September 22nd, 2009

INFORMATION EXCHANGE NETWORK (IEN)

SITE INTEGRATION

Workstation Test Procedures

Release 2, Final
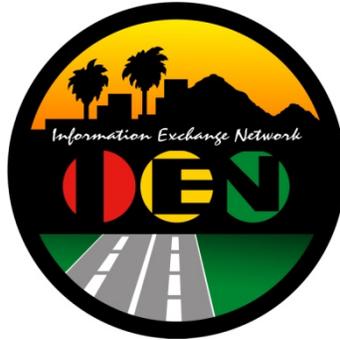
METRO

PUBLIC WORKS

Prepared by:

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LOS ANGELES COUNTYWIDE

INFORMATION EXCHANGE NETWORK

SITE INTEGRATION

WORKSTATION TEST PROCEDURES

Release 2 - Final

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Los Angeles County
Department of Public Works

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REVISION HISTORY

VERSION	DATE	IEN RELEASE	DESCRIPTION
Release 1	10/20/06	1.08	Release 1 Version (Incorporates LA County comments from "Draft" and IEN Site Integration Tests conducted in the City of West Hollywood)
Release 2		2.02	IEN Multiple Corridor Server updates

1. INTRODUCTION

1.1 PURPOSE

This document presents the LA County Information Exchange Network (IEN) Site Integration Workstation Test Procedures. The purpose of this test is to verify the connectivity and basic functionality of an IEN Workstation as installed at a participating agency.

1.2 SCOPE

The test procedures contained within this document verify the configuration and operation of IEN Workstation components.

These components include, but are not limited to, the following:

- IEN User Interfaces
- Displays of data from local and remote Traffic Control Systems
- User access right and privileges

These procedures are intended to certify that a new IEN Workstation has been installed and configured correctly. They are not intended to test the full functionality of the IEN Workstation software.

1.3 AUDIENCE

This document is intended for City/Agency personnel who are installing an IEN Workstation at their location.

1.4 REFERENCES

This document references the following materials:

- *IEN System Technical Reference Manual*

1.5 DOCUMENT CONVENTIONS

The following conventions are used within this document:

Table 1-1: Document Conventions

CONVENTION	EXAMPLE
A mono-spaced font is used to indicate prompts and commands typed in at a computer. The bold text is text that must be typed in.	`C:> `**`NSLOOKUP`**
Text enclosed in "greater-than" and "less-than" characters indicates keystrokes.	<TAB>
Text enclosed in brackets indicates a user-supplied value. Do not enter the brackets.	`C:> `**`PING`** [IP Address]
A plus sign indicates that two keys are to be pressed simultaneously; the first key is held down while the second key is pressed.	<SHIFT>+<F1>
A capitalized word represents a command button or menu option.	SHOW DIAGRAM
Italic typeface indicates document titles or emphasis.	*Scope of Work*

2. APPROACH

The following approach will be used for the test cases within this document.

2.1 TEST STEP FORMAT

The IEN Site Integration Workstation Test Procedures is comprised of a series of test cases. Each test case contains multiple steps, where each step exercises a discrete aspect of the system. The test steps in this document contain the following fields:

Table 2-1: Test Step Fields

FIELD	DESCRIPTION
Step	Identifier for the test step within the test case.
Description	A description of the function or component that is being tested.
Precondition	Any preconditions that must be met before the test can be performed.
Input	One or more actions to be performed by the Test Conductor as part of the test.
Expected Output	One or more operations or events that the system must return as a result of the input for the test to pass.
Notes/Comments	An open field in which the Test Conductor and/or witnesses can log comments or information related to the test step.
Pass/Fail	The result of the test (to be entered during testing).

2.2 ROLES AND RESPONSIBILITIES

The following roles are used in the Workstation Test Procedures:

- **Test Conductor**: The Test Conductor is responsible for performing the test procedures and logging the results. The Test Conductor should be familiar with IEN Workstation components.
- **Test Witness**: Test Witnesses are responsible for observing the performance of the test and certifying the documented results. Test Witnesses can record additional notes and comments for the Test Report.

The Test Conductor and Test Witnesses are members of the stakeholder agencies and/or their representatives. At least one representative must be present from the LA County Department of Public Works.

2.3 TEST PERFORMANCE

The Workstation Test Procedures test cases and steps are described in Section 4 of this document. The test cases have been developed such that each test case may be run independently.

Prior to the start of the test, the Test Conductor will ensure that all test environment specifications are met and that the Test Environment Configuration Table (see Section 3) has been completed. The Test Conductor will manipulate the test environment to satisfy all preconditions for a particular step. The Test Conductor is to perform the actions specified in the Input field of each test step and then observes the behavior of the system for the criteria specified

in the Expected Output fields. A test passes if the actual output meets the expected output criteria; otherwise the test fails. Additional information can be recorded in the Notes/Comments field, as needed.

Each step shall be documented as being completed with either a check mark ("√") or "P" for pass or an "X" or "F" for fail. At the conclusion of each test case, the Test Conductor, as well as any other Test Witnesses, shall log the test case results in both the Test Case Specifications and the Test Results Summary Table (see Section 5). A test case fails if any of the test steps fail. All failed test steps will be noted and System Problem/Change Request form(s) (SPCRs) (Appendix B) completed. Additional comments may be entered to document anomalies, detailed results, or redlined changes to the test steps. The Test Results Summary Table must contain an entry for each test case. The Test Case Specifications and the Test Results Summary Table are the written record of all activities that are performed as part of this integration test.

2.4 SEVERITY LEVELS

In the event that the actual results of a test step does not exactly match the stated expected results (i.e., a test step fails), the Test Conductor must rate and document the severity of the failure. Table 2.2 should be used as the guideline in this appraisal.

Table 2-2: Failure Severity

#	SEVERITY	DESCRIPTION
1	CRITICAL	Causes a system or application to fail. No work around is available.
2	SEVERE	Major functionality is missing and no work around is available.
3	MODERATE	Required functionality is missing but work around is available.
4	INCONVENIENCE	Inconvenient or an annoying but does not affect functionality. Documentation errors.
5	SUGGESTION	Improvement or enhancement that is outside the scope of required work.

3. TEST ENVIRONMENT SPECIFICATIONS

The Workstation Test Environment consists of the following components.

Table 3-1: Test Environment Components

COMPONENT	DESCRIPTION
Command/Data Interface	Software that connects an IEN Site Server to the local TCS. This component is only required for Sites that are connecting a TCS.
IEN Regional Server	A Windows-based PC located at LA County on which the IEN Regional Server software is installed.
IEN Database Server	A Windows-based PC located at LA County that hosts the central IEN Database.
Network	COTS networking components that interconnect the other test environment components. These components will vary from site to site, however the following should be true: • Traffic is not permitted between the IEN and other local networks with the exception of the connection between the Site Server, CDI, and TCS • The Site Server and CDI host system are connected over a 100 Mbps or better network link • The Site Server and Workstation system are connected over a 100 Mbps or better network link • The Site Server and Workstation systems are connected to the IEN servers at LACO over a 1.54 Mbps or better network link.
IEN Site Server	A Windows-based PC on which the IEN Site Server software is installed
IEN Workstation	A Windows-based PC on which the IEN Workstation software is installed
IEN Utility Server	A Windows-based PC located at LA County that provides various network services that support the IEN
TCS Server	A Traffic Control System that connects to an IEN Site Server through a Command/Data Interface. This component may not be available at all Sites.

The terms *local* and *remote* are used to differentiate between components installed at the Site where the IEN Workstation is located as opposed to components installed at other Sites within the IEN.

The IEN Workstation is the component being tested herein. The other components listed above support the Workstation's operation. The IEN Workstation being tested must be configured as specified in the *IEN System Technical Reference Manual*, meaning that the following actions have been performed:

- IEN Workstation software has been installed and configured appropriately for the Site
- The IEN Workstation has been joined to the IEN Windows domain
- The IEN Workstation has been registered in the IEN DNS
- The IEN Workstation is synchronized to the IEN's time server
- IEN users at the local Site have been configured in the IEN's Windows domain
- The IEN Workstation has access to shared ATMS Explorer diagrams

The Workstation Test Procedures rely on the availability of TCS data from local and remote Sites. Local TCS data originates from a local Traffic Control System that has been connected to the local IEN Site Server through a Command/Data Interface. Local TCS data will not be available if no TCS is connected to the local Site Server. Remote TCS device data is from a Traffic Control System connected at a remote Site.

The Test Environment is depicted below.

Figure 3-1: Test Environment
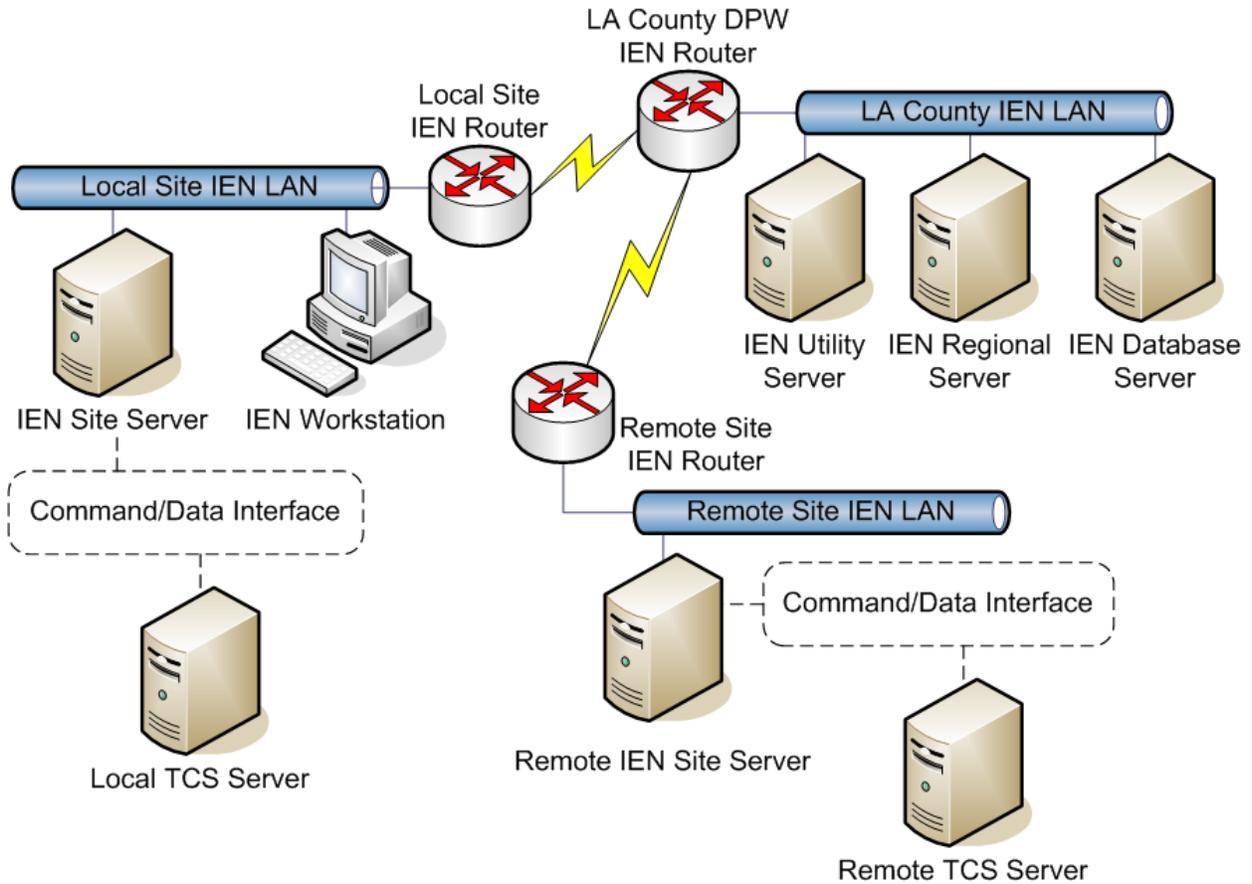
Each Workstation must be configured for the Site at which it is located. In Table 3-2 below, record the appropriate values for the workstation being tested.

Table 3-2: Test Environment Configuration Values

PARAMETER	VALUE
Regional Server ID Number	
Regional Server Host Name	
Regional Server IP Address	
Site ID Number	
Site Name	
Site Server Host Name	
Site Server IP Address	
Workstation Host Name	
Workstation IP Address	

The tests may be run with any valid IEN user account that has logon rights for the IEN Workstation. Additional user requirements are noted in the test step preconditions.

4. TEST CASES

The following sections contain the test cases of the IEN Site Integration Workstation Test Procedures. Each test case is written to be a stand-alone test and the test cases may be performed in any order.

The workstation being tested must be in the default test environment configuration (as specified in Section 3) prior to the start of the test, unless otherwise noted within the specifications of the test case.

It is the responsibility of the Test Conductor to insure that the test results are logged for each test case and test step. It is the responsibility of Test Witness(es) to sign the test results verifying Test Case completion(s) as documented. All witnesses must be listed on the Test Results Form.

It will take up to one hour to perform this test.

4.1 VERIFY WORKSTATION SYSTEM CONFIGURATION

TEST CASE SPECIFICATION	
ID	WS-1
Name	Verify Workstation System Configuration
Version	2.0.0
Description	Verifies that the Workstation uses a supported platform, is connected to other IEN systems, and that all prerequisite software is installed and properly configured.
Environment	Default
Prerequisites	The IEN Workstation being tested is configured as specified in the *IEN System Technical Reference Manual* and connected to the other Test Environment components.
Number of Steps	11
TEST CASE ACCEPTANCE	
Acceptance Targets	n/a
Acceptance Criteria	All test steps must pass
TEST CASE EXECUTION	
Software version/date	
Test start date/time	
Test end date/time	
Total Pass/Fail	

STEP	DESCRIPTION				P/F
	PRECONDITION	INPUT	EXPECTED OUTPUT	NOTES/COMMENTS	
1	Verify that the system is a member of the IEN domain.				
		Log onto the system with an IEN domain account.	The IEN domain account is able to log onto the Workstation.		
2	Verify that the system has network connectivity to the local Site Server.				
		Open a command prompt on the IEN Workstation and run the command PING [IP ADDRESS OF THE LOCAL SITE SERVER].	The Site Server responds to the Workstation's pings.		
3	Verify that the system has network connectivity to the Regional Server.				
		Open a command prompt on the IEN Workstation and run the command PING [IP ADDRESS OF THE REGIONAL SERVER].	The Regional Server responds to the Workstation's pings.		
4	Verify that the system has network connectivity to the IEN Utility Server.				4
		Open a command prompt on the IEN Workstation and run the command PING 10.10.2.10.	The Utility Server responds to the Workstation's pings.		
5	Verify that the system can connect to the IEN DNS and resolve IEN hostnames.				5
		Open a command prompt and run the following commands: 1. **NSLOOKUP** 2. [HOSTNAME OF THE LOCAL SITE SERVER] 3. [HOSTNAME OF THE REGIONAL SERVER] 4. <CTRL> + C	The system is able to resolve IP addresses from the given hostnames.		

STEP	DESCRIPTION				P/F
	PRECONDITION	INPUT	EXPECTED OUTPUT	NOTES/COMMENTS	
6	Verify that the system is registered in the IEN DNS.				
		Open a command prompt and run the following commands: 1. **NSLOOKUP** 2. [THE SYSTEM'S HOSTNAME] 3. [THE SYSTEM'S IP ADDRESS] 4. <CTRL> + C	The DNS resolves the system's hostname and IP address correctly.		
7	Verify that the system is synchronized to the IEN Time Server.				
		Open a command prompt and run the following commands: 1. C:> **NTPQ** 2. NTPQ> **PEERS** 3. NTPQ> <CTRL> + C	(1) The list that is returned by the "peers" command contains IENUTILSVR1.IEN.LOCAL (the IEN time server). (2) The time server listing is notated with an asterisk.		
8	Verify that the workstation is running Windows XP Professional or Windows 2003.				8
		Right-click the MY COMPUTERS icon and select PROPERTIES.	The Properties dialog shows that the operating system is Microsoft Windows XP Professional or Windows 2003.		
9	Verify that the Oracle 10g Database client has been installed and configured to connect to the IEN database.				
		Open a command prompt and run the command **TNSPING IENDB**.	(1) The TNS Ping Utility is reported to be version 10.2. (2) The command returns a status of "OK".		

STEP	DESCRIPTION				P/F
	PRECONDITION	**INPUT**	**EXPECTED OUTPUT**	**NOTES/COMMENTS**	
10	Verify that Microsoft .NET Framework, Crystal Reports, ESRI MapObjects software has been installed.				
		Open Add/Remove Programs and examine the list of installed programs.	The following applications are on the installed programs list: (1) Microsoft .NET Framework 3.5 (2) Crystal Reports 2008 Runtime (3) ESRI MapObjects 2 Runtime		
11	Verify that IEN domain user accounts have been configured for local users.				
		Log onto the Workstation with each local user's IEN domain account.	(1) IEN domain accounts have been created for local users. (2) Local users have logon access to the IEN Workstation. (3) The IEN Workstation Software is accessible to all local users.		

COMMENTS:

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4.2   VERIFY IEN WORKSTATION SOFTWARE CONFIGURATION

TEST CASE SPECIFICATION	
ID	WS-2
Name	Verify IEN Workstation Software Configuration
Version	2.0.0
Description	Verifies that IEN Workstation software is installed and configured properly.
Environment	Default
Prerequisites	The IEN Workstation being tested is configured as specified in the *IEN System Technical Reference Manual* and connected to the other Test Environment components.
Number of Steps	5
TEST CASE ACCEPTANCE	
Acceptance Targets	n/a
Acceptance Criteria	All test steps must pass
TEST CASE EXECUTION	
Software version/date	
Test start date/time	
Test end date/time	
Total Pass/Fail	

STEP	DESCRIPTION				P/F
	PRECONDITION	**INPUT**	**EXPECTED OUTPUT**	**NOTES/COMMENTS**	
1	Verify that IEN software has been installed.				
		Open Add/Remove Programs and examine the list of installed programs.	The following applications are on the installed programs list: (1) Los Angeles County Information Exchange Network (Version 2.02) (2) Los Angeles County IEN Map Data (Version 1.03)		
2	Verify that the IEN software has been configured correctly.				
		Open a command prompt and run the command `REG QUERY HKLM\SOFTWARE\TRANSCORE\LACDPW\IEN`. Examine the resulting command output. The command output will be divided into columns with configuration parameters in the far left column and their values in the far right column.	(1) The WDataServiceORBOption value is in the form of "-ORBInitRef NameService=corbaloc::[Site Server]:14444/NameService", where *[Site Server]* is the name of the local Site Server. (2) The RegionID value is the appropriate Regional Server ID for the workstation. (3) The SiteID value is the ID of the local site. (4) The WorkstationID value is a unique ID number at the local site.		

3	Verify that the IEN software starts properly.			3
		(1) Reboot the system. (2) Open the Windows Services console. (3) Check the status of the following services: • IEN Workstation Data Service • IEN Workstation Link Data Service • TransCore ATMS – Privilege Service • TransCore ATMS – System Log Forwarder	(1) The Status column shows that the specified services have all started. (2) The Startup Type column shows that all specified services are set to "Automatic".	
4	Verify that the local IEN database can be synchronized with the central IEN database.			4
		Select START > ALL PROGRAMS > LOS ANGELES COUNTY IEN > ADMINISTRATIVE TOOLS > SYSTEM COMMANDS > SYNC LOCAL IEN DATABASE.	The command completes with no errors reported in the "Synch Local IEN Database" command window.	
5	Verify that the local IEN database is synchronized nightly to the central IEN database.			5
		Open the Windows Scheduled Tasks and examine the "Sync IEN Database" task.	(1) The "Sync IEN Database" task exists. (2) The task is configured to run the "C:\Program Files\TransCore\IEN\IenDbSync.exe" program nightly with the "All" argument. (3) The last result of the task is "0x0".	

COMMENTS:

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4.3 VERIFY BASIC IEN WORKSTATION USER INTERFACE OPERATION

TEST CASE SPECIFICATION	
ID	WS-3
Name	Verify Basic Workstation User Interface Operation
Version	2.0.0
Description	Verifies basic IEN Workstation User Interface functionality on the local Workstation.
Environment	Default
Prerequisites	The IEN Workstation being tested is configured as specified in the *IEN System Technical Reference Manual* and connected to the other Test Environment components.
Number of Steps	18
TEST CASE ACCEPTANCE	
Acceptance Targets	n/a
Acceptance Criteria	All test steps must pass
TEST CASE EXECUTION	
Software version/date	
Test start date/time	
Test end date/time	
Total Pass/Fail	

STEP	DESCRIPTION				P/F
	PRECONDITION	**INPUT**	**EXPECTED OUTPUT**	**NOTES/COMMENTS**	
1	Verify that ATMS Map is installed and opens correctly.				
		Open the ATMS Map application and enable the various map layers.	(1) ATMS Map opens to display roadway information for the LA County region. (2) The map layers are activated displaying their icons on the map.		
2	Verify that the Workstation displays controller status summary data.				
		Observe Intersection Layer icons while selecting different status indications from the intersection legend.	Controller icons change colors to show their current value for the selected status indication.		
3	Verify that the Workstation displays status data from remote TCS's.				
		Double-click a remote TCS's intersection icon on the map to open a detailed status screen.	Detailed status information is reported for the remote controller.		
4	Verify that the Workstation displays congestion link status data.				4
		Observe Congestion Link Layer icons while selecting different status indications from the congestion link legend.	Congestion link icons change colors to show their current value for the selected status indication.		
5	Verify that the Workstation displays incidents and planned events on the map.				5
	Incident and planned events logged in the Incident Management System.	Enable the Incident and Planned Event Layers.	Incidents and planned event icons are shown on the map.		
6	Verify that the Workstation displays informational icons on the map.				
		Enable the Informational Layer.	Informational icons are shown on the map.		

STEP	DESCRIPTION				P/F
	PRECONDITION	**INPUT**	**EXPECTED OUTPUT**	**NOTES/COMMENTS**	
7	Verify that ATMS Explorer is installed and opens correctly.				
		Open ATMS Explorer.	ATMS Explorer opens to display the default diagram.		
8	Verify that the Workstation has access to the diagrams of remote intersections.				
	A default intersection diagram has been created for the selected controller.	(1) Open the ATMS Map application and enable the intersection map layer. (2) Locate a controller from a remote Site, right-click the controller icon, and select SHOW DIAGRAM.	ATMS Explorer opens to show the selected controller's default diagram.		
9	Verify that the Workstation displays intersection status data.				
		(1) Open the ATMS Map application and enable the intersection map layer. (2) Locate a controller from a remote Site, right-click the controller icon, and select SHOW DIAGRAM. (3) Examine the intersection status icons in the diagram.	Status data is displayed for the intersection.		
10	Verify that the Workstation displays system detector status data.				

STEP	DESCRIPTION				P/F
	PRECONDITION	**INPUT**	**EXPECTED OUTPUT**	**NOTES/COMMENTS**	
		(1) Open the ATMS Map application and enable the intersection map layer. (2) Locate a controller from a remote Site, right-click the controller icon, and select SHOW DIAGRAM. (3) Examine the detector status icons in the diagram.	Status data is displayed for the detector.		
11	Verify that the Workstation displays section status data.				
		(1) Insert a section icon into an ATMS Explorer diagram and associate it with a remote section. (2) Put the diagram in run mode and examine the summary and detailed status displays.	Status data is displayed for the section.		
12	Verify that the Incident Management System is installed and opens correctly.				
		Open the TransSuite Incident Management System application.	TransSuite IMS opens to display event status information.		
13	Verify that the Workstation displays incident and planned events.				
		Examine the IMS incident and planned event lists.	Incident and planned event lists are populated with IEN events.		
14	Verify that local users can open, modify, and close events.				
	Log on as a local user.	(1) Create a test event. (2) Update the event. (3) Clear the event.	The test event is created, modified, and cleared.		

TRANSCORE.

STEP	DESCRIPTION				P/F
	PRECONDITION	INPUT	EXPECTED OUTPUT	NOTES/COMMENTS	
15	Verify that the TransSuite Scenario Manager is installed and opens correctly.				
		Select START > ALL PROGRAMS > LOS ANGELES COUNTY IEN > SCENARIO MANAGER.	The Scenario Manager opens to display active and inactive scenario plans.		
16	Verify that the IEN Alarm Viewer is installed and opens correctly.				
		Select START > ALL PROGRAMS > LOS ANGELES COUNTY IEN > IEN ALARM VIEWER.	The Alarm Viewer opens to show alarms for which the user holds the VIEW privilege.		
17	Verify that the ATMS System Log Viewer is installed and opens correctly.				
		(1) Select START > ALL PROGRAMS > LOS ANGELES COUNTY IEN > ATMS SYSTEM LOG VIEWER. (2) Click the SIMPLE button to apply a simple filter.	The System Log Viewer shows events that meet the selected filter criteria.		
18	Verify that the Time Space Diagram application is installed and opens correctly.				
		(1) Select START > ALL PROGRAMS > LOS ANGELES COUNTY IEN > TIME SPACE DIAGRAM. (2) Open a layout.	(1) The Time Space Diagram application opens. (2) Coordination data is shown for the intersections in the layout.		

COMMENTS:

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4.4   VERIFY DISPLAYS OF LOCAL TCS DATA

TEST CASE SPECIFICATION	
ID	WS-4
Name	Verify Displays of Local TCS Data
Version	2.0.0
Description	Verifies that local TCS data is displayed on the Workstation
Environment	Default
Prerequisites	The IEN Workstation being tested is configured as specified in the *IEN System Technical Reference Manual* and connected to the other Test Environment components. A Traffic Control System is connected to the local Site Server.
Number of Steps	11
TEST CASE ACCEPTANCE	
Acceptance Targets	n/a
Acceptance Criteria	All test steps must pass
TEST CASE EXECUTION	
Software version/date	
Test start date/time	
Test end date/time	
Total Pass/Fail	

STEP	DESCRIPTION				P/F
	PRECONDITION	**INPUT**	**EXPECTED OUTPUT**	**NOTES/COMMENTS**	
1	Verify that local controllers are shown on the map.				
		Open ATMS Map, enable the Intersection Layer, and locate local controllers on the map.	Local controllers are visible on the map.		
3	Verify that icons for local controllers are drawn on the map at the correct locations.				
		Examine the positions of local controllers on the map.	Local controller icons are placed at the correct locations on the map.		
4	Verify that summary status data is being displayed for local controllers.				
		Open the Intersection Layer legend and select each of the controller indications.	Icons representing local controllers change color to indicate their status.		
5	Verify that detailed status data for local controllers can be viewed on the Workstation.				
		Double-click a local controller and examine the Intersection Detail Window.	Detailed status information is reported for the local controller.		
6	Verify that local arterial congestion links are represented on the map.				
	Local arterial links have been defined in the IEN.	Enable the Congestion Link Layer and locate local links on the map.	Local congestion link icons have been added to the map.		

STEP	DESCRIPTION				P/F
	PRECONDITION	**INPUT**	**EXPECTED OUTPUT**	**NOTES/COMMENTS**	
7	Verify that local arterial congestion link status is shown on the map.				7
	Local arterial links have been defined in the IEN.	Open the Congestion Link Layer legend and select each of the congestion indications.	Local arterial congestion links are colored to indicate their status.		
8	Verify that default diagrams have been created for local intersections.				8
		Open ATMS Map, enable the Intersection Layer, right-click a local controller, and select SHOW DIAGRAM.	ATMS Explorer opens to show the selected controller's intersection diagram.		
9	Verify that status data is being displayed for local detectors.				9
		(1) Insert a system detector icon into an ATMS Explorer diagram and configure it to report status for a local detector. (2) Put the diagram in run mode and examine the status displays. (3) Open the detector's detail view.	Status summary and detail data is displayed for the local system detector.		
10	Verify that status data is being displayed for local sections.				10
		(1) Insert a section icon into an ATMS Explorer diagram and configure it to report status for a local section. (2) Put the diagram in run mode and examine the status displays. (3) Open the section's detail view.	Status summary and detail data is displayed for the local section.		

STEP	DESCRIPTION				P/F
	PRECONDITION	INPUT	EXPECTED OUTPUT	NOTES/COMMENTS	
11	Verify that alarms from local devices are being reported.				
	(1) Local device reporting an alarm. (2) The logged on user is authorized to view alarms from local devices.	Open the IEN Alarm Viewer and examine the list for alarms from local devices.	Alarms from local devices are shown in the Alarm Viewer.		

COMMENTS:

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5. TEST RESULTS FORM

Test Date _____

Test Location _____

Test Name/ID _____

The undersigned verify that this test was conducted as redlined in the test cases and/or documented in the Test Result Summary Table (see Table 5-2).

Table 5-1: Test Witness Signatures

	Name (Printed)	Signature	Date
Test Conductor	_____	_____	_____
Test Recorder	_____	_____	_____
Client Witness	_____	_____	_____
Other Witness	_____	_____	_____

Table 5-2: Test Results Summary Table

TEST CASE	DATE	START TIME	END TIME	PASS/FAIL	FAILED STEPS	SPCR #'S	REMARKS
1							
2							
3							
4							

6. APPENDICES

6.1 APPENDIX A – ACRONYMS AND DEFINITIONS

TERM	DEFINITION
ATMS	Advanced Traffic Management System
COTS	Commercial Off the Shelf Software
CDI	Command and Data Interface. Software that connects an IEN Site Server to a Traffic Control System.
DNS	Domain Name Service
DPW	(Los Angeles County) Department of Public Works
ICMP	Internet Control Message Protocol
IEN	Information Exchange Network
IMS	Incident Management System
IP	Internet Protocol
LAN	Local Area Network
SPCR	System Problem/Change Request form
TCS	Traffic Control System
TSD	Time Space Diagram

6.2 APPENDIX B – SOFTWARE PROBLEM/CHANGE REQUEST FORM

SPCR Report Identifier: _____   Suggested Priority (1-5) _____

Reported By: _____   Date   _____
Organization: _____   Phone   _____

Problem Title: _____
Project   _____
Component/Program Unit _____ Version _____

Description (Be concise, include equipment involved and location. Attach additional sheets or supporting information as necessary)

_____
_____
_____
_____
_____
_____
_____
_____

Test Step/Scenario _____
Repeatable (Check One)   Always ( ) Frequently ( ) Rarely ( ) Unable to Repeat ( )

Phase Found   _____
Requirement(s) Affected (Reference Document and Paragraph) _____

_____
Initially Assign To   _____

Priority Legend

#	PRIORITY	DESCRIPTION
1	CRITICAL	Causes a system or application to fail. No work around is available.
2	SEVERE	Major functionality is missing and no work around is available.
3	MODERATE	Required functionality is missing but work around is available.
4	INCONVENIENCE	Inconvenient or an annoying but does not affect functionality. Documentation errors.
5	SUGGESTION	Improvement or enhancement that is outside the scope of required work.

6.3 APPENDIX C – VIEWING TCS DATA IN IEN USER INTERFACES

6.3.1 Intersection Data

The following table indicates where TCS intersection data is displayed in the IEN:

Table 6-1: IEN Intersection Data Displays

| DATA	WHERE DISPLAYED
IEN_INTERSECTIONINFO[1]	
Intersection ID number	Intersection detail screen
ID number of section containing this intersection	Intersection detail screen (labeled "Section Number")
Seconds between poll attempts to the intersection controller	Intersection detail screen
Controller type	Intersection detail screen
Description of the intersection controller	Intersection detail screen
Name of main street	Intersection detail screen
Name of cross street	Intersection detail screen
Direction of movement along the main street	Intersection detail screen
Latitude coordinate of intersection location	Intersection configuration screen
Longitude coordinate of intersection location	Intersection configuration screen
IEN_INTERSECTIONRTSTATUS	
Cycle counter, seconds since start of cycle	Intersection detail screen
Reference cycle counter for the intersection	Intersection detail screen

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[1] IEN administrators can override the device configuration values that are reported by the CDI with values manually entered through IEN device configuration screens.

DATA	WHERE DISPLAYED
IEN_INTERSECTIONRTSUMMARY	
Signal control mode	Intersection detail screen (labeled "Mode")
Intersection signal state	Intersection detail screen (labeled "Signal Status")
Controller response state	Intersection detail screen (labeled "Comm Rsp")
Preemption type	Intersection detail screen (labeled "Preempt")
Controller alarms	Intersection detail screen (labeled "Alarms")
Main street green active	Intersection detail screen (labeled "Main St. Green")
Communication state for the intersection controller	Intersection detail screen (labeled "Comm State")
Timing plan ID number	Intersection detail screen (labeled "Timing Plan")
Desired cycle length	Intersection detail screen (the first value of the "Planned Cycle Length/Offset" pair)
Desired offset	Intersection detail screen (the second value of the "Planned Cycle Length/Offset" pair)
Actual offset	Intersection detail screen (the second value of the "Last Cycle Length/Offset" pair)
IEN_PHASE_STATEDATA	
Active green phases	Intersection detail screen (labeled "Active Phases")
IEN_PEDPHASE_STATEDATA	
Active pedestrian phases	Intersection detail screen (labeled "Ped. Phase State")

DATA	WHERE DISPLAYED
IEN_VEHCALL_STATEDATA	
Active actuation phases	Intersection detail screen (labeled "Vehicle Call State")
IEN_LASTCYCLE_PHASEDATA	
Length of last cycle	Intersection detail screen (the first value of the "Last Cycle Length/Offset")
Total green time for each active phase in the controller's last cycle.	Intersection detail screen (labeled "Last Cycle")
IEN_TP_PHASEDATA	
Maximum permissible green time for each phase of the active timing plan.	Intersection detail screen (labeled "Programmed")

With the exception of latitude and longitude coordinates, all intersection data can be viewed on the intersection detail screen.

Figure 6-1: IEN Intersection Detail Screen
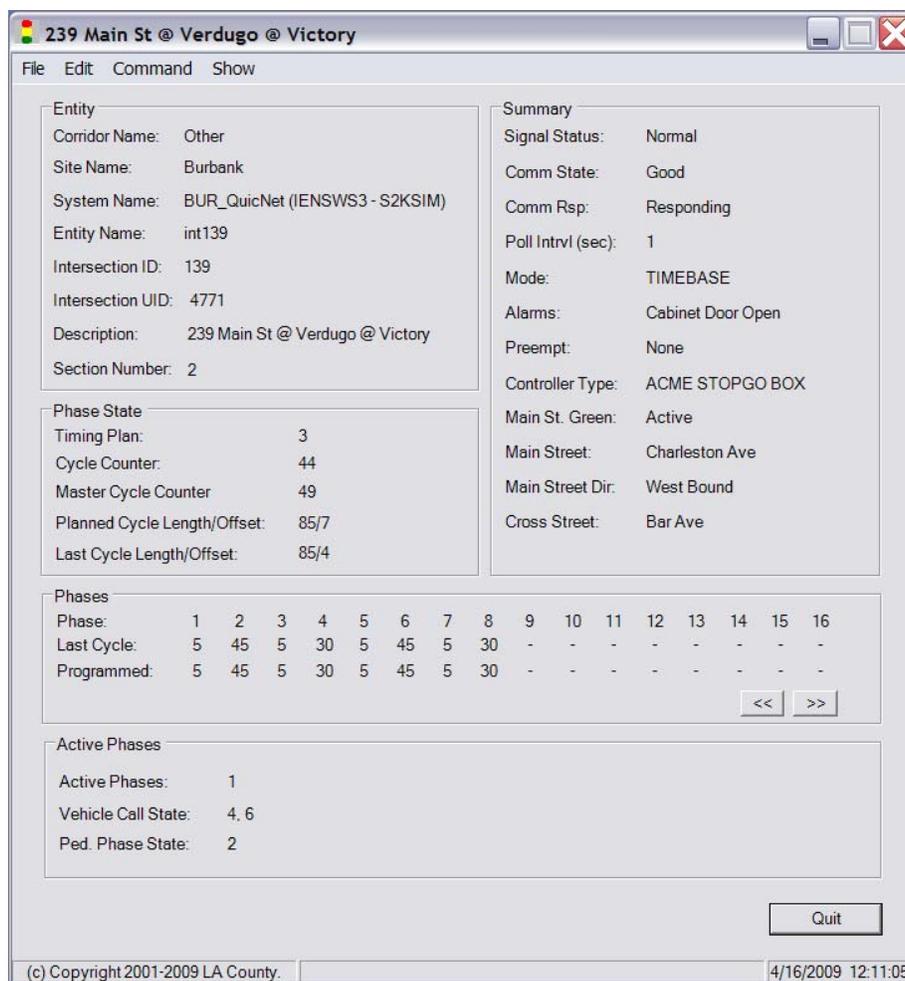
Latitude and longitude coordinates can be viewed through the IEN intersection configuration screens, which are accessible to administrative users only.

To open the intersection detail screen, right-click an intersection control within ATMS Map or ATMS Explorer and select MONITOR.

6.3.2   System Detector Data

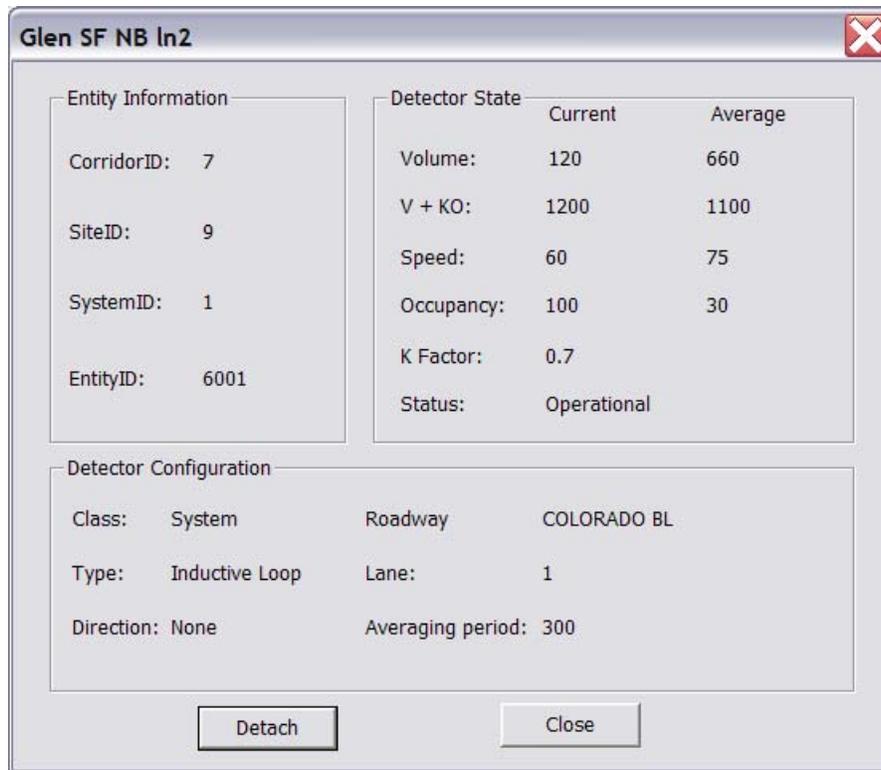The following table indicates where TCS system detector data is displayed in the IEN:

Table 6-2: IEN System Detector Data Displays

DATA	WHERE DISPLAYED
IEN_DETECTORINFO[2]	
Detector data averaging period	System detector detail screen
Detector ID	System detector detail screen
Detector class	System detector detail screen
Detector type	System detector detail screen
Direction of traffic flow over the detector	System detector detail screen
Lane number for traffic passing over the detector	System detector detail screen
Name of the roadway that contains the detector	System detector detail screen
Weighting factor (K) for volume + weighted occupancy calculations	System detector detail screen
IEN_DETECTORSTATE	
Volume from the most recent upload, in vehicles per hour	System detector detail screen (labeled "current volume")
Average volume, in units of vehicles per hour	System detector detail screen
Volume, in vehicles per hour + weighted occupancy, for volume and occupancy from the most recent upload.	System detector detail screen (labeled "current V+ KO)
Average volume, in vehicles per hour + weighted occupancy, for volume and occupancy in the averaging period.	System detector detail screen (labeled "average V + KO")
Detector status	System detector detail screen
Speed data from the most recent upload, in miles per hour	System detector detail screen (labeled "current speed")
Average speed, in miles per hour	System detector detail screen
Occupancy data from the most recent upload, in percent	System detector detail screen (labeled "current occupancy)
Average occupancy, in percent	System detector detail screen

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[2] IEN administrators can override the device configuration values that are reported by the CDI with values manually entered through IEN device configuration screens.

All detector data can be viewed on the system detector detail screen.

Figure 6-2: IEN System Detector Screen

To open the system detector detail screen, right-click a system detector control within an ATMS Explorer diagram and select MONITOR.

6.3.3   Section Detail Screen

The following table indicates where TCS section data is displayed in the IEN:

Table 6-3: IEN Section Data Displays

DATA	WHERE DISPLAYED
IEN_SECTIONINFO[3]	
List of member intersections	Section detail screen
IEN_SECTIONSTATE	
Section control mode	Section detail screen
Section timing plan	Section detail screen

All section data can be viewed on the section detail screen.

Figure 6-3: IEN Section Detail Screen

To open the section detail screen, right-click a section control within an ATMS Explorer diagram and select MONITOR.

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[3] IEN administrators can override the device configuration values that are reported by the CDI with values manually entered through IEN device configuration screens.