Summary of Work Performed Under UCI Subaward #2009-2291
TMC Performance Measures Project

Task 1: CMS data Integration Feasibility

The purpose of this task was to determine the feasibility of data exchange between the Activity Log and the ATMS CMS subsystem so that Caltrans can make the decision of whether or not to implement feature.

The purpose of this data exchange is to eliminate duplicate manual entry of the same data into two systems, thus reducing workload, and to reduce data entry errors, thus improving quality.

Two methods could be used to implement a data exchange between the Activity Log and the ATMS CMS subsystem:

1) Manually enter the CMS message and data into the Activity Log then transfer the data to the ATMS CMS subsystem.

2) Manually enter the CMS message into the ATMS then transfer the data to the Activity Log.

Through discussions with the TMC personnel, it was determined that it is standard procedure to first enable CMS messages using the ATMS and then enter the information into the Activity Log later, therefore only the second implementation method was analyzed for feasibility.

CMS integration using the second method consists of implementing the following features in the Activity Log:

1) Provide an indicator on an Activity Log page that indicates that there are CMS messages available to be processed.

2) Clicking the indicator will cause the display of a CMS message selection page. Routine system messages, i.e. Travel Time messages, will not appear.

3) The CMS message selection page will allow any or all CMS messages to be either ignored, marked as rejected, or selected for logging.

4) A CMS message marked as rejected will be removed from the list of CMS messages available to be processed and added to the Activity Log database.

5) A CMS message marked as accepted will cause a page to open to allow the message to be associated with other information in the Activity Log and the appropriate data inserted into the Activity Log database.

The estimated effort required to implement CMS integration between the Activity Log and the ATMS is shown in Table 1.

Table 1

Activity Log pages programming	100 hours
ATMS CMS message interface programming	60 hours
Debugging, training, and support	25 hours
Total	**185 hours**

Task 2: Improve Report Builder

The purpose of this task is to improve the Activity Log's reporting capability. To that end, additional reports were added to all three of the TMC's activity log applications, i.e. the TMT Responders Log, the Operations Activity Log, and the Communications Radio Activity Log.

The TMT Responders Log had three reports added.

1) A delay calculation report

2) An employee report

3) An EA summary report

All three reports included the ability to run the report for any date range. In addition, the date range subroutine that is used by all reports was improved to be more accurate and error check malformed or invalid dates.

The Operations Activity Log, which is used by the TMC back row, had two reports added and several reports were improved, including the report builder itself.

1) Improvements were made to the report builder to display all activity log columns, including the Performance Measures, Route, Direction, Location, Lanes Blocked and Post Miles columns.

2) Both the Daily Report and the Incident History Report were improved to include data captured from the Communications Radio Activity Log and the CHP iCAD public XML feed.

3) The TMC Operations Activity Report was improved to better capture activity log data and the final report was made so the entries could be edited if needed.

4) A new CHP iCAD Activity Report was added, and access to the new Closure Sheets Report from the Communications Radio Log was added to the Operations Activity Log.

The main focus for this phase of the project was on the Communications Radio Activity Log reports which is used by the maintenance personnel in the TMC front row. As this log was only just completed at the end of last phase, only two reports had been started.

1) All of the reports from the Operations Activity Log were copied to the Communications Radio Activity Log and modified to include the new IMMS field.

2) The report builder was improved to display all activity log columns, including the Performance Measures, Route, Direction, Location, Lanes Blocked and Post Miles columns.

3) The Daily Report and the Incident History Report were improved to include data captured from the Operations Activity Log and the CHP iCAD public XML feed.

4) The Spilled Substance report was improved and the ability to email the report as an attachment was added.

The majority of the work was done on the Closure Sheets Report.

1) The Route and Direction fields were split and both were given drop down lists instead of data entry boxes.

2) Location and Description were split into separate entries and a new Lanes entry box was added.

3) Error checking was added to insure proper formatting of the ID field that corresponds to the CAD field in the Activity Log.

After the work was complete, it was reclassified as an Activity Log Routine and removed from the reports window and a button was added inside the Communications Radio Activity Log to access it.

This was required because the information from the Closure Sheets was now being inserted directly into the Communications Radio Activity Log when the 10-97 field gets entered saving duplication of effort. A new copy of the report was added back to the reports window without the ability to modify the entries.

Task 3: Activity Log Support

From time to time bugs and display errors are discovered and reported by the users of the Activity Log Programs. Once they are reported, they are researched and programming fixes are implemented.

The following items were the major fixes or changes in this phase of the contract:

1) Fixed a bug that would cause the JavaScript to break when illegal characters were used in CAD numbers.

2) Fixed the bug that was preventing the transactions with no CAD number from showing up in the Find Record Search.

3) Set the default display when you pick a date to show records with no CAD number.

4) Fixed a bug that caused the menus to display poorly when the screen resolution was set below 1024x768.

5) Fixed a display problem that caused older CAD numbers to show before newer ones.

6) Resolved an issue causing the time to not input properly under some circumstances.

7) Fixed the Communications Radio Log Layout in Internet Expolorer.

8) Fixed a display problem with low-resolution settings on Communications Radio Log.

9) Fixed a problem with duplicate menu items in Communications Radio Log.

10) Diagnosed and fixed CHP iCAD XML data that stopped working on 3/9/2010.

11) Worked on numerous small bug fixes, display fixes, maintenance issues and program changes.

Task 4: Event Management Data Integration Feasibility

The purpose of this task was to determine the feasibility of event/closure/incident data exchange between the Activity Log and the ATMS Event Management subsystem so that Caltrans can make the decision of whether or not to implement feature.

The purpose of this data exchange is to eliminate duplicate manual entry of the same data into two systems, reduce workload, eliminate data entry errors, and thus improve quality.

Through discussions with the TMC personnel, it was determined that the Activity Log should be the source of event data and the method which most conforms to existing procedures would be to transfer data, e.g. type, location, duration, etc., from the Activity Log to the ATMS Event Management subsystem. Once the data has been transferred to the Event Management subsystem, all of it capabilities, such as response plan generation, may optionally be used to further manage the event.

Event Management integration consists of implementing the following features in the Activity Log:

1) A button will be provided on an Activity Log page to initiate the transfer of information from the Activity Log to the ATMS Event Management subsystem.

2) Clicking the initiate button will cause the display of a page to appear which will allow the information to be reviewed by an operator before transfer and to allow for entry of items that are required by Event Management, but are not available in the Activity Log, by the use of pull-downs or clickable lists. The operator may either confirm the data as a valid incident/event/closure and send it to the Event Management subsystem or cancel the entire operation.

3) The transfer of information to the Event Management subsystem will cause the creation of a termination button to appear on the Activity Log.

4) Clicking the termination button will cause the display of a page to appear which will allow the event to be terminated within the Event Management subsystem, thus removing the incident as if it were terminated using the ATMS GUI.

The estimated effort required to implement event management integration between the Activity Log and the ATMS is shown in Table 2.

Table 2

Activity Log pages programming	80 hours
Event Management Oracle database analysis	20 hours
Oracle interface programming	20 hours
Debugging, training, and support	25 hours
Total	**145 hours**

Task 5: Activity Log Enhancements

The purpose of this task was to add improvements to the existing Activity Log Program. As Operators use the program, they discover items that can be improved or items that might have been missed in initial development.

One of the first items was to change the layout of the Communications Radio Activity Log. The columns were moved, the buttons were moved to a more central location, and new buttons were added for closing CAD numbers and IMMS numbers. More room was made available for the memo field, and the bottom selection box was widened so more information can be displayed.

Other changes include:

1) Mouse over menu items were added.

2) Operators were provided with the ability to edit the mouse over menu items.

3) The contact information program was updated.

4) A button was added to allow users to change their password.

5) The (Contacted) check box column for the log was removed.

6) The edit record function was updated to open an incident if a CAD was added while editing a record.

7) Error checking was added to manually entered date stamps on CAD numbers.

8) New search for IMMS number capability was added to Incident History Search.

9) Users can now select the number of records that appear in the lower search box.

10) Several other small miscellaneous changes and updates were made.

11) The Bugzilla bug reporting system was implemented on an available District 12 server and a bug report button linking to that system was added for all logs.

Project cost summary

Table 3 shows the original estimate for the hours required for each task, the actual hours used, and any remaining hours that are unused.

Table 3

Task	Estimated hours	Used hours	Remaining hours
CMS data Integration Feasibility	50	50	0
Improve Report Builder	200	200	0
Activity Log Support	100	100	0
Event Management Data Integration Feasibility	50	50	0
Activity Log Enhancements	100	100	0
Total	500	500	0

Appendix A

Acceptance Test Plan