FLORIDA DEPARTMENT OF TRANSPORTATION

Survey Processing Software (SPS)
USER MANUAL

Prepared for:

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I.   INTRODUCTION

Survey Processing Software (SPS), Version 5.0, was developed to provide the Florida Department of Transportation (FDOT) District Offices with software that can transfer data created from a variety of highway survey counters, perform standards editing, and then transfer summarized classification and count data statistics from their PC to the FDOT mainframe. SPS has the capability to process speed surveys but only summarized volume count from these surveys are transferred to the FDOT mainframe. The software will also download the station inventory from the mainframe to the District PC.

Previously, SPS was available in two versions: the District version and the Consultant version. There is only one version of SPS which has the capability to transfer data to the mainframe. Users not connected to the mainframe should not use the transfer functions, as they would not do anything.

Architecture

SPS was created using Microsoft Visual Studio .NET 2005 C#.

Enhancements to Version 5.0.9P

- SPS uses an Access database file to store all the data.
- Inventory errors are presented to the user after it attempts to load all files instead of after each file.
- Inventory and volume errors are presented to the user after all sites have gone through the Edit process.

Enhancements to Version 4.0

- Enhanced Inventory find option that also displays variance factors.
- SPS can now read both new and old inventory file formats
- SPS can now read both new and old text file formats
- A calculation / estimate field has been added to the output text files

II.   SPS INSTALLATION REQUIREMENTS

System Requirements

SPS requires a minimum of 512 MB of system RAM and 50 MB of local hard disk space. A Pentium M with a 1400 MHz or better clock speed is the minimum CPU required. SPS also requires Windows XP with .NET Framework 2.0. Screen area resolution should be set to at least 1024 x 768 pixels resolution.

The District version of SPS requires local FTP access to the FDOT mainframe within the FDOT firewall. No remote mainframe interactions are allowed.

A CD-ROM drive is required to install SPS.

Installation

SPS is installed using the SPS installation CD. Place the CD in the CD-ROM drive and, from the Windows Explorer, click on the Setup icon. Please read and follow all on screen instructions.

SPS is installed by default to the target directory \Program Files\SPS but, can be changed by the user to any target directory.

The Setup program will place a Shortcut file on the Desktop and in the Start Menu under All Programs named "SPS".

Once installation is complete, the first time SPS 5.0 is ran the "Set Preferences" window will pop up requiring the user to enter a District number and then install an inventory and the variance factors.

Set Preferences

Allows the user to select the District Number and select class limits for classes 1, 4, & 15. The Default Values for these classes are as follows:

Class 1 = 3%
Class 4 = 5%
Class 15 = 10%

Also the user can select a default directory for Synopsis Reports, Interval Output text files, and Report Summary Reports. The defaults are

SYN Reports: \Program Files\SPS\SYN
TXT Reports: \Program Files\SPS\TXT
RSR Reports: \Program Files\SPS\RSR

Loading PTMS Inventory File

A PTMS Inventory file can be loaded into the SPS database from either the mainframe or an ".INV" file on the users PC. To download from the mainframe, the user must have access to the Mainframe and enter a valid username and password. To load an Inventory from a file, the user needs to select Tools from the menu and then select "Import PTMS Inventory from .INV File". The user will then get an Open Dialog Window to select the directory and PTMS.INV File to be loaded.

Load Variance Factors

This function allows you to load new variance factors from an external file. When you run this function, you will be prompted to select the new variance factors file from a File Open dialog.

These values consist of minimum and maximum limits for each month with both seasonally factored and axle factored volumes. Sites where the data is collected as per-vehicle data (classification or presence) are compared to the seasonally factored limits while sites where the volume data is collected by axle (one road hose) are compared to the axle factored limits.

In situations where a new station was created, where there is a "0", or if there is no variance factors entered, it is necessary to input a "1" in the minimum AND maximum seasonal and axle total columns so that it will process the data. These need only be input for the selected month or months that the count was actually taken.

From the SPS Main Functions Command Buttons, click the "Load Variance Factors" Button, or from the menu select Tools and then Load Variance Factors. You will be prompted to select a folder or drive that contains the "n_AXF.TXT" and "n_SVF.TXT" files for the appropriate district ("n" is the district number). A file with any other name will not be accepted.

Documentation Conventions

Combined keystrokes are common in the use of the SPS application. For example, **Alt+B** means that you hold the Alt key down and press the B key simultaneously. **Shift+click** means that you hold the Shift key down and Click the left mouse button simultaneously to select a range of files.

General Usage Guidelines

The following general guidelines are, more or less, common sense.

> ***Never*** shut down the computer by shutting off the power. Always shutdown using the Windows Start I Shut Down menu option. If you turn off the computer without following Windows shutdown standards, data corruption may occur.

> ***Avoid*** blank entries; double-check all data entry. Invalid data may skew edit and/or statistical results.

Running the Application

From the Windows Desktop double-click on the icon entitled "SPS"

From the Start Menu select All programs icon entitled "SPS"

III.   MAIN SYSTEM MENU FUNCTIONS

The following figure shows the main SPS screen as it is displayed when you run the application.
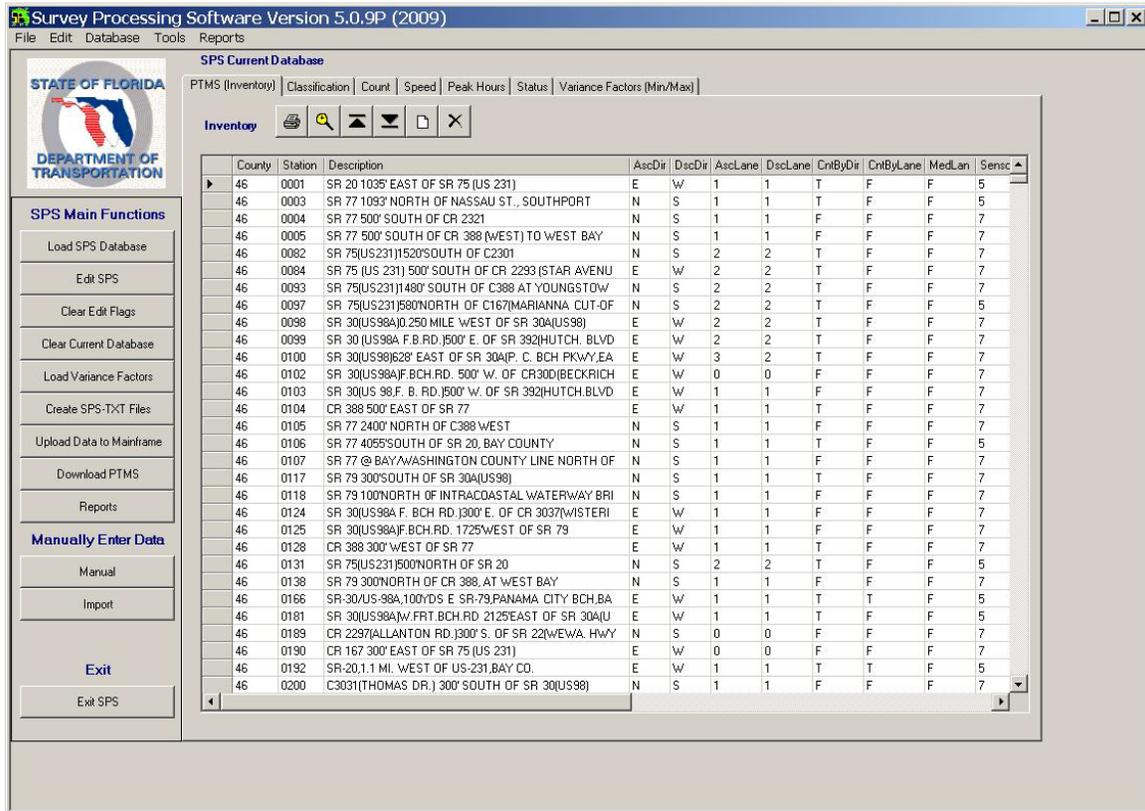

Figure 1: The SPS Main Screen

In the main display area is shown the station inventory. This display can be changed to show, respectively, classification counts and summary, volume counts and summary, speed counts and summary, peak hours, the status of data loads and edits, and variance factors. You can change this display by clicking on the respective tab.

To the left of the main display area are the primary application function buttons. The functions for Manually Entered Data have been set apart. At the top of the screen are the main system menu functions that provide an alternate selection method.

III.1   MAIN SCREEN MENU FUNCTIONS

At the top of the main screen are the main system menu functions. Many of these menu options duplicate functionality found in the primary function buttons. The primary menu pad is composed of File, Edit, Database, Tools, and Reports options. The functions contained within these menu pads are detailed herein.

File options

Menu Function(s)	Description and Usage
Set Preferences	Launches a window where you can view or adjust class limits and the district number.
Printer Setup	Launches the standard Windows Printer/Page Setup dialog where the printer and its current properties may be set. The available options vary according to the printer installed.
Open/View File	Allows you to open a file in a small window for viewing. You may not open certain files, such as binary or system files.
Print, Copy, Move, Delete File	Allows you to print, make a copy of, move, or delete files. Especially useful for .TXT and .SYN files
Quit SPS	Closes the SPS application.

Edit options

Menu Function(s)	Description and Usage
Find (Ctrl+F)	Pops up a menu of the fields in the displayed data to find by. You can then enter criteria; the first record in the displayed list matching these criteria will be displayed.

Database options

Menu Function(s)	Description and Usage
Record Data	
Load SPS Database	Load one or more files in a text type form of a count, classification or speed survey.
Edit SPS Database	Check all the data loaded for a particular county/station location against predefined parameters and validity checks.
Clear Edit Flags	Clear the program indications that the data has already been edited.
Clear Database	Clear the files from the current data set.
Upload Data to Mainframe	Create and transfer a file to the FDOT mainframe.
Download PTMS from Mainframe	Update the PTMS inventory from the current records on the FDOT mainframe.
Summary Data	
Load Summary Data	Load one or more files representing summary for individual locations.
Edit Summary Data	Check all the data loaded for a particular county/station location against predefined parameters and validity checks.
Save Summary TXT File	Save summary data manually entered or

Tools Options

Menu Function(s)	Description and Usage
Load Variance Factors	Load a data set of variance factors from an external file.
Create SPS-TXT Files	Create a .TXT file combining all data for a given county/station and survey type.
Export PTMS Inventory to .INV File	Creates a file with the extension of .INV that is an export of the current inventory.
Import PTMS Inventory from .INV File	Imports an .INV file into the current inventory, replacing any records already there.

Reports Options

These menu options present submenus for 24-Hour Synopsis Report functions and Record Summary Report functions. These functions are identical to the functions presented in the Reports primary function buttons.

Menu Function(s)	Description and Usage
24-Hr Synopsis	
Create	Create a file that contains the data for the Synopsis report.
Print	Print a formatted report for any day for which survey data is available for the selected county/station location.
Delete	Intended to allow for deletion of .SYN files report.
View ASCII Version	Opens the file created to produce the Synopsis
Record Summary Report	
Create	Create a file (.RSR) that contains the data for the RSR Report. The direction(s) and lane(s) may be selected. If so, then only those direction(s) and lane(s) will be on the report.
View	View the data from the file created for the RSR report.
Print	Print the Record Summary Report. A preview window will be seen from which the report can then be printed.
Move	Move the .RSR file to another drive or folder.
Copy	Copy the .RSR file to another drive or folder.
Delete	Delete the selected .RSR file.

III.2   DISPLAY FUNCTION BUTTONS

Within the main display area are six display-oriented function buttons. These buttons perform the following functions:

Function(s)	Icon(s)	Description
Print		Prints a report of the data currently displayed. The report can be sent directly to the printer or first previewed on the screen. For some reports you have the option of entering criteria to isolate specific sets of data.
Find (Ctrl+F)		Pops up a menu of the fields in the displayed data to find by. You can then enter criteria; the first record in the displayed list matching this criteria will be displayed.
Skip to top		Repositions the display to the first record.
Skip to bottom		Repositions the display to the last record.
Add		Add a new record to the displayed table. The cursor will be moved to the first field in the list to enter data. Only one record is added after the button has been clicked,
Delete		Deletes the record currently highlighted on screen. Use this function with caution.

SPS Main Functions

The buttons to the left of the main display area are the primary application function buttons. These buttons are used to perform the major functions within the application. When running a primary function, the data in the main display is temporarily blanked. The SPS main functions are described in the following sections.

III.3   LOAD SPS DATABASE (ALT+L)

This function allows the user to load "Interval Data" from the following type of file formats, PRN, TWF, TXT or LOG. When the user chooses the Load SPS Database option, if there is any data in any of the interval or summary tables the user is prompted whether or not to clear the database. If the user chooses yes, the "Clear SPS Database" window will appear (*Figure 2*). Clear "ALL" is the defaulted setting. The user may then choose what Type of Survey, Type of Record, or Record Status to clear. The user may also selectively clear data for specific Station Numbers, or Date. If the user chooses No in this window, no data will be cleared and the newly loaded data will be appended to the current set of data. If the user is reloading a selected County/Station survey and that data is already in the SPS database, that data will be replaced by new incoming data. If the user chooses Cancel in this window, the entire load function will be aborted.

Figure 2: "Clear SPS Database image"

The user is now given a "Select Data to LOAD" dialog window as shown below in *Figure 3*, which allows the user to select one or more Interval files to load. The user may choose any or all of the Interval files listed in the Available Files list and the user may also change the source directory for the files.
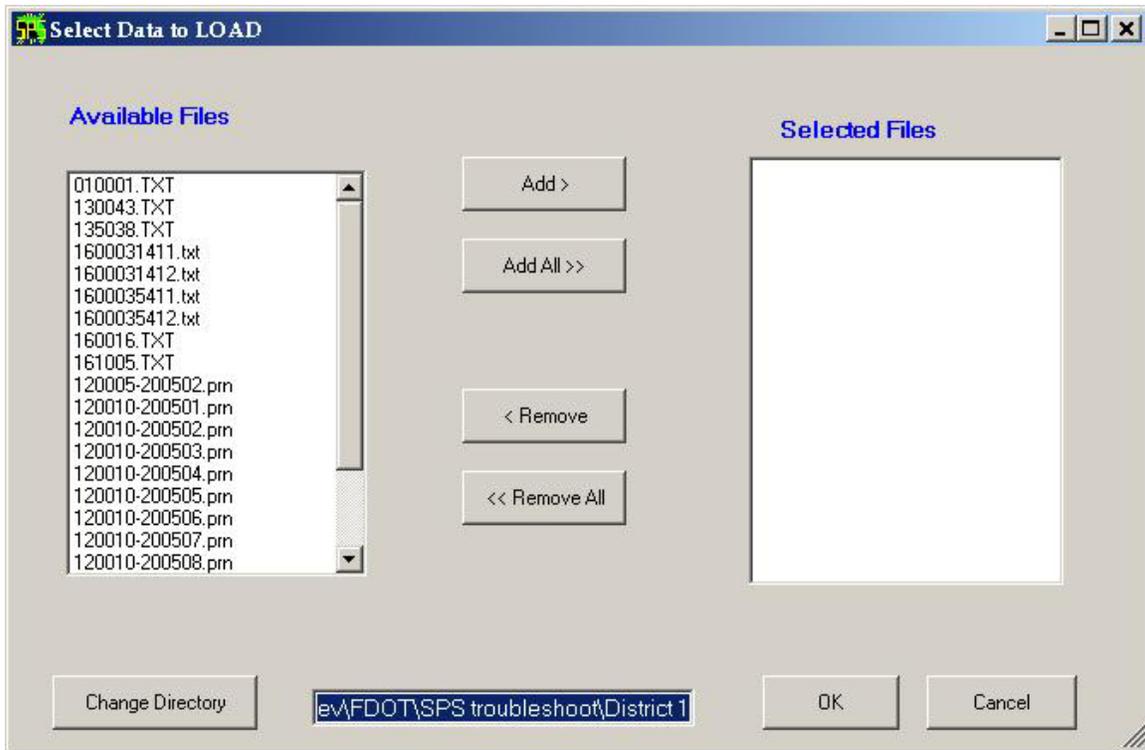
Figure 3: Choosing PRN, TWF LOG and/or TXT files to load in Interval Tables.

When selecting from either Available or the Selected lists, the user may use **Shift+Click** to select a range of Interval files or **Ctrl+Click** to "cherry pick" several Interval files. Alternatively, files may be highlighted and then you may click the Add or Remove buttons to change the file status from Available to Selected or vice versa. Also, double clicking on a file's name will reverse its Available/Selected status.

After a file or files have been chosen, clicking the OK button will cause the data to be loaded in the appropriate Interval Table. Choosing Cancel will abort the load process.

SPS will attempt to load all of the selected files and check the incoming data against the PTMS Inventory for any inconsistencies. If any inconsistencies are found in any of the incoming TXT files then data **WILL NOT BE LOADED** and the user will be presented an **Inventory Errors** dialog window (*Figure 4*) after the load process is complete. The user can then print the inventory error list or save it to the "...SPS\ErrorReports" directory. Also if a select county/station file can not be found in the inventory, the user may choose to display the **Not in Inventory** dialog window (*Figure 5*) where the county/section file can be added as temporary site.
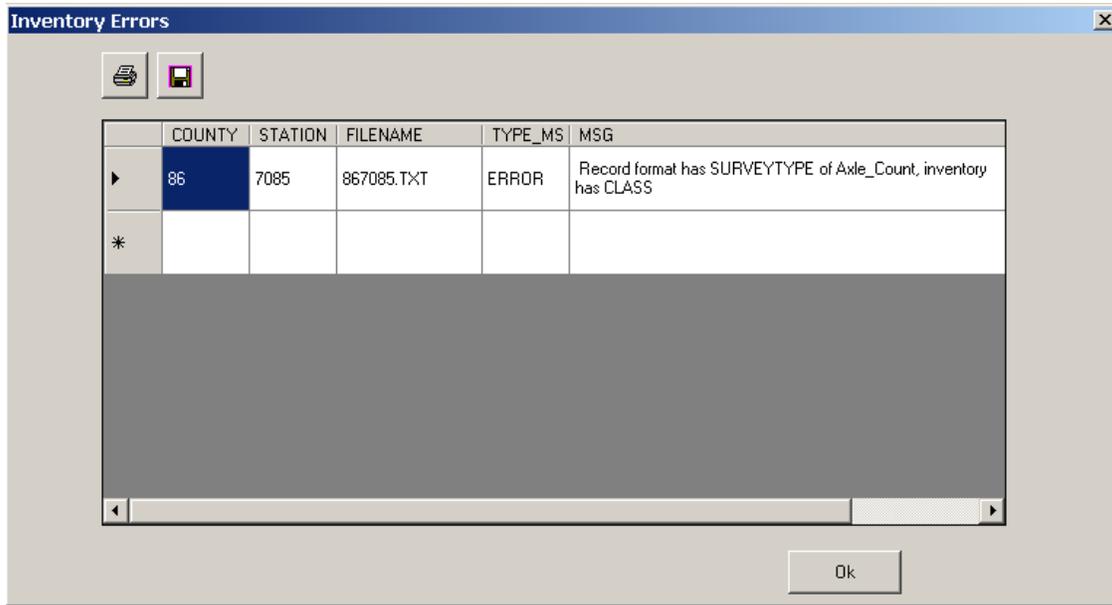
Figure 4: Inventory Error Dialog Window.
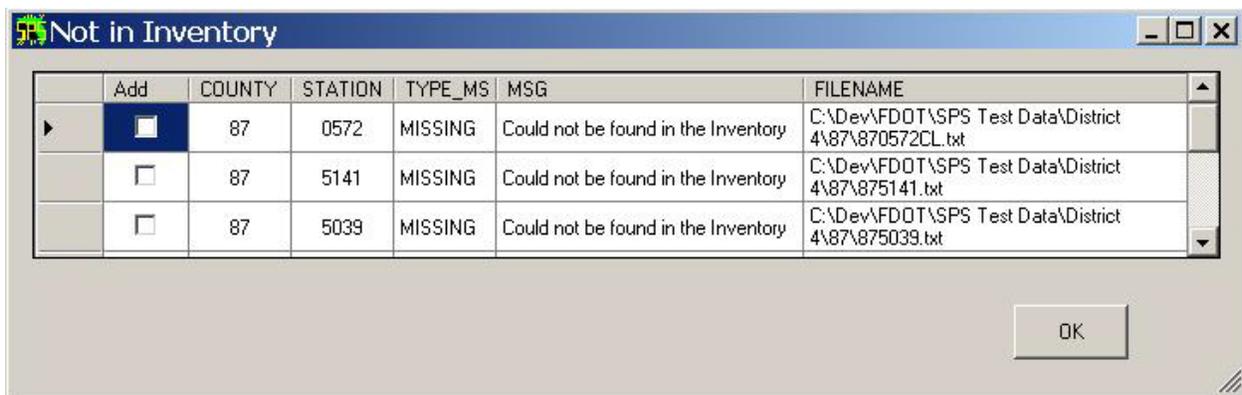
Figure 5: Not in Inventory Dialog Window.

For the other types of files (*TWF & PRN*), the input is less straightforward and many errors occur in processing the header information. For example, if a wrong code is entered identifying a count file as a classification or speed study, SPS will try to gather more data than is available in the file, possibly leading to problems. The header information is then displayed to the user, allowing him an opportunity to correct the file. Should an error be found, a window like the one shown below in *Figure 6* will be displayed. The user has the option to add this station to the Inventory, re-verify the header information, rewrite the header with updated information, not load the data or attempt to load the file unchanged.

Figure 6: File Header Information extracted from a PRN, or TWF file

III.4   EDIT SPS DATABASE (ALT + E)

This function allows the user to apply edit rules to data that has been loaded into the Interval Tables. Edited data in the current data set will not be affected (unless the Clear Edit Flags function has been run; see below).

The "Select Data to EDIT" window will list all of the County/Station survey combinations of unedited data found in the Interval Tables and display them in the Available Files List. This dialog window as shown in Figure 3 above, allows the user to select or unselect data in the same manner.

The selected data is now processed according to SPS edit rules. These rules and checks include the following:

- Checks that County/Station is valid
- Deletes duplicate records if any are found
- Computes intervals if interval field is zero
- Checks that all lanes are present
- Checks for valid direction
- Chops data into 24-hour blocks
- Checks that no four consecutive hours have the same volume total
- Compares road-hose derived volume data to axle factored minimum and maximum limits
- Compares vehicle derived data to seasonal factored minimum and maximum limits
- Checks that directional volume is not greater than 80% of the total volume
- Verifies that classification types 1, 4, and 15 are not above specified limits

When the Edit process is running, a list of any inventory inconsistencies or volume check failures will be logged in the status table. After all unedited county/stations have been checked and if any more inventory inconsistencies were found, the user is presented an Inventory Errors dialog window showing the inconsistencies as in *Figure 7.*
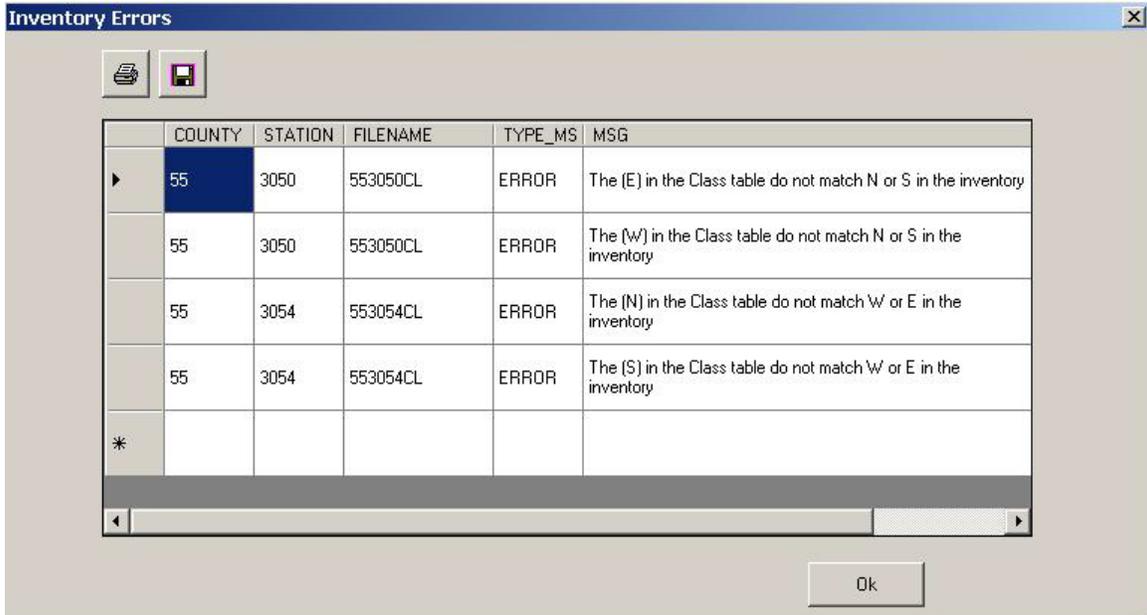
Figure 7: After Edit rule check's Inventory Errors.

Next any failed Volume Checks are displayed in a dialog similar to that in *Figure 8*. In the Volume Checks dialog the user may reject or accept part or all of the data one county/station set of data at a time.
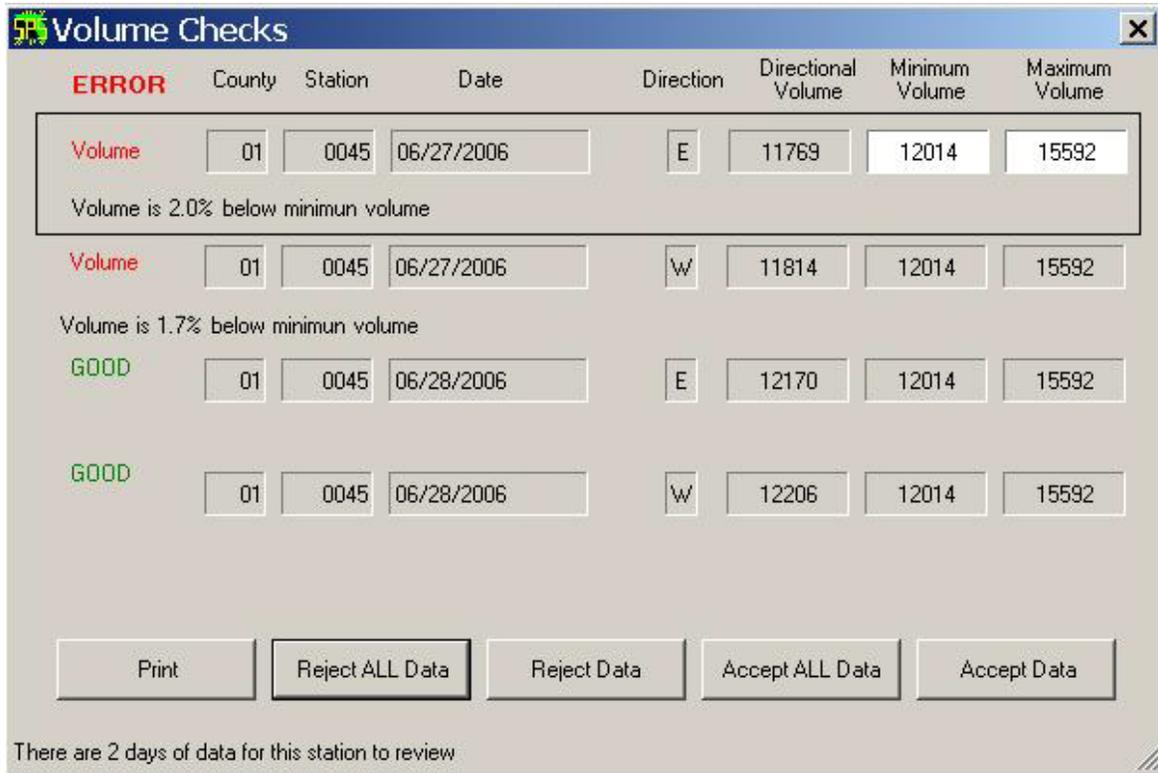
Figure 8: Volume check error while running the Edit SPS Database function

When all selected all county/station data have been checked and summarized, the View Edit Status window will be displayed as below in *Figure 9.*
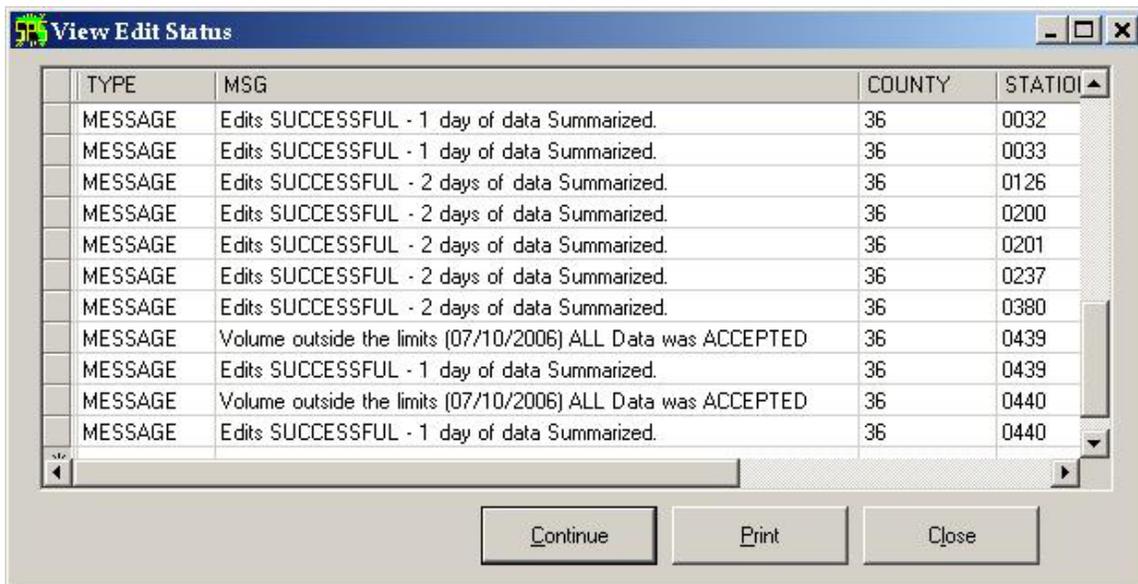
Figure 9: The edit is complete and the status is shown.

The Status Report displays the results of the edits. The important line in this display is the last line, which tells the user if the edits were successful or unsuccessful. Besides volume and directional checks where data was rejected, invalid county/station combinations, counts, classifications, and speed studies with less than 24 hours of data will result in an edit being unsuccessful. In addition all of the successful and unsuccessful loads are list in this report along with the warning message as to why the load failed.

The user have the option of continuing the edit, printing the edit status in a report, or closing the edit process (successful or otherwise) with no further actions. Choosing to continue the edit process will bring up the Edited Records window. The user is then prompted to create Record Summary Reports and then 24-hr Synopsis Reports. The user does not have to create these reports at this time; they can be created through main menu options at any time.

Finally, data that was successfully edited will be displayed in the Edited Records window where the user can choose to print a number of reports on classification, counts, and peak hours. The user can close this form without printing any reports, if desired.

III.5   CLEAR EDIT FLAGS (ALT+F)

This function allows you to selectively clear the edit flags for edited data from one or more county/station numbers (*Figure 10*). You can then re-run these records though the Edit SPS Database function after making desired adjustments, additions, or deletions. The Edit Flag for each file will be blank or 0 for a file not edited, 1 for a successfully edited file and 9 for those that failed the edit process.
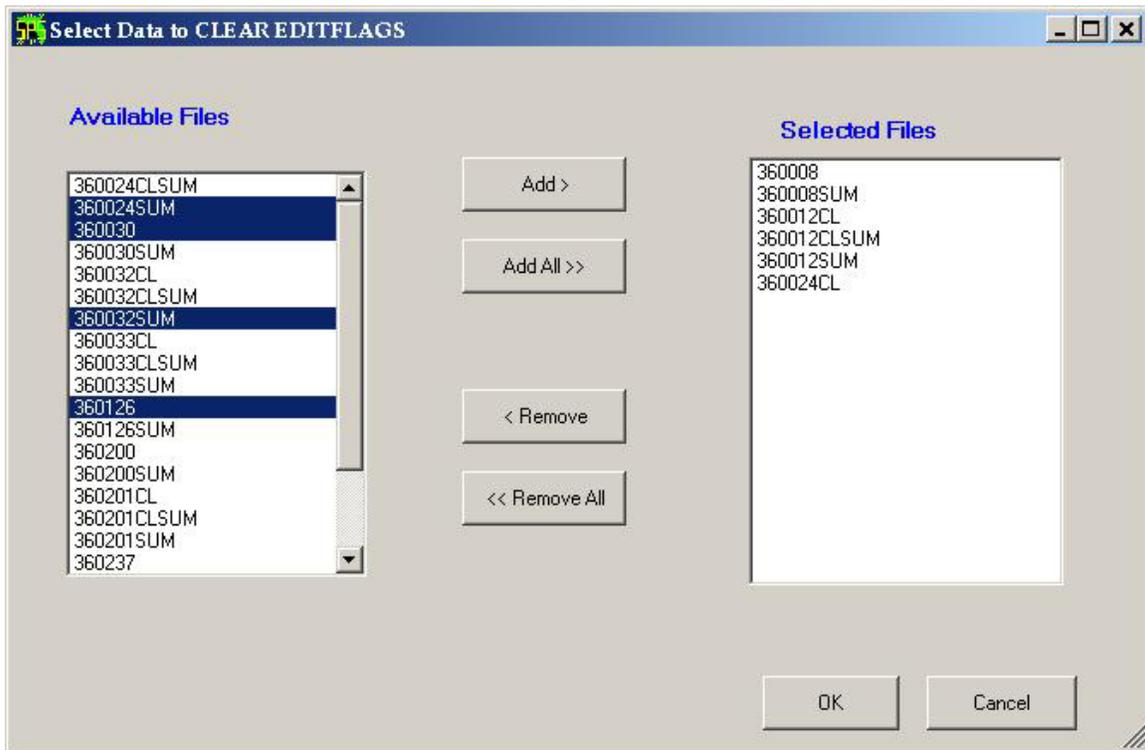
Figure 10: Selecting County/Stations to clear in the Clear Edit Flags function.

III.6 CLEAR CURRENT DATABASE (ALT+C)

This function allows the user to selectively clear any records from the current data set. Selected records are completely removed from the current data set. This function allows the user to select the survey types, data, the individual or summary records, and the edit status of the records to be removed from the current data set. The records to be removed can be further filtered by selecting from the drop down boxes in the Clear SPS Databases dialog box. Data can be removed on the basis of an individual county/station number, date, direction, time, or lane. The form that appears after the Clear Current Database button is pushed is shown below:
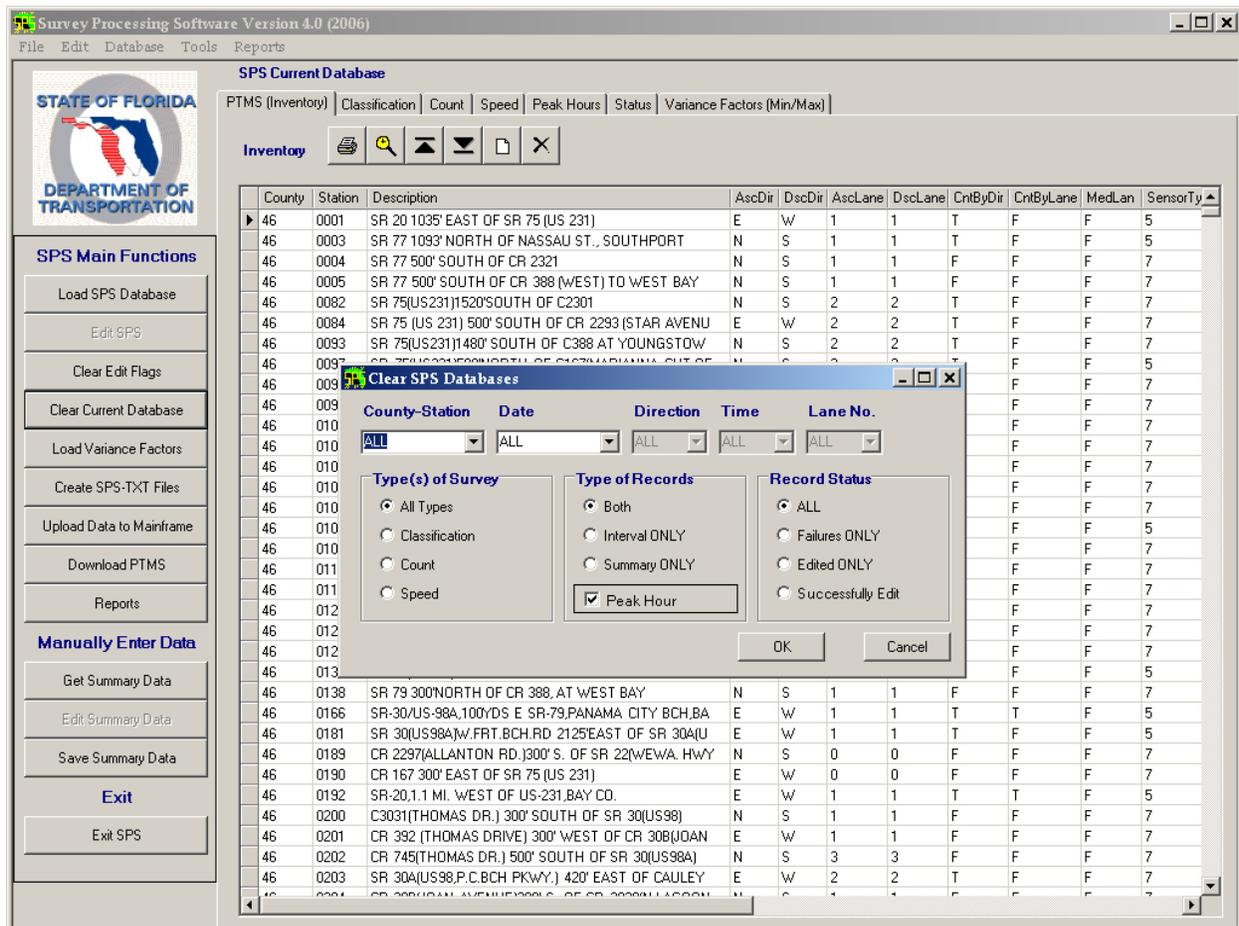
Figure 11: Clear SPS Database selection window

III.7 CREATE SPS-TXT FILES (ALT+S)

This function allows the user to create TXT files by selecting one or more county stations from those in the current data set. This function employs the exact same dialog as shown in *Figure 12*. Creating a TXT file after processing the count allows the user to combine all data files for a given county/station into a single file. This file can be saved and used to load into the database in lieu of the original data files. The file name consists of the 2-digit County Code and 4-digit Station number and then Classification Code (CL), Speed (SP), or Count ().

IV. REPORTS (ALT+R)

The Report function allows the user to create or otherwise manipulate 24-Hour Synopsis Reports or Record Summary Reports, as shown below.

Figure 12: The Reports Window

IV.1 SYNOPSIS FILES

This function allows the user to create, print, and save detailed reports where count station information such as location, date of count, directional volumes, directional peak hour information, and truck percentages (for sites where classification data was collected) can be quickly retrieved and printed for reference or for filing. The ".SYN" file are save as ASCII text and can be electronically transferred and read by a text editing program such as "Notepad". All Synopsis reports are saved in the SYN directory which is set in the "Set Preferences" window. The .SYN file name is created and displayed as the 6-digit County and Station Id number, followed by a 4-digit year, 2-digit month, and 2digit day extension (i.e., 750123-20010928.Syn). The year/month/day extension is determined by the date that the count was taken. A separate file is created for each individual day of data. This will allow the user to create multiple .SYN files for the same station and not overwrite the previous .SYN file.

IV.2 RECORD SUMMARY REPORT (RSR)

This function allows the user to create, print, and save reports where detailed count station information such as location, date of count, and 15-minute directional volumes and hourly totals, can be quickly retrieved and printed for reference or for filing. Once created, these files can also be used to load into the database instead of the actual data file(s).

V. DISTRICT FUNCTIONS

There are two functions related to importing data from and exporting data to the FDOT mainframe.

V.1 UPLOAD DATA TO MAINFRAME (ALT+U)

This function allows the user to perform the Traffic Characteristics Weekly Load which will transfer the NCTRAFF.FDF file to the mainframe and then load the data into TCI. When this function is started the Edit Records windows will be shown as below.

Figure 13: Edit Records ready to be sent to the mainframe

The user must click the "Upload Data to Mainframe" button. This will bring up the "Upload FDF to Mainframe" dialog box (*Figure 14*). In order for the transfer and load to work properly, the user must enter both their Windows User ID and Windows password and their RACF User ID and RACF password.
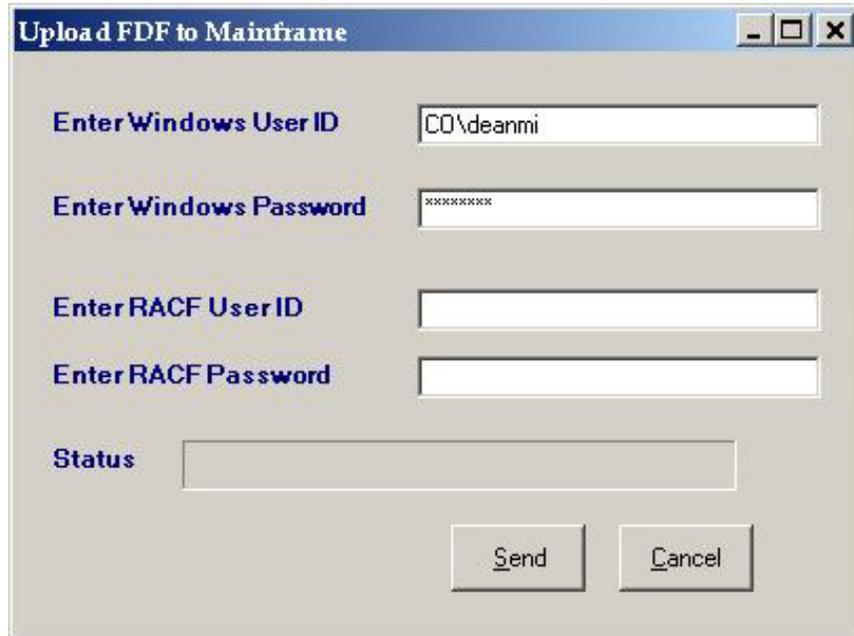

Figure 14: Upload FDF to Mainframe

V.2   DOWNLOAD PTMS (ALT+D)

This function allows the user to update the SPS application station and county inventory from the current records for your district on the mainframe. You will need to provide a valid TSO user ID and password (*Figure 15*). Added in Version 5.0, the PTMS Inventory downloaded from the Mainframe will include Latitude and Longitude data.
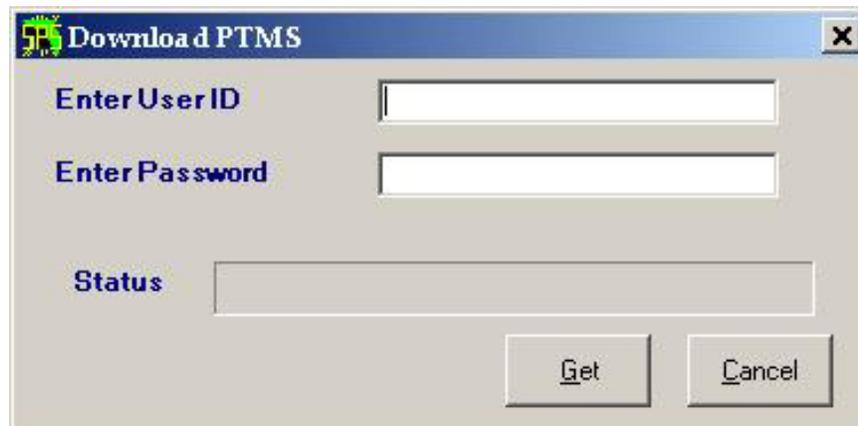
Figure 15: Download PTMS image

VI.   MANUALLY ENTERED DATA

SPS provides the capability to edit manually entered data. Along with that capability are associated functions to load, edit, and save this data. In order to enter data, one would click on the add display function button as described earlier in the Display Function Buttons section. This would position the cursor to the first field in the list to enter data. This is shown in *Figure 16* below:
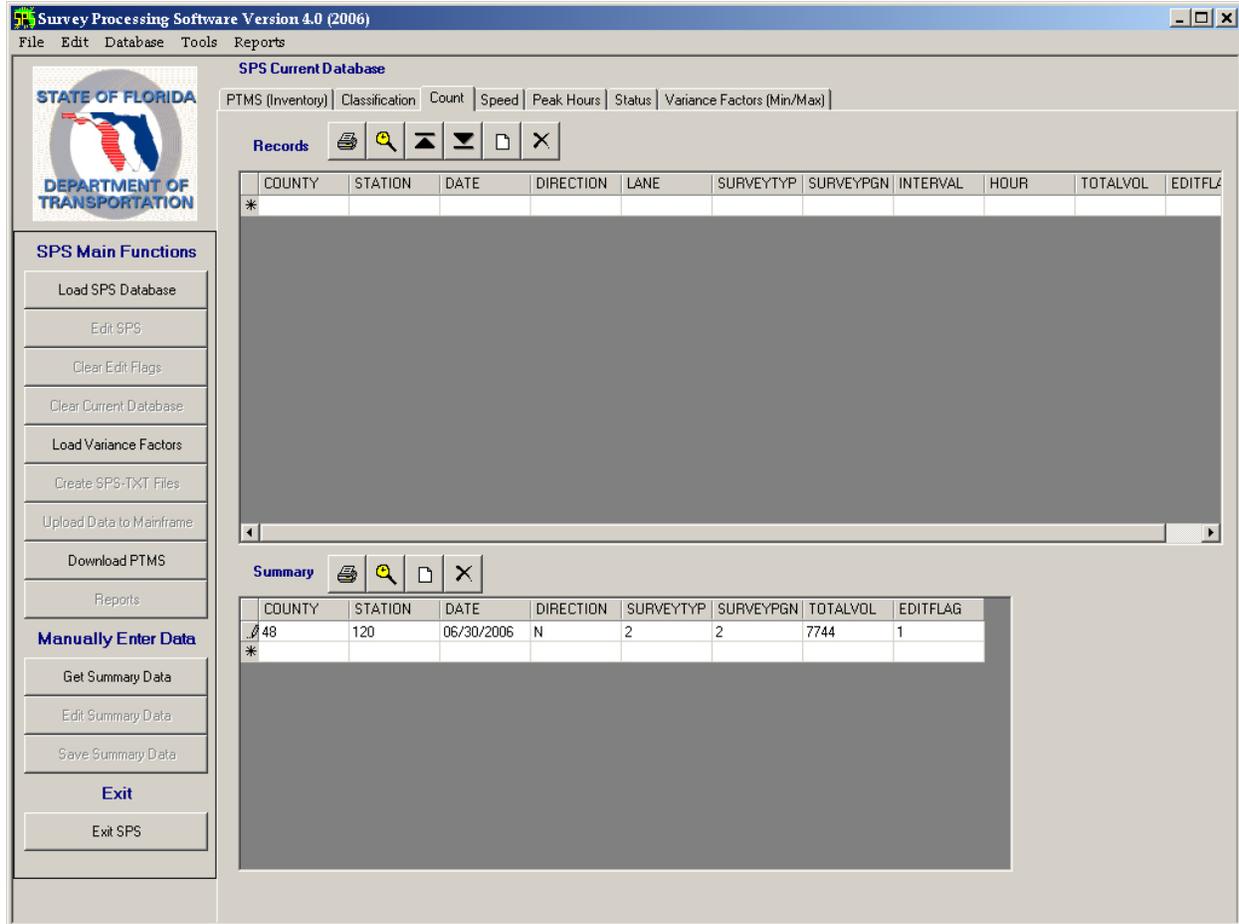

Figure 16: Manually entering a Count Summary record

After data has been entered it can be edited using the applicable subset of the rules and checks applied to other sets of data. If the user chooses to edit the data, then the data is checked for having a valid county and station number, that the survey codes are correct, that a directional volume is not greater than 80% of the total volume and volumes are compared to axle factored minimum and maximum limits and seasonal factored minimum and maximum limits.

VI.1 GET SUMMARY DATA (ALT + G)

This function allows the user to load or get summary data from a file. This could be from either manually entered data or from files that are generated from the processing of classification, count, or speed surveys. The program will add a "SUM" suffix to any file generated as part of its processing. Files may also be selected with the Load Database Function. SPS is able to differentiate files because of the "SUM" suffix. Clicking the Get Summary Data button will activate the familiar file selection dialog box as shown in *Figure 17* below.
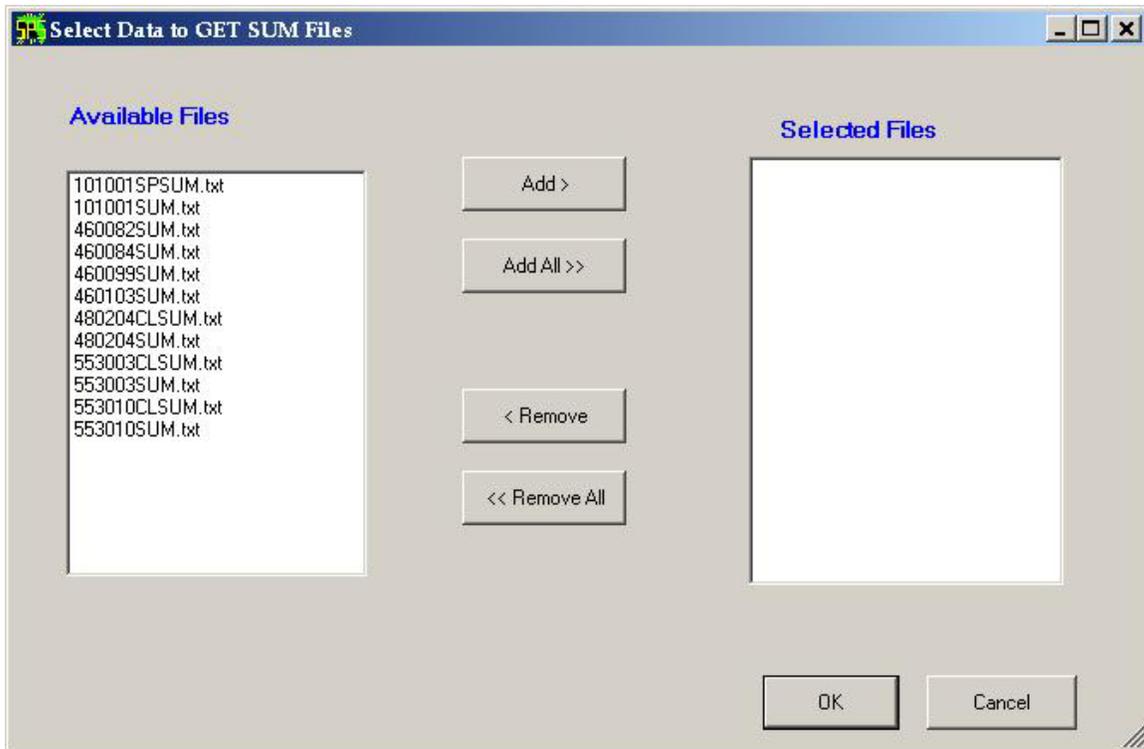

Figure 17: Selecting Summary Data files to load

VI.2 EDIT SUMMARY DATA (ALT + T)

This function allows the user to choose the Summary Data files to edit and actually puts the files through the edit process, checking the validity of data and that the volumes are within expected limits as previously mentioned. The file selection screen is the familiar one similar to the one shown in *Figure 14*. The Clear Edit Flags and Clear Current Database functions will also affect these files.

VI.3 SAVE SUMMARY DATA (ALT + M)

This function allows the user to select the Summary Data files to save and to actually assign the name of the file before saving it. The file selection screen is the familiar one similar to the one shown in *Figure 14*. The save dialog box is shown below in *Figure 18*.
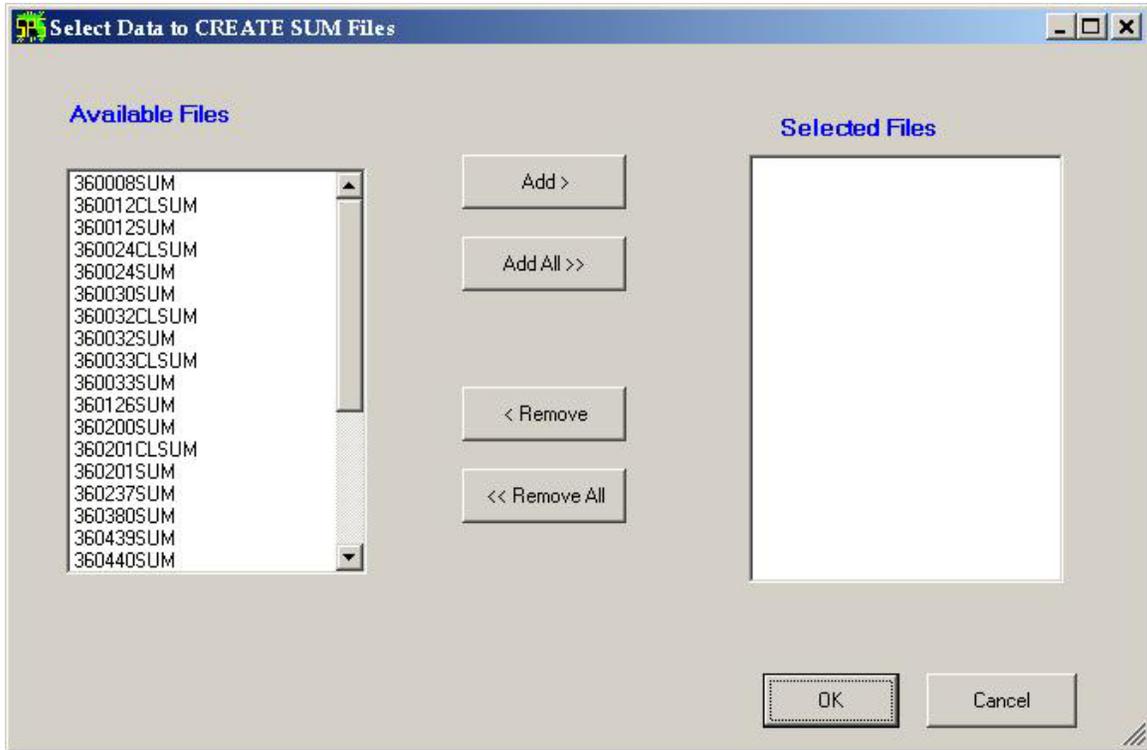
Figure 18: Saving Summary Data Text File

VII.   EXIT SPS (ALT+X)

This function terminates the application, closing SPS.

APPENDICES