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User Manual

for the

ROADCHECK™

T-500

Tag Programming Station (TPS)

Document: A316000-699

REV A8 05-Jun-08

Prepared By: RJ Middlemiss

Approved By: _____

FILE:\C:\Documents and Settings\whe\Desktop\T500\FCC\316000-699,T500 user man A8.doc, last printed on 6/19/2008 1:50:00 PM

NOTICE of PATENTS

MARK IV INDUSTRIES CORP., I.V.H.S. DIVISION, has patented or has patents pending on critical design features of the item or items described herein.

NOTICE TO MANUAL USERS:

The information presented in this document is current although it is subject to change. As such, MARK IV INDUSTRIES CORP. assumes no liability on behalf of the USER of this manual with respect to interpretation of the information contained herein.

FACTORY SUPPORT AND SERVICE

For Return Material Authorization (RMA) numbers please telephone: 905-624-3020

For service information and other requests please FAX: 905-238-5053

FCC/Industrial Canada Warnings

*** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:**

- **– Reorient or relocate the receiving antenna**
- **– Increase the separation between the equipment and receiver.**
- **– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**
- **– Consult the equipment manufacture for help.**

*** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.**

*** The transmitter and antenna must not be co-located or operating in conjunction with any other antenna or transmitter. Failure to observe this warning could produce an RF exposure condition.**

*** The operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.**

*** This device has been designed to operate with the antenna unit included in the system. Use of any antenna device other than the one included is strictly prohibited.**

MANUAL REVISIONS

The complete *revision detail list* is found in *Appendix-Document Revision Control*.

Table Of Contents

New Features for this software version

For the T500 Tag Programmer - PC Software (700371-003) version 1.99.03.24 or higher…

Description…
Maintenance release of T500 tag programming station PC software. This version has been qualified.

New Features…
1) New option to clear unassigned agency and scratchpad fields. Default setting for the scratchpad fields: clear bits (Toll collection, traffic management fields). Default setting for unassigned agency bits: not cleared. Default setting for unassigned scratchpad bits: clear bits.
2) The DLL file is checked for the proper version. The program does not continue if the wrong DLL version is in use. The correct version is dated Mar. 12-99, size 69120 bytes.

Enhancements…
1. Provided a "no change" template option for agency fields. This allows modifying specific fields in a tag without modifying other fields.
2. The Help | About menu item now displays the TPU firmware version in addition to the PC software version.

Problem Fixes…
1. When the width of a custom agency or scratchpad field is changed, the value of the field will be set to 0.
2. Vehicle class changes in agency tab display (tractor length changed from 53' to 48', removed definition for vehicle type 16) per document "E-Z Pass Interagency Group / Tag Data Format/Content" dated 12/22/98.
3. No other known problem to date.

Reference documentation…
Customer: T-500 Tag Programming Station – User Manual (A316000-699)
Customer: T-500 Tag Programming Station – Data sheet
Customer: T-500 Tag Programming Station – DLL Interface (Sept. 25, 1998)
Internal: T-500 Tag Programming Station – SW Requirements (TS 322749-047 Feb. 5th, 1999)

Software Installation Notes…
Installation is compatible with Windows -9x or -NT 4.0. Close any open programs before starting the installation. You may see a message "*Could not register MFC42.dll*". Hit OK and the installation will continue. This PC software must be used in conjunction with the following TPU firmware version:

TPU Firmware (800473-009) Version TPS102R – Checksum 45AF

Developer Notes
It is possible for a 3rd party developer to not use the Mark IV user interface and read / program tags directly via the DLL interface. Contact Mark IV for details.

System Installation Notes

Environmental Notes…
The installation environment for this equipment must include a method of control for…
- temperature
- humidity
- dust

Mains Power Notes…
- It is strongly recommended to install a UPS for the TPS computer.

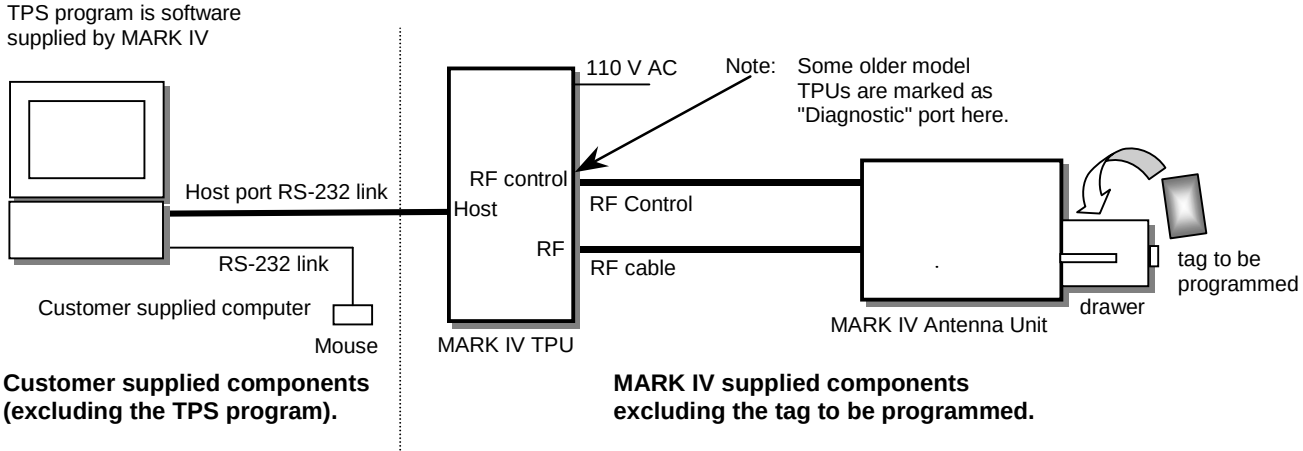
Abbreviations Used

Abbreviation	Meaning
AU	antenna unit
RF	radio frequency
T500	an alternate name for the TPS
TPS	tag programming station
TPU	tag programming unit
UPS	uninterrupted power supply

1.0 TPS Components and Interconnection - Overview

The system components are shown below.

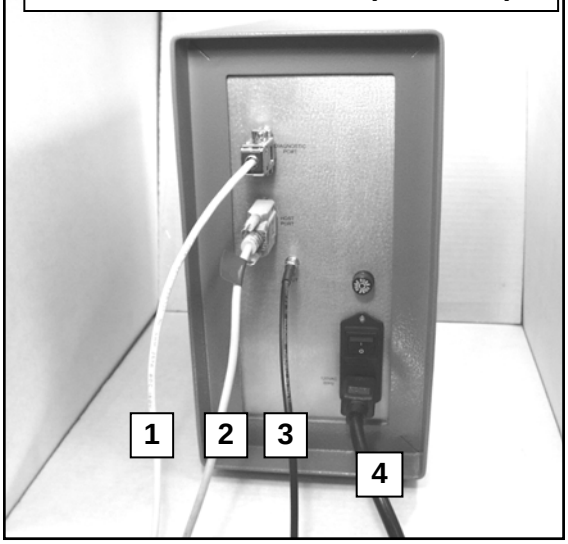
1.1 Front view of TPS system components:



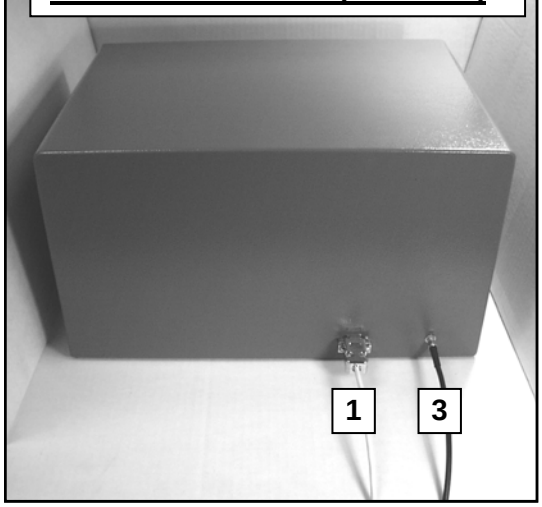
1.2 System component interconnections

Cable ID	Part Nº	From…	To…	Comments
1	326595-001	TPU *RF Control* port	AU *RF Control* port	See Note in previous diagram
2	326595-002	TPU *Host* port	PC serial port	
3	800824-001	TPU RF coaxial cable port	AU RF coaxial cable port	
4	314922-004	TPU power port	120VAC mains wall socket	

T500 TPU connections (rear view)



T500 AU conections (rear view)



WARNING

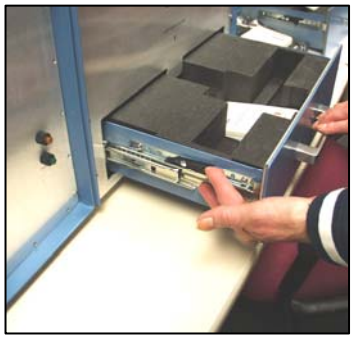
*** The transmitter and antenna must not be co-located or operating in conjunction with any other antenna or transmitter. Failure to observe this warning could produce an RF exposure condition.**

*** To comply with RF exposure requirements the unit must be installed and operated with a separation distance of 20 cm or more between the device and all person's body (excluding extremities of hands, wrist and feet).**

*** This device has been designed to operate with the antenna unit included in the system. Use of any antenna device other than the one included is strictly prohibited.**

1.3 Tag "cradle" inside the AU drawer

The tag cradle is shown at right in a "top view" photo (of the AU drawer pulled out). The cradle shown in the photo at right is configured to accept various Fusion or Type 2 LCD tags. A separate AU drawer[1] has a cradle that is configured to accept various FPT, RMT or LPT tags.
Drawers are easily exchanged by slipping them on and off from the drawer glides as shown in the photo below.



Lift up on the black plastic locks on both sides of the drawer while gently pulling the drawer up and out from the slides.
Reverse the procedure to install a drawer. Pull the slides out frontward as far as possible to re-engage the locks. Both locks must "click" into place.

IMPORTANT…
The correct alignment of the tag in the cradle is vital to the programming process. When placing any tag into the cradle, ensure that the applicable alignment diagram (or photograph) is referenced. For details, refer to *Appendix - Positions of tags in the AU drawer "cradle"*.

[1] This feature will be changed to a single drawer for all tags. Refer to the notes on page 2 of Appendix - Hardware.

2.0 Getting started - Installation Overview

This section is an <u>overview</u> of what you will do to install the program and to start programming tags.

The TPS components are interconnected as shown in the previous section.

An "*installer*" will install the TPS program for the first time separately on each TPS computer. The *installer* will use the password "**doinstall**" which is valid only for the install procedure. The installer will require the "authorization code" for each TPU previously sent to the agency or service center contact person. For security purposes, the authorization code is set differently on each TPU shipped.

The *installer* <u>must</u> add at least one supervisor to the User ID file. Then the *installer* must exit (log off) from the program. The *installer* is not allowed to start up and/or log into the program again.

Now, one of the supervisors listed in the User ID file must log in and create a password. The supervisor may now add (or remove) the other system users and/or supervisors. Note that the TPU does not have to be connected to the computer to perform this function.

Now, each one of the users in turn use their ID to log on and put their password into the User ID file. Each user then logs out then logs in again using the password to gain access only to the user menu items.

At this point the TPS will be <u>properly</u> setup to program tags. For larger batches of tags, the supervisor may selectively automate the programming activity.
The TPS program is normally running all the time. A supervisor or a user will log in and out as required. The system accepts only one person to be logged in at a time. The program menu items are automatically enabled/disabled for the user type that is currently logged in.

<u>IMPORTANT</u>
It is strongly recommended to install a UPS for the TPS computer.

With the exception of a power failure, the TPS program is intended to run continuously, however...

1. Supervisors must always use the "Exit" menu command if the program is ever terminated.
2. Always "Exit" the program before shutting down the computer for any reason.
3. You must be familiar with the care and use of the TPU.
4. Read the *Appendix - Hardware Setup* in this manual before using the TPS system.

2.1 A note about "forgotten" passwords…

- If a user forgets their password then any supervisor may simply erase that user from the list and then re-enter the same name in the list again. That user must re-create a password when logging in.
- If a supervisor forgets their password then any other supervisor may simply erase that supervisor from the list and then re-enter the same name in the list again. That supervisor must re-create a password when logging in.
- If there is only one supervisor in the list and that supervisor forgets their password then the following procedure must be taken.

    1) Erase the current list of users and passwords by erasing the file "*tps.cfg*" in the Windows directory.
    2) Re-install the TPS program and re-setup the system as described in the overview above.

2.2 Using the Table of Contents as a guide…

The pertinent sections of the **table of contents** are arranged below in "*logical order*". This means that if you are installing the program at a new site then you will start with the steps outlined in item 1. Then item 2 steps are arranged in the order that they are usually taken immediately after a new installation has been completed. After the new users' "*change password*" action has been performed the steps 2a through 2g may be taken independently from each other (i.e. each step outlines how to perform a specific "*free standing*" action). Item 3 outlines all of the remaining actions that may be taken only by a Supervisor.

1. **Installer Activities**

   a) **install** the TPS program
   b) **launch** the TPS program
   c) **add** Supervisors and Users
   d) **log out**

2. **Supervisor and User Activities**

   a) **log in**
   b) **create password**
   c) **change password**
   d) **read** a tag
   e) **program** a tag
   f) **template** load
   g) **log out**

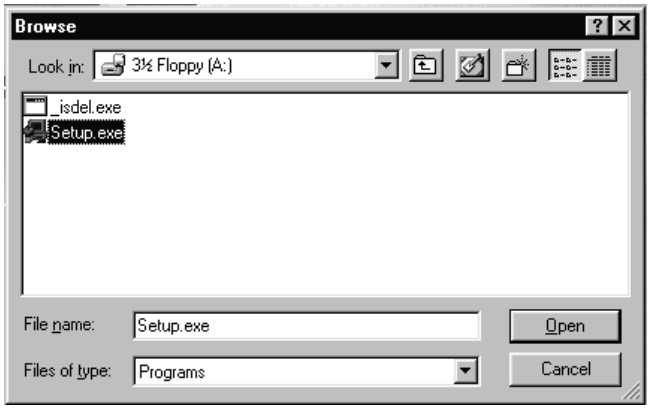
3. **"Supervisor only" Activities**

   a) **add** Supervisors and Users
   b) **template** create and save
   c) **TPS configuration** setup functions (e.g. automatic read or write the tags)
   d) **other** supervisor functions

3.0 Program installation procedure

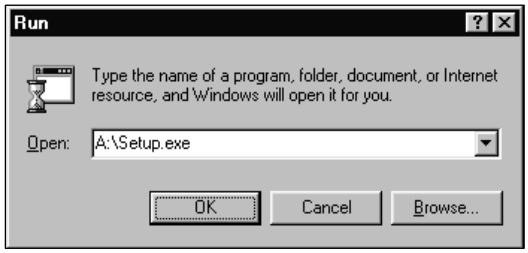
You must be an "Installer" to perform this function.
Make a copy of the original program disk(s). Store the original disk(s). Use the copy to install the program onto your hard drive. The TPS program is entirely *self-installing* by using the "Setup.exe" utility on program disk #1. Be prepared to use the secret "installer's password" and the "authorization code" at the appropriate prompt in the install process.

- Verify that there are no other Windows® applications currently running on the computer (i.e. Word®, Excel®, etc.)
- Insert program disk #1 into the floppy drive.
- Use the Windows® toolbar commands "Start", "Run" then "Browse" to locate the Setup program (see example below).

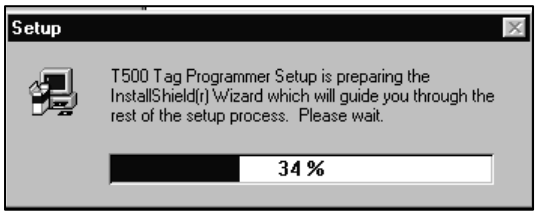


Important Note:
It is not necessary to have the TPU connected in order to install the software and configure the system users.

- Click "Open", the Run window is displayed again except now the *Setup.exe* utility is loaded.



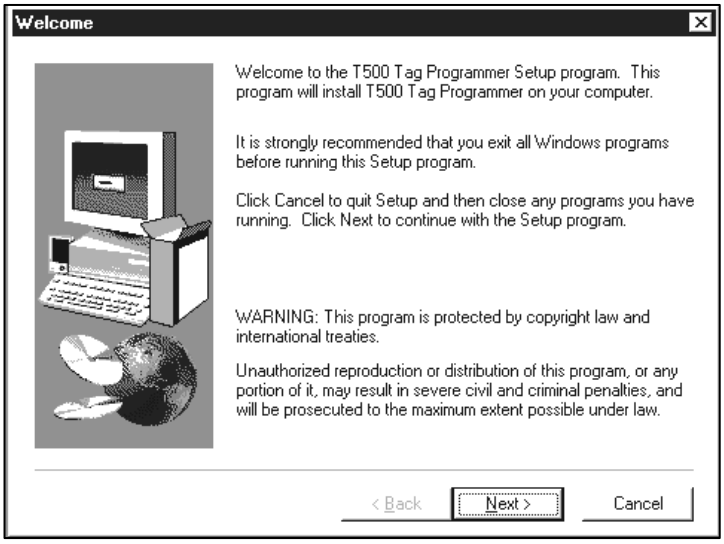
- After clicking "OK", the very first message box for the TPS install will look like this…



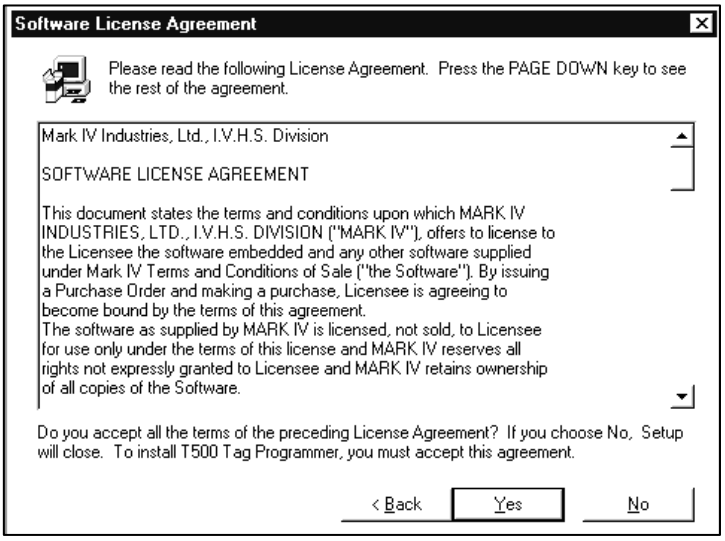
The *InstallShield® Wizard* is installed first and you are prompted to wait.

There are several screens associated with the *InstallShield® Wizard* displayed next.

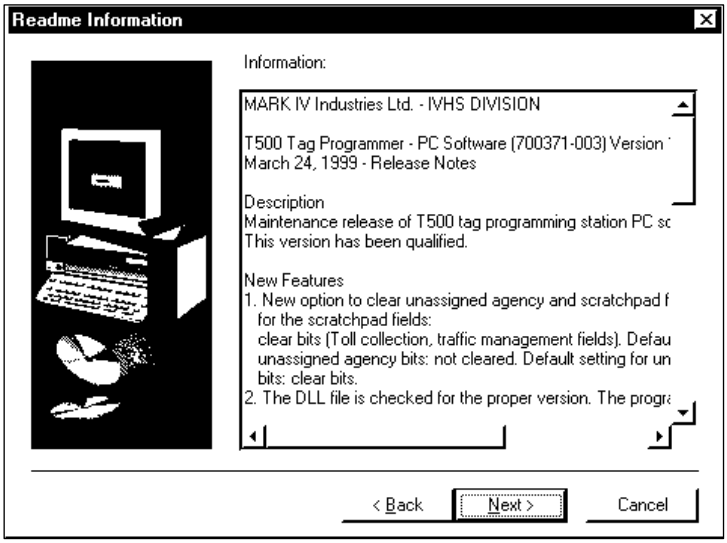
- The *Welcome* screen displays usual warnings. Please read them then click on the "Next" button.



- After clicking on the "Next" button, the *Software License Agreement* screen is displayed.

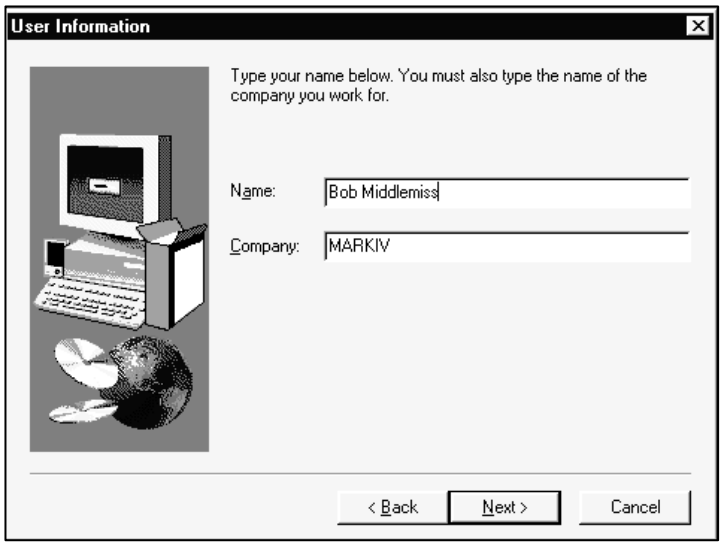


- Please read <u>all</u> of the agreement. To continue installing TPS, click on the "Yes" button.



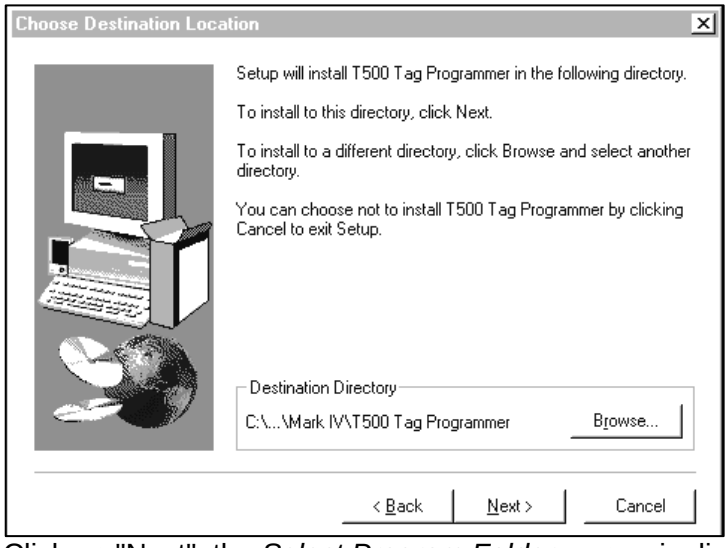
The *Readme Information* screen contains pertinent data on the current version of the TPS program that you are installing. For example, here is where the software 'version control' data is revealed.

- Click on "Next", the *User Information* screen is displayed …



Type the requested information into the appropriate fields.

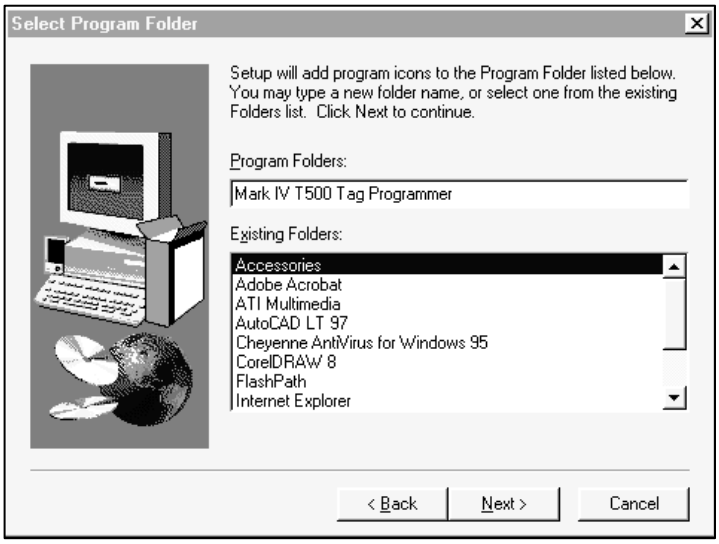
- Click on "Next", the *Choose Destination Location* screen is displayed …



At this point, the installer will select a path for the program to be installed. Usually the default as shown is OK so you may simply click on "Next".

However…
Example: If your computer has another drive, "D" for example, that you want to use, then select it in the "Browse" window then come back and Click "Next".

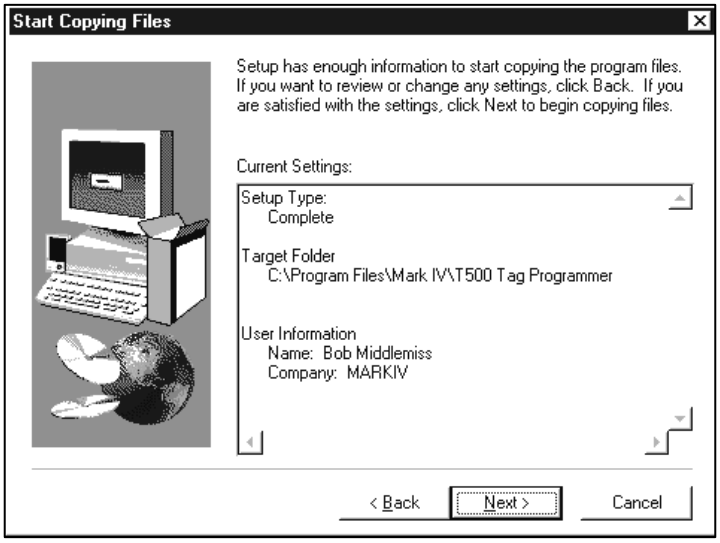
- Click on "Next", the *Select Program Folder* screen is displayed …



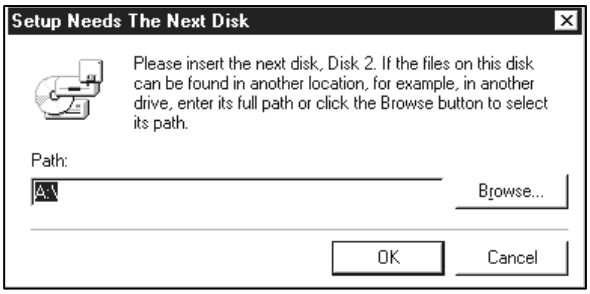
At this point, the installer will select a folder in which the program icon is to be placed. Usually the default as shown is OK so you may simply click on "Next".

However…
Example: If you want to create a new folder name then type it. Alternatively, you may select a name from the "Existing Folders:" field list, then Click "Next".

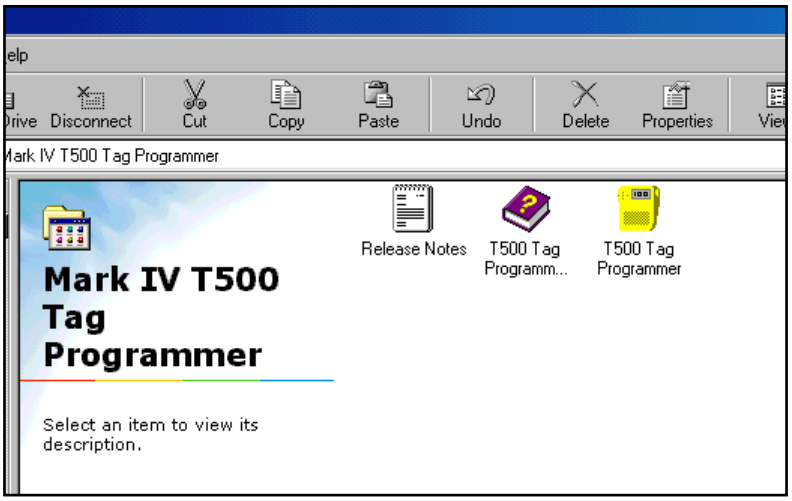
- Click on "Next", the *Start Copying Files* screen is displayed…



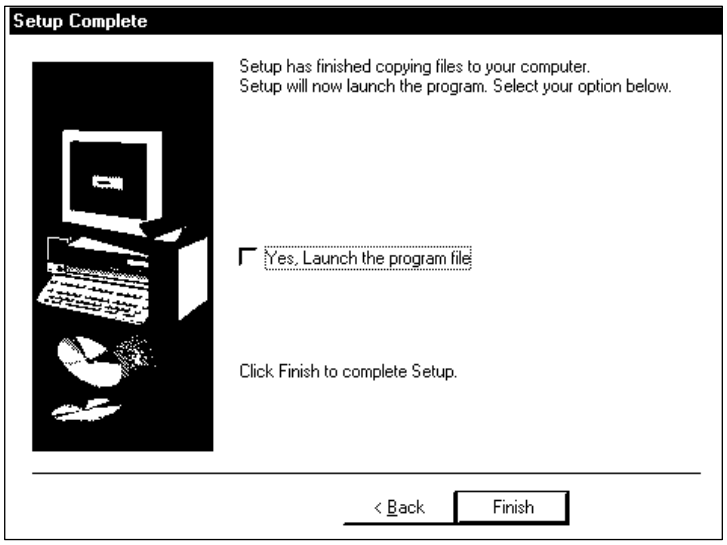
- After clicking the "Next" button, the install utility decompresses and copies the files on disk #1. Eventually the following prompt appears…



- Remove disk #1 from the floppy drive and put disk #2 into the floppy drive.
- Click on OK to continue, eventually the installed program icons appear briefly as…



- Then the *Setup Complete* prompt appears with an option to launch the program.



To launch the program click on the box beside the prompt "Yes, Launch the program file", then click on the "Finish" button.
Otherwise, to finish the installation without launching the program, first remove disk #2 from the floppy drive in use, verify that all other floppy drives (if present) are empty, and then click on the "Finish" button.

In either case, the TPS program icon will be visible on the Windows desktop as shown at right.

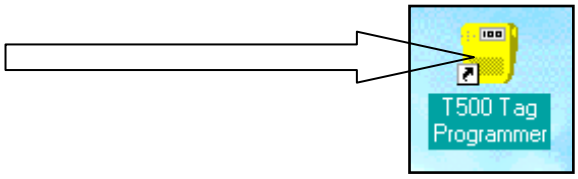
The program installation from disk is complete at this point. The installer now launches the program and sets up the TPS system with at least one Supervisor before logging out from the installation.

3.1 Launching the TPS program

If the "Yes, Launch…" box shown above was selected then the computer will start the TPS program.
If the "Yes, Launch…" box shown above was not selected then to start the TPS program do the following.

The TPS program icon will be displayed on the Windows desktop (because after the installation is complete the program is listed in the Startup menu).

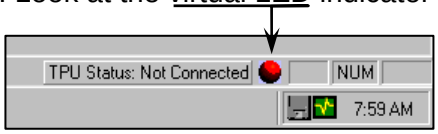
To launch the TPS program click on the icon.



If the following error message appears…

Then you must…

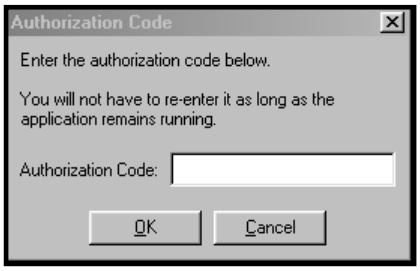
1) Verify that the TPU is turned on and is connected to the host computer. Look at the virtual LED indicator for "TPU status" located at the bottom right of the host computer screen.



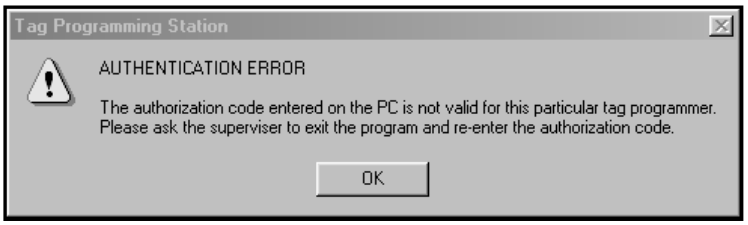
2) Verify all cable connections at the back of the TPU and AU and PC.
3) Verify that the PC serial port that you are connected to (COM1 or COM2) matches the default port set in the configuration menu (see *Set Communications port parameters*).

Note:
The cable marked "326595-001" connects the AU to the TPU.
The cable marked "326595-002" connects the TPU to the PC (Host).
Do not switch these two cables, even though they look identical they are not. The Host cable has a "null modem" built in and is intended only for the Host connection.

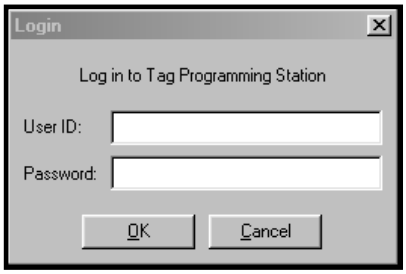
- Type in the "authorization code" for the specific TPU then press OK



Possible error messages are…



- The TPS main menu screen will appear in the background along with the "*Log in to Tag Programming Station*" dialog box.



- Type "installer" in the User ID box, then select the Password box and type "doinstall" as the password then click the OK button. (*Note that both typed entries here are 'case sensitive'*.)

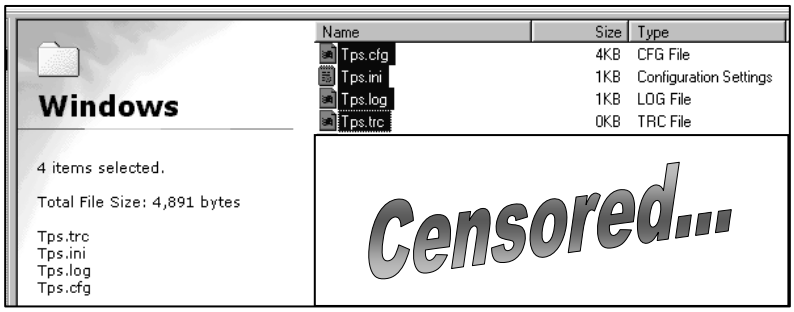
- This warning message is displayed. Click the OK button to continue.

- This warning message is displayed. Click the OK button to continue.

At this point the installer is ready to set up the first group of Supervisors and/or Users. The installer must add at least one Supervisor before logging out from the installation. Refer to the section *Add Supervisors and Users* procedure in this manual.

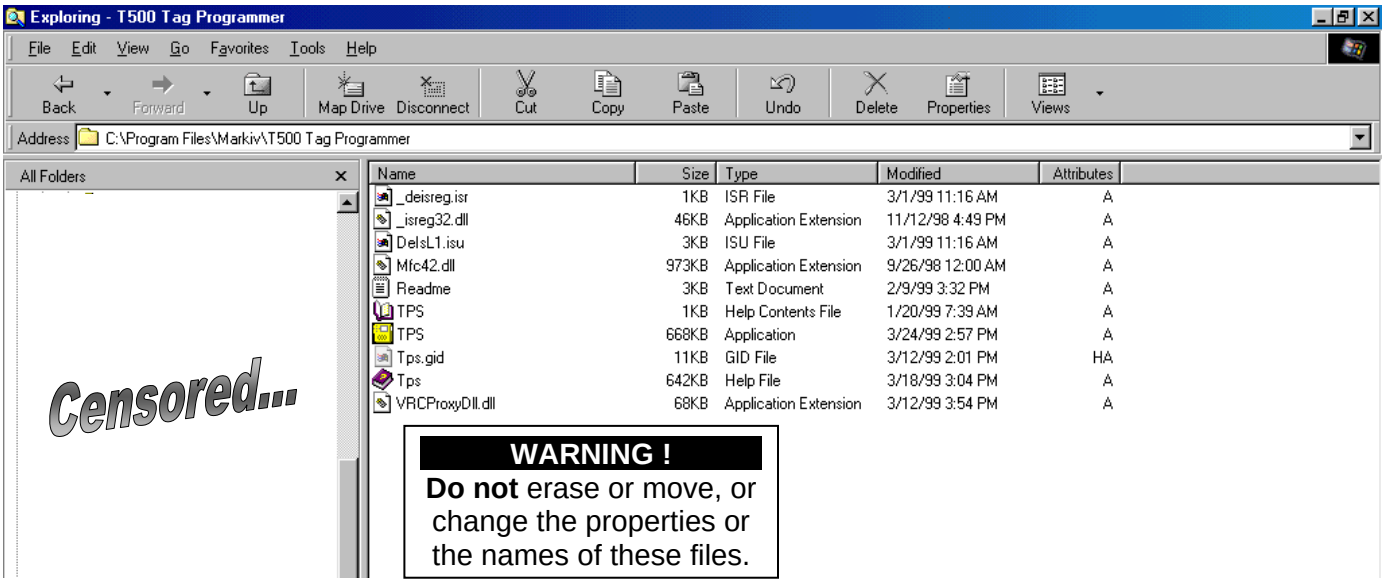
3.1.1 Notes regarding the location of various program files

After you run the program for the first time, the following files are created in the ***Windows® directory***.



WARNING !
Do not erase or move, or change the properties or the names of these files.

Note:
After you install the program, the following files are loaded in the application directory*. If you have used the TPS installation defaults, the* ***application directory*** *will be as shown below.*



WARNING !
Do not erase or move, or change the properties or the names of these files.

After you subsequently read or programmed tags then several of the files with the extension "**.TXT**" are created in the ***application directory***. *If you have used the TPS installation defaults, the application directory will be C:\Program Files\Markiv\T500 Tag Programmer*.**

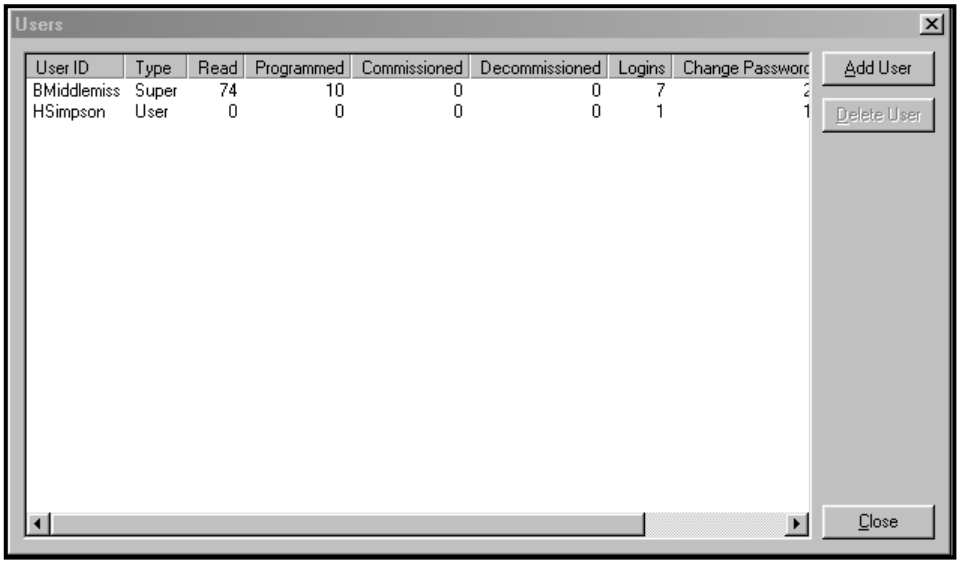
WARNING !
Do not erase or move, or change the properties or the names of these files.

After you create new templates for programming tags then several of the files with the extension "**.TPL**" are created. The directory of template files is C:\TagTemplates*.* *provided that you accepted the default directory path when you saved those templates.*

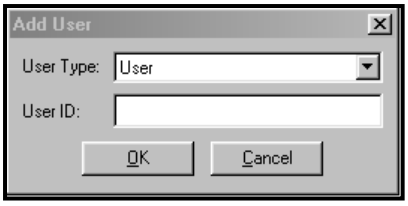
IMPORTANT !
Template files may be stored anywhere however, for the purpose of easier system maintenance, try to use the same directory path each time you save a new template.

3.2 Add Supervisors and Users

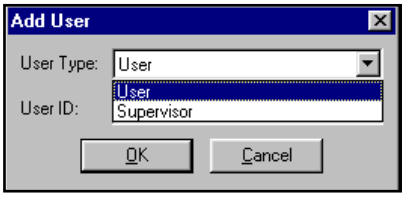
- Select the main menu item "Supervisor" then click on the "Users" menu item. The Users information box is displayed as shown below. The information box will not have any users in the list if this is the first time that the list is displayed during the *program installation procedure*.



- Now click on the "Add User" button. The "Add User" dialog box is displayed.



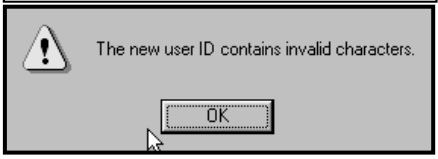
- Now click on the down arrow ᛃ on the right hand side to view the "User Type" list.



- Select and click on the "Supervisor" type.

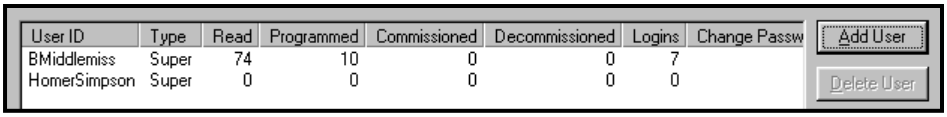
- Select the "User ID" box and type the Supervisor's name.

Warnings that may be seen…



Invalid characters are typically "spaces".

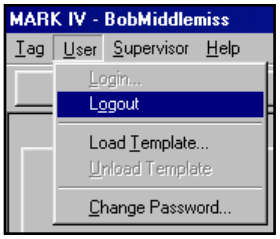
- Now click on the OK button. The new Supervisor's name is added to the current list.



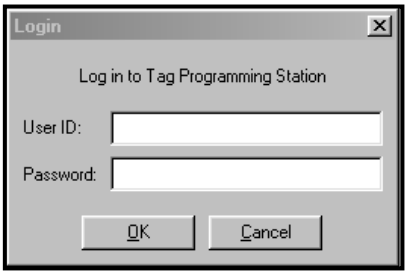
- Repeat the process until all Supervisors are added to the list.
- During the installation procedure, the installer may also add any Users to the list at this time. Afterward, the installer will log out.
- All new users added to the list must log in and register their unique passwords by using the *Change Password* procedure.

3.3 Log out

- Select the main menu item "User" then click the mouse button on the sub-menu item "Logout".



- The following message is displayed.



- Click the Yes button. You are now logged out and the log in dialog box is displayed immediately.

- Click OK to log in or click Cancel to set the TPS program to "idle" mode (= nobody is logged in).

At this point the banner at the top of the main menu shows nobody is logged in.
In this "idle" mode the program is not terminated but is ready for the next person to log in.
This "idle" mode will also be set after the automatic logout timer expires (if it was enabled).

4.0 Supervisor and User Functions

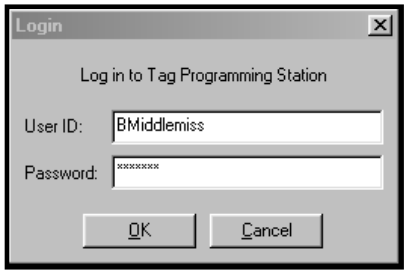
1. You must be logged in to the system before you may read or program a tag.
2. You must read a tag before you may obtain the *template editor*.
3. You must select an existing template or use the *template editor* to create a specific *template* (also known as the *tag configuration data file*).
4. You must always verify that the selected *template* is correct before you program a tag.

4.1 Log in

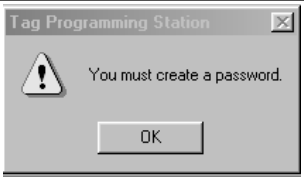
- Select the main menu item "User" then click the mouse button on the sub-menu item "Login".

Possible error messages (see Appendix - displayed error

- The "*Log in to Tag Programming Station*" dialog box appears.
- Type your log in ID. Now select the password box and type your password then press OK.



The **first time** you ever log in you may leave the password box empty. You will then be prompted to create a password. See also *Create password* for details.



- After you are logged in the top banner has your ID and the operable command buttons are in **bold**.

The **Program** command button will become operable when a tag is read, see also *Program a Tag* for details.

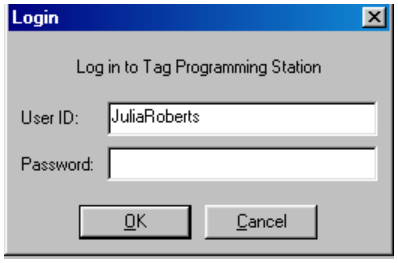
From this point you have access to all functions set for your access level. Refer to the access level table at the rear of the manual for details.

Generally,

- a Supervisor has access to all functions
- a User (Operator) has access to Read and Program Tags

4.2 Create password

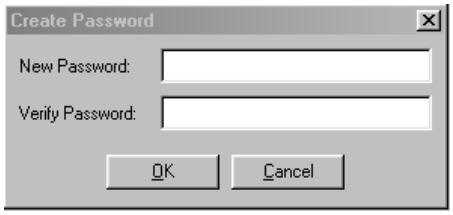
Situation: The Supervisor has just added your name to the User list and this is the **first time** you have ever attempted to log in to the system. When the log in box is displayed, you may type your log in name in the User ID box and leave the Password box empty.



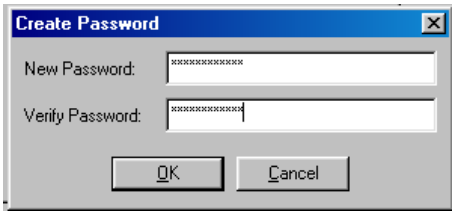
IMPORTANT…
The user ID and password are case sensitive. You must remember and use the exact typing as was originally entered and accepted by the system.

- Click on the OK button. You will then be prompted to create a password.

- Click on the OK button. The "Create Password" dialog box appears.



- Type the new password into the "New Password" field. Type the new password once more into the "Verify Password" field.



Warnings that may

Any upper or lower case characters including numbers are allowed.

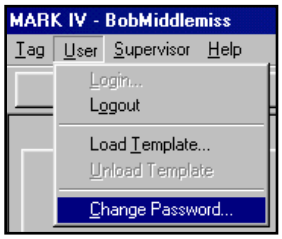
Invalid characters are typically "spaces".

- Now click the OK button.
- The new password must be used the very next time that you log into the program.

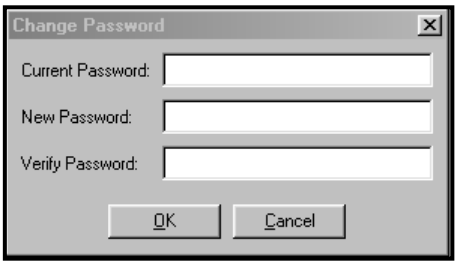
Notes:
- You must have a password in order to perform any programming or reading of tags.
- To change your password refer to "Change Password".

4.3 Change password

- In order to change a password you must be logged in first.
- Select the main menu User item then click on "Change Password".



- The "Change Password" dialog box is displayed. Type the current and new passwords into the appropriate fields. Type the new password once more into the "Verify Password" field. Then click the OK button.



IMPORTANT…
The password is case sensitive. You must remember and use the exact typing as was originally entered and accepted by the system.

Warnings that may appear…

Any upper or lower case characters including numbers are allowed.

Invalid characters are typically "spaces".

- The new password must be used the very next time that you log into the program.

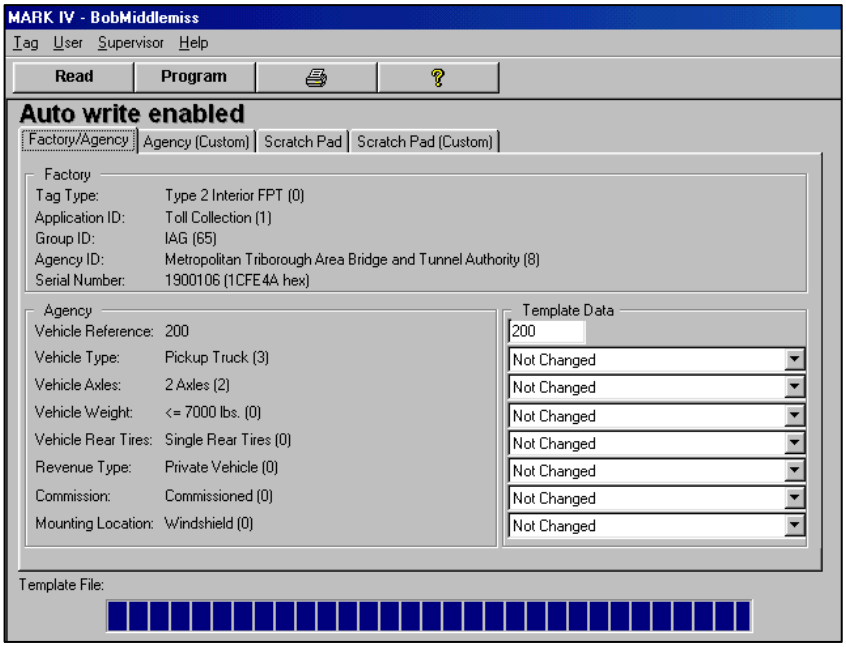
Notes:

- You must have a password in order to perform any programming or reading of tags.

4.4 Reading and Programming IAG Tags

4.4.1 Read an IAG tag

- Place the IAG tag into the foam insert in the AU drawer that is configured to accept this type of tag. (see tag orientation photo in *Appendix - Positions of tags in the AU drawer "cradle"*.).
- Close the AU drawer. Click on "Read" button, otherwise if the Read command has been set to automatic, then the following screen is displayed (example: a Type 2 interior FPT tag was used).



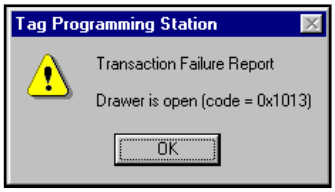
The **Program** command button is highlighted in **bold** after the tag is read.
"**Auto write enabled**" is displayed if it has been enabled. This is a warning for the User that opening and closing the AU drawer will overwrite the tag inside the drawer with the data currently displayed.
If the "Default View Page" was set to "Factory/Agency" then the tag data is displayed as shown. The Supervisor may begin modifying the displayed *template* or may create a new one from it and then save it.
Users will then be able to obtain any one of the saved templates for use in programming other tags.

Notes: The absence of a Template File name (at bottom left) indicates that the data displayed came from the tag just read. "Not Changed" in the selection boxes is displayed until the Supervisor makes a new selection in order to create a new template from this one. The *Vehicle Reference* field value (shown as "200" in the example above) represents the cumulative total of the first 4 field values assigned as "vehicle" data.

- If the automatic Read is not set, click on the Read button. Within 1 second the tag contents are displayed (See "Data displayed on 'Read a tag'" below).

Message "Read Failed"
The following message appears if the read command failed.

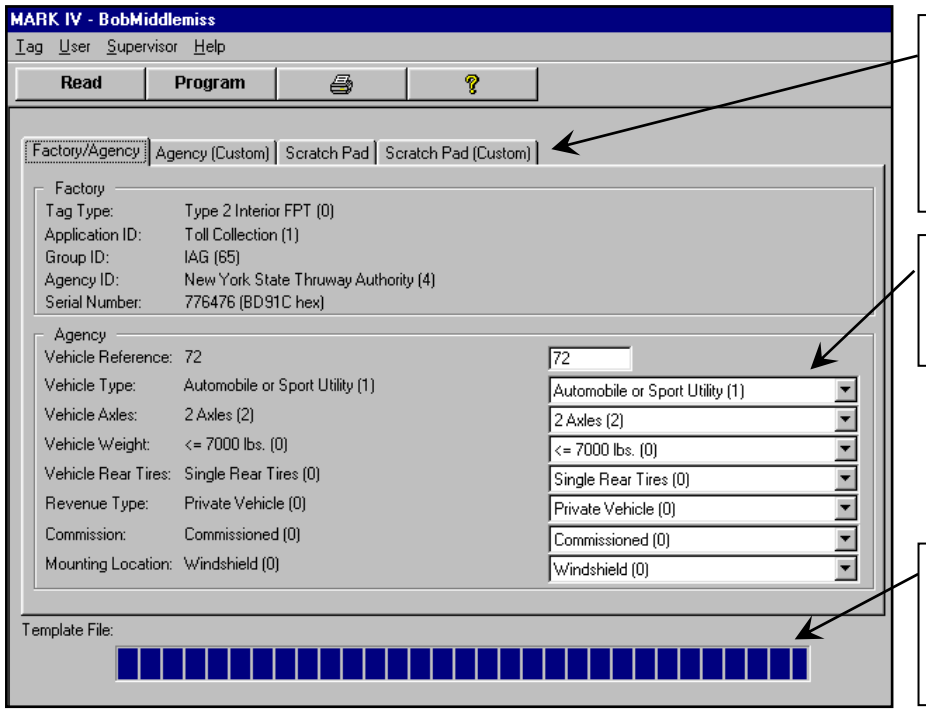
Click on "Details" to view the error code for the failure. A typical error code message is depicted below. The code shown must be revealed to Mark IV Service Dept.



The reason for the failure detected is shown here. Another typical reason displayed is "**Drawer is open**".

Data displayed on "Read a tag"

There are also 4 folder tabs displayed. The folder tabs represent the various areas inside the tag that are programmable either by the Factory or by the Agency. If a Supervisor can modify a tag field it is displayed as a selection box (white background areas in the screen).



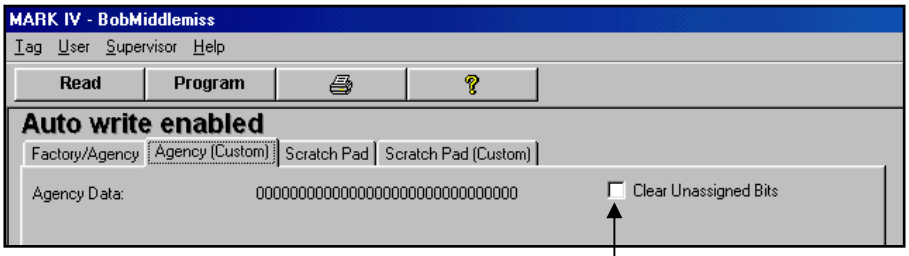
The Supervisor may change the default folder tab displayed upon reading a tag. Refer to the section in the manual titled "Default View Page."

The selection boxes shown here allow the template data to be modified.

The number of blue squares displayed in the "progress bar" indicates the relative completion of the Read or Program task.

The fixed Factory data fields and the variable Agency data fields from the **Factory/Agency** folder tab are displayed by default.

To display the value read in the interactive Agency (Custom) 31 bit data field, click on the **Agency (Custom)** folder tab.



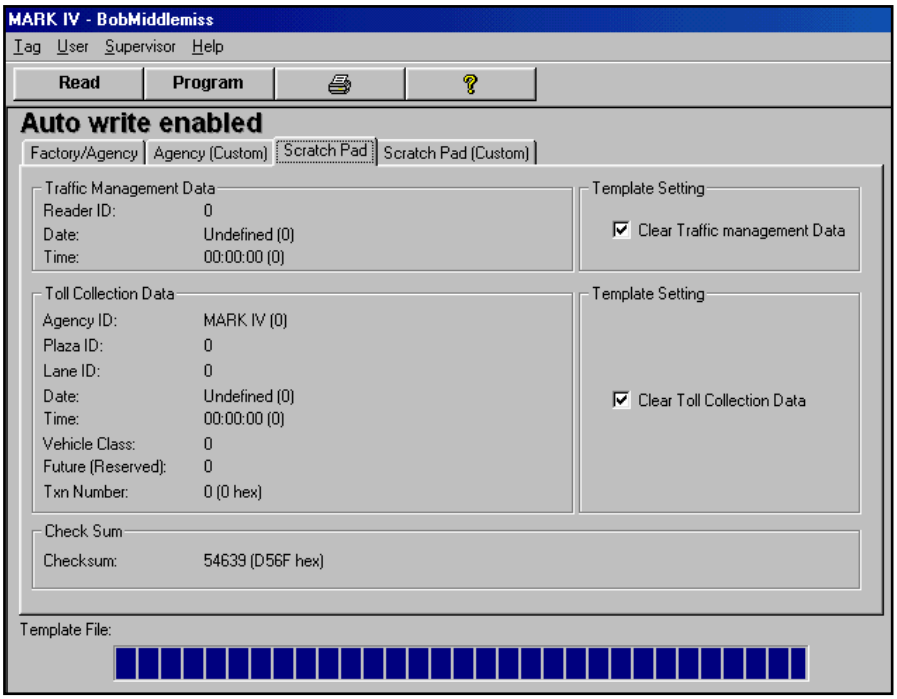
There would be selection boxes shown here only if a Supervisor created and saved a new template.
Refer to the section "Create a new Template file".

"Clear Unassigned Bits", when selected, will set all the unused bits in the entire field to zero.

Note 1. If a template file is not loaded then the "Clear Unassigned Bits" default value is "unselected". Reason: all IAG tags have these 31 bits set when they were originally programmed at the factory.

Note 2. If a template file is loaded then this "Clear Unassigned Bits" value is set to the data that was stored in that template file.

To display the value read in the scratch pad data fields, click on the **Scratch Pad** folder tab



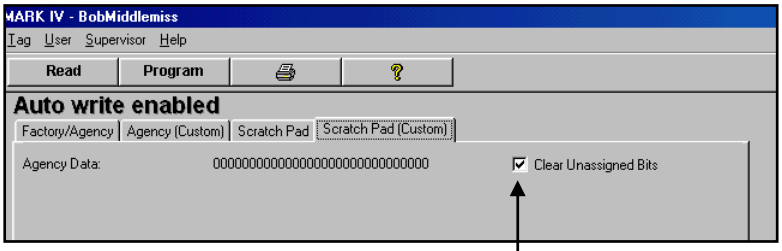
"Clear <specified> Data", when selected, will set all the bits in the <specified> set of fields to zero.

Similar to "Clear Unassigned Bits", explanation below, except…
If a template file is not loaded then the "Clear Traffic Management Data" or "Clear Toll Collection Data" default value is "selected".

IMPORTANT !

Be aware of these values if the AUTO WRITE function is enabled and there is no template file loaded.

To display the value read in the interactive scratch pad 30 bit data field, click on the **Scratch Pad (Custom)** folder tab.



There would be more selection boxes shown here only if a Supervisor created and saved an IAG template.
Refer to the section "Create a new IAG Template file".

"Clear Unassigned Bits", when selected, will set all the unused bits in the entire field to zero.

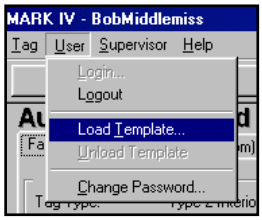
Note 1. If a template file is not loaded then the "Clear Unassigned Bits" default value is "selected".

Note 2. If a template file is loaded then this "Clear Unassigned Bits" value is set to the data that was stored in that template file.

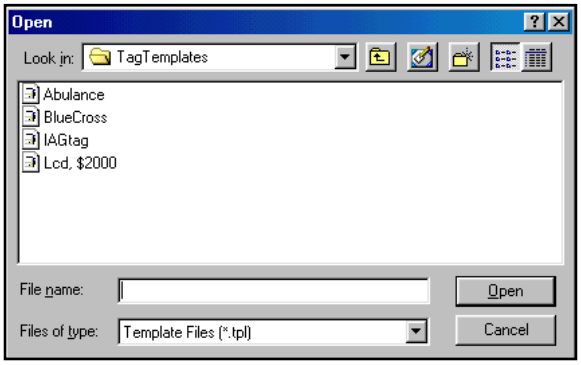
4.4.2 Load an IAG template (for programming an IAG tag)

(You should read and be familiar with the previous section in the manual.) All users must verify the current *template* displayed when programming a tag or a batch of tags. (The *template* is also known as the *tag configuration data file*.) If the current *template* data is incorrect then the user must load the correct *template*. If the correct template does not exist in the list of template files (see below) then the Supervisor must create it.

- Select the main menu item "User" then Click on the "Load Template" sub-menu item.

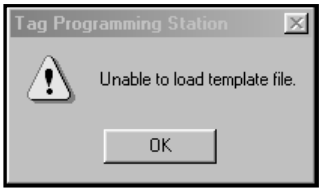


- The following dialog box appears (example).

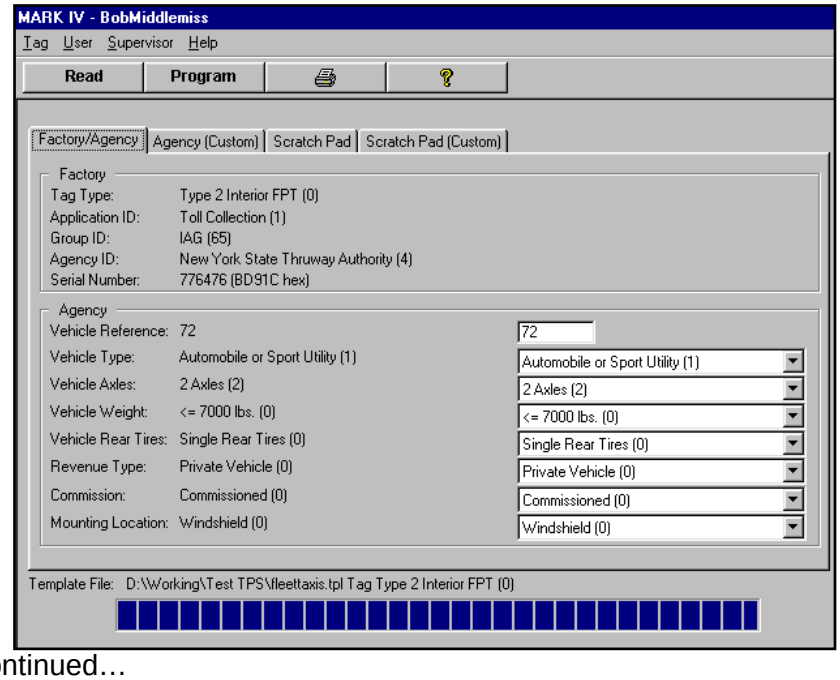


Template files are created and stored in a separate directory as specified by a Supervisor (default is c:\TagTemplates*.*). If the required template does not exist then only a Supervisor may create a new *template*.

Possible error message may be "Unable to load template file" if the directory was emptied or if the files have been moved.



- Choose the appropriate *template* file by selecting it with the mouse then clicking on the "Open" button.
- Verify that this is the correct template; select the Factory/Agency folder tab and then examine all of the selection boxes displayed.



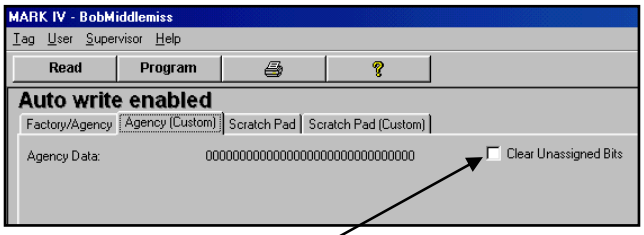
After verifying that the fixed Agency fields are correct you must then verify that the field having 31 bits of custom Agency Data is set to the desired value. Click on Agency Custom folder tab to view the current value set for this field (see below).

The selection boxes shown here allow the template data to be modified by a Supervisor. The presence of a Template File name (at bottom left) indicates that the data displayed came from that template file.

continued…

continued…

- After verifying that the fixed Agency fields are correct you must then verify that the 31 bits of custom Agency Data are set to the desired value.
- Click on the Agency Custom folder tab to view the current value set for this field.

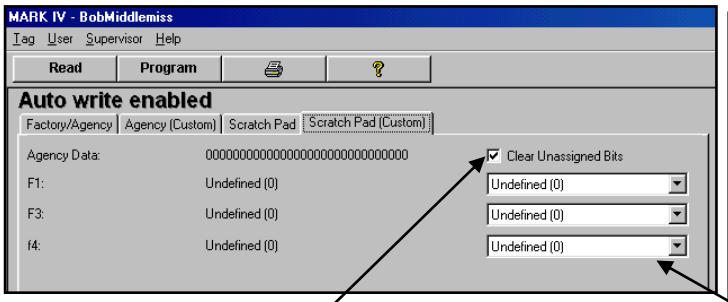


The default value is 31 zeros (as shown). This portion of the Template file is created and stored in a separate directory as specified by a Supervisor. If the required agency custom data file does not exist then only a Supervisor may design a new *agency custom data* file.

"Clear Unassigned Bits", when selected, will set all the unused bits in the entire field to zero. If no template is loaded the default is "unselected".

- After verifying that the 31 bits of fixed custom Agency Data are correct you must then verify that the 30 bits of custom Scratch Pad Data are set to the desired value.

- Click on the Scratch Pad Custom folder tab to view the current value set for this field.

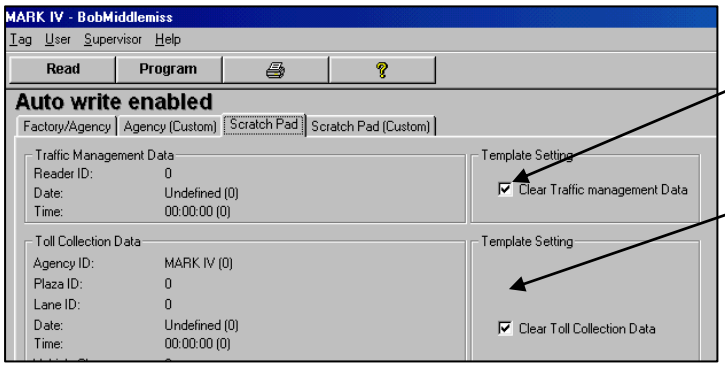


The default value is 30 zeros (as shown). This portion of the Template file is created and stored in a separate directory as specified by a Supervisor.
If the required scratch pad custom data file does not exist then only a Supervisor may design a new *scratch pad custom data* file.

Values that were pre-assigned by a Supervisor are shown in selection boxes.

"Clear Unassigned Bits", when selected, will set all the unused bits in the entire field to zero. If no template is loaded the default is "selected".

- Click on the Scratch Pad folder tab to view the current value set for "Clear Unassigned Bits".



"Clear Traffic Management Data", when selected, will set all the unused bits in the entire field to zero. If no template is loaded the default is "selected".

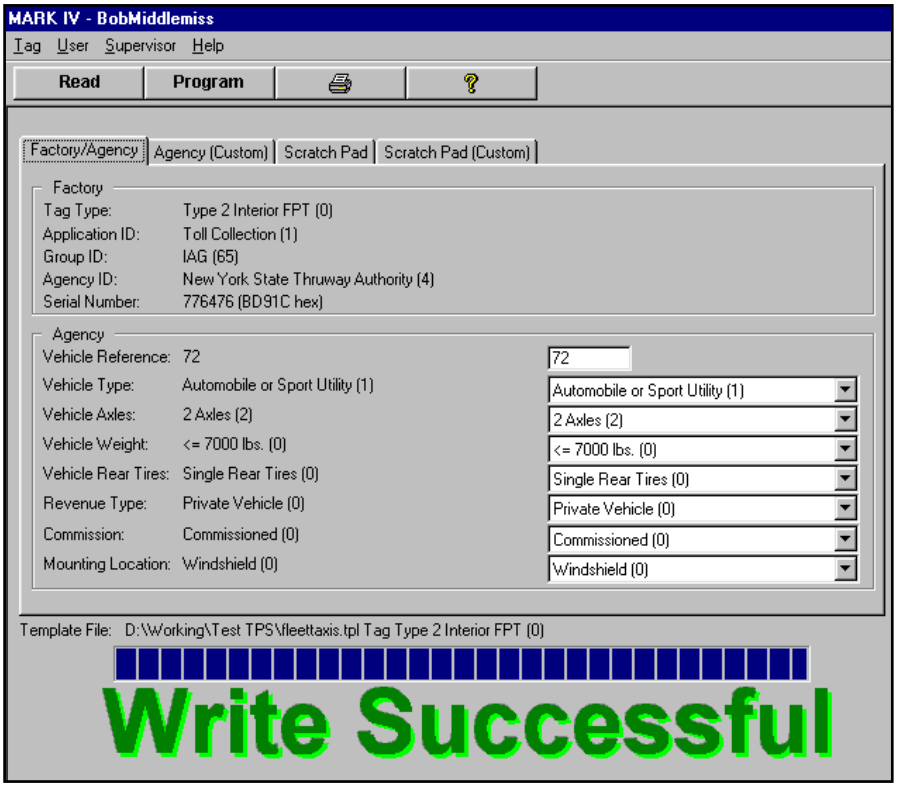
"Clear Toll Collection Data", when selected, will set all the unused bits in the entire field to zero. If no template is loaded the default is "selected".

At this point the data to be programmed has been visually verified. The tag may now be programmed. Refer to the section ***Program an IAG Tag***.

4.4.3 Program an IAG tag

- Load and verify the required "template" file for programming the tag. Refer to the section titled **Load a Template**.
- Place the tag to be programmed into the foam insert in AU drawer[2]. Close the AU drawer.
- If the Supervisor (see Supervisor Configuration of Automation parameters) has set the **Automatic Write** function, the tag will be programmed. Within 1 second the "Write Successful" message is displayed (as shown further below).
- If the Automatic Write function has not been set, click on the Program button.

- Within 1 second the "Write Successful" message is displayed.

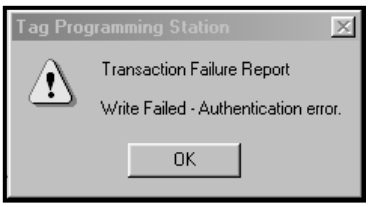


Message "Write Failed"

The following message appears whenever the tag cannot be programmed.

Reason for failure

Click on "Details" to view more report data. An example of more data is shown at right.

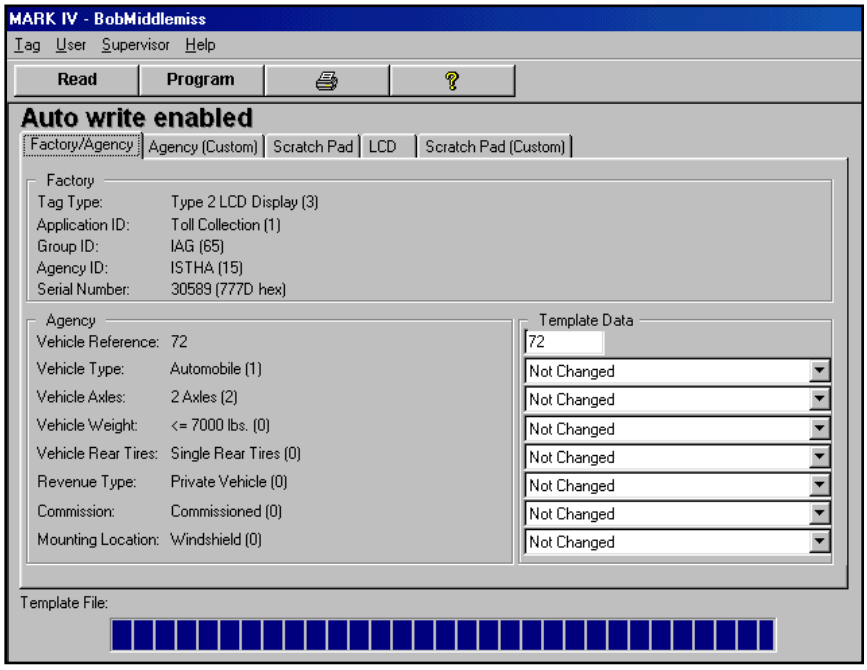


[2] There are two drawer configurations, see Appendix - Positions of tags in the AU drawer "cradle". The cutout in the foam "cradle" allows for several different tag configurations to be used. The tag orientation is shown in a specific photo appendix to this document, example: *IAG FPT tag orientation in the AU drawer*. More photos of the AU drawer depicting various tag orientations along with different foam inserts will be added as the TPS system is expanded to handle other tags.

4.5 Reading and Programming Type 2 LCD Tags

4.5.1 Read a Type 2 LCD tag

- Place the Type 2 LCD tag into the foam insert in the AU drawer made that was for this type of tag (see tag orientation photo in *Appendix - Positions of tags in the AU drawer "cradle"*.).
- Close the AU drawer. Click on "Read" button, otherwise if the Read command has been set to automatic, then the following screen is displayed (example: a Type 2 LCD Display tag was used).



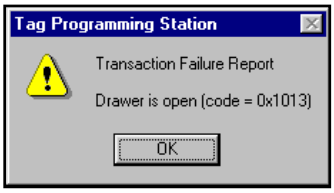
The **Program** command button is highlighted in **bold** after the tag is read.
"**Auto write enabled**" is displayed if it has been enabled. This is a warning for the User that opening and closing the AU drawer will overwrite the tag inside the drawer with the data currently displayed.
If the "Default View Page" was set to "Factory/Agency" then the tag data is displayed as shown. The Supervisor may begin modifying the displayed *template* or may create a new one from it and then save it. Users will then be able to obtain any one of the saved templates for use in programming other tags.

Notes: The absence of a Template File name (at bottom left) indicates that the data displayed came from the tag just read. "Not Changed" in the selection boxes is displayed until the Supervisor makes a new selection in order to create a new template from this one. The *Vehicle Reference* field value (shown as "72" in the example above) represents the cumulative total of the first 4 field values assigned as "vehicle" data.

- If the automatic Read is not set, click on the Read button. Within 1 second the tag contents are displayed (See "Data displayed on 'Read a tag'" below).

Message "Read Failed"
The following message appears if the read command failed.

Click on "Details" to view the error code for the failure. A typical error code message is depicted below. The code shown must be revealed to Mark IV Service Dept.

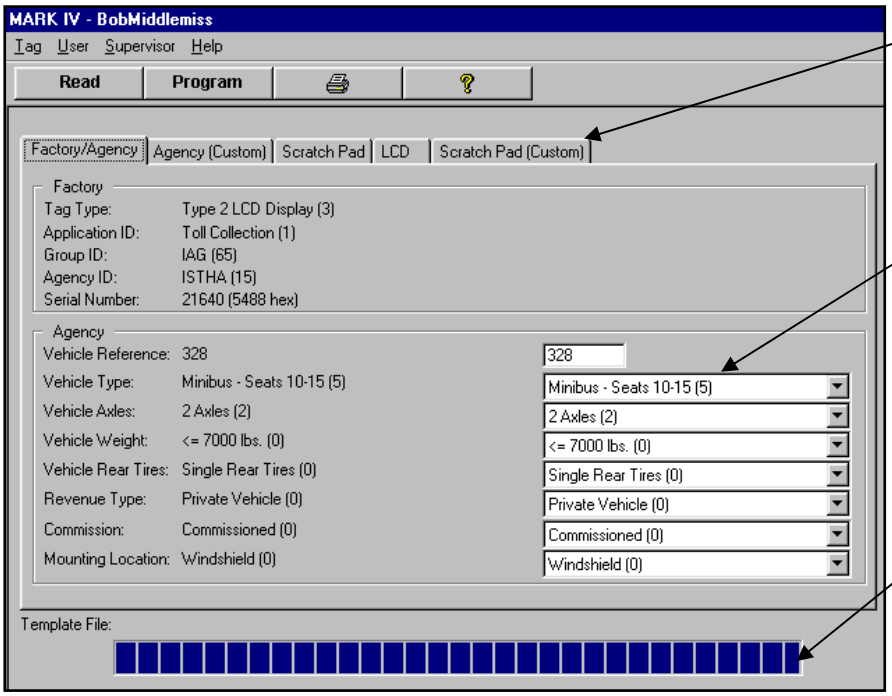


The reason for the failure detected is shown here. Another typical reason displayed is "**Drawer is open**".

Data displayed on "Read a tag"

There are also 5 folder tabs displayed. The folder tabs represent the various areas inside the tag that are programmable either by the Factory or by the Agency. If a Supervisor can modify a tag field it is displayed as a selection box (white background areas in the screen).

The fixed Factory data fields and the variable Agency data fields from the **Factory/Agency** folder tab are displayed by default.

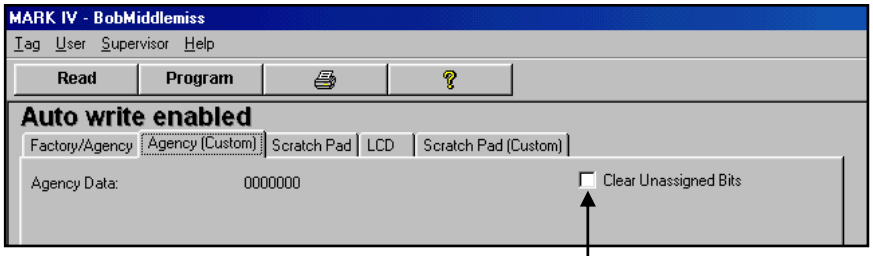


The Supervisor may change the default folder tab displayed upon reading a tag. Refer to the section in the manual titled "Default View Page.."

The selection boxes shown here allow the template data to be modified.

The number of blue squares displayed in the "progress bar" indicates the relative completion of the Read or Program task.

To display the value read in the interactive Agency (Custom) 7 bit data field[3], click on the **Agency (Custom)** folder tab.



There would be more selection boxes shown here only if a Supervisor created and saved a new template.
Refer to the section "Create a new Template file".

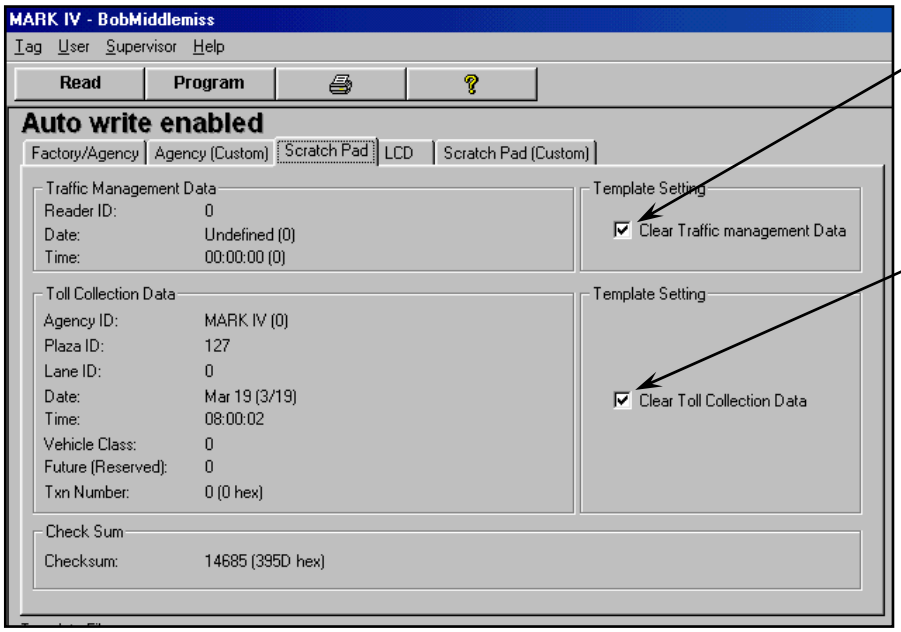
"Clear Unassigned Bits", when selected, will set all the unused bits in the entire field to zero.

Note 1. If a template file is not loaded then the "Clear Unassigned Bits" default value is "unselected". Reason: all ISTHA class tags have these 4 bits set when they were originally programmed at the factory.

Note 2. If a template file is loaded then this "Clear Unassigned Bits" value is set to the data that was stored in that template file.

[3] The 7 bits are a combination of the contiguous 3-bit data field for "Agency Data" and the 4-bit data field for "Type 2 LCD Class". *The parsed data is*; MSB Agency data 1 →321 bits followed by MSB Type 2 LCD Class →4321 bits, current values allowed for "Type 2 LCD Class" are 1 through 9 and are assigned by the authority only of ISTHA.

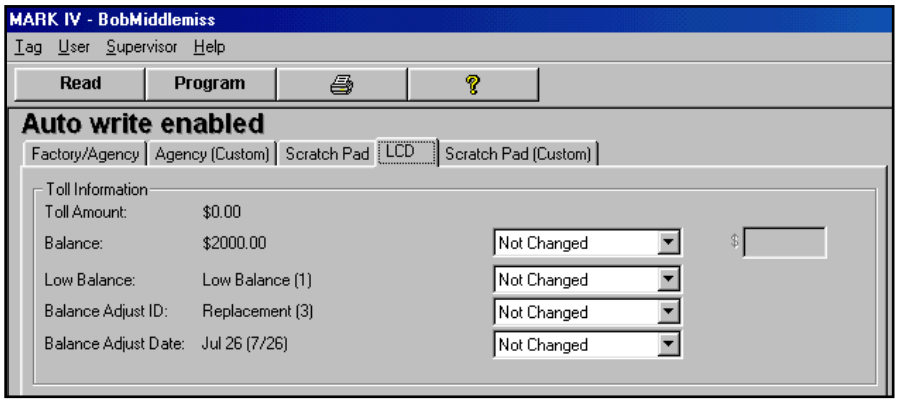
To display the value read in the scratch pad data fields, click on the **Scratch Pad** folder tab.



Similar to "Clear Unassigned Bits", explanation below, except…
If a template file is not loaded then the "Clear Traffic Management Data" default value is "selected".

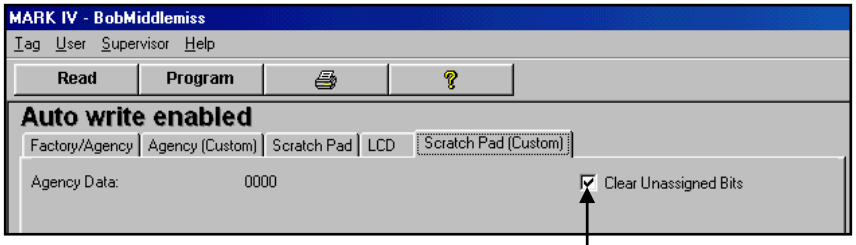
1. Clears all toll collection data to zero only if the "Clear Toll Collection Data" default value "selected" is set and in the LCD tab the "Balance" is set to "not changed" (as shown below).
2. Clears all toll collection data to zero except Plaza ID (= 177), TC date (= PC date) and TC time (= PC time) if in the LCD tab the "Balance" is set to "clear" or "specific".

To display the value read in the LCD data fields, click on the **LCD** folder tab.



The selection boxes shown here display selected values only if a Supervisor created and saved a new template. Refer to the section "Create a new Template file".

To display the value read in the interactive scratch pad 4-bit data field[4], click on the **Scratch Pad (Custom)** folder tab.



There would be selection boxes shown here only if a Supervisor created and saved a new template. Refer to the section "Create a new Template file".

"Clear Unassigned Bits", when selected, will set all the unused bits in the entire field to zero.

Note 1. If a template file is not loaded then the "Clear Unassigned Bits" default value is "selected".

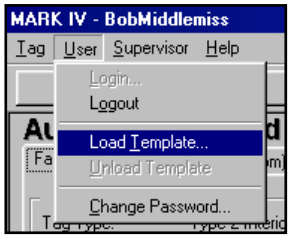
Note 2. If a template file is loaded then this "Clear Unassigned Bits" value is set to the data that was stored in that template file.

[4] These 4 bits comprise the data field for "Agency data 2" in the R/W partitioned area of the tag.

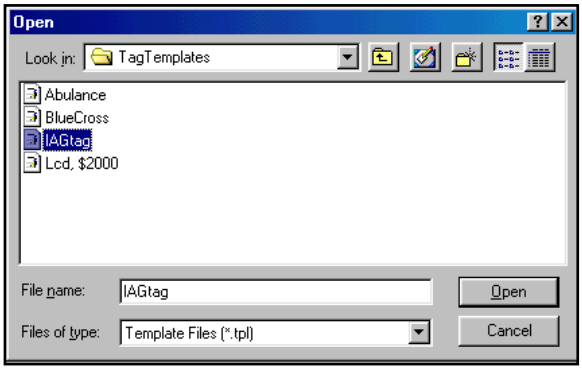
4.5.2 Load a Type 2 LCD template (for programming a Type 2 LCD tag)

(You should read and be familiar with the previous section in the manual.) All users must verify the current *template* displayed when programming a tag or a batch of tags. (The *template* is also known as the *tag configuration data file*.) If the current *template* data is incorrect then the user must load the correct *template*.

- Select the main menu item "User" then Click on the "Load Template" sub-menu item.



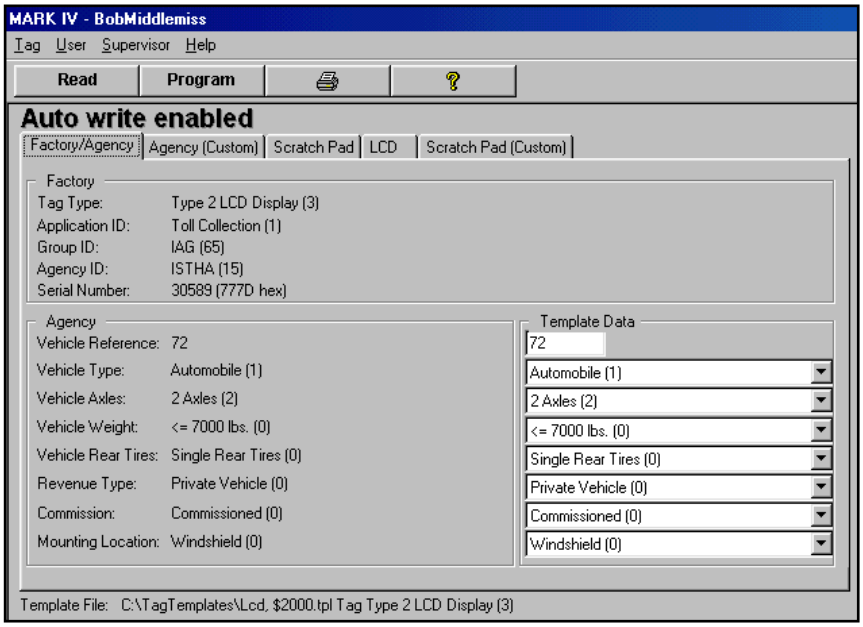
- The following dialog box appears (example).



Template files are created and stored in a separate directory as specified by a Supervisor (example directory at left is "TagTemplates").
If the required template does not exist then only a Supervisor may create a new *template*.

Possible error message may be "Unable to load template file" if the directory was emptied or if the files have been moved.

- Choose the appropriate *template* file by selecting it with the mouse then clicking on the "Open" button.
- Verify that this is the correct template; select each folder tab in turn and then examine all of the selection boxes displayed.



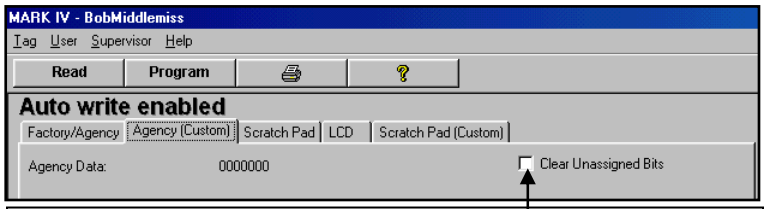
After verifying that the variable Agency fields are correct you must then verify that the field having 7 bits of custom Agency Data is set to the desired value. Click on Agency Custom folder tab to view the current value set for this field (see below).

Note: The *Vehicle Reference* field value (shown as "72" in the example above) represents the cumulative total of the first 4 field values assigned as "vehicle" data.

continued…

continued…

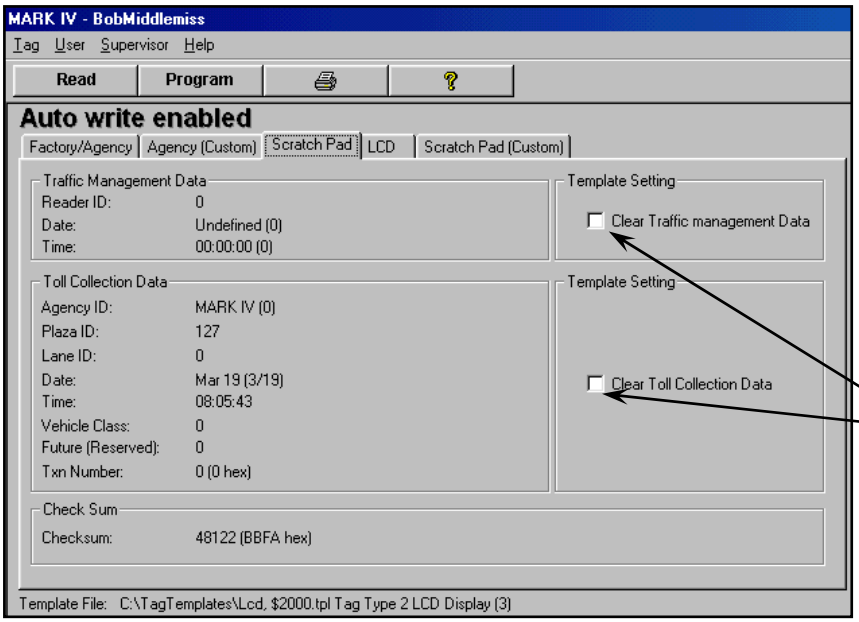
- After verifying that the seven fixed Agency fields are correct you must then verify that the 7 bits of custom Agency Data are set to the desired value.
- Click on the Agency (Custom) folder tab to view the current value set for this field.



"Clear Unassigned Bits", when selected, will set all the unused bits in the entire field to zero.

The default value is 7 zeros (as shown). This portion of the Template file is created and stored in a separate directory as specified by a Supervisor.
If the required agency custom data file does not exist then only a Supervisor may design a new *agency custom* data file.

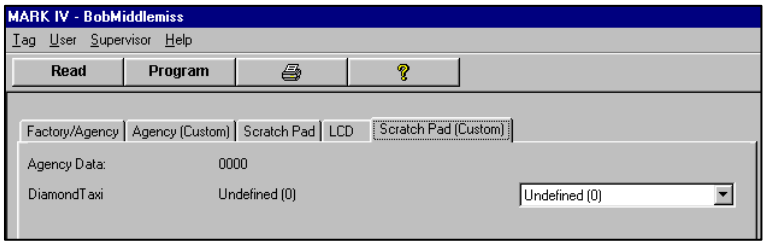
- After verifying that the Agency (Custom) Data are correct you must then verify that the Scratch Pad Data are set to the desired value.
- Click on the Scratch Pad folder tab to view the current value set for this field.



"Clear <specified> Data", when selected, will set all the bits in the <specified> set of fields to zero.

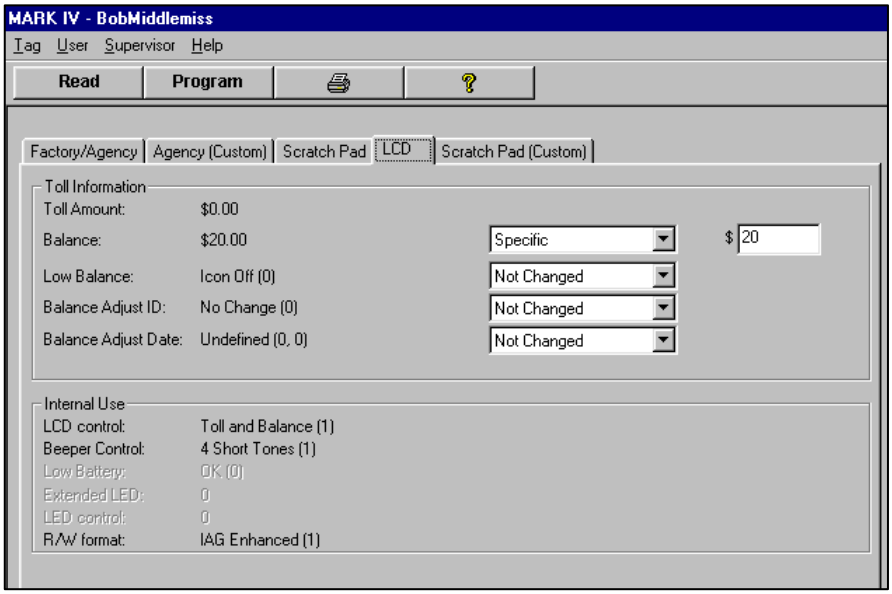
The selected or unselected state is set by the template file data that was saved when the template was created.

- After verifying that the Scratch Pad Data are correct you must then verify that the 4 bits of custom Scratch Pad Data are set to the desired value.
- Click on the Scratch Pad Custom folder tab to view the current value set for this field.



The default value is 4 zeros (as shown). This portion of the Template file is created and stored in a separate directory as specified by a Supervisor.
If the required scratch pad custom data file does not exist then only a Supervisor may design a new *scratch pad custom* data file.

- After verifying that the Scratch Pad Custom Data are correct you must then verify that the LCD data bits are set to the desired value. Click on the "LCD" folder tab.



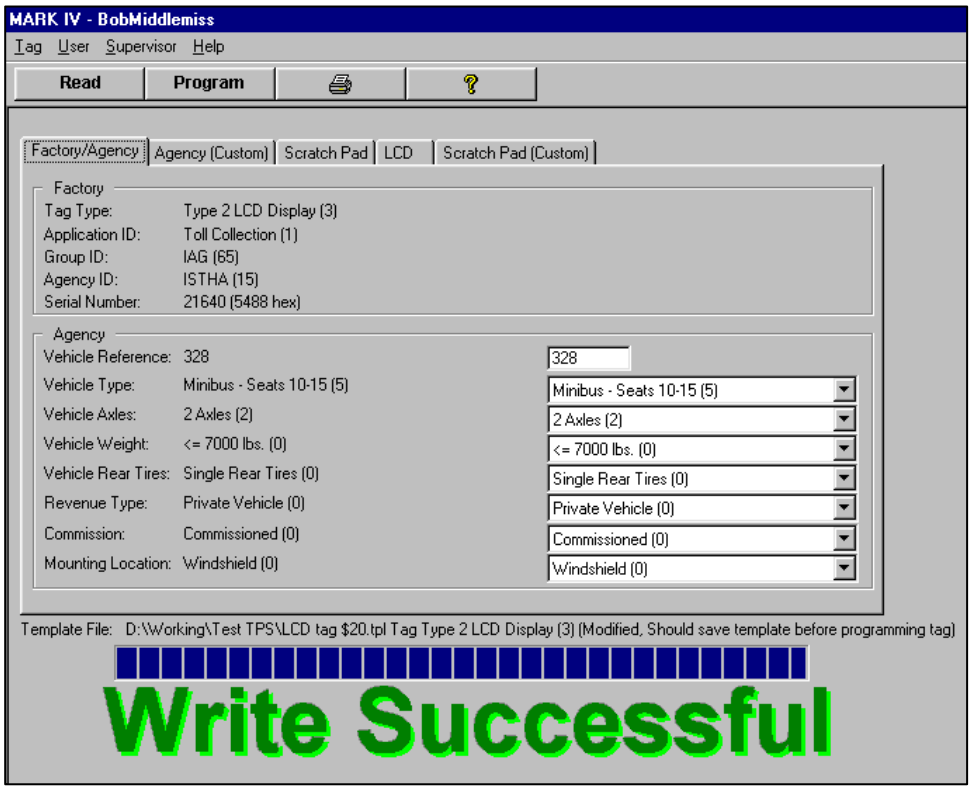
Note:
The "Balance" is in increments of nickels.

At this point the data to be programmed has been visually verified. The tag may now be programmed. Refer to the section ***Program a Type 2 LCD Tag***.

4.5.3 Program a Type 2 LCD tag

- Load and verify the required "template" file for programming the tag. Refer to the section titled **Load a Type 2 LCD Template**.
- Place the tag to be programmed into the foam insert in AU drawer[5]. Close the AU drawer.
- If the Supervisor has set the **Automatic Write** function (see Supervisor Configuration of Automation parameters), the tag will be programmed. Within 1 second the "Write Successful" message is displayed (as shown further below).
- If the Automatic Write function has not been set, click on the Program button.

- Within 1 second the "Write Successful" message is displayed.



Unless the Write Successful message is displayed first, then before opening the drawer you must wait for antenna unit green light to come on.
It is not necessary to wait for the tag "beeps" to stop before opening the drawer.

Message "Write Failed"

The following message appears whenever the tag cannot be programmed.

Reason for failure

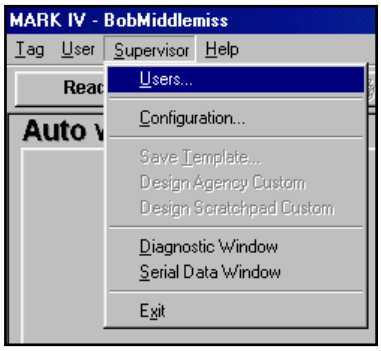
Click on "Details" to view more report data.
An example of more data is shown at right.

[5] The cutout foam "cradle" along with optional foam inserts allows for several different tag configurations to be used. The tag orientation is shown in a specific photo appendix to this document, example: *Type 2 LCD tag orientation in the AU drawer*. More photos of the AU drawer depicting various tag orientations along with different foam inserts will be added as the TPS system is expanded to handle other tags.

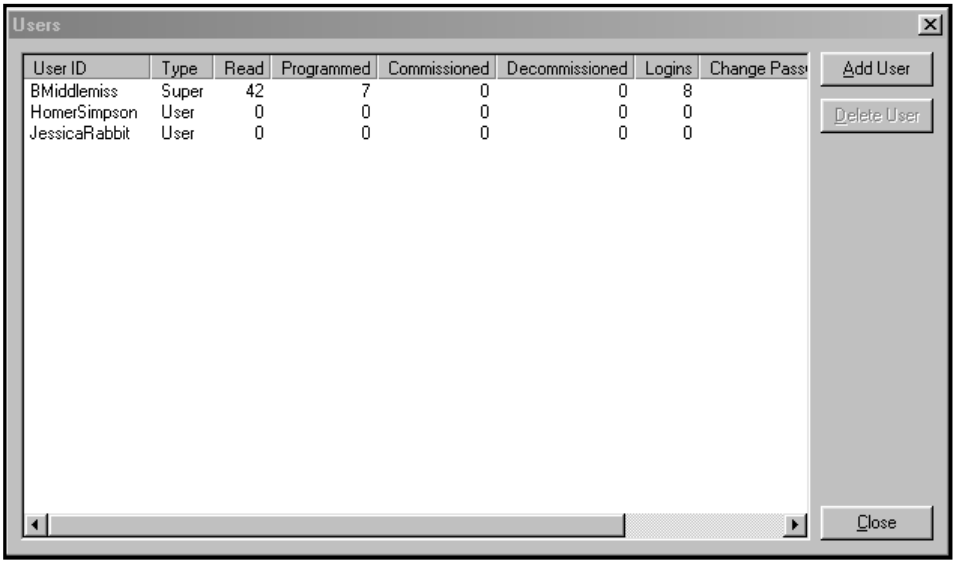
5.0 Special Supervisor Functions

An installer or a Supervisor may add other Supervisors and Users to the system as described in the program installation procedure section "Add Supervisors and Users".

Review…
To initiate that function, select the main menu item "Supervisor" then click on "Users".



The Users list is displayed. Click on "Add User" to add a user or select a user ID in the list then delete that user. When logged in, only a Supervisor may delete a User or another Supervisor from the list. There will always be at least one Supervisor in the list. E.g. in the example below, BMiddlemiss is the only Supervisor name in the list and when he is logged in he cannot delete himself from the list.



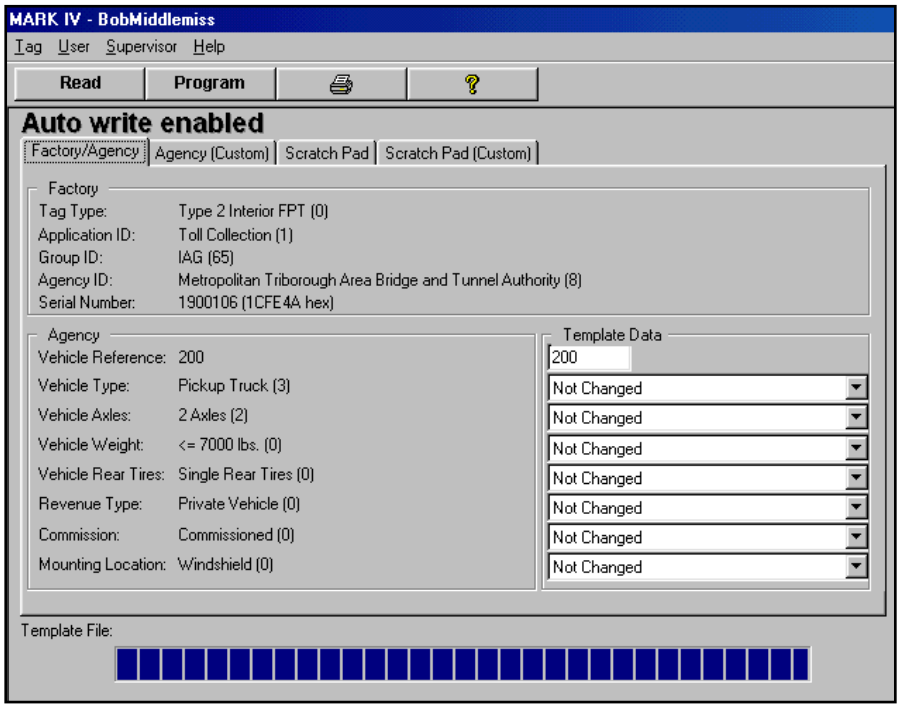
Only a Supervisor may perform the other functions listed in this section.

5.1 Create a new template file

In order to create a new template…

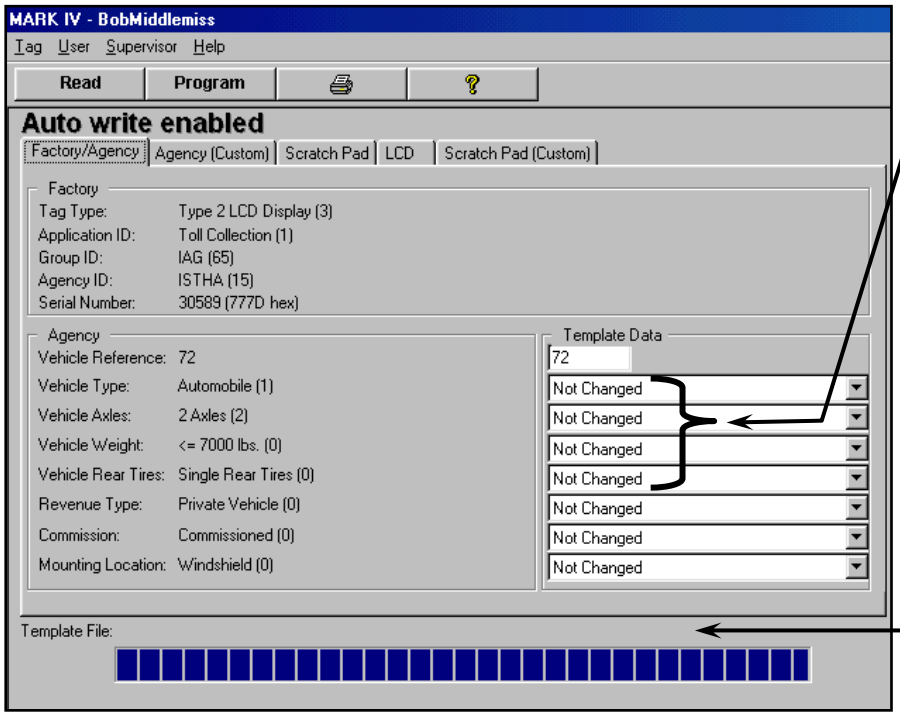
- Read a tag (any tag, the tag read will determine which folder tabs are displayed)
- Select the **Factory/Agency** folder tab.

Example: IAG tag template…



Initially, the "Not Changed" status indicates that the template will not modify the corresponding field in the tag when it is programmed. To make a change, view the selections by clicking on the down arrow on the right hand side of each field one at a time and select the appropriate values for the specific tag.
If you change any of the fields the "Not Changed" status will be replaced by the selected value.

Example: Type 2 LCD tag template…



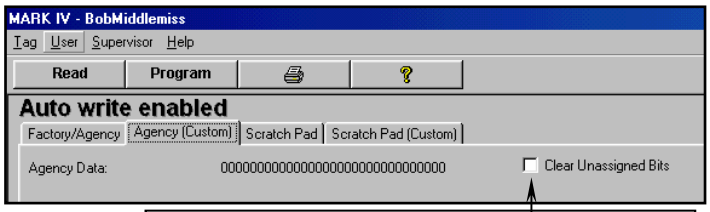
Note: The *Vehicle Reference* field value (shown as "200" in the IAG tag example and "72" in the Type 2 LCD example) represents the cumulative total of the first 4 field values assigned as "vehicle" data.

Note: If the Supervisor changes any field then a message "(Modified. Should save template before programming tag)" appears on the bottom line to the right of "Template File:" in either screen. The Supervisor must save the modified template file and give it a new name.

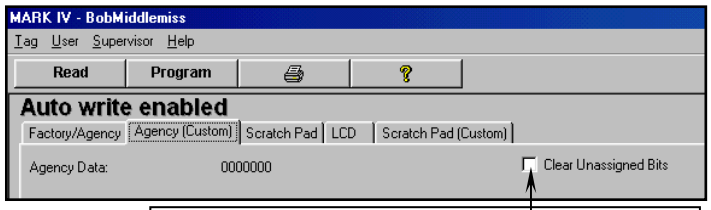
Note: A template file name is not displayed when there is no template loaded.

- If required, use the selection boxes to set up the Factory/Agency tag programming template data.

- Click on the Agency (Custom) folder tab. The *read partition area* Agency Data field for the tag just read is shown. The default value for an IAG tag is 31 zeros and for a Type 2 LCD tag is 7 zeros.

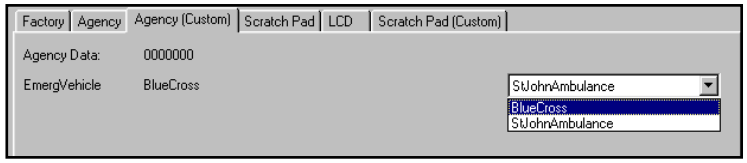


Previously discussed in section 4.4.1.



Previously discussed in section 4.5.1.

- If there are any other Agency Custom files available they will be displayed along with a selection box of other values for that file (example at right). If the value of a specific custom file must be changed refer to section 5.1.1 below titled ***Design Agency (Custom) data field***.



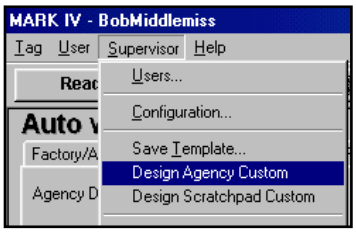
- Click on the click on the Scratch Pad Custom folder tab. The *write partition area* Agency Data field for the tag just read is shown. If this value must be changed refer to section 5.1.2 titled ***Design Scratch Pad (Custom) data field***.
- If creating a type 2 LCD tag template, click on the LCD folder tab. The Toll Balance parameters are shown. If any of these values must be changed refer to the section 5.1.3 titled ***Set Type 2 LCD data field values***.
- If there are no further fields in any of the folder tabs to be set or changed, save the new template.

After all of the data fields in all of the folder tabs are set to the desired values you must save the template so that it may be retrieved for use in programming a tag. Refer to the section titled ***Save a Template*** below.

5.1.1 Design Agency (Custom) data field

The Supervisor will design and save a data file describing a new value for the fixed Agency data field. The IAG tag format data field has 31 bits and the Type 2 LCD tag format has 7 bits. In either tag this field starts at bit #65 (referenced to the tag header MSB = bit #0).
The new data file will be included in a new template used to program a tag.

- Click on the main menu item ***Supervisor*** then click on ***Design Agency Custom***.



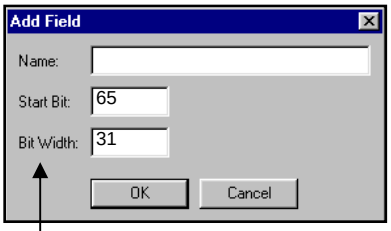
This is a **two-step** process. The Supervisor will first **design** a new field then secondly, **set a value or values** for that same new field. The field may have several sets of values each with a unique name. Within one template file, only one set of Agency Custom values may be used at any one time for programming a tag or a batch of "like tags".
IMPORTANT…There is a maximum of 10 custom Agency data field names that may be created.

Step one, set up an Agency custom field

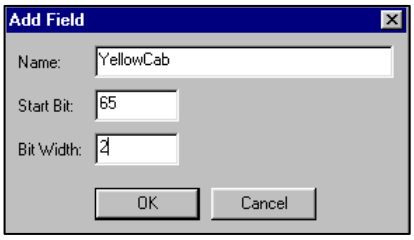
- The *Custom Fields* dialog box is displayed.

The example list shows that there are no other *Custom Fields* names currently saved. After you design and name a new *Custom Fields* and then save it the list will display it.

- Click on the *Add* button. The *Add Field* dialog box is displayed. Example…



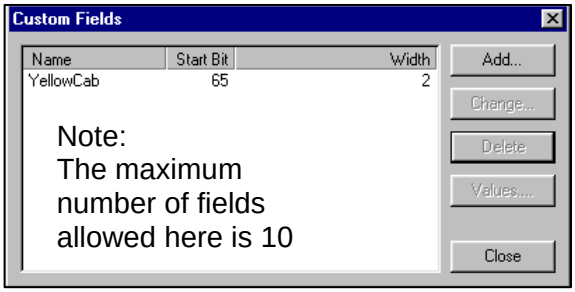
Type the desired field *name* (maximum 25 characters), the *start bit* position (from the tag header MSB) and the *bit width* (how many bits wide the field will be).



For IAG	For type 2 LCD
Start = 65	Start = 65
Width = 31	Width = 7

Using the tag type detected, the program automatically assigns the valid start bit and the available bit width.

- When the desired values are typed, click the OK button. The *Custom Fields* dialog box is shown again with the new custom field listed.

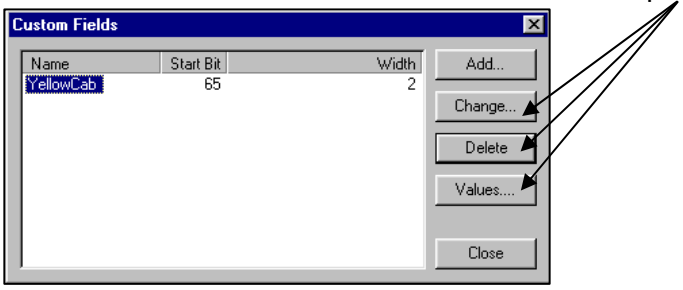


At this point the **first step** in the design process is completed. The **second step** is to assign at least one value to the field. The field may eventually have several assigned values (the total number of values that may be used depends on the bit width assigned for each field name).

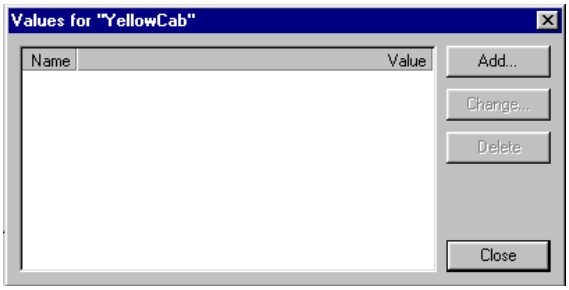
- Click on the Close button.

Step two, assign a value to the Agency custom field

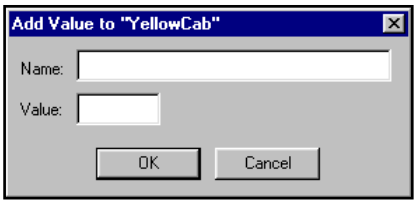
- Position the cursor on the new field name. The 3 push buttons are now highlighted.



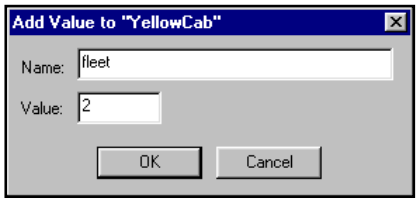
- Click on the *Values* button. The Values for "<chosen field name>" dialog box is displayed.



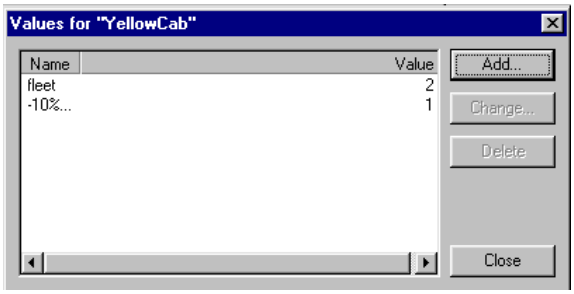
- Click on the *Add* button. The *Add Field* dialog box is displayed. Example…



Type the desired value *name* and the



- When the desired *value* is typed, click the OK button. The Values for "<chosen field name>" dialog box is displayed again with the new value *name* listed.



At this point the **second step** in the *Design Agency (Custom)* process is completed.

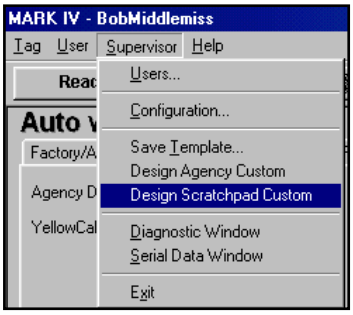
- Click on the Close button.

At this point the new Agency custom file will be available to a Supervisor when creating a new template. The Supervisor will **select** an Agency custom file having the desired value. Refer to the section titled *Create a new template*.

5.1.2 Design Scratch Pad (Custom) data field

The Supervisor will design and save a data file describing a new value for the scratchpad Agency data field. The IAG tag format data field has 30 bits and starts at bit #194 (referenced to the tag header MSB = bit #0). The Type 2 LCD tag format data field has 4 bits and starts at bit #72 (referenced to the tag header MSB = bit #0). The new data file may be included in a new template used to program a tag provided that tag supports the specific data field parameters.

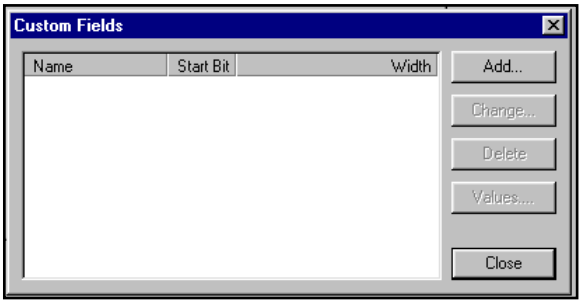
- Click on the main menu item ***Supervisor*** then click on ***Design Scratchpad Custom***.



This is a **two-step** process. The Supervisor will first **design** a new field then secondly, **set a value or values** for that same new field. The field may have several sets of values each with a unique name. Only one set of Scratchpad Custom values may be used at any one time for programming a tag or a batch of "like tags". **IMPORTANT**…There is a maximum of 10 Scratchpad Custom data field names that may be created.

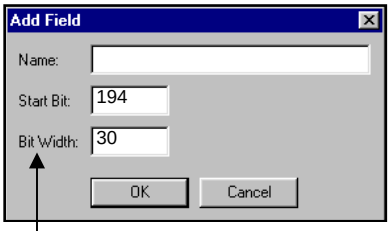
Step one, set up a Scratchpad custom field

- The *Custom Fields* dialog box is displayed.

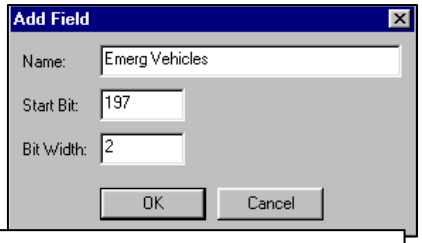


The example list shows that there are no other custom fields files currently saved. After you design and name a new *Custom Fields* and then save it, the list will display it.

- Click on the *Add* button. The *Add Field* dialog box is displayed. Example for IAG tag format field…



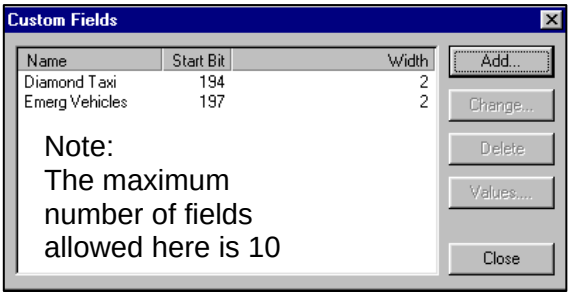
Type the desired field *name* (maximum 25 characters), the *start bit* position (from the tag header MSB) and the *bit width* (how many bits wide the field will be).



For IAG	For type 2 LCD
Start = 194	Start = 72
Width = 30	Width = 4

Using the tag type detected, the program automatically assigns the valid start bit and the available bit width.

- When the desired values are typed, click the OK button. The *Custom Fields* dialog box is shown again with the new custom field listed.

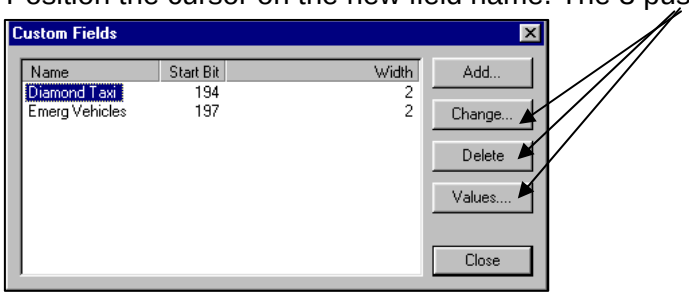


At this point the **first step** in the design process is completed. The **second step** is to assign at least one value to the field. The field may eventually have several assigned values (the total number of values depends on the field bit width).

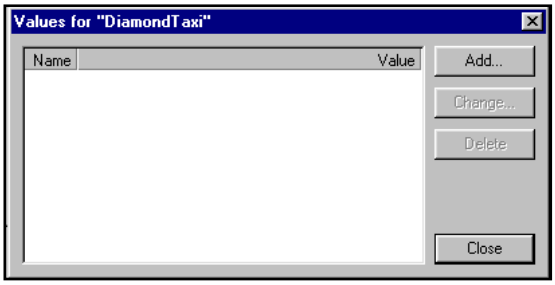
- Click on the Close button.

Step two, assign a value to the Scratchpad custom field

- Position the cursor on the new field name. The 3 push buttons are now highlighted.

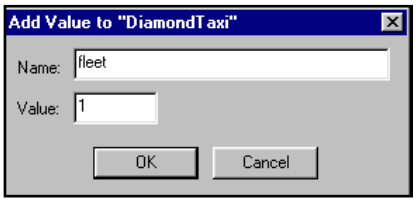


- Click on the *Values* button. The Values for "<chosen field name>" dialog box is displayed.

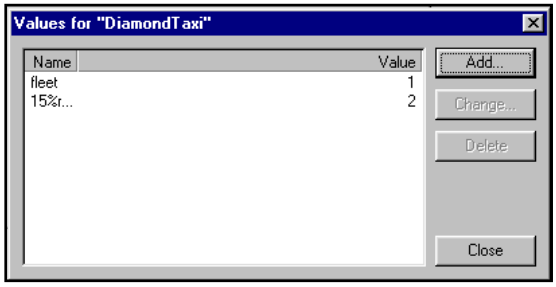


- Click on the *Add* button. The *Add Field* dialog box is displayed. Example…

Type the desired value *name* and the



- When the desired *value* is typed, click the OK button. The Values for "<chosen field name>" dialog box is displayed again with the new value *name* listed.



At this point the **second step** in the *Design Scratchpad Custom* process is completed.

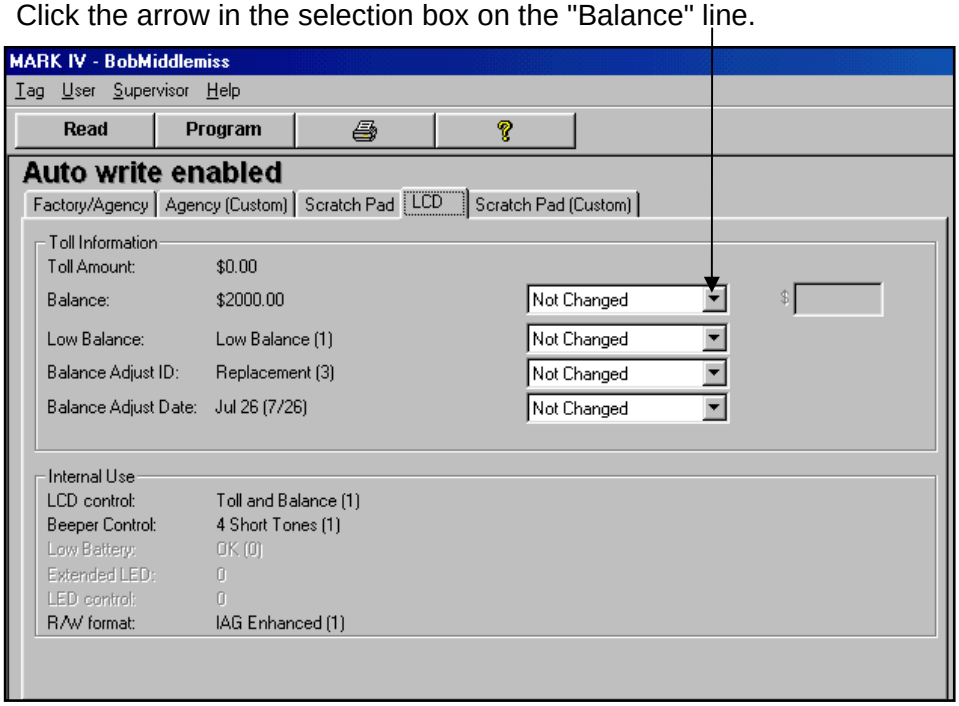
- Click on the Close button.

At this point the new Scratchpad custom file will be available to a Supervisor when creating a new template. The Supervisor will **select** a Scratchpad custom file having the desired value. Refer to the section titled *Create a new template*.

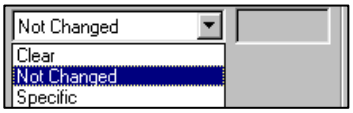
5.1.3 Set Type 2 LCD data field values (includes setting a new balance)

The LCD folder comprises the data fields displayed on the LCD of the Type 2 LCD tag. The data includes "Balance" current value (in nickels) "Low Balance" icon set on or off, "Balance Adjust ID" type, and "Balance Adjust Date". The folder section "Internal Use" displays the attributes set for the physical resources of the tag.

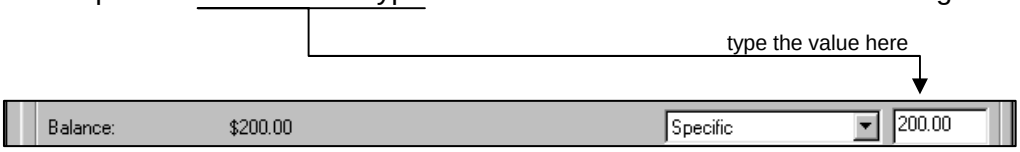
- Click on the "LCD" folder tab to view the data fields of the tag just read.
- Click the arrow in the selection box on the "Balance" line.



- Click on an action within the selection box now displayed.
- You must **click on "Specific"** to type a **new balance** value.

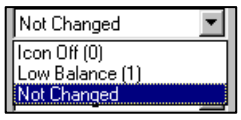


- The "Specific" **dollar value** typed must be in **increments of nickels**. E.g. 199.95 or 200 or 200.05

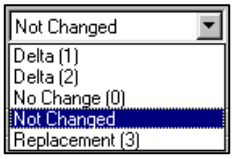


Similarly the values for the other fields may be changed…

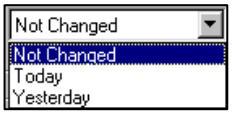
Viz. "Low Balance"



"Balance Adjust ID"



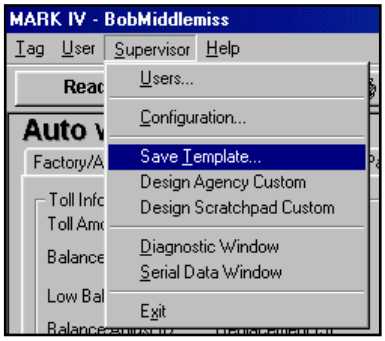
"Balance Adjust Date"



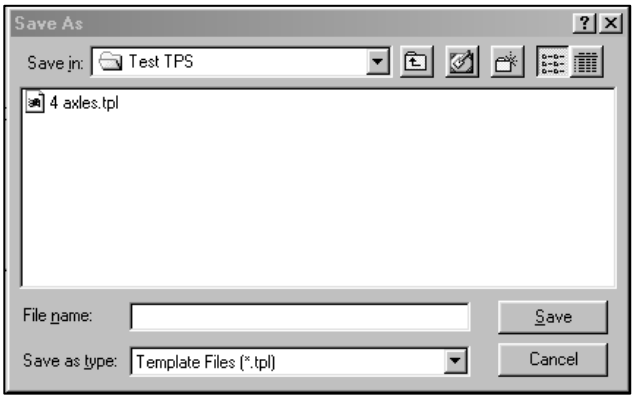
5.2 Save a Template

The Supervisor will save a template after creating a template. Refer to the section titled "*Create a template*".

- To save the new template, select the main menu item "Supervisor" then click on "Save Template".



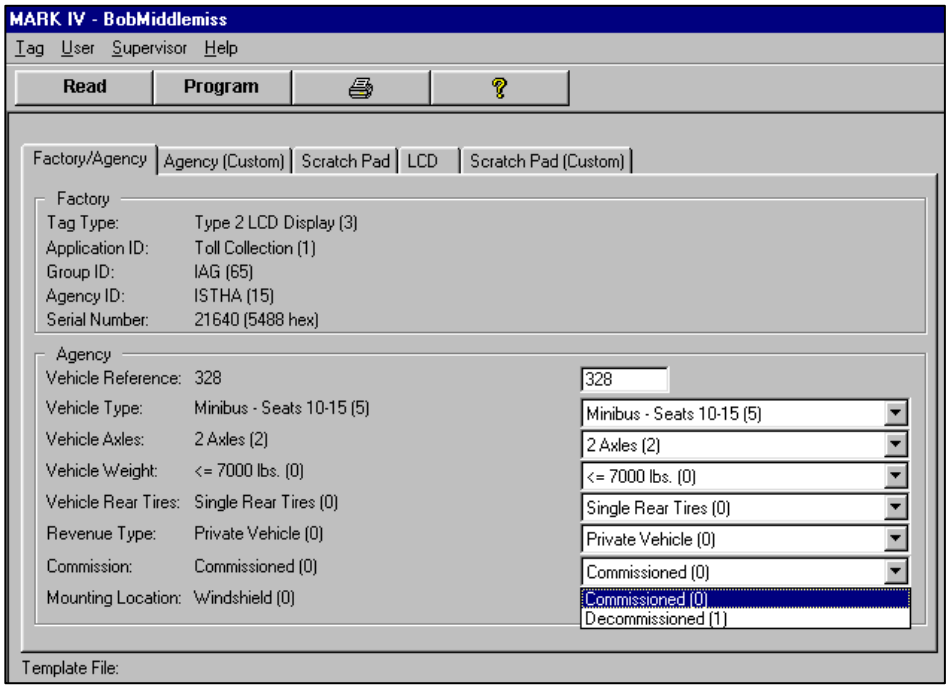
- The dialog box for saving the template appears.



Type a "File name" that uniquely identifies this template from all others. Select a "Save in" directory in which to save the template. Now click on the "Save" button.
Usually, all templates are saved in one directory (the default is C:\tagTemplates*.*) however the template storage setup is entirely at the discretion of the Supervisor.
Never attempt to change the file extension ".tpl" as shown in the "Save as type" field.
At this point you may use the new template to program a tag (see the section "Program a tag").

5.3 Commission a tag

- First you must read the tag by clicking on the **Read** command button (see also "Read a tag").
- When the tag data is displayed on screen, select and click on the "Agency" folder tab.
- If the tag is already commissioned you do not have to proceed, otherwise…
- Now click on the "arrow down" ⇂ on the right hand side of the "Decommission" selection box.



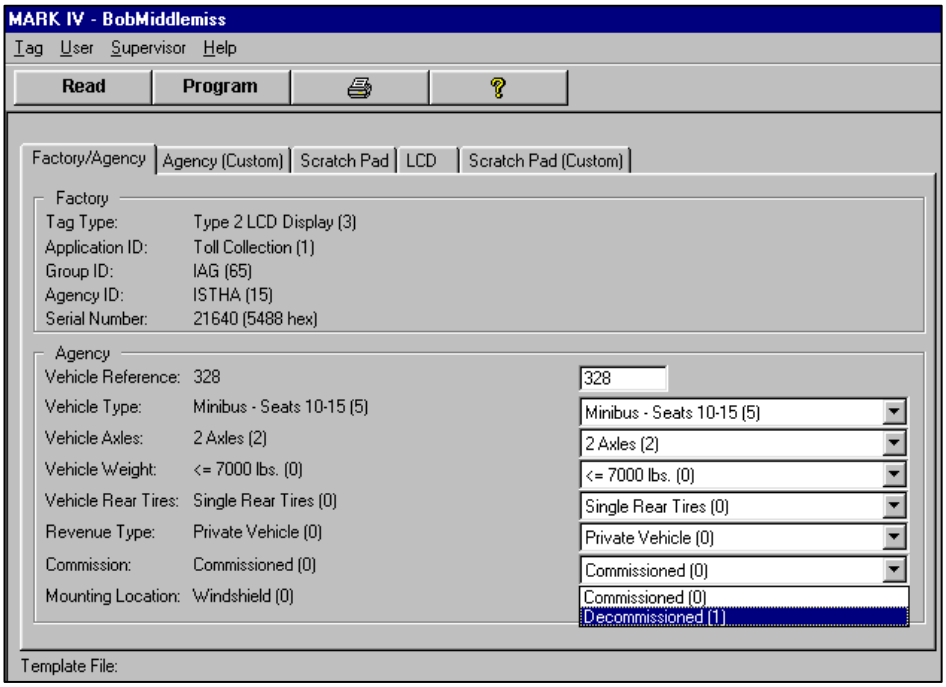
"Decommission" will be displayed only if the tag is currently decommissioned. Otherwise, "Commissioned" will already be displayed.

- Select "Commission" from the list in the selection box.
- Now program the tag by clicking on the "**Program"** command button (see also "Program a tag").
- The message "Write Successful" will be displayed.

At this point the tag is commissioned.

5.4 Decommission a tag

- First you must read the tag by clicking on the **Read** command button (see also "Read a tag").
- When the tag data is displayed on screen, select and click on the "Agency" folder tab.
- If the tag is already decommissioned you do not have to proceed, otherwise…
- Now click on the "arrow down" ⇂ on the right hand side of the "Commission" selection box.



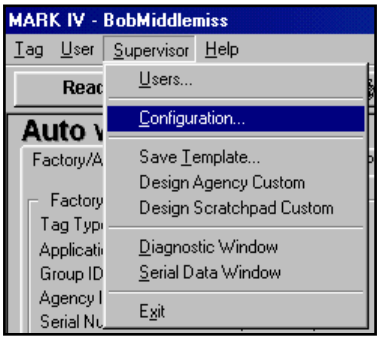
"Commission" will be displayed only if the tag is currently commissioned. Otherwise, "Decommissioned" will already be displayed.

- Select "Decommission" from the list in the selection box.
- Now program the tag by clicking on the "**Program"** command button (see also "Program a tag").
- The message "Write Successful" will be displayed.

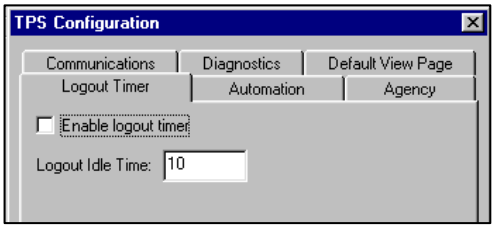
At this point the tag is decommissioned.

5.5 Configure the TPS program resources

- Select the main menu "Supervisor" item and click on the sub-menu "Configuration" item.



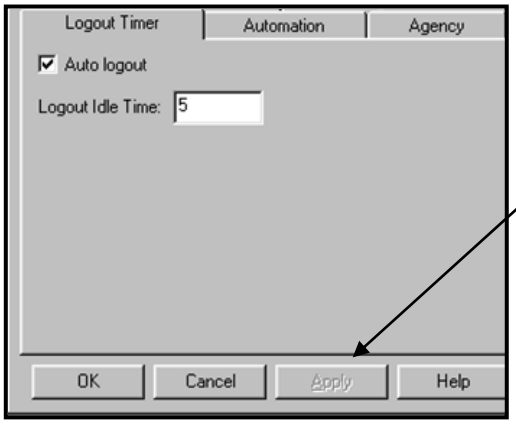
- The TPS Configuration folder tabs are displayed.



Select the desired function by clicking on the folder tab.
The selection parameters for each folder tab are described in the following sections.

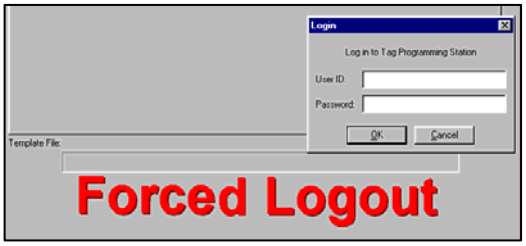
5.5.1 Set Logout Timer parameters

This feature sets the TPS program to idle when there has been no activity for the set time limit.



Select this function by clicking on the "Logout Timer" folder tab.
Activate the timer by clicking on the "Auto logout" checkbox, a checkmark "√" appears. The "Apply" button will become highlighted. Click on "Apply" to accept the displayed settings.
De-activate the timer by clicking again on the box, the checkmark disappears. Click on "Apply" to accept the displayed settings.
Set the duration of the timer in minutes by typing a value (1 to 180) in the "Logout Idle Time" box. Click on "Apply" to accept the displayed settings. The default is set at 30 minutes.
Click on "OK" to exit from this menu.

If the logout timer ever forces the logout then a message appears as…



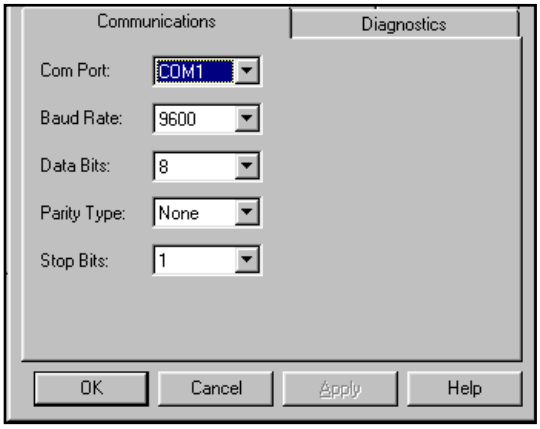
5.5.2 Set Agency ID

This is the Agency name displayed in the "title box" in the program banner area.

Type the name of the Agency ID.
When completed, click on "Apply" to accept the displayed settings. Click on "OK" to exit from this menu. The name (as shown in the example at left) will appear at the upper left corner of the main screen as shown in the example below.

5.5.3 Set Communications port parameters

These are the program parameters set at the PC port and then used in communication with the TPU.

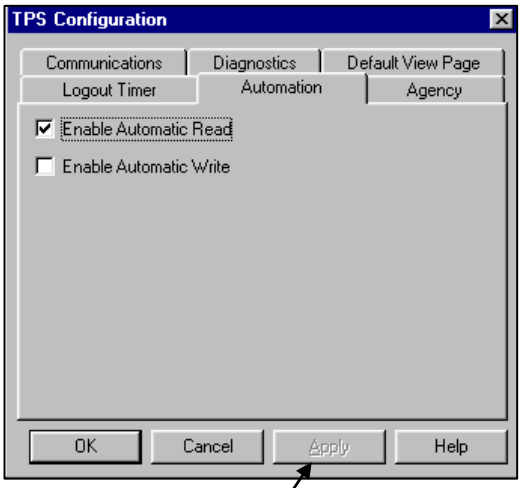


The Com Port parameter default is set at COM1. If your computer has a serial port mouse connected at COM1 you must change this parameter to COM2 (or whatever external port is available for serial comms use).

Note:
The remaining parameters have defaults as shown.
Do not change these remaining parameters unless you get authorization in writing from MARK IV INDUSTRIES LTD, for example in a software update instruction. Only at that time, to change these remaining parameters, then type the new values, then click on "Apply" to accept the displayed settings. Click on "OK" to exit from this menu.

5.5.4 Set Automation parameters (for tag programming)

These are the menu options provided to execute automatically when the AU drawer is closed.

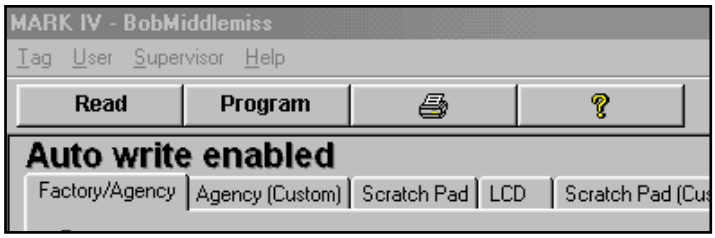


Enable Automatic Read provides automatic tag reading whenever the AU drawer is closed (otherwise a "manual read" from the main menu tool bar is required).

Enable Automatic Write provides automatic tag programming whenever the AU drawer is closed (otherwise a "manual program" from the main menu tool bar is required). The "**Auto Write Enabled**" banner is displayed onscreen if this option is enabled (refer to the screen displayed below).

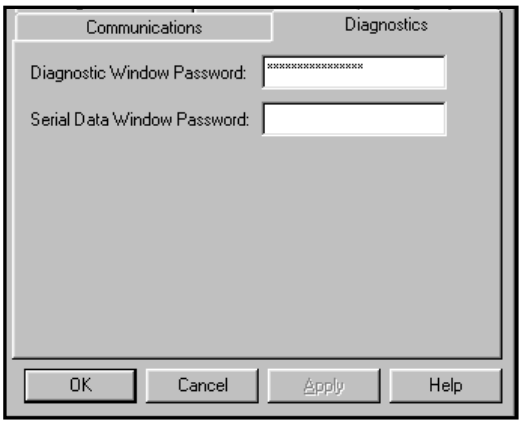
IMPORTANT…
The "Apply" button will be highlighted after changing the previously selected option(s). To assert (use) the change(s) you must click on the "Apply" button before clicking the "OK" button.

The" **Auto Write Enabled**" banner is a **warning** that, when the AU drawer is closed, the tag will be programmed with whatever data is currently displayed on screen. The banner appears as follows…



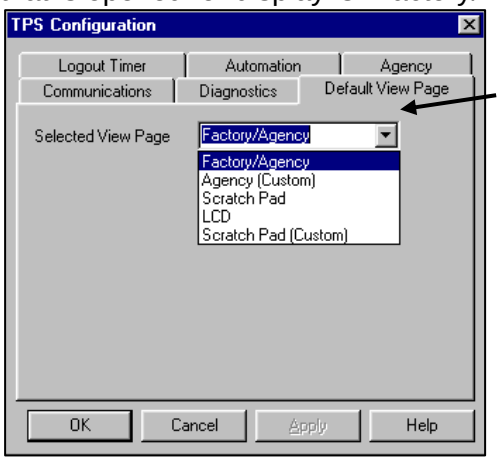
5.5.5 View Diagnostic data

Note: These two "windows" are service tools used only by MARK IV personnel.



5.5.6 Default View Page ("page" = Windows® folder tab)

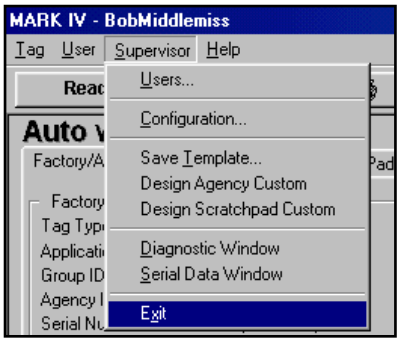
The folder tabs are initially revealed after reading a tag. On the very first program bootup, the set default tab that is opened for display is "Factory/Agency". The Supervisor is allowed to select another default folder tab to be displayed upon reading a tag. This makes the task easier when viewing results of reading many tags when comparing specific data. Click on the arrow button on the right side of the pop down menu. Select a folder tab from the list displayed.



Example: If you are only comparing the LCD data from a batch of Type 2 LCD tags then select the folder tab "LCD" as the default. The TPS will then automatically show that set of data after each tag is read or written.

5.6 Exit (Quit the TPS program)

Only a Supervisor may terminate a TPS program session.
The Supervisor selects the main menu item " Supervisor", then clicks on the "Exit" sub-menu item.



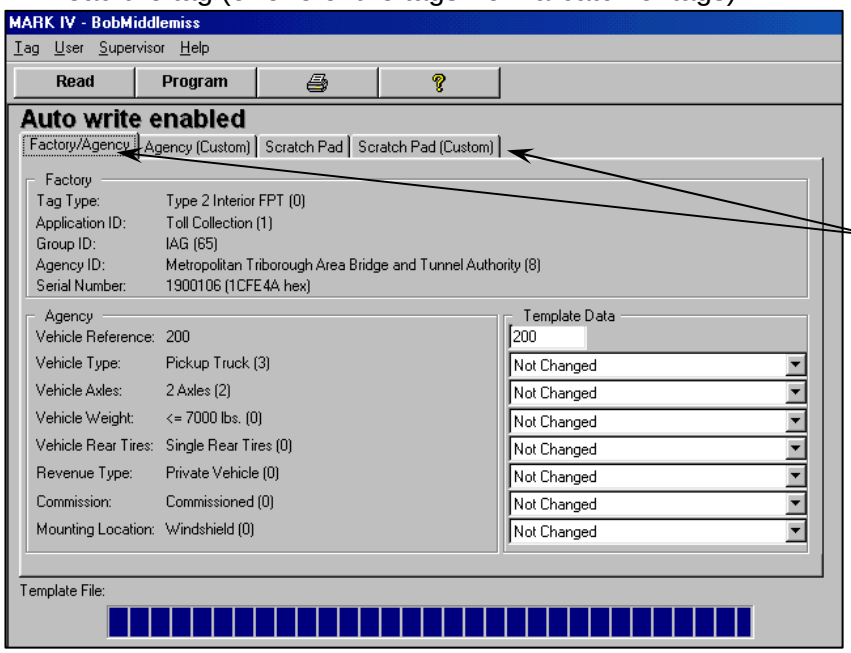
6.0 Supervisors Notes

This section relates to a supervisor using the TPS to perform the "normal" daily tasks.

6.1 Changing (programming) one or more specific data fields in a tag

Sometimes all that is required is to read a tag and make a ***change to a specific data field*** such as Vehicle Type or Revenue Type ***and also <u>not</u> change any other data currently in the tag***. This situation may apply to a tag or batch of tags that are being re-assigned to another vehicle after having been previously used by the same client for a different commercial vehicle fleet. This situation may also apply to batch programming functions, for example, commissioning or decommissioning of tags. This situation may also apply to batch programming functions where the same scratchpad data is to be programmed into tags belonging to several vehicle types.

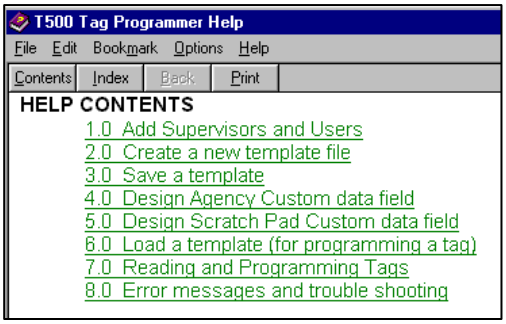
- Read the tag (or one of the tags from a batch of tags).



Note:
A "template" consists of <u>all</u> the data fields on <u>all</u> the folder tabs shown.
Only the data fields that have been changed are used in the programming function. All other data fields that indicate "not changed" are passed over.
In other words…
"Not Changed" = "not to be changed"

- Click on the down arrow for the field(s) to be changed and select new data. Alternatively, if the data to be changed is in another folder tab, select that folder tab and change the data.
- Save the template and give it a filename that will identify it from all the other saved template files.
- The supervisor may then program the tag(s) immediately (see *Program a tag*) or logout and allow a user to load this filename to program the pre-selected changes into the tag(s).

6.2 Using HELP files…



Comprehensive HELP files are available on-line. Just click on the main menu " Help " item or hit the "F1" key when the main menu is displayed. Search by function in "content" or "index".

Appendix - Document Revision Control

The following table summarizes the revision events. Compressed cells are older revision events.

REV.	Date	*Type	Section	Description and/or ECN reference
A	28-Sep-98	none	n/a	prototype document
A1	27-Oct-98	none	n/a	prototype document, DRAFT, limited release
A2	30-Oct-98	none	n/a	document, DRAFT, first official release
A3	12-Nov-98	change	global	reference T-500 is now T500
		add	global	section numbers
		change	3.0	auto-installation procedure with "Setup.exe" (2 disks)
		add	5.1.3	set LCD data for ISTHA tag programming
		add	5.5.6	set the *default folder tab* to view (when reading a tag)
A4	25-Nov-98	change	global	error "TPU drawer" is now "AU drawer"
		add	global	ISTHA tag functions (*see new table of contents*)
		change	5.6.4	"disable tag" function has moved to new section 5.6.7
		add	5.6.7	disable the scanner
		add	5.2.3	LCD folder tab functions (for ISTHA tags)
		add	photos	photo of an ISTHA tag in the AU cradle
		change	global	custom data fields are indexed to the tag start bit (bit #0)
A5	9-Feb-99	change	global	all "ISTHA tag" references are now "Type 2 LCD tag"
		delete	global	barcode scanner functions (*see new table of contents*)
		add	parts	2nd drawer configuration for Type 2 LCD and Fusion tags
A6	19-Mar-99	add	1.1	block diagram, same as used in Appendix-Hardware
		add	1.2	cable assembly part numbers
		add	3.1	more files seen in application directory after install
		add	global	"Auto Write Enabled" banner is displayed (if enabled)
		change	global	some "selection boxes" were identified as "dialog boxes"
		add	introduction	System Installation Notes
		change	Apx-hardware	in Note under table, cable references 4a/4b are now 6/7
		add	Apx-hardware	Note regarding the new "universal" drawer for the AU
		add	Apx-hardware	line cord and battery items to list of parts
		clarify	Apx-hardware	block diagram on page 1
A7	24-Mar-99	add	2.1	…note about "forgotten" passwords…
		add	3.0	…note about TPU connection not necessary at this point…
		add	6.0, 6.1	Supervisors notes…, changing a specific data field in a tag
		add	6.2	how to obtain the online HELP notes
A8	05-Jun-08	add	Page 3	FCC/IC warnings
		add	1.2	FCC/IC warnings

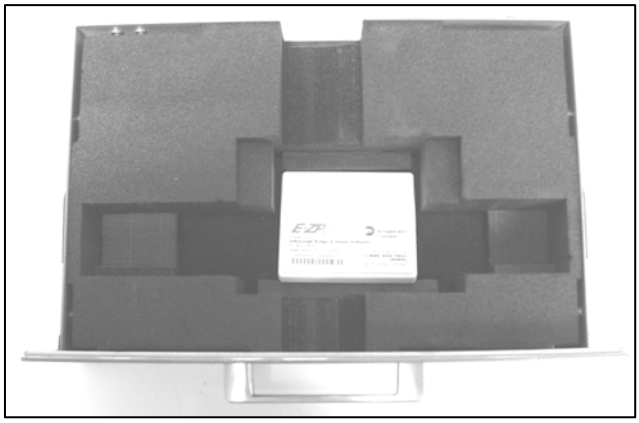
TYPE is either* ***none, add, change, clarify, delete.

Appendix - Positions of tags in the AU drawer "cradle"

This section will be expanded as more tag types are added to the TPS capability.
There are now 2 drawer configurations.

Identification of the LPT/RMT/FPT tag drawer

The AU drawer cradle designed for LPT, RMT and FPT tags looks like this…



Identification of the Type 2 LCD tag and Fusion tag drawer

The AU drawer cradle designed for Type 2 LCD or Fusion tags looks like this…

Photo: FPT

Photo: LPT

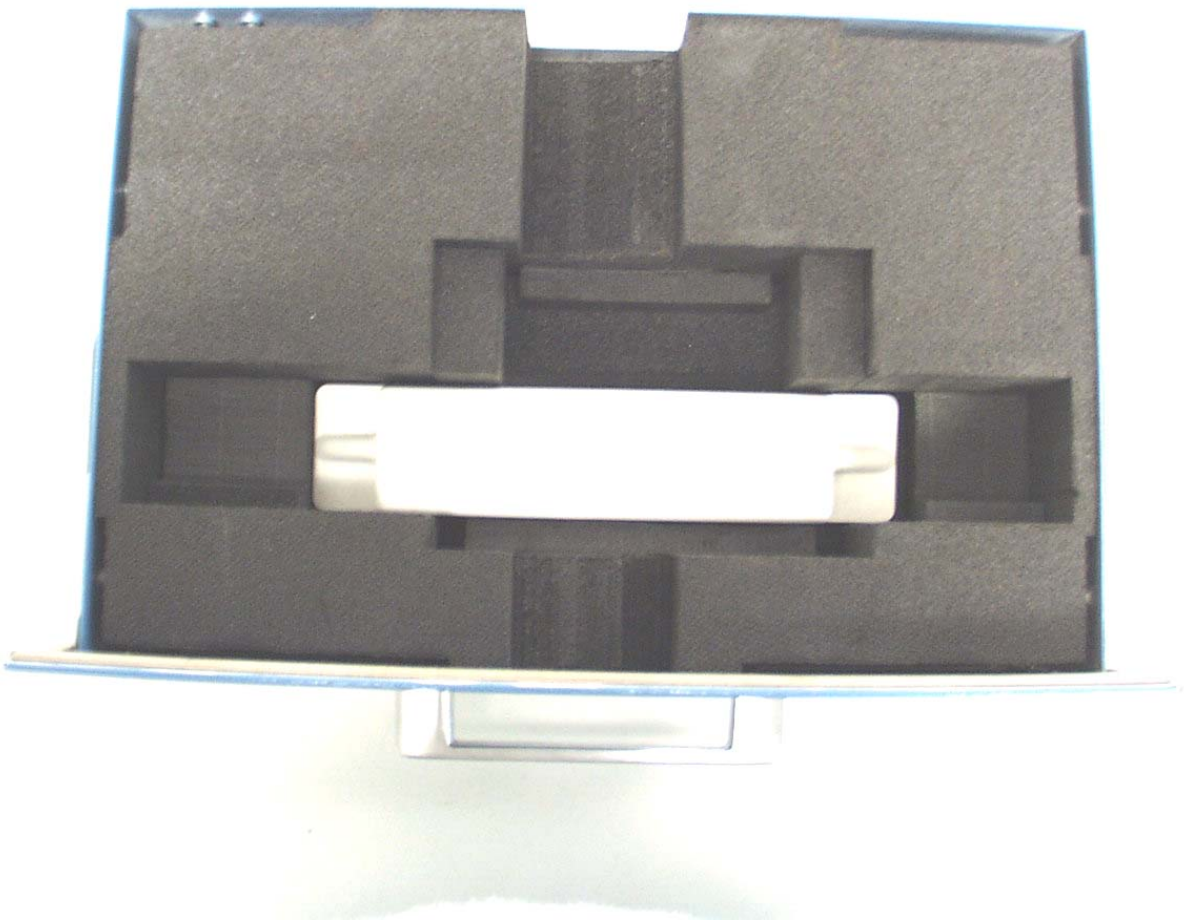


Photo: RMT

Photo: Type 2 LCD

Appendix - displayed "error" messages and probable causes

Error Message Displayed on PC

The error messages that may be displayed on the PC while reading and programming tags are as follows:

Operation	The error message displayed on-screen may be…
Read Transponder	Read Failed - Could not read after multiple attempts Read Failed - Authentication error Read Failed - Drawer is open Read Failed - Configuration error, TPU has not been configured (Contact MARK IV service)
Program Transponder	Write failed - Agency not supported Write failed - Tag ID specified is different than last read Write failed - Could not program after multiple attempts Write failed - Authentication error Write failed - Drawer is open

Asynchronous Fault Report Codes Displayed on PC

Error Type	The error message displayed on-screen may be…
Configuration Error	"Configuration Error" TPU has not been configured (Contact MARK IV service)
Authentication Error	"Authentication Error" The authorization code entered on start up is not valid. Supervisor must exit program and re-enter the authorization code.

Tag programmer troubleshooting

Can’t log in

- The user name and password is case sensitive. Make sure it has been entered correctly.
- The first time a new user is created the password field must be left blank.
- Check that the users exists (check Supervisor | Users menu item).

Authentication Error

- Ensure that you have entered the correct authorization code for the tag programmer being used. Each tag programmer has a different authorization code.
- Has the tag programmer been moved between PCs? Is so, the authorization codes you enter must also be swapped.

Can't read or program transponders

- Verify that a transponder is present in the antenna unit.
- Check the PC COM port configuration (Supervisor | Configuration menu item, Communications tab). For example, if the mouse is on COM1, change the tag programmer port to COM2. By default, COM1 is used.
- Verify the connection between the TPU and the PC. Check for any loose RF and data cables.
- The data cable must be connected between the tag programmer port labeled "RF Control" and the antenna unit port labeled "RF Control". (*See also the Note in the diagram in section 1.1.*)

- Verify the PC COM port configuration under the Supervisor | Configuration | menu.

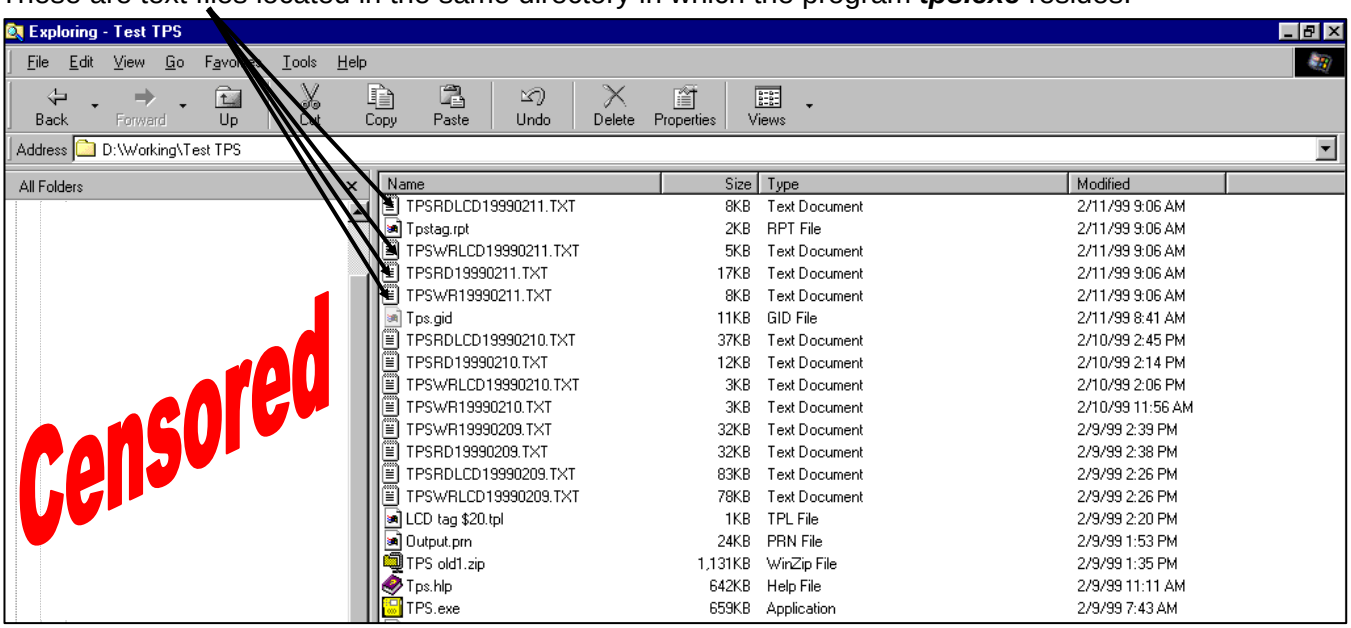
Communication Error

Can be caused by one of the following:

- Check serial connection between PC and the tag programmer unit.
- Check serial connection between AU and the tag programmer unit.
- Check that TPU power is on.
- Check the PC COM port configuration. If the tag programmer is connected via COM2, this must be reflected in the Supervisor | Configuration menu, under the "Communications" tab.

Appendix - Viewing and/or printing log files

These are text files located in the same directory in which the program ***tps.exe*** resides.



Files are identified as follows…(*yeardate* is coded, typical e.g. 19990211 being 1999Feb11)

TPSRD*yeardate*.**TXT**	Read IAG tags
TPSWR*yeardate*.**TXT**	Write IAG tags
TPSRDLCD*yeardate*.**TXT**	Read Type 2 LCD tags
TPSWRLCD*yeardate*.**TXT**	Write Type 2 LCD tags

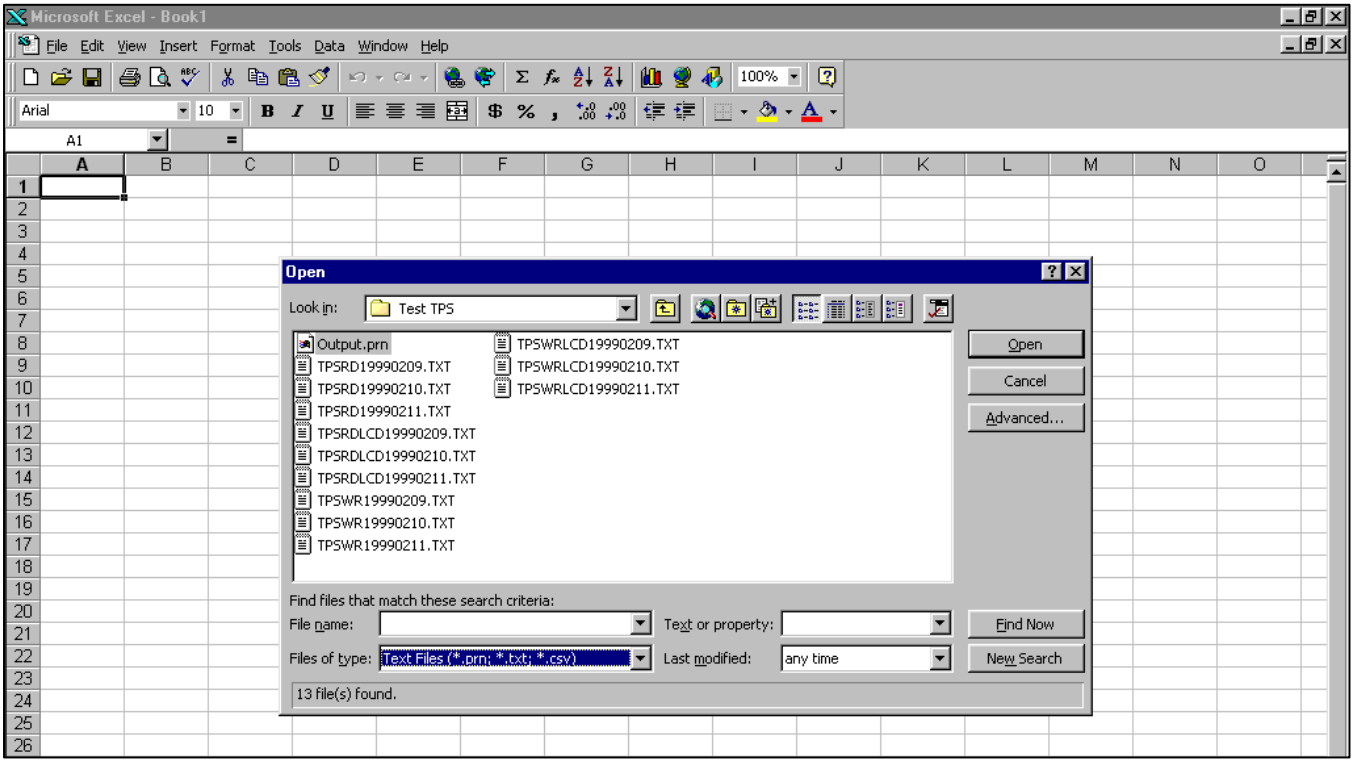
Notes…

1) If an activity was not performed (e.g. you did not write any Type 2 LCD tags) then that log file will not be created.
2) There may be more than one set of log files if the program was exited and subsequently re-started.

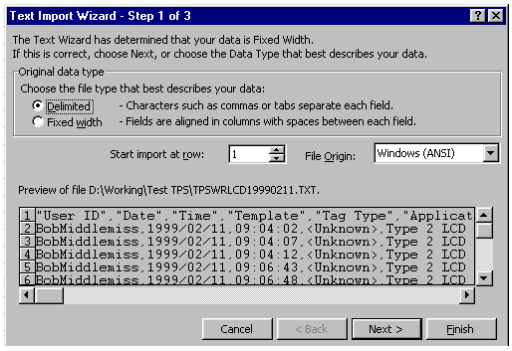
To print a log file, open it with a spread sheet editor (e.g. *Excel®*) and print it.

See an example using *Excel®* starting on the next page…

Start Excel….
Click "File", then click "Open".
Example: select the file TPSWRLCD19990211.TXT by clicking on it twice.

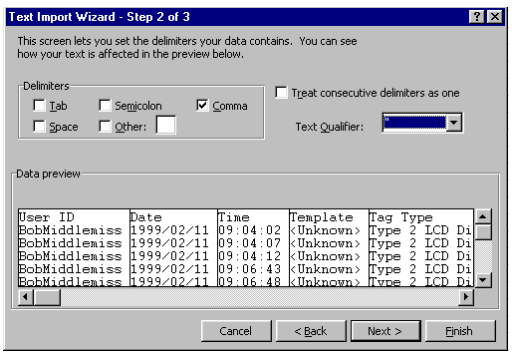


A dialog box titled "Text Import Wizard - Step 1 of 3" appears.



Select "Delimited" for the file type.
Click on "Next".

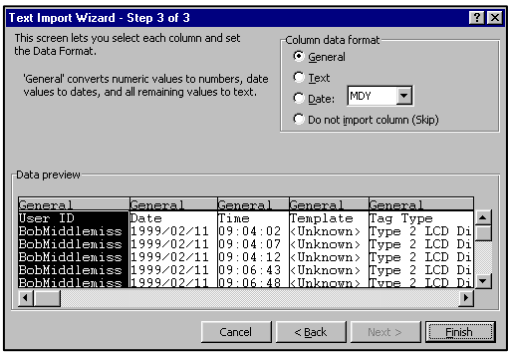
A dialog box titled "Text Import Wizard - Step 2 of 3" appears.



Select "Comma" for the Delimiters type.
Make sure you de-select all the other delimiter types.
Do not select "Treat consecutive delimiters as one".

Click on "Next".

A dialog box titled "Text Import Wizard - Step 3 of 3" appears



For printing the file, it is usually not necessary to format the columns to anything else other than "General".

Click on "Finish".

At this point the file will be imported and the first 11 columns (there are many more columns than this) of the Excel work sheet will look something like this…(the example only has 5 records in it)

User ID	Date	Time	Template	Tag Type	Application ID	Group ID	Agency ID	Serial Number	Vehicle Reference	Vehicle Type
BobMiddlemiss	2/11/99	9:04:02	<Unknown>	Type 2 LCD Display (3)	Toll Collection (1)	IAG (65)	ISTHA (15)	21640 (5488 hex)	328	Minibus - Seats 10-15 (5)
BobMiddlemiss	2/11/99	9:04:07	<Unknown>	Type 2 LCD Display (3)	Toll Collection (1)	IAG (65)	ISTHA (15)	21640 (5488 hex)	328	Minibus - Seats 10-15 (5)
BobMiddlemiss	2/11/99	9:04:12	<Unknown>	Type 2 LCD Display (3)	Toll Collection (1)	IAG (65)	ISTHA (15)	21640 (5488 hex)	328	Minibus - Seats 10-15 (5)
BobMiddlemiss	2/11/99	9:06:43	<Unknown>	Type 2 LCD Display (3)	Toll Collection (1)	IAG (65)	ISTHA (15)	21640 (5488 hex)	328	Minibus - Seats 10-15 (5)
BobMiddlemiss	2/11/99	9:06:48	<Unknown>	Type 2 LCD Display (3)	Toll Collection (1)	IAG (65)	ISTHA (15)	21640 (5488 hex)	328	Minibus - Seats 10-15 (5)

You may now select the columns for print and use the Excel function "Set Print Area" as the print manager. You may also search the Excel worksheet for specific records and print them one at a time.

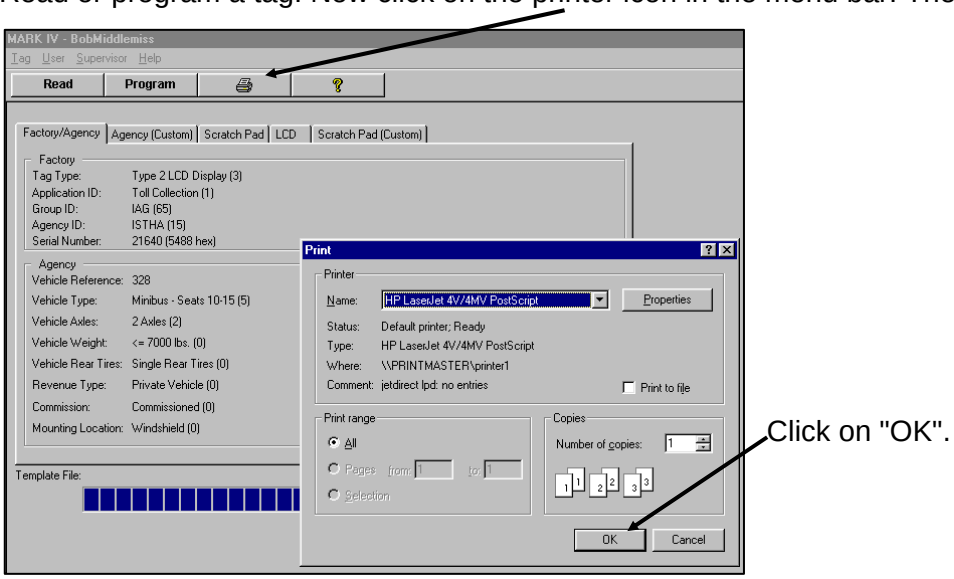
Note:
If you simply want to review the raw log data you may use a text editor like Word98 to view the file. However the records are not parsed for easy viewing in this manner. See the example on the next page.

Viz. (the same example file as shown in the Excel format above, TPSWRLCD19990211.TXT, is displayed on screen using *Word*98® text file import)

"User ID","Date","Time","Template","Tag Type","Application ID","Group ID","Agency ID","Serial Number","Vehicle Reference","Vehicle Type","Vehicle Axles","Vehicle Weight","Vehicle Rear Tires","Revenue Type","Decommission","Mounting Location","Agency Data 1","Agency (Custom 2)","Agency (Custom 3)","Agency (Custom 4)","Agency (Custom 5)","Agency (Custom 6)","Agency (Custom 7)","Agency Data 2","Scratch Pad (custom 2)","Scratch Pad (custom 3)","Scratch Pad (custom 4)","Balance Adjustment ID","Low Balance","Balance Adjustment Date","Extented LED","LED Control","LCD Control","Beep Control","TM Reader ID","TM Date","TM Time","TC Agency ID","TC Plaza ID","TC Lane ID","TC Date","TC Time","TC Vehicle Class","Reserve","Balance Amount","Low Battery","Toll Amount","R/W Format","TC TXN Number","TC Checksum","Raw Data"
BobMiddlemiss,1999/02/11,09:04:02,<Unknown>,Type 2 LCD Display (3),Toll Collection (1),IAG (65),ISTHA (15),21640 (5488 hex),328,Minibus - Seats 10-15 (5),2 Axles (2),<= 7000 lbs. (0),Single Rear Tires (0),Private Vehicle (0),Commissioned (0),Windshield (0),Undefined(0000000),Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Undefined(0000),Unassigned,Unassigned,Unassigned,No Change (0),Icon Off (0),Undefined (0, 0),0,0,Toll and Balance (1),4 Short Tones (1),0,Undefined (0),00:00:00,0,127,0,Feb 11 (2, 11),09:04:02,0,0,$20.00,0,$0.00,IAG Enhanced (1),0 (0 hex),1835 (72B hex),ECC11E00A91052000000000500000000007F012D22040000190000100000072B
BobMiddlemiss,1999/02/11,09:04:07,<Unknown>,Type 2 LCD Display (3),Toll Collection (1),IAG (65),ISTHA (15),21640 (5488 hex),328,Minibus - Seats 10-15 (5),2 Axles (2),<= 7000 lbs. (0),Single Rear Tires (0),Private Vehicle (0),Commissioned (0),Windshield (0),Undefined(0000000),Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Undefined(0000),Unassigned,Unassigned,Unassigned,No Change (0),Icon Off (0),Undefined (0, 0),0,0,Toll and Balance (1),4 Short Tones (1),0,Undefined (0),00:00:00,0,127,0,Feb 11 (2, 11),09:04:07,0,0,$20.00,0,$0.00,IAG Enhanced (1),0 (0 hex),58042 (E2BA hex),ECC11E00A91052000000000500000000007F012D220E000019000010000E2BA
BobMiddlemiss,1999/02/11,09:04:12,<Unknown>,Type 2 LCD Display (3),Toll Collection (1),IAG (65),ISTHA (15),21640 (5488 hex),328,Minibus - Seats 10-15 (5),2 Axles (2),<= 7000 lbs. (0),Single Rear Tires (0),Private Vehicle (0),Commissioned (0),Windshield (0),Undefined(0000000),Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Undefined(0000),Unassigned,Unassigned,Unassigned,No Change (0),Icon Off (0),Undefined (0, 0),0,0,Toll and Balance (1),4 Short Tones (1),0,Undefined (0),00:00:00,0,127,0,Feb 11 (2, 11),09:04:12,0,0,$20.00,0,$0.00,IAG Enhanced (1),0 (0 hex),25683 (6453 hex),ECC11E00A91052000000000500000000007F012D22180000190000100006453
BobMiddlemiss,1999/02/11,09:06:43,<Unknown>,Type 2 LCD Display (3),Toll Collection (1),IAG (65),ISTHA (15),21640 (5488 hex),328,Minibus - Seats 10-15 (5),2 Axles (2),<= 7000 lbs. (0),Single Rear Tires (0),Private Vehicle (0),Commissioned (0),Windshield (0),Undefined(0000000),Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Undefined(0000),Unassigned,Unassigned,Unassigned,No Change (0),Icon Off (0),Undefined (0, 0),0,0,Toll and Balance (1),4 Short Tones (1),0,Undefined (0),00:00:00,0,127,0,Feb 11 (2, 11),09:06:43,0,0,$20.00,0,$0.00,IAG Enhanced (1),0 (0 hex),712 (2C8 hex),ECC11E00A91052000000000500000000007F012D23560000190000010000002C8
BobMiddlemiss,1999/02/11,09:06:48,<Unknown>,Type 2 LCD Display (3),Toll Collection (1),IAG (65),ISTHA (15),21640 (5488 hex),328,Minibus - Seats 10-15 (5),2 Axles (2),<= 7000 lbs. (0),Single Rear Tires (0),Private Vehicle (0),Commissioned (0),Windshield (0),Undefined(0000000),Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Undefined(0000),Unassigned,Unassigned,Unassigned,No Change (0),Icon Off (0),Undefined (0, 0),0,0,Toll and Balance (1),4 Short Tones (1),0,Undefined (0),00:00:00,0,127,0,Feb 11 (2, 11),09:06:48,0,0,$20.00,0,$0.00,IAG Enhanced (1),0 (0 hex),48608 (BDE0 hex),ECC11E00A91052000000000500000000007F012D23600000190000100000BDE0
BobMiddlemiss,1999/02/11,10:47:39,<Unknown>,Type 2 LCD Display (3),Toll Collection (1),IAG (65),ISTHA (15),21640 (5488 hex),328,Minibus - Seats 10-15 (5),2 Axles (2),<= 7000 lbs. (0),Single Rear Tires (0),Private Vehicle (0),Commissioned (0),Windshield (0),Undefined(0000000),Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Unassigned,Undefined(0000),Unassigned,Unassigned,Unassigned,No Change (0),Icon Off (0),Undefined (0, 0),0,0,Toll and Balance (1),4 Short Tones (1),0,Undefined (0),00:00:00,0,127,0,Feb 11 (2, 11),10:47:39,0,0,$20.00,0,$0.00,IAG Enhanced (1),0 (0 hex),7452 (1D1C hex),ECC11E00A91052000000000500000000007F012D57CE0000190000100001D1C

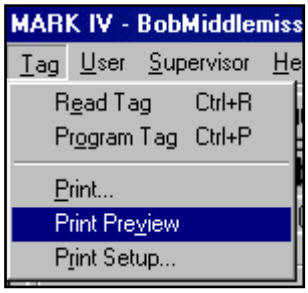
Printing the contents of the tag currently displayed

Read or program a tag. Now click on the printer icon in the menu bar. The following dialog box is displayed.



Click on "OK".

The printed report is identical to the format displayed for "Tag - Print Preview".
To view the print preview on screen, click on the "Tag" menu item, then click on the "Print Preview" item in the pop-up list.



The "print preview" formats for various tags appear in the next few pages.

Print preview of a tag type 2 LCD "Read Tag Contents"

without loading a template

READ TAG CONTENTS REPORT
User ID: BobMiddlemiss
Date: 1999/03/19 Time: 08:59:40

Tag Type	Type 2 LCD Display (3)
Application ID	Toll Collection (1)
Group ID	IAG (65)
Agency ID	ISTHA (15)
Serial Number	30589 (7770 hex)
Vehicle Reference	72
Vehicle Type	Automobile (1)
Vehicle Axles	2 Axles (2)
Vehicle Weight	<= 7000 lbs. (0)
Vehicle Rear Tires	Single Rear Tires (0)
Revenue Type	Private Vehicle (0)
Decommission	Commissioned (0)
Mounting Location	Windshield (0)
Agency Data 1	Undefined (0000000)
Agency (Custom 2)	Unassigned
Agency (Custom 3)	Unassigned
Agency (Custom 4)	Unassigned
Agency (Custom 5)	Unassigned
Agency (Custom 6)	Unassigned
Agency (Custom 7)	Unassigned
Agency Data 2	Undefined (0000)
Scratch Pad (custom 2)	Unassigned
Scratch Pad (custom 3)	Unassigned
Scratch Pad (custom 4)	Unassigned
Balance Adjustment ID	Replacement (3)
Low Balance	Low Balance (1)
Balance Adjustment Date	Jul 26 (7/26)
Extented LED	0
LED Control	0
LCD Control	Toll and Balance (1)
Beep Control	4 Short Tones (1)
TM Reader ID	0
TM Date	Undefined (0)
TM Time	00:00:00
TC Agency ID	0
TC Plaza ID	127
TC Lane ID	0
TC Date	Mar 19 (3/19)
TC Time	08:38:00
TC Vehicle Class	0
Reserve	0
Balance Amount	$2000.00
Low Battery	0
Toll Amount	$0.00
R/W Format	IAG Enhanced (1)
TC TXN Number	0 (0 hex)
TC Checksum	21706 (54CA hex)

Template file: <Unknown> Page 1

with loading a template

READ TAG CONTENTS REPORT
User ID: BobMiddlemiss
Date: 1999/03/19 Time: 09:03:56

Tag Type	Type 2 LCD Display (3)
Application ID	Toll Collection (1)
Group ID	IAG (65)
Agency ID	ISTHA (15)
Serial Number	30589 (7770 hex)
Vehicle Reference	72
Vehicle Type	Automobile (1)
Vehicle Axles	2 Axles (2)
Vehicle Weight	<= 7000 lbs. (0)
Vehicle Rear Tires	Single Rear Tires (0)
Revenue Type	Private Vehicle (0)
Decommission	Commissioned (0)
Mounting Location	Windshield (0)
Agency Data 1	Undefined (0000000)
Agency (Custom 2)	Unassigned
Agency (Custom 3)	Unassigned
Agency (Custom 4)	Unassigned
Agency (Custom 5)	Unassigned
Agency (Custom 6)	Unassigned
Agency (Custom 7)	Unassigned
Agency Data 2	Undefined (0000)
Scratch Pad (custom 2)	Unassigned
Scratch Pad (custom 3)	Unassigned
Scratch Pad (custom 4)	Unassigned
Balance Adjustment ID	Replacement (3)
Low Balance	Low Balance (1)
Balance Adjustment Date	Jul 26 (7/26)
Extented LED	0
LED Control	0
LCD Control	Toll and Balance (1)
Beep Control	4 Short Tones (1)
TM Reader ID	0
TM Date	Undefined (0)
TM Time	00:00:00
TC Agency ID	0
TC Plaza ID	127
TC Lane ID	0
TC Date	Mar 19 (3/19)
TC Time	08:38:00
TC Vehicle Class	0
Reserve	0
Balance Amount	$2000.00
Low Battery	0
Toll Amount	$0.00
R/W Format	IAG Enhanced (1)
TC TXN Number	0 (0 hex)
TC Checksum	21706 (54CA hex)

Template file: C:\TagTemplates\Lcd, $2000.tpl Page 1

Print preview of a tag type 2 LCD "Write (Program) Tag Contents

without loading template

WRITE TAG CONTENTS REPORT
User ID: BobMiddlemiss
Date: 1999/03/19 Time: 09:12:39

Tag Type	Type 2 LCD Display (3)
Application ID	Toll Collection (1)
Group ID	IAG (65)
Agency ID	ISTHA (15)
Serial Number	30589 (7770 hex)
Vehicle Reference	72
Vehicle Type	Automobile (1)
Vehicle Axles	2 Axles (2)
Vehicle Weight	<= 7000 lbs. (0)
Vehicle Rear Tires	Single Rear Tires (0)
Revenue Type	Private Vehicle (0)
Decommission	Commissioned (0)
Mounting Location	Windshield (0)
Agency Data 1	Undefined (0000000)
Agency (Custom 2)	Unassigned
Agency (Custom 3)	Unassigned
Agency (Custom 4)	Unassigned
Agency (Custom 5)	Unassigned
Agency (Custom 6)	Unassigned
Agency (Custom 7)	Unassigned
Agency Data 2	Undefined (0000)
Scratch Pad (custom 2)	Unassigned
Scratch Pad (custom 3)	Unassigned
Scratch Pad (custom 4)	Unassigned
Balance Adjustment ID	Replacement (3)
Low Balance	Low Balance (1)
Balance Adjustment Date	Jul 26 (7/26)
Extented LED	0
LED Control	0
LCD Control	Toll and Balance (1)
Beep Control	4 Short Tones (1)
TM Reader ID	0
TM Date	Undefined (0)
TM Time	00:00:00
TC Agency ID	0
TC Plaza ID	127
TC Lane ID	0
TC Date	Mar 19 (3/19)
TC Time	09:12:39
TC Vehicle Class	0
Reserve	0
Balance Amount	$2000.00
Low Battery	0
Toll Amount	$0.00
R/W Format	IAG Enhanced (1)
TC TXN Number	0 (0 hex)
TC Checksum	21706 (54CA hex)

Template file: <Unknown> Page 1

with loading a template

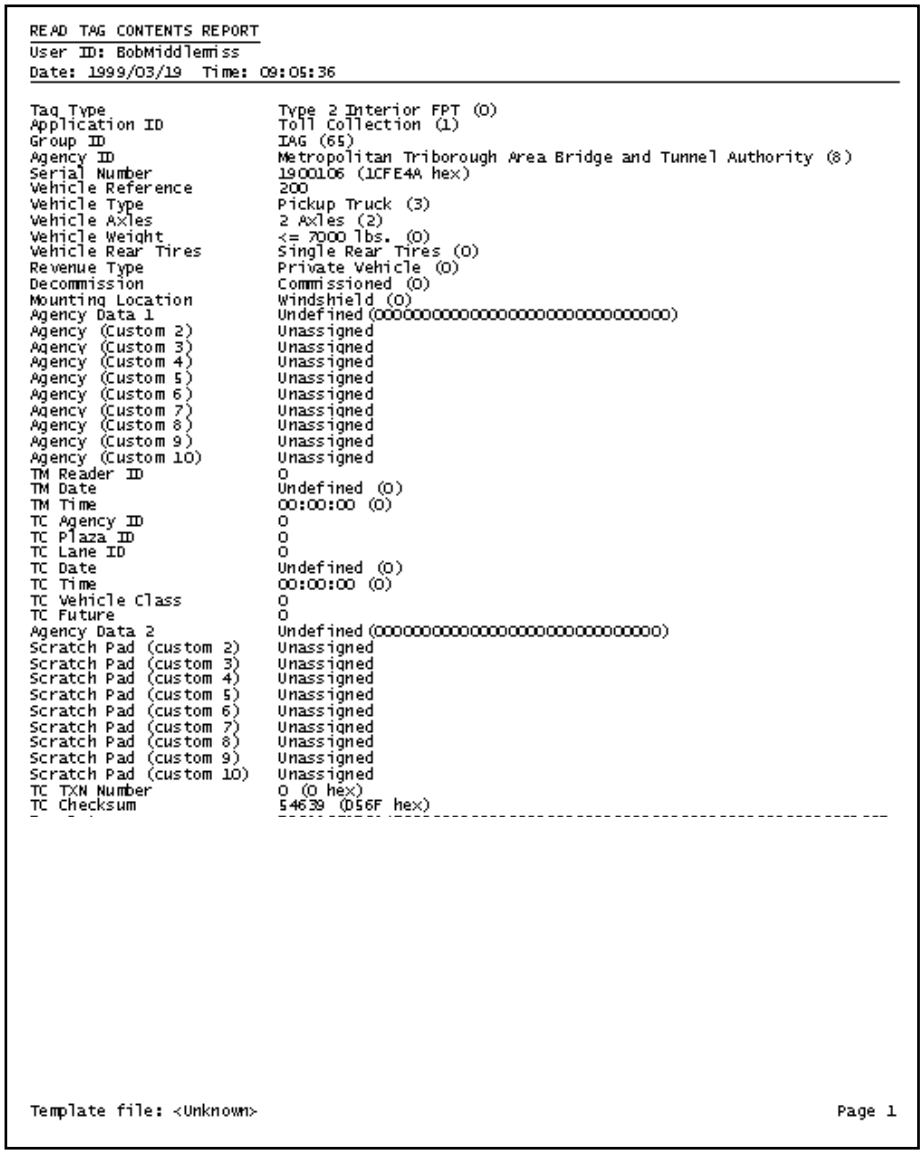
WRITE TAG CONTENTS REPORT
User ID: BobMiddlemiss
Date: 1999/03/19 Time: 09:14:32

Tag Type	Type 2 LCD Display (3)
Application ID	Toll Collection (1)
Group ID	IAG (65)
Agency ID	ISTHA (15)
Serial Number	30589 (7770 hex)
Vehicle Reference	72
Vehicle Type	Automobile (1)
Vehicle Axles	2 Axles (2)
Vehicle Weight	<= 7000 lbs. (0)
Vehicle Rear Tires	Single Rear Tires (0)
Revenue Type	Private Vehicle (0)
Decommission	Commissioned (0)
Mounting Location	Windshield (0)
Agency Data 1	Undefined (0000000)
Agency (Custom 2)	Unassigned
Agency (Custom 3)	Unassigned
Agency (Custom 4)	Unassigned
Agency (Custom 5)	Unassigned
Agency (Custom 6)	Unassigned
Agency (Custom 7)	Unassigned
Agency Data 2	Undefined (0000)
Scratch Pad (custom 2)	Unassigned
Scratch Pad (custom 3)	Unassigned
Scratch Pad (custom 4)	Unassigned
Balance Adjustment ID	Replacement (3)
Low Balance	Low Balance (1)
Balance Adjustment Date	Jul 26 (7/26)
Extented LED	0
LED Control	0
LCD Control	Toll and Balance (1)
Beep Control	4 Short Tones (1)
TM Reader ID	0
TM Date	Undefined (0)
TM Time	00:00:00
TC Agency ID	0
TC Plaza ID	127
TC Lane ID	0
TC Date	Mar 19 (3/19)
TC Time	09:14:32
TC Vehicle Class	0
Reserve	0
Balance Amount	$2000.00
Low Battery	0
Toll Amount	$0.00
R/W Format	IAG Enhanced (1)
TC TXN Number	0 (0 hex)
TC Checksum	1524 (5F4 hex)

Template file: C:\TagTemplates\Lcd, $2000.tpl Page 1

Print preview of an IAG tag "Read Tag Contents"

without loading template

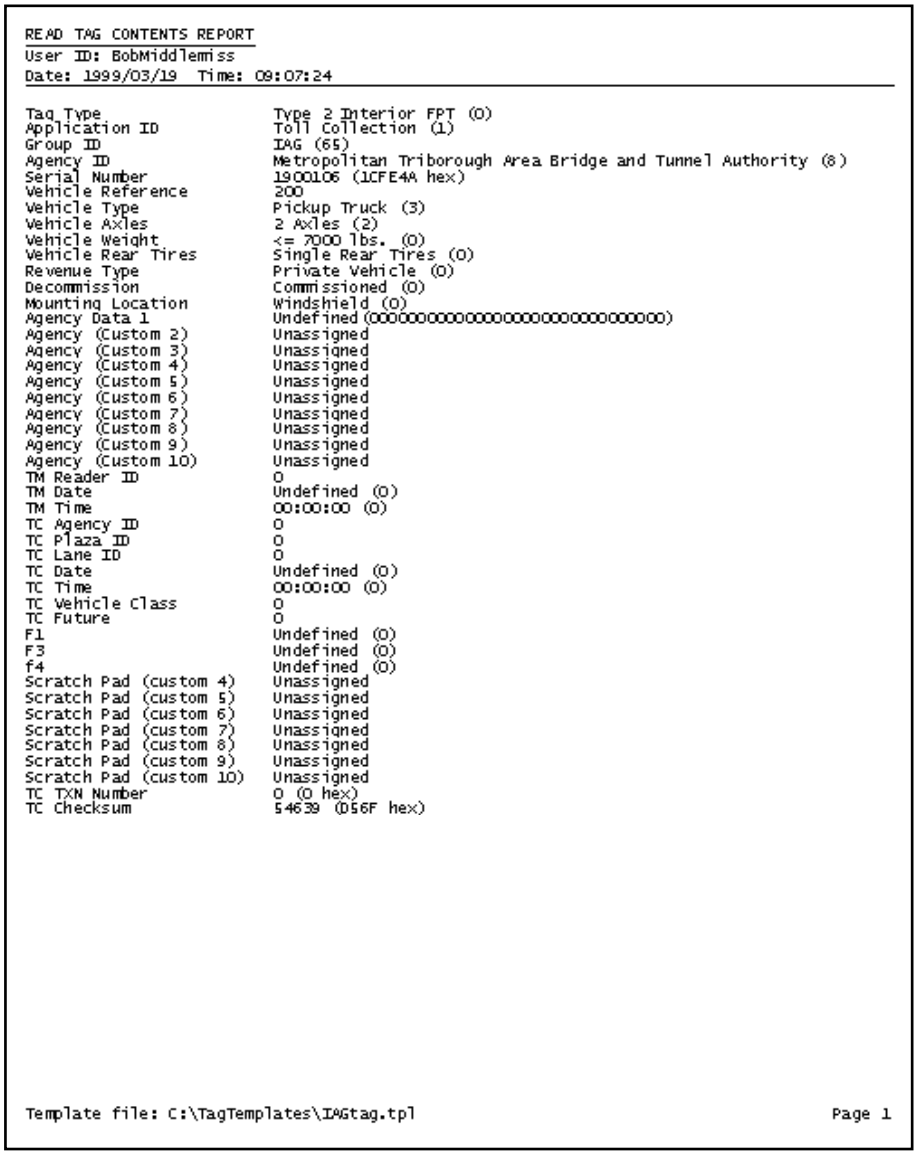


READ TAG CONTENTS REPORT
User ID: BobMiddlemiss
Date: 1999/03/19 Time: 09:05:36

Tag Type	Type 2 Interior FPT (0)
Application ID	Toll Collection (1)
Group ID	IAG (65)
Agency ID	Metropolitan Triborough Area Bridge and Tunnel Authority (8)
Serial Number	1900106 (1CFE4A hex)
Vehicle Reference	200
Vehicle Type	Pickup Truck (3)
Vehicle Axles	2 Axles (2)
Vehicle Weight	<= 7000 lbs. (0)
Vehicle Rear Tires	Single Rear Tires (0)
Revenue Type	Private Vehicle (0)
Decommission	Commissioned (0)
Mounting Location	Windshield (0)
Agency Data 1	Undefined (00000000000000000000000000000000)
Agency (Custom 2)	Unassigned
Agency (Custom 3)	Unassigned
Agency (Custom 4)	Unassigned
Agency (Custom 5)	Unassigned
Agency (Custom 6)	Unassigned
Agency (Custom 7)	Unassigned
Agency (Custom 8)	Unassigned
Agency (Custom 9)	Unassigned
Agency (Custom 10)	Unassigned
TM Reader ID	0
TM Date	Undefined (0)
TM Time	00:00:00 (0)
TC Agency ID	0
TC Plaza ID	0
TC Lane ID	0
TC Date	Undefined (0)
TC Time	00:00:00 (0)
TC Vehicle Class	0
TC Future	0
Agency Data 2	Undefined (00000000000000000000000000000000)
Scratch Pad (custom 2)	Unassigned
Scratch Pad (custom 3)	Unassigned
Scratch Pad (custom 4)	Unassigned
Scratch Pad (custom 5)	Unassigned
Scratch Pad (custom 6)	Unassigned
Scratch Pad (custom 7)	Unassigned
Scratch Pad (custom 8)	Unassigned
Scratch Pad (custom 9)	Unassigned
Scratch Pad (custom 10)	Unassigned
TC TXN Number	0 (0 hex)
TC Checksum	54639 (D56F hex)

Template file: <Unknown> Page 1

with loading a template



READ TAG CONTENTS REPORT
User ID: BobMiddlemiss
Date: 1999/03/19 Time: 09:07:24

Tag Type	Type 2 Interior FPT (0)
Application ID	Toll Collection (1)
Group ID	IAG (65)
Agency ID	Metropolitan Triborough Area Bridge and Tunnel Authority (8)
Serial Number	1900106 (1CFE4A hex)
Vehicle Reference	200
Vehicle Type	Pickup Truck (3)
Vehicle Axles	2 Axles (2)
Vehicle Weight	<= 7000 lbs. (0)
Vehicle Rear Tires	Single Rear Tires (0)
Revenue Type	Private Vehicle (0)
Decommission	Commissioned (0)
Mounting Location	Windshield (0)
Agency Data 1	Undefined (00000000000000000000000000000000)
Agency (Custom 2)	Unassigned
Agency (Custom 3)	Unassigned
Agency (Custom 4)	Unassigned
Agency (Custom 5)	Unassigned
Agency (Custom 6)	Unassigned
Agency (Custom 7)	Unassigned
Agency (Custom 8)	Unassigned
Agency (Custom 9)	Unassigned
Agency (Custom 10)	Unassigned
TM Reader ID	0
TM Date	Undefined (0)
TM Time	00:00:00 (0)
TC Agency ID	0
TC Plaza ID	0
TC Lane ID	0
TC Date	Undefined (0)
TC Time	00:00:00 (0)
TC Vehicle Class	0
TC Future	0
F1	Undefined (0)
F3	Undefined (0)
f4	Undefined (0)
Scratch Pad (custom 4)	Unassigned
Scratch Pad (custom 5)	Unassigned
Scratch Pad (custom 6)	Unassigned
Scratch Pad (custom 7)	Unassigned
Scratch Pad (custom 8)	Unassigned
Scratch Pad (custom 9)	Unassigned
Scratch Pad (custom 10)	Unassigned
TC TXN Number	0 (0 hex)
TC Checksum	54639 (D56F hex)

Template file: C:\TagTemplates\IAGtag.tpl Page 1

Print preview of an IAG tag "Write (Program) Tag Contents"

without loading a template

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WRITE TAG CONTENTS REPORT
User ID: BobMiddlemiss
Date: 1999/03/19  Time: 09:10:58

Tag Type                Type 2 Interior FPT (0)
Application ID          Toll Collection (1)
Group ID                IAG (65)
Agency ID               Metropolitan Triborough Area Bridge and Tunnel Authority (8)
Serial Number           1900106 (1CFE4A hex)
Vehicle Reference       200
Vehicle Type            Pickup Truck (3)
Vehicle Axles           2 Axles (2)
Vehicle Weight          <= 7000 lbs. (0)
Vehicle Rear Tires      Single Rear Tires (0)
Revenue Type            Private Vehicle (0)
Decommission            Commissioned (0)
Mounting Location       Windshield (0)
Agency Data 1           Undefined (00000000000000000000000000000000)
Agency (Custom 2)       Unassigned
Agency (Custom 3)       Unassigned
Agency (Custom 4)       Unassigned
Agency (Custom 5)       Unassigned
Agency (Custom 6)       Unassigned
Agency (Custom 7)       Unassigned
Agency (Custom 8)       Unassigned
Agency (Custom 9)       Unassigned
Agency (Custom 10)      Unassigned
TM Reader ID            0
TM Date                 Undefined (0)
TM Time                 00:00:00 (0)
TC Agency ID            0
TC Plaza ID             0
TC Lane ID              0
TC Date                 Undefined (0)
TC Time                 00:00:00 (0)
TC Vehicle Class        0
TC Future               0
Agency Data 2           Undefined (00000000000000000000000000000000)
Scratch Pad (custom 2)  Unassigned
Scratch Pad (custom 3)  Unassigned
Scratch Pad (custom 4)  Unassigned
Scratch Pad (custom 5)  Unassigned
Scratch Pad (custom 6)  Unassigned
Scratch Pad (custom 7)  Unassigned
Scratch Pad (custom 8)  Unassigned
Scratch Pad (custom 9)  Unassigned
Scratch Pad (custom 10) Unassigned
TC TXN Number           0 (0 hex)
TC Checksum             54639 (D56F hex)

Template file: <Unknown>                                    Page 1
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with loading a template

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WRITE TAG CONTENTS REPORT
User ID: BobMiddlemiss
Date: 1999/03/19  Time: 09:09:07

Tag Type                Type 2 Interior FPT (0)
Application ID          Toll Collection (1)
Group ID                IAG (65)
Agency ID               Metropolitan Triborough Area Bridge and Tunnel Authority (8)
Serial Number           1900106 (1CFE4A hex)
Vehicle Reference       200
Vehicle Type            Pickup Truck (3)
Vehicle Axles           2 Axles (2)
Vehicle Weight          <= 7000 lbs. (0)
Vehicle Rear Tires      Single Rear Tires (0)
Revenue Type            Private Vehicle (0)
Decommission            Commissioned (0)
Mounting Location       Windshield (0)
Agency Data 1           Undefined (00000000000000000000000000000000)
Agency (Custom 2)       Unassigned
Agency (Custom 3)       Unassigned
Agency (Custom 4)       Unassigned
Agency (Custom 5)       Unassigned
Agency (Custom 6)       Unassigned
Agency (Custom 7)       Unassigned
Agency (Custom 8)       Unassigned
Agency (Custom 9)       Unassigned
Agency (Custom 10)      Unassigned
TM Reader ID            0
TM Date                 Undefined (0)
TM Time                 00:00:00 (0)
TC Agency ID            0
TC Plaza ID             0
TC Lane ID              0
TC Date                 Undefined (0)
TC Time                 00:00:00 (0)
TC Vehicle Class        0
TC Future               0
F1                      Undefined (0)
F3                      Undefined (0)
f4                      Undefined (0)
Scratch Pad (custom 4)  Unassigned
Scratch Pad (custom 5)  Unassigned
Scratch Pad (custom 6)  Unassigned
Scratch Pad (custom 7)  Unassigned
Scratch Pad (custom 8)  Unassigned
Scratch Pad (custom 9)  Unassigned
Scratch Pad (custom 10) Unassigned
TC TXN Number           0 (0 hex)
TC Checksum             54639 (D56F hex)

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