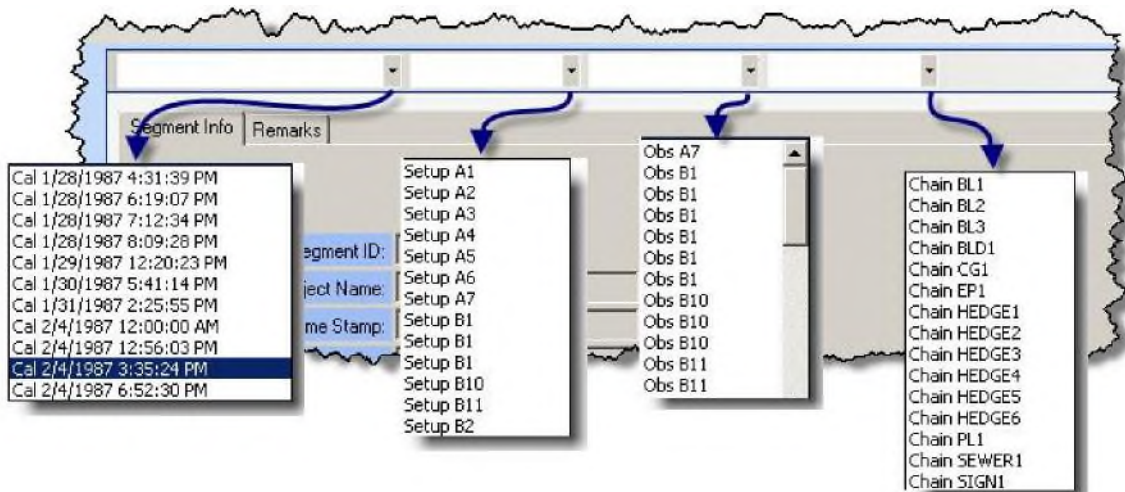
Segment Observations

When one of the *Observations* pages is selected *(Calibrations, Setups,* and *Observations),* the corresponding Data View is displayed and three (3) drop-down lists are available to select from: *Calibrations, Setups,* and *Observations*.

Segment Chains

When one of the *Chain* pages is selected, then the Chains information is displayed in the Data View and one list is displayed in the drop-down Toolbar: *Chains*.

Control Points

A project with no *Control Points* |established || **will** |**display an empty** |**file with a project name of**
"*Untitled***". Startup of a Control Point setup can be accomplished by either selecting the** *Control Point Settings* command in the **Control Points Menu** or by selecting the *Points* **branch in the Tree View. The initial setup of the Control Point file will require naming of (or referring to) the** EFB project and setting the **Units, State Plane Code, NAD** (Horizontal datum) and **NGVD (vertical datum). These settings will apply t** o all *Control Points* added to a project.

A control file may be imported into the file by selecting *File > Import* from the **Main Menu** or **new points added individually by selecting the** *Add Point* command in the **Control Points Menu**. **At any time after points have been added, the user also has the option of Merging in Control Points from a Control Point (.CTL) file.** (***See the File Menu section of this document for further explanation of the differences between importing and merging***).
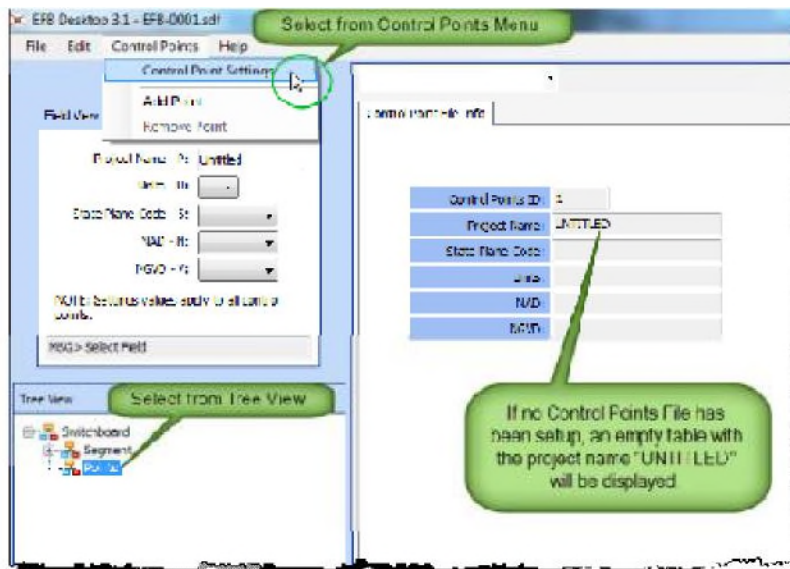
If any of the existing *Control Points* are selected, the information displayed is specific to the selected *Control Point*. One drop-down is displayed: *Control Points*.
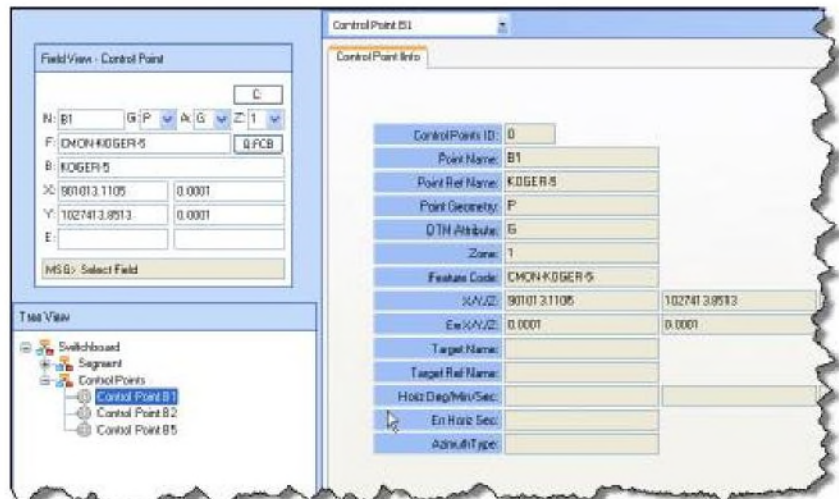
Control Point Settings

Master Control Point settings are established by selecting *Control Points > Control Point Settings* from the Main Menu. The following screen will appear:
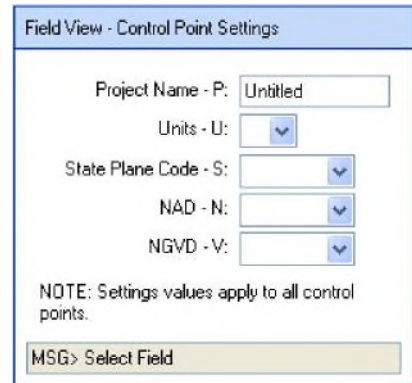
Enter in the Project Name along with the applicable settings for that project. Once these settings have been established, all subsequent *Control Points* that are added will be linked to these settings.

Adding Control Points
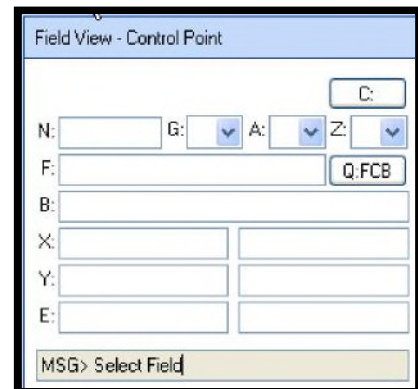
Control Points are added by either importing or merging an existing *.CTL (Control Point)* file or by selecting *Control Points > Add Point* from the Main Menu and keying in new control point information manually.

Enter the *Control Point (N:)* name for the new point, add the Control Point information into the Field View, then select

the　　　key to Record the change.

Example of Control Point Add screen:

Editing Control Points

Select the *Control Point* for editing, enter the correct (updated) values in the Field View, then

select the　　　key to Record the change.

Removing Control Points

Removing existing *Control Points* is done by highlighting the point that requires removal in the Tree View, then select *Control Points > Remove Point* from the Main Menu. In the *Confirm Delete* dialog box, click the **OK** button to confirm the "Are you sure?" prompt.

The function key　　　will also delete the record.

Point Processing

Overview

Point Processing **is the numerical processing of raw survey data** *(horizontal circle readings, zenith circle readings, slope distances, height of instrument, height of target, level rod* readings, taping **distance observation**, *calibrations and point names)* **found in the .OBS f**ile into **coordinate information (.XYZ file) while tying to control (.CTL file).** The Electronic Field Book Processing **(EFBP) system does this by reducing the measured circle readings, distances to create angles and reduced distances, and also elevation changes into coordinates and/or elevations for all of the observed points. This processing will help identify any blunders and errors, providing vertical and horizontal least squares adjustment, and create data files that can** be passed along to drafting/mapp**ing/design software, while generating reports for review and** analysis.

SDMS analysis is an alternative method that can be accessed within the EFB Desktop program. **Refer to the SDMS Help file for operational documentation and tutorials.**
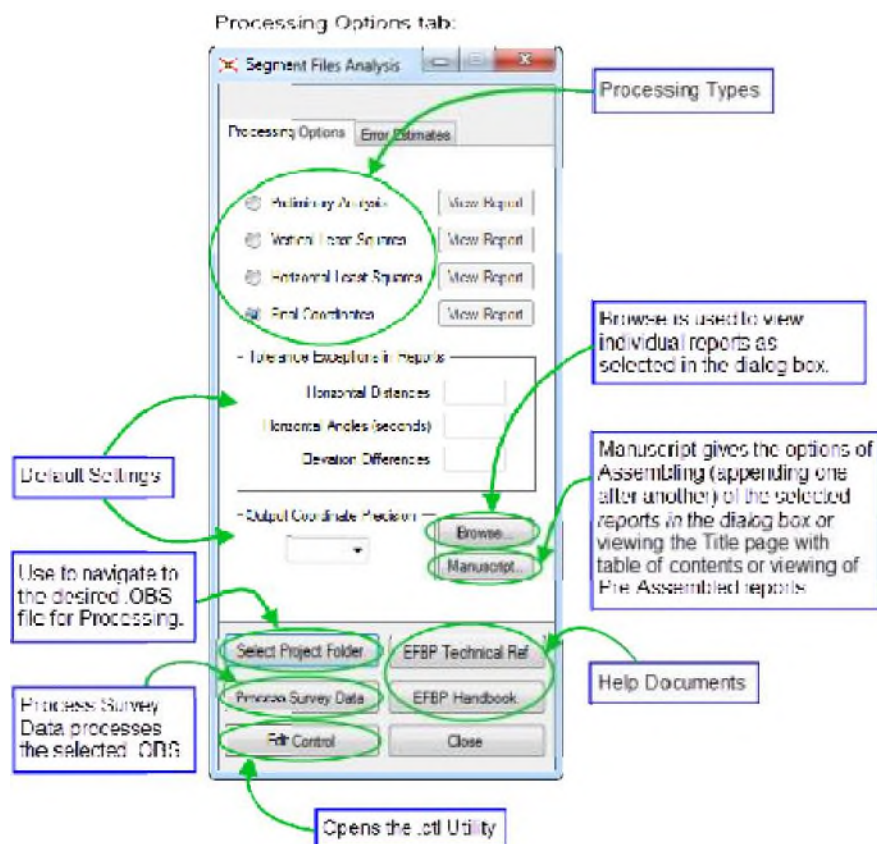
Error Estimates tab:
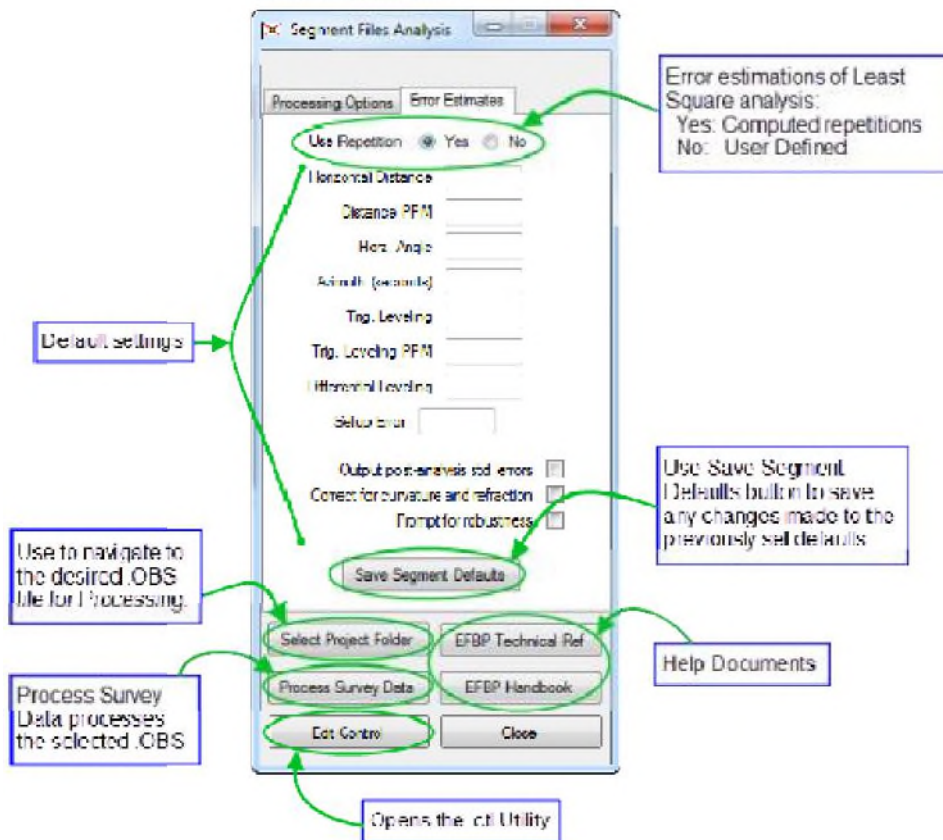
Quick Steps – Processing

1. Select the **.OBS file to be processed.**

> *Note:* **When an OBS file exis ts in the current folder of the SDF project, thi** s file will
> **automatically load,** **herwise there will be a message indicating t** hat none
> **exists. An OBS file** will need to be chosen **using the Select Proje** ct Folder
> button command.

2. Choose **Error Repetition method.**

3. **Verify default values, change if necessary.**

4. Save **segment** defaults.

5. Select **type of report to process.**

6. Process data.

Quick Steps – Viewing / Assembling reports

1. View Report (Processing Options tab) – View specific report selected

2. **Browse…** - View existing reports individually by making selection from dialog box

3. **Manuscript…** - View Title page with Table of Contents and append reports together to create one comprehensive and paginated report file.

Detailed Explanation

Processing

1. In the File Menu, select **EFB Processor (EFBP)** command to open the Segment Files Analysis dialog box. The program will automatically use the OBS file found in the current folder of the SDF file.

   - If more than one OBS file is located in the folder a list will be provided prompting the user to select the OBS file to process.
   - If no OBS file exists in the current folder a "*No OBS File Found!*" message box will display. Click the **OK** button. The Segment Files Analysis dialog box will open.

2. When the OBS file is not in the SDF folder, click the 　Select Project Folder　 button to access the applicable project folder for the OBS file requiring processing.

   - When there is only one OBS file located within the project folder the file will automatically be loaded. Upon the initial processing of an OBS file the system will also create the following three files:

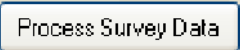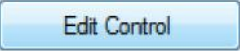   > **Default.con** – When "*Use Repetition*" in the Error Estimates screen is *Yes*, the default setting changes will be stored in this default file.

     > **Default.sd** - When "*Use Repetition*" in the Error Estimates screen is *No*, the default setting changes will be stored in this default file.

     > **Temp.job** – contains Project name

   - When there is more than one OBS file located within a project folder, a Select an OBS File dialog will appear and a selection will need to be made. The same rules apply for copying and creating files as stated above.

3. Choose **Error Repetition** method from the top of the *Error Estimates* tab for the *Use Repetition:* field click **Yes** for *Computed Repetitions* and **No** for *User Defined Repetitions*.

4. Default settings for the Tolerance Exceptions in Reports within the Processing Options tab. The Output Coordinate Precision within the Processing Options tab and Error Estimates within the Error Estimates tab are pulled from the EFB_Settings.xml file upon the initial processing of an OBS file. Change the value to any setting that requires modification.

5. Click the [Save Segment Defaults] button from the *Error Estimates* tab to save default settings to the applicable defaults file. When modifications are made to the settings, the changes are stored in the *default.con* or *default.sd* files. *(See Step 1 above for definitions of .con vs. .sd file types.)*

6. Select the type of process desired from the following choices:

   • Preliminary Analysis (file extension .GEN) - process only to measurement reduction and network coordinate estimation.
   • Vertical Least Squares (file extension .1D) - process the above and through vertical least squares adjustment.
   • Horizontal Least Squares (file extension .2D) - process all of the above and through the horizontal least squares adjustment.
   • Final Coordinates (file extension .XYZ) - process all of the above, and resolve all side shots creating final output and all reports of processing.

7. Click the [Process Survey Data] button to process the data.

CTL.exe Utility

1. Click the [Edit Control] button to load the CTL utility. This utility allows editing of CTL files under program control.

C:\Program Files (x86)\FDOT.EFB 3.1\Program\EFB.Desktop\Utilities\ctl.exe

```
COMPUTER PROGRAM CTL VERSION 06-03-01

PROJECT NAME IS KOGERA
WOULD YOU LIKE TO CHANGE IT <N>
```
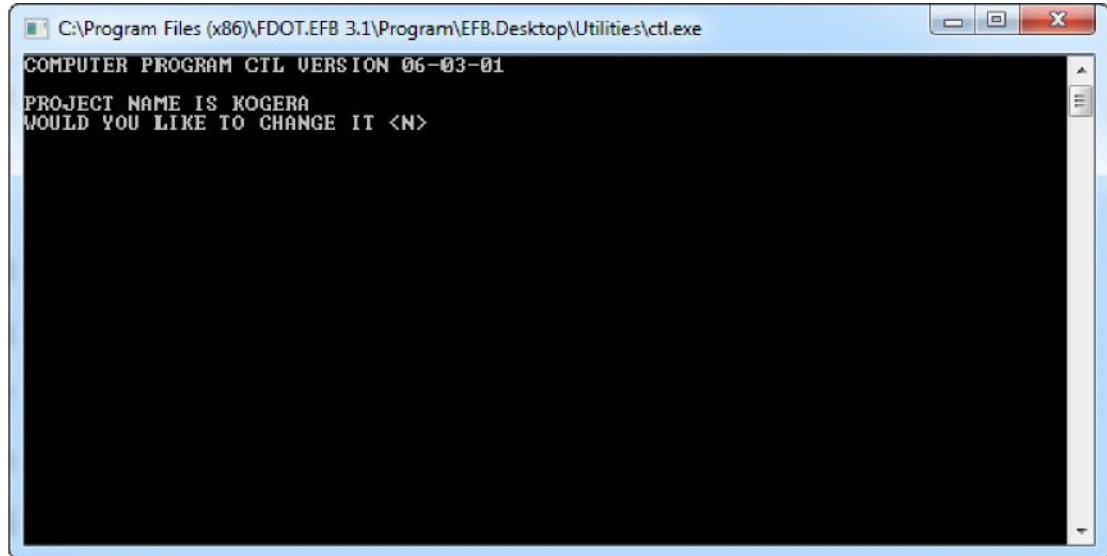
Viewing / Assembling Reports
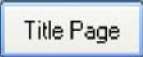
1. **View Report:** To view one of the four main reports, from the *Processing Options* tab, click the _____ button adjacent to the applicable report to be viewed.

1. **Browse...:** To view existing reports individually, from the *Processing Options* tab, click the

   [Browse...] button and check the desired reports

   (s) to view and then click the _____ button to display report(s).

   Browse button:

   Browse Segment File Reports

   - ☐ Raw Measurements (.OBS)
   - ☐ Control Points (.CTL)
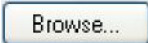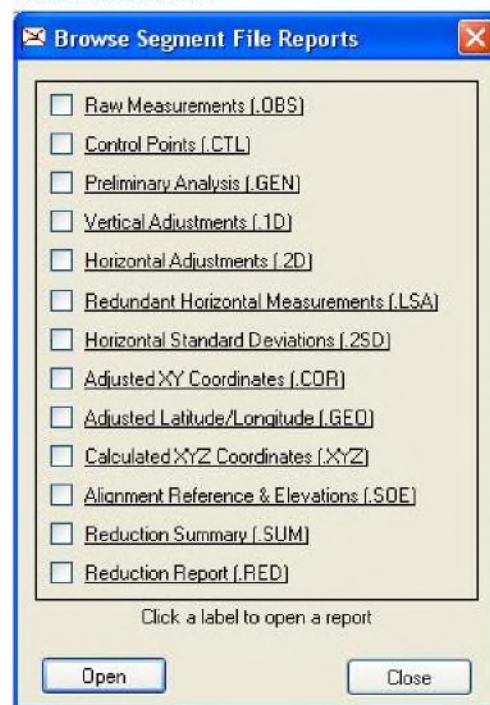   - ☐ Preliminary Analysis (.GEN)
   - ☐ Vertical Adjustments (.1D)
   - ☐ Horizontal Adjustments (.2D)
   - ☐ Redundant Horizontal Measurements (.LSA)
   - ☐ Horizontal Standard Deviations (.2SD)
   - ☐ Adjusted XY Coordinates (.COR)
   - ☐ Adjusted Latitude/Longitude (.GEO)
   - ☐ Calculated XYZ Coordinates (.XYZ)
   - ☐ Alignment Reference & Elevations (.SOE)
   - ☐ Reduction Summary (.SUM)
   - ☐ Reduction Report (.RED)

   Click a label to open a report

   [Open]   [Close]

2. **Manuscript...** To display the *Title Page with the Table of Contents*, from the *Processing Options* tab, click the Manuscript button, check the applicable reports from the Segment Manuscript

   Assembly dialog box and then click the [Title Page] button.

   Manuscript button:

   Segment Manuscript Assembly

   C:\Documents and Settings\Lorrie Mattor\My Document

   - ☑ Raw Measurements (.OBS)
   - ☑ Control Points (.CTL)
   - ☑ Preliminary Analysis (.GEN)
   - ☑ Vertical Adjustments (.1D)
   - ☑ Horizontal Adjustments (.2D)
   - ☑ Redundant Horizontal Measurements (.LSA)
   - ☑ Horizontal Standard Deviations (.2SD)
   - ☑ Adjusted XY Coordinates (.COR)
   - ☑ Adjusted Latitude/Longitude (.GEO)
   - ☑ Calculated XYZ Coordinates (.XYZ)
   - ☑ Alignment Reference & Elevations (.SOE)
   - ☑ Reduction Summary (.SUM)
   - ☑ Reduction Report (.RED)

   [Title Page]   [Assemble]   [View]

   [Close]

4. Sample of **Title Page with Table of Contents**: This file may be edited utilizing the text file viewer commands.


```
KOGERA.job - Notepad
File  Edit  Format  View  Help

                    ELECTRONIC FIELD BOOK
                          MANUSCRIPT

                 Book No.: 00000001
                 Proj. No.:              Road No.:
                 W.P.I.No.:
                    County:
                      From:
                        To:
                 Survey for:
                      Date:
             Chief of Party:

        I Certify the data in this field book was done
        according to D.O.T. Survey Procedures No. 760

        (Sign) _____
                        Party Chief


                    CERTIFICATION:

        I hereby certify that as of the date shown below all data
        recorded in said Field Book _____ is a true
        representation of the Field Survey made in my responsible
        charge and that to the best of my knowledge said Field Survey
        is in compliance with the Minimum Technical Standards adopted
        by the Florida State Board of Land Surveyors.


                        CERTIFIED

        (Sign) _____

        (Print Name) _____

        Florida Professional Land Surveyor No. _____

        Date _____

        Property of Florida Department of Transportation

        Address _____

               _____

        Phone (    ) _____


# OBSERVATIONS
C:\Documents and Settings\Lorrie Mattor\My Documents\Work\CadManage\EFB.03.00.32\Pr
C:\Documents and Settings\Lorrie Mattor\My Documents\Work\CadManage\EFB.03.00.32\Pr
ANALYSIS
```

- To **Assemble** (append one after another) reports, check the applicable reports to be assembled from the Segment Manuscript Assembly dialog box and then click the

    button. This will create one summary report from all the reports selected.

- To **View** pre-assembled reports without having to assemble, click the button.

Note: From the displayed text screen, standard text editing commands may be used to save, print, format, etc.

Appendix A

Installing Windows Mobile Emulator

Overview

The following steps will enable the use of an Emulator version of the EFB Mobile unit.

Files Required

1. Program files for EFB Mobile or EFB Mobile .CE

2. Windows Mobile 6.1.4 Professional Images (380.8MB)

    (http://www.microsoft.com/downloads/en/details.aspx?FamilyID=1a7a6b52-f89e-4354-84ce-5d19c204498a#Instructions)

3. .Net Compact 3.5 Framework (EX: NETCTv35.cm.armv4i.cab)

    (http://www.microsoft.com/downloads/en/details.aspx?FamilyID=e3821449-3c6b-42f1-9fd9-0041345b3385&displaylang=en)

4. SQLCE3.5 for Windows Mobile (EX: sqlce.wce5.armv4i.cab)

    (http://www.microsoft.com/downloads/en/details.aspx?displaylang=en&FamilyID=5544c638-c532-48e3-871c-58b49c5d855c)

Installation Steps

1. Download and Install **Windows Mobile 6.1.4 Professional Images**.

2. Download **.Net Compact 3.5 Framework** (NETCTv35.cm.armv4i.cab) and **SQLCE3.5 for Windows Mobile** (sqlce.wce5.armv4i.cab)

3. Create a folder on the C:\ drive as a "**share**" for the emulator to retrieve files. Example path: C:\Users*Username*\My Documents\EFB Share.

4. Place the **NETCTv35.cm.armv4i.cab** file, the **sqlce.wce5.armv4i.cab** file and the **EFB.Mobile** folder into the newly created *Share* folder.

    The EFB.Mobile folder should be located in the Program Files\FDOT.EFB 3.1\Program folder. These may not be the exact file names as they differ from Mobile to Mobile.CE and there may be later versions on the Microsoft website.

5. Launch **Windows Mobile 6.1.4 Professional** by navigating to **All Programs** from the Windows icon and selecting **Windows Mobile 6 SDK > Standalone Emulator Images > US English > WM 6.1.4 Professional**.

---

6. Select the **File menu and click Configure**. This **step is necessary to identify (configure) the location of the Share folder, where files are** stored **for access from the Emulator.**
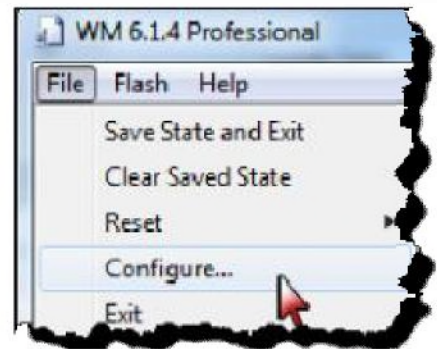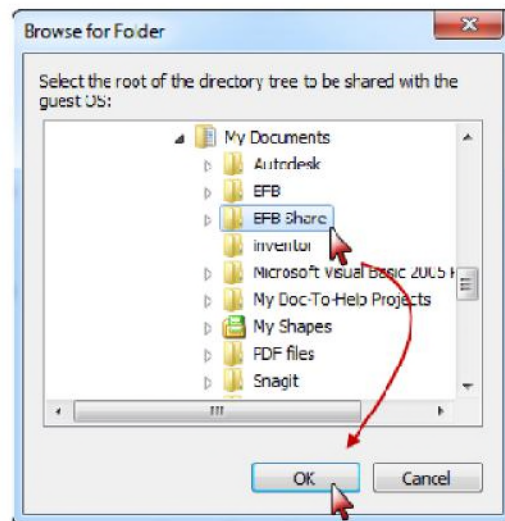

7. Select the **General tab, then click the** [...] button adjacent to the ***Shared folder:*** box
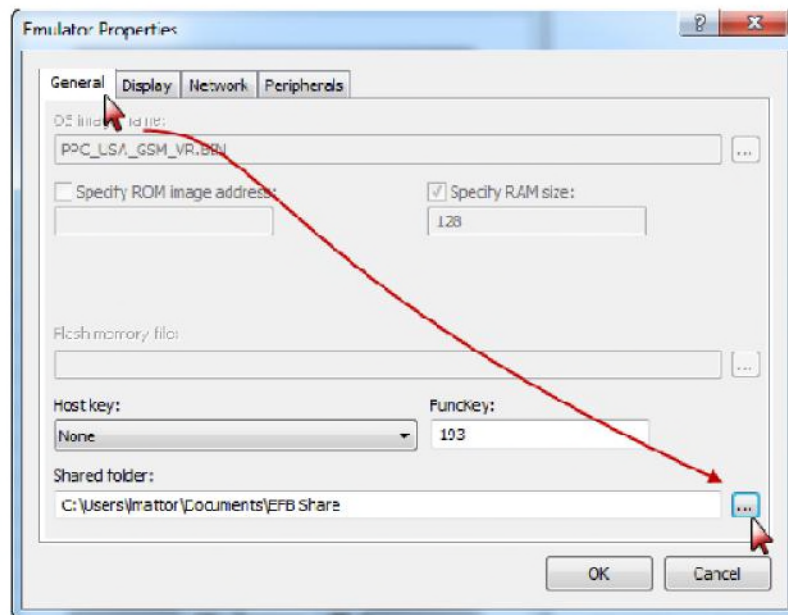
8. **Navigate to the folder that was created in step 3 above.**
   Example path: C:\Users***Username*** \My Documents\EFB Share.

9. **Select the applicable folder, and then** the **click OK** button to save and exit.

   This "share" folder will be referred to as the **Storage Card in the E**mulator.