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Service Agency*

*Congestion Management
Agency*

*Service Authority for
Abandoned Vehicles*

October 30, 2013

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SCAQMD
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Subject: Fiscal Year 2006 #MS06002 Final Report

Enclosed is the Fiscal Year 2006 Mobile Source Air Pollution Reduction Committee Contract #MS06002 Final Report.

If you have any questions or comments about this report, please feel free to contact me at (714) 560-5940, or by email at jgarbowski@octa.net.

Sincerely,

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Final Report

Contract #06002

Freeway Service Patrol – Automated Vehicle Location

Orange County Transportation Authority

October, 30 2013

“Prepared for the Mobile Source Air Pollution Review Committee (MSRC) under the AB 2766 Discretionary Fund Work Program.”

“The statement and conclusions in this report are those of the contractor and not necessarily those of the Mobile Source Air Pollution Reduction Review Committee (MSRC) or the South Coast Air Quality Management District (SCAQMD). The mention of commercial products, their sources or their uses in connection with material reported is not to be construed as either an actual or implied endorsement of such products.”

1) Acknowledgements

This report was submitted in fulfillment of MS06002 and Freeway Service Patrol (FSP) AVL MDT Project by the Orange County Transportation Authority (OCTA) under the partial sponsorship of the Mobile Source Air Pollution Reduction Review Committee (MSRC). Work was completed as of December 31, 2012.

2) Project Description & Work Performed

OCTA contracted with a vendor to develop and support a mobile data collection and vehicle tracking system. OCTA worked with the vendor through the term of the agreement to manage and improve the performance of the application, until it was retired on December 31, 2012. Despite its shortcomings, the system did provide valuable near real-time tracking of tow vehicles and the collection of service data. Staff found it easier to work with the data outside of the system, and established an external data warehouse to manage and work with data. This improved the value of the data, data reporting, and satisfaction with the system (because we were working outside of the system).

3) Problems Encountered

The system encountered regular issues with GPS tracking and connectivity to the database throughout the project. There were also issues with mounting full-sized laptop computers in for vehicles, expecting that the operators would never close the laptop lid (the developers' view of how it would operate). There were also periodic hardware issues related to the laptop device operating in an “on the road” environment. The solution also did not contain a portal to manually enter data after the fact, should there be an issue with the mobile solution.

4) Emissions Benefits

While it is difficult to say exactly what the cost savings or emission reduction may be as a direct result of this system, the FSP program that this system supports provides a significant cost savings for motorists and significant emission reductions, based on state-provided benefit-cost data. While updated benefit-cost data is not-yet available from the State the most recent statewide benefit/cost (B/C) analysis for the FSP program, completed for FY 2009-10, estimates that the Orange County FSP program provides \$7.50 of congestion relief benefit for each dollar spent on the program. The B/C model estimates delay-saving benefits based on the FSP beats' geometric and traffic characteristics, as well as the frequency and type of FSP-assisted freeway incidents. The estimated benefits include reductions in incident-induced vehicular delays, fuel consumption, and air pollution emissions.

5) Photographs & Outreach

MSRC logos/decals were not affixed to any of the subject equipment, and there were no news articles or public outreach associated with the project (it's not that type of a project). Photos of completed system equipment and a system users guide are included in this document (Attachment 1).

6) Summary & Conclusions

OCTA contracted with a vendor to develop and support a mobile data collection and vehicle tracking system. OCTA worked with the vendor through the term of the agreement to manage and improve the performance of the application, until it was retired on December 31, 2012. Future projects should include system design that is end-user configurable, eliminating the need for long-term support from the designer/vendor when implementing relatively simple changes to the system (parameter-based instead of hard-coded programming). Future projects should also include the ability to easily migrate to more efficient devices that have faster processors as the technology matures.

Attachment 1

FSP Program Tow Truck (Not MSRC Funded)



Program MDC (Partial MSRC Funding)



Orange County Freeway Service Patrol
MDC Tracking and Reporting Application User Guide

OVERVIEW

The Freeway Service Patrol (FSP) Mobile Data Computer (MDC) and vehicle tracking and data collection application are designed to provide near real-time vehicle location and driver status information to California Highway Patrol (CHP) dispatchers and program supervisors so that they may effectively monitor and support drivers in the field. The application also, through Operator input, collects program service data to be used for state required reporting and to provide other program data and statistics.

The major components of a system generally include application servers, in-vehicle mobile data computers, internal or external GPS antennas, dispatcher console computers, supervisor console computers, contractor console computers, along with contract administration, beat segment, geo-fencing, and reporting module interfaces utilized to maintain the system.

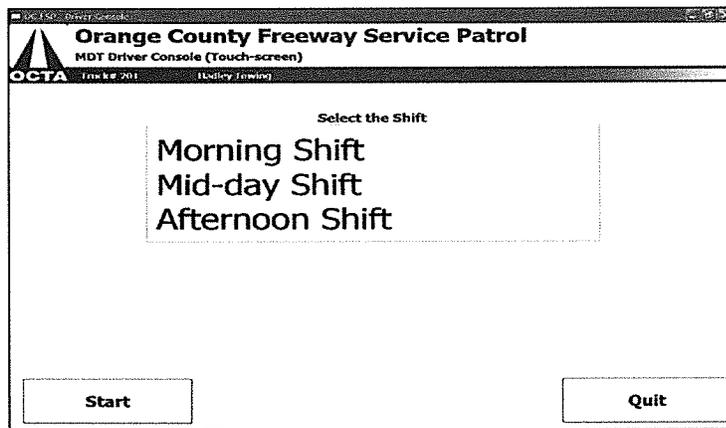
The current FSP Operator console consists of a ruggedized laptop computer with global positioning satellite (GPS) capabilities, a wireless air card with external GPS antenna, and an FSP Operator interface (application).

Operators must be aware of safety concerns associated with the use of mobile data computers. For example, MDC lids should be closed while operating the vehicle, if necessary, to assure adequate visibility to the roadway and mirrors. Safety must always be a priority.

LOGGING ON TO THE MDC

Operators are REQUIRED to log on to their MDC before leaving the yard. Operators may log on up to sixty minutes before their service start time.

- 1) Start the vehicle engine
 - a) The engine must be started prior to logging on to the system to assure that the proper electrical current is provided to the MDC.
- 2) Complete any required pre-shift vehicle inspections and inventory checks. If not already on with the starting of the vehicle, press the MDC power button to power up the MDC.
- 3) Once powered up, the MDC will provide the user with a shift selection screen.
 - a) Select the desired shift.
 - b) Select "start" (bottom left-hand corner of the screen).



- 4) Enter your driver and beat information.
 - a) Enter your CHP issued FSP Driver ID
 - b) Select your assigned service beat from the drop-down menu.
 - c) Select "Login" (Bottom left-hand corner of the screen).

- i) A user may discontinue the login process by selecting "Cancel."

The screenshot shows a touch-screen interface for the Orange County Freeway Service Patrol. At the top, it displays the OCTA logo and the text "Orange County Freeway Service Patrol MDT Driver Console (Touch-screen)". Below this, there are two input fields: "FSP Driver ID" and "Beat". The "Beat" field has a dropdown arrow. At the bottom of the screen, there are two buttons: "Login" and "Cancel".

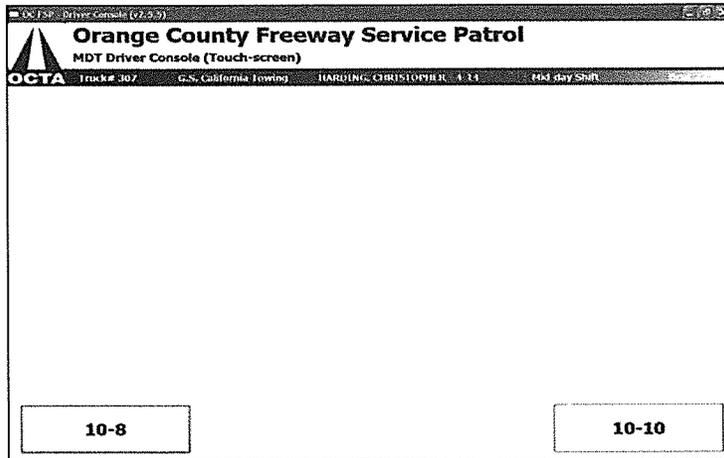
- d) After logging in, the user will receive a "10-8 screen" displaying a "10-8" button (In Service) and a "10-10" button (Off Duty). The user may now proceed to his service beat.

REMEMBER: Close MDC lid if necessary to assure adequate visibility to roadway and mirrors (safety always comes first).

STARTING PATROL

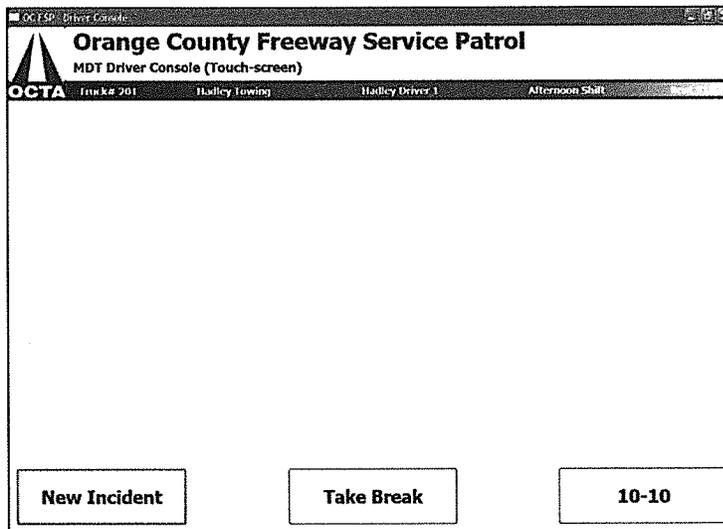
When starting service at the beginning of your shift, your MDC will display a static service screen with a "10-8" button or "10-10" button.

- 1) At the start of the shift you will select the "10-8" button. The MDC will not allow you to go 10-8 until you are within your assigned beat limits.



- a) Pressing the 10-8 button notifies dispatchers and supervisors that you are on your assigned beat, ready for service, and actively patrolling your beat.

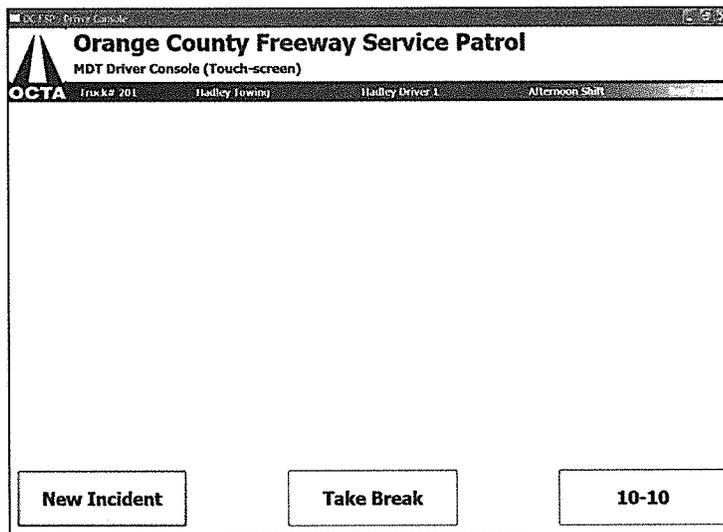
- b) While in service, patrolling, the MDC will display a screen containing three options: New Incident, Take Break, and 10-10. This screen is referred to as the "Patrol Screen."



PROVIDING SERVICE

Upon arriving to an incident or a vehicle that requires service, the driver must indicate that they have arrived on scene, and are providing service.

- 1) Select "New Incident." This will take the user to an incident entry screen.



- 2) In the new incident screen, verify the beat number, freeway, location and incident type information that are presented by the system. Change any information that is not correct, using the drop-down box for each section.
 - a) The system will auto-fill beat and location sections for you based on login and GPS information, and will present a default setting of "1126: Disabled Vehicle" for the incident type.
- 3) Enter a brief description of the vehicle, including make, model, and a description of the issue (if evident) in the description box.
 - a) EXAMPLE: Blue Toyota Prius flat tire.
 - i) Avoid using commas in the description box. Use dashes instead of commas.

4) Select "10-97."

The image shows a software window titled "New Incident". It contains several input fields and two buttons. The fields are: "Beat" with a dropdown menu showing "553"; "Freeway" with a dropdown menu showing "NB 405"; "Location" with a dropdown menu showing "I-405 AT BRISTOL"; "Type" with a dropdown menu showing "1126: Disabled Vehicle"; and "Description" with a large empty text box. At the bottom of the window, there are two buttons: "10-97" and "Cancel". The window has a standard Windows-style title bar and a taskbar is visible at the bottom of the screen.

- a) Selecting 10-97 informs the dispatcher and supervisors that you are "on scene" providing service, and provides general information based on the description you have entered.
- b) The system will display a more detailed incident information screen after selecting 10-97. Complete this information **AFTER** providing service.
 - i) Make certain that you collect the additional information that is required (vehicle type, license number, etc.) as part of providing service.

5) Provide Service

- a) Remember to present the customer with a FSP program brochure and business card as you greet the customer, and that the customer remains in a safe location off of the roadway while you are providing assistance.

6) Upon returning to your vehicle, after providing service, fill in the remaining incident information.

New Incident

PROVIDE SERVICE TO THE MOTORIST; COME BACK; AND CLICK CONTINUE.

Beat 553

Freeway NB 405

Location I-405 AT BRISTOL

Type 1126: Disabled Vehicle

Description Red VW

Service Req'd

Vehicle Type

License Plate California

Continue Cancel

- a) Type of incident (if different than originally entered)
- b) Description (if new or different information is available)
- c) Service Required (using the drop-down box)
- d) Vehicle Type (using the drop-down box)

e) License Plate Number

f) License State (using the drop-down box)

g) Select "Continue"

i) This will take the user to a screen titled "Vehicle 1"

7) Complete the remaining assist information (some fields will be carried over from the previous screens).

The screenshot shows a window titled "New Incident" with a sub-header "Vehicle 1". The form contains the following fields:

- Service Provided: OCEAN - Overheat (dropdown)
- Vehicle Type: Motorhome (dropdown)
- License Plate: KDUEU33 (text input)
- License State: California (dropdown)
- Vehicle Position: (dropdown)
- Assistance: (dropdown)
- Traffic Speed: (dropdown)
- Tow Location: (dropdown)
- Drop Zone: (text input)
- Wait Period (mins): (text input)
- Start Miles: (text input)
- End Miles: (text input)
- Last Name: (text input)

At the bottom of the form are two buttons: "Done (10-98)" and "Next Vehicle".

a) Service Provided (verify from previous screen, change if necessary)

b) Vehicle type (verify from previous screen, change if necessary)

c) License Plate (verify from previous screen, change if necessary)

d) State (verify from previous screen, change if necessary)

- e) Vehicle Position (using the drop-down menu)
- f) Assistance (using the drop-down menu)
- g) Traffic Speed (using the drop-down menu)
- h) Tow Location (using the drop-down menu)
- i) Drop Zone (if towed)
- j) Wait Period (in minutes). Ask the motorist how long they waited for assistance.
- k) Start Miles - If vehicle is towed and providing 11-48X for female or juvenile motorist
- l) End Miles - If vehicle is towed and providing 11-48X for female or juvenile motorist
- m) Last Name (customer last name) - If providing 11-48X for female or juvenile motorist
- n) Select "Next Vehicle" or "10-98"

(1) Use "Next Vehicle" if you provided assistance to more than one vehicle at the same incident. Use "Next Vehicle" as many times as necessary to enter all vehicles assisted at the scene.

(a) Complete all assist information for all additional vehicles as outlined in this section.

8) Use "10-98" to indicate that you have entered all assist information and are returning to service.

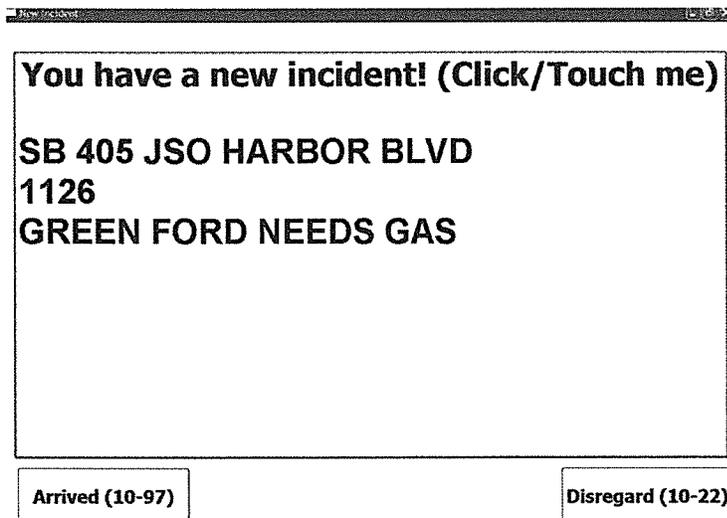
(1) Resume patrol.

ERROR HANDLING

NOTE: The system will not allow you to proceed if any required information is missing. The system, instead, will present a message at the top of the screen asking you to enter the missing (required) information. If you encounter an error, complete the required (missing) information then select 10-98.

RECEIVING INCIDENTS THROUGH THE MDC

- 1) Dispatchers may assign incidents to a FSP Operator using the MDC. If assigned to an incident by dispatch, the MDC will emit an alarm tone (ringing) and display the incident information / location on the MDC screen. Touch the screen to accept the call. This will indicate to dispatch that you are en-route to the call.
 - a) Upon arriving at the dispatched location, press the (10-97) button to indicate that you have arrived on scene.



- b) Provide service and enter service information into the system as outlined in the providing service / new incident section of the instructions.

NOTE: If you should be instructed to disregard the call while in route, select "Disregard (10-22)" button to cancel the call. The MDC will return to the patrol screen.

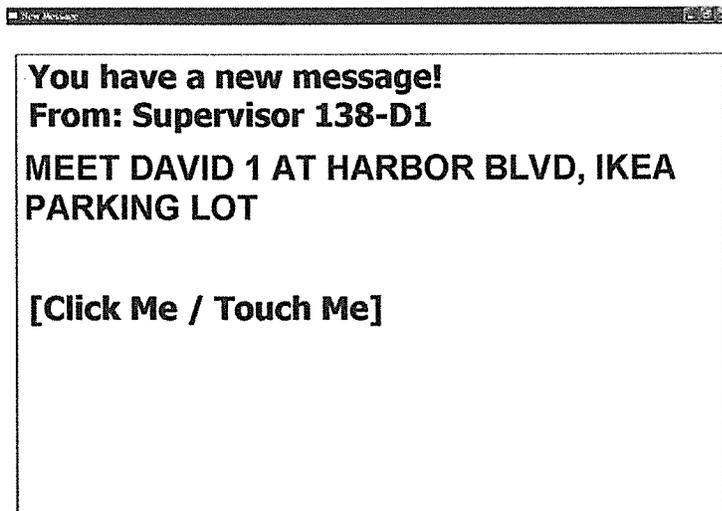
If you have already arrived at the location, prior to the dispatcher canceling you, complete a service record with the information that you have available, and code the call as appropriate (Unable to Locate, Private Assistance, etc.)

RECEIVING MESSAGES FROM DISPATCHERS AND SUPERVISORS

- 2) Periodically dispatchers or program supervisors may have a need to send a message through your MDC. When this occurs, the system will emit a ring tone and display the message on your MDC screen.
 - a) Read the message, and proceed as necessary. Click on the screen to clear the message. Clicking or touching the screen **deletes** the message.

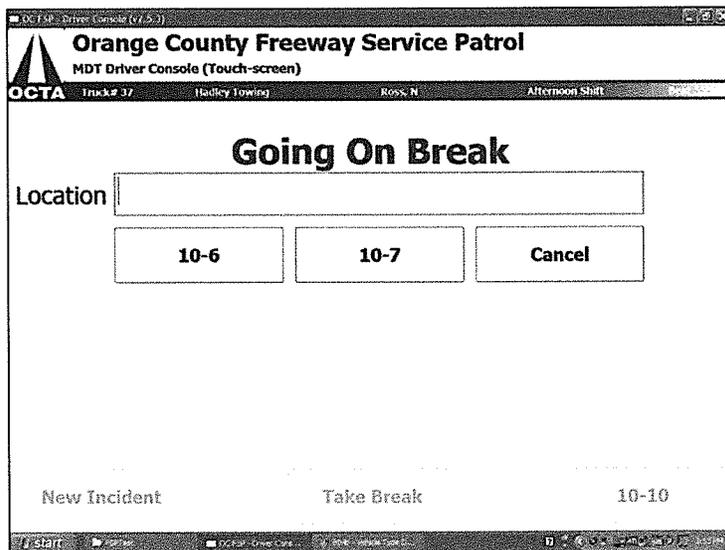
TAKE A BREAK

Operators are entitled to take authorized breaks (10-6), or may be scheduled for a meal period break (10-7), as part of their scheduled shift.



- 1) From the patrol screen, select "Take Break."
- 2) Enter your break location (where you are taking your break).
- 3) Select appropriate break code.
 - a) Select "10-6" for a restroom break or other (short) unscheduled break.

- b) Select "10-7" for a scheduled meal break.
- c) Select "cancel" if not going on break.



- 4) After selecting the desired break code, the MDC will display a break timer. The count up timer will display the number of minutes that the user has been on break. If the user exceeds his allowed break time, the screen will display red lettering.



- 5) After completing your break, select "Resume" to return to the patrol screen and resume patrol. Selecting the resume button automatically places you 10-8 back in service.

NOTE: The system will not allow a user to take a "10-7" break if one of the adjacent beats is on a "10-7" break. The user must wait until the adjacent beat returns to duty before taking his break.

ERROR HANDLING

The MDC will not allow the user to begin a break, and will display an error screen, if the user has not entered a break location into the MDC. If you receive this error, enter a break location and re-select the desired break-code button to proceed.

LOG OUT

- 1) When ready to log off of the system, select the "10-10" button from the patrol screen.

OC.FSP - Driver Console

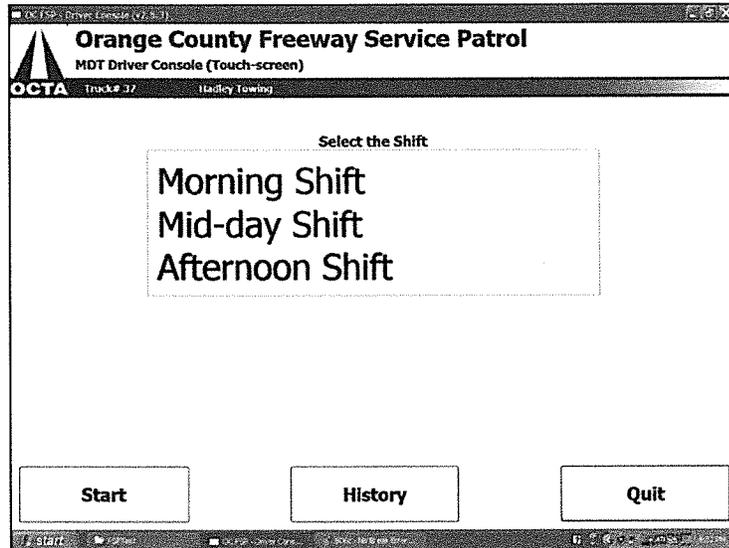
Orange County Freeway Service Patrol

HDT Driver Console (Touch-screen)

OCTA Truck# 201 Hadley towing Hadley Driver 1 Afternoon Shift

New Incident **Take Break** **10-10**

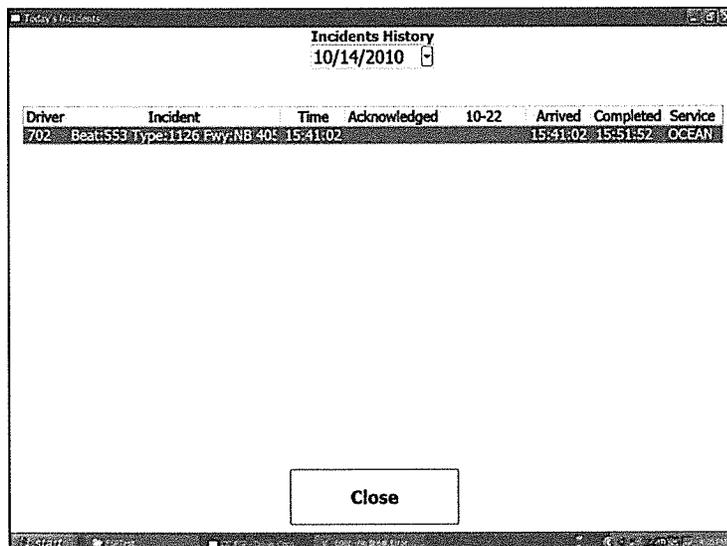
- a) You will be taken to a screen that will allow you to log back in to the system (start), review your history, or log out (quit).



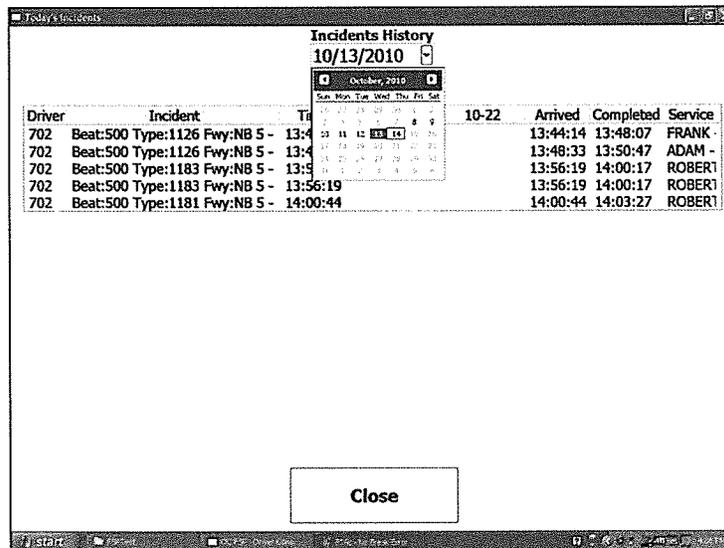
- 2) Review incident history by selecting the "History" button.

- a) Review the history to assure that all incidents are accurately recorded into the system.

If all vehicle assists are not included in the beat history, (1) notify FSP Program Supervisors (CHP David Units) of the issue, (2) identify the missing records on your daily activity log, and (3) notify your Company Supervisor when you turn in your daily activity log.



- b) From the history screen, you can review your incident history from previous days by selecting a date in the date field drop-down box of the history screen.



- 3) After reviewing incident history, select "close."

- a) Select "Quit."

You may now turn off the MDC.