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NG9-1-1 Comtech TCS CLC & ESInet Test Plan

Test Cases for Call Logic Centers and All Interfaces on TCS/Customer NG9-1-1 Network

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1. Introduction

1.1. Purpose

This document provides Comtech TCS Next Generation 9-1-1 (NG9-1-1) Network Solution customers ("customer") with an overview of the test cases that Comtech TCS will execute for each interface and/or system component on the NG9-1-1 system Comtech TCS is delivering for the customer. This document contains:

- Description of each interface and/or system component
- Testing goal of each interface and/or system component
- How Comtech TCS will test each interface and/or system component
- Per each interface and/or system component:
  - Test cases
  - Expected results for each test case
  - How Comtech TCS will verify each test case

This test plan was developed to prove to our NG9-1-1 customer, that the NG9-1-1 solution that Comtech TCS is delivering is operationally ready for the next stage of testing being conducted.

The next stage of testing expected is end-to-end public safety answering point (PSAP) NG9-1-1 deployment verification testing, starting with a pilot group of PSAPs identified by Comtech TCS' NG9-1-1 Customer using:

- Type of originating 9-1-1 calls (wireline, wireless, VOIP, Text) that are routed through the NG9-1-1 network
- PSAPs which have been cut-over to the Comtech TCS NG9-1-1 network

In addition to the Comtech TCS solution being tested, Comtech TCS has documented all of the acceptance testing requirements that Comtech TCS mandates for other vendors or carriers who will be connecting into the Comtech TCS operated NG9-1-1 network. Comtech TCS will execute a series of tests with each vendor and/or carrier after the vendor and/or carrier proves it has met Comtech TCS' acceptance test requirements.

1.2. Comtech TCS Test Coverage

Interfaces or system components include:

- Voice trunks from Wireless Service Provider (WSP)
- ISUP signaling associated with NG9-1-1 calls
- Other LEC's selective routing network into Comtech TCS network
- Provisioning API through UAT
- Comtech TCS NG9-1-1 selective routing and location applications

- Monitoring and alarming components in the NG9-1-1 platform
- ESInet connections:
  - Multi-Protocol Label Switching (MPLS) to call logic centers (CLC)
  - MPLS to PSAPs
  - PSAP equipment – pre-PSAP cut-over to Comtech TCS NG9-1-1 system

1.3. Assumptions and Clarifications

Comtech TCS has rigorously tested its NG-9-1-1 solution using five (5) distinct levels of test methodology, based on TCS International Organization for Standardization (ISO) and Quality management practice for the information and communications technology industry (TL 9000) processes, which are audited each year:

- Unit testing (white-box testing)
- Integration testing (informal end-to-end, black-box testing)
- Functional certification testing (formal end-to-end, black-box testing)
- Performance, stability, and failover testing in its production reference environment (PRE):
  - The PRE replicates the NG9-1-1 system that is being deployed in customer's region, including hardware, software and geo-redundancy.
  - PRE testing includes system performance, including voice quality under heavy load and during component failure.
  - PRE includes a simulated wide-area network including a MPLS network such as what is being deployed by Comtech TCS.
- The [12a] network verification test plan has been executed (i.e., soft switches).
- All NG9-1-1 network equipment and connectivity is in place and is configured.
- Comtech TCS test simulation and monitoring equipment is in place.
- Comtech TCS test endpoints are in place.
- All interoperability-test partners have their environment and/or circuits ready to start interoperability testing and have met the Comtech TCS circuit-test acceptance standards for NG9-1-1.
- In this document, "PSAP" means the simulated PSAP test endpoint that Comtech TCS is using.
- In this document, "originating call" means the simulated call origination point that Comtech TCS is using prior to end to end call flow testing

1.4. Customization

This document is the generic CLC test plan, intended to be tailored on a case-by-case basis.

1.5. For Additional Information

If you have questions about this document, please contact [TCS Client Service Manager for Customer name and contact information].

1.6. Glossary

Exhibit 1. List of Acronyms, Terms, and Definitions

Abbreviation or Acronym	Term	Definition
ALI	Automatic Location Identification	The automatic display at the PSAP of: • The subscriber's telephone number. • The address or geolocation of the subscriber. • Supplementary emergency services information. [Adapted from *the NENA Master Glossary of 9-1-1 Terminology*.]
API	Application Programming Interface	A source-code–based specification used as an interface by software components to communicate with each other.
ALI database	Automatic Location Identification database	A database that relates a telephone number (TN) to a subscriber's MSAG address. Each ALI database encompasses a geographic region serving one or more PSAPs. The ALI database accepts location queries from the PSAPs and responds with the corresponding address. An ALI is typically owned by a LEC or a PSAP. If a location query contains an ESXK, the ALI forwards the query to the appropriate GMLC, MPC, or VPC and sends the response back to the PSAP. The word "database" is commonly dropped, so that an ALI database is simply called an "ALI."
AQS	ALI Query Service	A NENA protocol for communication between an NG9-1-1 system and a compatible legacy PSAP [redacted][12a][redacted] based and is more flexible than the older NENA and PAM protocols.
BCF	Border Control Function	An NG9-1-1 functional component that enforces security at the entry and exit points of the ESInet (that is, the points where messaging enters the ESInet from an originating network and where messaging exits the ESInet to the emergency-services network). [redacted][12a][redacted] See also SBC.
CLC	Call Logic Center	
ECRF	Emergency Call Routing Function	An NG9-1-1 functional component that receives location information (either civic address or geo-coordinates) as input and uses this information to provide a URI that can be used to route an emergency call toward the appropriate PSAP for the caller's location. In the TCS NG9-1-1 system, the ECRF consists of the PRF and a LoST Server.

Abbreviation or Acronym	Term	Definition
ESInet	Emergency Services IP Network	In an NG9-1-1 system, the IP-based network that interconnects all parties involved in routing and responding to a 9-1-1 call, including the originating network, the PSAP, and the position determining element (for example, a GMLC or an MPC).
ESRP	Emergency Services Routing Proxy	An NG9-1-1 functional component that selects the next hop routing within the ESInet. In the TCS NG9-1-1 system, queries the ECRF, providing the caller's position in the query, and receives the URI of the servicing PSAP. The ESRP also invokes the PRF and routes the call to the URI returned by the PRF.
ESRK	Emergency Services Routing Key	A 10-digit number used to route an E9-1-1 call to the appropriate PSAP.
FOA	First Office Application	A term often used as a synonym for beta-testing of software or a software/hardware solution; typically used to describe testing when there is only one site (beta tests usually take place with many customers).
GMLC	Gateway Mobile Location Center	In GSM networks, the element that calculates the caller's location.
HELD-deref	HTTP-enabled location delivery–dereferencing protocol	A SIP protocol for retrieving the position of a subscriber by means of a location-by-reference URI. This URI can be assigned to the subscriber by any of several sources—for example, the originating network.
i3		A transitional standard defined by NENA for an IP-based VoIP E9-1-1 network. The i3 standard was the last step in the evolution of E9-1-1 before NG9-1-1. The i3 standard addressed IP-based connectivity between the ESInet and IP-enabled PSAPs.
	i3 PSAP	A PSAP that can receive IP-based emergency-call signaling, can originate IP-based calls, and conforms to NENA specifications for such PSAPs.
IP	Internet Protocol	The primary communications-level protocol for delivery of data packets across the Internet.
	legacy	Using technology or connectivity that predates IP-based NG9-1-1.
LDAP	Lightweight Directory Access Protocol	An IP-based, client-and-server protocol, defined by IETF, for storing information in and retrieving information from a directory, or listing, of users or other entities.
LIF	Location Internetworking Function; Location Interwork Function	In NG9-1-1 systems, a component that manages the retrieval of location information, using the ESXK and/or other information furnished by the NIF. The LNG and the LPG each include a LIF.
LIS	Location Information Server	In the NENA i2 architecture, a database that stores subscriber location information and responds to location queries.
LNG	Legacy Network Gateway	In NG9-1-1 systems, the gateway between originating networks and the ESInet. Includes LIF, NIF, and PIF components.

Abbreviation or Acronym	Term	Definition
LoST	Location-to-Service Translation	An [12a] IETF protocol for mapping a service identifier and either geo-coordinate or civic location information to service contact URIs. In NG9-1-1 systems, a LoST Server is an element of the ECRF. Given the service identifier for emergency services and location information, it returns the URI of the servicing PSAP.
LPG	Legacy PSAP Gateway	In NG9-1-1 systems, the gateway between the ESInet and legacy PSAPs.
LRO	Last Routing Option	In E9-1-1 systems, a fallback routing number used when all other routing options fail.
LVF	Location Verification Function	In NG9-1-1 systems, a component that confirms civic addresses as valid for routing and dispatch prior to their being used. An address is valid if it can be uniquely mapped to a service-area polygon. The originating network must include an LVF if that network provides civic addresses with call signaling.
MLP	Mobile Location Protocol	An application-level Open Mobile Alliance protocol for obtaining the position of mobile stations (mobile phones, wireless personal digital assistants, etc.). The MLP defines the interface between a Location Server and a Location Services client. [Adapted from the OMA MLP V3.1 Web page.]
MSAG	Master Street Address Guide	A database of street-name and address-range records maintained by each regional emergency-services authority and used by MPCs and VPCs to route 9-1-1 calls to the appropriate PSAP. PSAPs uses the MSAG to identify the correct combination of first responders (police, fire, and medical) for an address. NENA defines a standard MSAG format.
MPC/VPC	Mobile Positioning Center/VoIP Positioning Center	A network node that receives location requests from mobile subscribers or VoIP subscribers, manages the position-determination process, routes the call to the appropriate PSAP, and provides the PSAP with location and subscriber information.
NG9-1-1	Next Generation 9-1-1	Variously applied to the architecture, the technology, and the government initiative, a term referring to the routing and delivery of 911 calls in an IP-based inter-network. The NG9-1-1 inter-network is designed to provide access to emergency services from all connected communications sources and to provide PSAPs and other emergency service organizations with multimedia data capabilities.
NIF	NG 9-1-1 specific Internetwork Function	In NG9-1-1 systems, a functional component that manages incoming signaling: passing extracted information to the LIF; using the location information returned by the LIF to send a LoST query; and using the LoST response to route the call.
PIDF-LO	Presence Information Data Format–Location Object	[12] content included in SIP call signaling that contains location information for the mobile subscriber. PIDF-LO format is defined by IETF standards.
PIF	Protocol Internetwork Function	In NG9-1-1 systems, a component that handles the reworking of messages from one protocol to another.

Abbreviation or Acronym	Term	Definition
PRF	Policy Routing Function	In NG9-1-1 systems, a functional component that determines whether to route a call to the primary PSAP for the caller's location or to an alternative PSAP, based on the policies of the primary PSAP.
SBC	Session Border Controller	The hardware and/or software responsible for the BCF.
SIP	Session Initiation Protocol	An IETF signaling protocol that accommodates multimedia content and is the protocol used in NG9-1-1 inter-networks.
	SIP-enabled PSAP	A PSAP that can handle multimedia sessions in Voice over Internet Protocol (VoIP) emergency calls.
UAT	User Acceptance Testing	Testing conducted to determine if the requirements of a specification or contract are met
URI	Uniform Resource Identifier	The generic term for names and addresses that refer to objects on the World Wide Web.
URL	Uniform Resource Locator	The "address" of a Web object. For example, www.webaddress.com. A URL can be used to navigate to the Web object.
URN	Uniform Resource Name	An identifier of a Web object that follows a standard syntax. Cannot be used to navigate to a Web object.
VSP	Voice Over Internet Protocol (VoIP) Service Provider	A business entity that provides voice service over devices such as soft phones that are connected to the Internet.
WSP	Wireless Service Provider	A business entity that provides wireless, or cellular, phone service.

2. Test Case Coverage

2.1. Circuit Connectivity for Voice Trunks from WSP

Purpose of this test coverage will be to prove that the circuit connectivity of the Time Division Multiplexing (TDM) trunks to WSPs is in place to handle 9-1-1 calls.

Note: The Comtech TCS circuit-test acceptance standards for NG9-1-1 should be reviewed prior to test case execution

Test Case Number and Test Case Coverage Area:	2.1-1, Voice Trunks from WSP - Circuit Connectivity
Test Stage:	CLC Stage 1
Test Case:	Circuit Test Requirements and Standards for TCS Circuits – WSP to CLCs
Expected Results:	TCS work with circuit provider on connectivity from CLC datacenters to WSP

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Testing T1 circuit to remote loopback using [redacted] [12a] [redacted] DACS – CLC City1	Run 24 hr. continuous test to/from DACS w/o errors.		❑ Yes ❑ No		
Step #	**Method Description**					
1	Establish Loopback test to/from DACS by: creating a Loopback in the DACS for remote end-to-test to; OR, start a 24 hr. continuous BERT test from the DACS to a remote Loopback at far end.					
2	Run BERT test to remote far end Loopback.					
3	Using handheld Test set, run 24 hr. continuous BERT test to far end remote Loopback.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	Testing T1 circuit to remote Loopback using test set – CLC City1	Run 24 hr. continuous test to/from test set w/o errors.		❑ Yes ❑ No		
Step #	**Method Description**					
1	Establish loopback test to/from DACS by: cCreating a Loopback in the DACS for remote end to test to; OR, start a 24 hr. continuous					

	BERT test from the DACS to a remote Loopback at far end.					
2	Run BERT test to remote far end Loopback.					
3	Using handheld test set, run 24 hr. continuous BERT test to far end remote loopback. Or place loopback in CORE, and run test set from far end to CORE loopback.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
C	Testing T1 circuit to remote Loopback using [redacted] DACS – CLC City 2	Run 24 hr. continuous test to/from DACS w/o errors.		❑ Yes ❑ No		
Step #	**Method Description**					
1	Establish loopback test to/from DACS by: creating a Loopback in the DACS for remote end to test to; OR, start a 24 hr. continuous BERT test from the DACS to a remote Loopback at far end.					
2	Run BERT test to remote far end loopback.					
3	Using handheld test set, run 24 hr. continuous BERT test to far end remote loopback.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
D	Testing T1 circuit to remote Loopback – CLC City 2	Run 24 hr. continuous test w/o errors.		❑ Yes ❑ No		
Step #	**Method Description**					
1	Establish Loopback test to/from DACS by: creating a Loopback in the DACS for remote end-to-test to; OR, start a 24 hr. continuous BERT test from the DACS to a remote Loopback at far end.					
2	Run BERT test to remote far end Loopback.					
3	Using handheld test set, run 24 hr. continuous BERT test to far end remote loopback.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
E	Testing T1 circuit to remote Loopback using test set – CLC City 2	Run 24 hr. continuous test to/from test set w/o errors.		❑ Yes ❑ No		
Step #	**Method Description**					

1	Establish Loopback test to/from DACS by: creating a Loopback in the DACS for remote end-to-test to; OR, start a 24 hr. continuous BERT test from the DACS to a remote Loopback at far end.
2	Run Router BERT test to remote far end Loopback.
3	Using handheld test set, run 24 hr. continuous BERT test to far end remote Loopback.
Comments: If any test method has incurred any errors, work with circuit provider to isolate/resolve the issues/errors; then the test MUST be restarted for an additional 24 continuous hours.	

2.2. Carrier COT Testing for ISUP trunk Groups

Purpose of this test coverage will be to prove that Comtech TCS [redacted] signaling network will pass a COT test.

Test Case Number and Test Case Coverage Area:		2.2-1, Carrier COT testing for ISUP trunk Groups				
Test Stage:		CLC Stage 1				
Test Case:		Perform standard COT test to verify ISUP trunk group				
Expected Results:		ALL CICs must pass the COT test				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Perform the COT test from the Comtech TCS application to the carrier.	Comtech TCS has connectivity to the carrier.		❑ Yes ❑ No		
Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
1	Perform the COT test from the Comtech TCS application to the carrier.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	Perform the COT test from the carrier to the Comtech TCS application.	The carrier has connectivity to Comtech TCS.		❑ Yes ❑ No		
Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
1	Perform the COT test from the carrier to the Comtech TCS application.					
Comments:						

2.3. Audio Quality for Voice Trunks from WSP

Purpose of this test coverage will be to prove that the audio quality of the TDM trunks to WSPs is satisfactory to handle 9-1-1 calls.

Test Case Number and Test Case Coverage Area:	2.3-1, Voice Trunks from WSP - Audio Quality
Test Stage:	CLC Stage 1
Test Case:	Validate Good Audio quality from Carrier point of view - WSP to CLCs
Expected Results:	Test Entity validates voice recording and quality were normal

Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	2 way voice testing – each channel on trunk – CLC City1	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		

Step #	**Method Description (per each trunk/channel)**
1	Comtech TCS configures Carrier call-to-point–to-audio test platform: a) Answer incoming SIP call b) Audio prompts as follows c) Press 1 for loop echo loop (testing to see if echo canceller are working or not….Your speech is looped) d) Press 2 to record a message (say something on line and it will be played right back at you after a delay) e) Press 9 to end f) Press 2 to record your audio and hear CLEAR playback of your speech g) Once satisfied with audio quality press 9 to end call Loop back to (b)
2	Comtech TCS will initially build the trunk group in our gateway to point to a “test” number plan.
3	Any call that arrives on the trunk group will route to the SIP server application referenced in (1).
4	Carrier will place calls down every channel in the trunk group.
5	Comtech TCS’ gateway will route the call according to the “test” number plan and the recording/playback application will operate on the trunk until the carrier ends the call.
6	When testing is completed satisfactorily, Comtech TCS will re-configure the incoming trunk group to point to the “production” number plan.
Comments:	

Trunk/ Channel	*Variation Description*	*Expected Result/Value*	*Actual Result/Value*	*Expectation Met?*	*Tested By*	*Tested On (mm/dd/yy)*
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #1)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #2)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #3)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #4)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #5)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #6)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #7)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #8)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #9)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #10)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		

	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #11)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #12)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #13)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #14)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #15)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #16)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #17)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #18)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #19)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #20)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #21)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		

	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #22)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #23)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #24)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Placeholder for additional trunks verified			❑ Yes ❑ No		

2.4. Circuit Connectivity for Voice Trunks from Legacy LEC

Purpose of this test coverage will be to prove that the circuit connectivity of the TDM or[12a] trunks between Comtech TCS and legacy LECs are in place to handle 9-1-1 calls.

Note: The Comtech TCS circuit-test acceptance standards for NG9-1-1 should be reviewed prior to test case execution

Test Case Number and Test Case Coverage Area:	2.4-1, Voice Trunks from legacy LEC - Circuit Connectivity
Test Stage:	CLC Stage 2
Test Case:	Circuit test requirements and standards for Comtech TCS circuits - LEC to Comtech TCS and CLCs - test case will be executed for each LEC connecting into Comtech TCS network.
Expected Results:	Comtech TCS work with circuit provider on connectivity from Comtech TCS to LEC

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Testing T1 circuit to remote Loopback using [12a] DACS	Run 24 hr. continuous test to/from DACS w/o errors.		❑ Yes ❑ No		
Step #	**Method Description**					
1	Establish Loopback test to/from DACS by: creating a Loopback in the DACS for remote end to test to; OR, sStart a 24 hr. continuous BERT test from the DACS to a remote Loopback at far end.					
2	Run BERT test to remote far end Loopback.					
3	Using Handheld test set, run 24 hr. continuous BERT test to far end remote Loopback.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	Testing T1 circuit to remote Loopback using test set	Run 24 hr. continuous test to/from test set w/o errors.		❑ Yes ❑ No		
Step #	**Method Description**					
1	Establish Loopback test to/from DACS by: creating a Loopback in the DACS for remote end to test to					
2	Run BERT test to remote far end Loopback.					

3	Using handheld test set, run 24 hr. continuous BERT test to far end remote loopback.
Comments: If any test method has incurred any errors, work with circuit provider to isolate/resolve the issues/errors; then the test MUST be restarted for an additional 24 continuous hours.	

2.5. Carrier COT Testing to Legacy LECs

Purpose of this test coverage will be to prove that Comtech TCS signaling network will pass a COT test to the legacy LECs.

Test Case Number and Test Case Coverage Area:	2.5-1, Carrier COT testing to Legacy LECs
Test Stage:	CLC Stage 1
Test Case:	Perform standard COT test to verify connectivity to the legacy LECs
Expected Results:	ALL CICs must pass the COT test

Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Perform the COT test from the Comtech TCS application to the legacy LEC.	Comtech TCS has connectivity to the legacy LEC.		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)	
Step #	**Method Description**
1	Perform the COT test from the TCS application to the carrier.

Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	Perform the COT test from the legacy LEC to the Comtech TCS application.	The legacy LEC has connectivity to Comtech TCS.		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)	
Step #	**Method Description**
1	Perform the COT test from the legacy LEC to the Comtech TCS application.
Comments:	

2.6. Audio Quality for Voice Trunks from Legacy LECs

Purpose of this test coverage will be to prove that the audio quality of the trunks to legacy LECs is satisfactory to handle 9-1-1 calls.

Test Case Number and Test Case Coverage Area:	2.6-1, Voice Trunks from legacy LECs - Audio Quality
Test Stage:	CLC Stage 1
Test Case:	Validate Good Audio quality from Carrier point of view – legacy LECs to CLCs
Expected Results:	Test Entity validates voice recording and quality were normal

Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	2 way voice testing – each channel on trunk – CLC City1	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		

Step #	**Method Description (per each trunk/channel)**
1	Comtech TCS configures Carrier call-to-point-to-audio test platform: h) Answer incoming SIP call i) Audio prompts as follows j) Press 1 for loop echo loop (testing to see if echo canceller are working or not….Your speech is looped) k) Press 2 to record a message (say something on line and it will be played right back at you after a delay) l) Press 9 to end m) Press 2 to record your Audio and hear CLEAR playback of your speech n) Once satisfied with audio quality press 9 to end call Loopback to (b)
2	Comtech TCS will initially build the trunk group in our gateway to point to a “test” number plan.
3	Any call that arrives on the trunk group will route to the SIP server application referenced in (1).
4	Carrier will place calls down every channel in the trunk group.
5	Comtech TCS’ gateway will route the call according to the “test” number plan and the recording/playback application will operate on the trunk until the carrier ends the call.
6	When testing is completed satisfactorily Comtech TCS will re-configure the incoming trunk group to point to the “production” number plan.
Comments:	

Trunk/ Channel	*Variation Description*	*Expected Result/Value*	*Actual Result/Value*	*Expectation Met?*	*Tested By*	*Tested On (mm/dd/yy)*
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #1)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #2)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #3)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #4)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #5)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #6)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #7)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #8)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #9)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #10)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		

	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #11)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #12)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #13)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #14)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #15)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #16)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #17)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #18)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #19)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #20)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #21)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		

	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #22)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #23)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Trunk ID _____ and channel # _____ Tested (ex: Trunk ID 123456 channel #24)	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
	Placeholder for additional trunks verified			❑ Yes ❑ No		

2.7. Media Gateway Network Verification

Purpose of this test coverage will be to prove that Comtech TCS media gateways are ready for 9-1-1 call routing traffic and that Comtech TCS redundancy features operate as expected.

Test Case Number and Test Case Coverage Area:	2.7-1, Media gateway network verification
Test Stage:	CLC Stage 1
Test Case:	Execute [12a] Media Gateway Network Verification Plan
Expected Results:	TCS accepts [12a] Verification Test Results

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	All [12a] Test Cases – CLC 1	As per documented in [12a] Gateway Verification Plan		❑ Yes ❑ No		
B	All [12a] Test Cases – CLC 2	As per documented in [12a] Gateway Verification Plan		❑ Yes ❑ No		
Step #	**Method Description**					
All	As per documented in [12a] Network Verification Plan					
All	All [12a] Test Cases – CLC City 2	As per documented in [12a] Gateway Verification Plan		❑ Yes ❑ No		
Step #	**Method Description**					
All	As per documented in [12a] Gateway Verification Plan					
Comments:						

2.8. Provisioning API through UAT

Purpose of this test coverage is to prove that the Comtech TCS NG9-1-1 provisioning process works and data validates and/or expected errors occur if data is not correctly provisioned.

Comtech TCS to follow their standard provisioning workflow process for each test case provided in this test coverage area:

Step 1: Provision data

Step 2: Verify correct data provisioned. The tester verifies in UI that new data is present (for Add) or new values are present (for update), or target data is no longer present (for Delete) or;

Step 3: Based on error message, fix data and start provisioning Step 1

Test Case Number and Test Case Coverage Area:	2.8-1, Provisioning API through UAT – LNG Trunk
Test Stage:	CLC Stage 2
Test Case:	Add, update and/or delete a LNG Trunk and its corresponding Point Code and Carrier through Provisioning UI
Expected Results:	Based on the action, a LNG trunk will be correctly provisioned and/or successfully deleted.

Variation		**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A		Add new LNG Trunk and its corresponding Point Code and Carrier through Provisioning UI	New LNG trunk, corresponding point code and carrier have been correctly provisioned.		❑ Yes ❑ No		
B		Update a LNG Trunk's provisioned data, by changing a Carrier's name and point code	An existing LNG trunk's point code and the corresponding carrier's name are updated.		❑ Yes ❑ No		
C		Delete a LNG Trunk from system	An existing LNG trunk and all corresponding data is deleted from system.		❑ Yes ❑ No		
		Comments: Verification of how data is provisioned is included in description of Test case.					

Test Case Number and Test Case Coverage Area:	2.8-2, Provisioning API through UAT – LNG Trunk Error
Test Stage:	CLC Stage 2
Test Case:	Add, update and/or delete a LNG Trunk and its corresponding Point Code and Carrier through Provisioning UI, business rules associated with action are violated.
Expected Results:	Based on action, the system returns expected error message, and data is not provisioned

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Add new LNG Trunk and its corresponding Point Code and Carrier through Provisioning UI, incorrect data used for provisioning LNG Trunk's point code.	Provisioning UI returns an error message indicating which business rule(s) have been violated, and data is not provisioned		❑ Yes ❑ No		
B	Update a LNG Trunk's provisioned data, by changing a Carrier's name and point code, incorrect data used for provisioning LNG Trunk's point code.	Provisioning UI returns an error message indicating which business rule(s) have been violated, and data is not provisioned		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of Test case.

Test Case Number and Test Case Coverage Area:	2.8-3, Provisioning API through UAT – ESRK
Test Stage:	CLC Stage 2
Test Case:	Add, update and/or delete ESRK and its corresponding location method through Provisioning UI
Expected Results:	Based on the action, an ESRK will be correctly provisioned and/or successfully deleted.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Add new ESRK and its corresponding location method and Carrier through Provisioning UI	New ESRK and its corresponding location method have been correctly provisioned.		❑ Yes ❑ No		
B	Update ESRK corresponding location method through Provisioning UI	An existing ESRKs corresponding location method is corrected		❑ Yes ❑ No		
C	Delete an ESRK and its corresponding location method from system	An ESRK and its corresponding location method have been deleted from system.		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of Test case.

Test Case Number and Test Case Coverage Area:	2.8-4, Provisioning API through UAT – ESRK Error
Test Stage:	CLC Stage 2
Test Case:	Add, update and/or delete ESRK and its corresponding location method through Provisioning UI, rules associated with action are violated.
Expected Results:	Based on action, the system returns expected error message

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Add new ESRK and its corresponding location method and Carrier through Provisioning UI, where partial ESRK is used	Provisioning UI returns an error message indicating which business rule(s) have been violated, and data is not provisioned		❑ Yes ❑ No		
B	Update ESRK corresponding location method through Provisioning UI, where partial ESRK is used	Provisioning UI returns an error message indicating which business rule(s) have been violated, and data is not provisioned		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of test case.

Test Case Number and Test Case Coverage Area:	2.8-5, Provisioning API through UAT – ESRK Error
Test Stage:	CLC Stage 2
Test Case:	Add ESRK and its corresponding location method through Provisioning UI, ESRK is not in remote XPC.
Expected Results:	Based on action, the system returns expected error message and data is not provisioned

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Add ESRK and its corresponding location method through Provisioning UI, ESRK is not in remote XPC.	Based on action, the system returns expected error message and data is not provisioned		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of Test case.

Test Case Number and Test Case Coverage Area:	2.8-6, Provisioning API through UAT - PSAP
Test Stage:	CLC Stage 2
Test Case:	Add, update and/or delete PSAP Profile data elements through Provisioning UI
Expected Results:	Based on the action, a PSAP Profile will be correctly added, updated and/or successfully deleted.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Add new PSAP profile data elements through Provisioning UI	New PSAP profile has been correctly provisioned.		❑ Yes ❑ No		
B	Update PSAP profile data elements through Provisioning UI	An existing PSAP profile is updated with new PSAP		❑ Yes ❑ No		
C	Delete PSAP profile through Provisioning UI	An existing PSAP profile is has been deleted from system.		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of test case.

Test Case Number and Test Case Coverage Area:	2.8-7, Provisioning API through UAT PSAP Error
Test Stage:	CLC Stage 2
Test Case:	Add, update and/or delete PSAP profile data elements through Provisioning UI , business rules associated with action are violated.
Expected Results:	Based on action, the system returns expected error message and data is not provisioned

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Add new PSAP profile data elements through Provisioning UI, key PSAP profile data element PSAP URI is missing	Based on action, the system returns expected error message and data is not provisioned		❑ Yes ❑ No		
B	Update PSAP Profile data elements through Provisioning UI, where key PSAP profile data element PSAP URI is invalid	Based on action, the system returns expected error message and PSAP Profile is not updated.		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of test case.

Test Case Number and Test Case Coverage Area:	2.8-8, Provisioning API through UAT – PSAP State
Test Stage:	CLC Stage 2
Test Case:	Ensure the PSAP status is set to correct operational state through Provisioning [redacted][12a][redacted]
Expected Results:	Based on expected PSAP operational state, the PSAP status is set to correct operational state.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Set PSAP status from any operational state to any available operational state in the system	PSAP status shows as normal		❑ Yes ❑ No		
B	Modify PSAP status from [redacted][12a][redacted]	PSAP status shows as [redacted][12a][redacted]		❑ Yes ❑ No		
C	Modify PSAP status from [redacted][12a][redacted]	PSAP status shows as [redacted][12a][redacted]		❑ Yes ❑ No		
D	Modify PSAP status from [redacted][12a][redacted]	PSAP status shows as [redacted][12a][redacted]		❑ Yes ❑ No		
E	Modify PSAP status from [redacted][12a][redacted]	PSAP status shows as [redacted][12a][redacted]		❑ Yes ❑ No		
F	Modify PSAP status from [redacted][12a][redacted]	PSAP status shows as [redacted][12a][redacted]		❑ Yes ❑ No		
G	Modify PSAP status from [redacted][12a][redacted]	PSAP status shows as [redacted][12a][redacted]		❑ Yes ❑ No		
H	Modify PSAP status from [redacted][12a][redacted]	PSAP status shows as [redacted][12a][redacted]		❑ Yes ❑ No		
I	Modify PSAP status from [redacted][12a][redacted]	PSAP status shows as [redacted][12a][redacted]		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of test case.

Test Case Number and Test Case Coverage Area:	2.8-9, Provisioning API through UAT – PSAP Alternative Routing
Test Stage:	CLC Stage 2
Test Case:	Add, modify and/or delete PSAP Routing Alternative data elements through Provisioning UI.
Expected Results:	Based on action, all PSAP Routing Alternative Routing data elements added, modified and/or deleted as expected

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Load new PSAP Alternative Routing data.	All new PSAP Alternative Routing data loaded shows as correctly provisioned		❑ Yes ❑ No		
B	Modify PSAP Alternative Routing data; add new PSAP Alternative Routing data, where existing data is loaded.	All modified PSAP Alternative Routing data shows as correctly provisioned		❑ Yes ❑ No		
C	Modify PSAP Alternative Rank.	Modified PSAP Alternative Rank from any existing rank to any other rank that is less than 12		❑ Yes ❑ No		
D	Delete PSAP Alternative Routing data.	All deleted PSAP Alternative Routing data is deleted		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of test case.

Test Case Number and Test Case Coverage Area:	2.8-10, Provisioning API through UAT PSAP Alternative Routing Error
Test Stage:	CLC Stage 2
Test Case:	Add, modify and/or delete PSAP Routing Alternative data elements through Provisioning UI, in a manner that violates the business rules allowed for this action.
Expected Results:	Based on action, the system returns expected error message and data is not provisioned

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Load invalid new PSAP Alternative Routing data.	Based on action, the system returns expected error message and PSAP Alternative Routing data not provisioned.		❑ Yes ❑ No		
B	Modify PSAP Alternative Routing data; by incorrectly adding new PSAP Alternative Routing data, where existing data is loaded.	Based on action, the system returns expected error message and the new PSAP Alternative Routing data not provisioned.		❑ Yes ❑ No		
C	Incorrectly modify PSAP Alternative routing Rank by ranking PSAP alternative routing same as another PSAP Alternative.	Based on action, the system returns expected error message and PSAP Alternative routing not changed.		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of test case.

Test Case Number and Test Case Coverage Area:	2.8-11, Provisioning API through UAT – PSAP [12a] Rule
Test Stage:	CLC Stage 2
Test Case:	Modify the [12a] PSAP Operational hour rules through Provisioning UI.
Expected Results:	PSAP Operational hours are modified with new [12a] rule, or not provisioned if incorrect [12a] data entered, the system returns expected error message and data is not provisioned

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Modify the [12a] PSAP Operational hour rules through Provisioning UI.	PSAP Operational hours are modified with new [12a] rule.		❑ Yes ❑ No		
B	Incorrectly modify the [12a] PSAP Operational hour rules through Provisioning UI.	Based on action, the system returns expected error message and the modified PSAP [12a] operational hour rules are not changed.		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of Test case.

Test Case Number and Test Case Coverage Area:	2.8-12, Provisioning API through UAT – PSAP [12a]
Test Stage:	CLC Stage 2
Test Case:	Load 5 PSAP [12a] into the master PSAP [12a] LIS Server,
Expected Results:	LIS Server Loader shows successful upload of all 5 PSAP [12a]. PSAP [12a] will not be loaded if incorrec [12a] entered and the system returns expected error message and data is not loaded.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Load 5 PSAPs [12a] into the master PSAP [12a] LIS Server	LIS Server Loader shows successful upload of all 5 PSAP [12a]		❑ Yes ❑ No		
B	Incorrectly load PSAP [12a] into the master PSAP [12a] LIS Server	Based on action, the system returns expected error message and PSAP [12a] data is not loaded.		❑ Yes ❑ No		

Comments:
Verification of how data is provisioned is included in description of Test case.

2.9. Comtech TCS NG9-1-1 Selective Routing and Location Applications

Purpose of this test coverage will be to prove that the Comtech TCS NG9-1-1 applications are configured properly, calls route correctly, and location data is accurately delivered.

Test Case Number and Test Case Coverage Area:	2.9-1, NG-911 Applications - LNG Service
Test Stage:	CLC Stage 1
Test Case:	Verify LNG service related agents can be started successfully
Expected Results:	All LNG service related agents are able to be started successfully

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify LNG services related agents can be started successfully at CLC1	All LNG service related agents are able to be started successfully at CLC1		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC1
2	Execute following command to bring up agents: [redacted][12a][redacted] Verify command can be executed successfully, output show LNG related agents are being started on virtual machines for LNG components: [redacted][12a][redacted]
3	Execute following command to verify agents are in running state: [redacted][12a][redacted]
4	Open [redacted][1 message log and verify that only [redacted][12a and [redacted][12a are generated during agent start up, no error messages are logged for agent

	communication, databases connections, etc.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	Verify LNG services related agents can be started successfully at CLC2	All LNG service related agents are able to be started successfully at CLC2		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Login to server at CLC2					
2	Execute following command to bring up agents: [redacted][12a][redacted] Verify command can be executed successfully, output show LNG related agents are being started on virtual machines for LNG components: [redacted][12a][redacted]					
3	Execute following command to verify agents are in running state: [redacted][12a][redacted]					
4	Open [redacted][1[redacted] message log and verify that only [redacted][12a][redacted] and [redacted][12a][redacted] are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.					
Comments:						

Test Case Number and Test Case Coverage Area:		2.9-2, NG-911 Applications - ESRP Service				
Test Stage:		CLC Stage 1				
Test Case:		Verify ESRP service related agents can be started successfully				
Expected Results:		All ESRP service related agents are able to be started successfully				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Verify ESRP services related agents can be started successfully at CLC1	All ESRP service related agents are able to be started successfully at CLC1		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Login to server at CLC1					
2	Execute following command to bring up agents: [redacted][12a][redacted] Verify command can be executed successfully, output show ESRP related agents are being started on virtual machines for ESRP components: [redacted][12a][redacted] [redacted] [redacted] [redacted]					
3	Execute following command to verify agents are in running state: [redacted][12a][redacted]					
4	Open [redacted][1][redacted] message log and verify that only [redacted][12a][redacted] and [redacted][12a][redacted] are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	Verify ESRP services related agents can be started	All ESRP service related agents are able to be started successfully at		❑ Yes ❑ No		

	successfully at CLC2	CLC2				
Test Case Execution						
Step #	**Method Description**					
1	Login to server at CLC2					
2	Execute following command to bring up agents: [12a] Verify command can be executed successfully, output show ESRP related agents are being started on virtual machines for ESRP components: [12a]					
3	Execute following command to verify agents are in running state: [12a]					
4	Open [1 message log and verify that only [12a] and [12a] are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.					

Test Case Number and Test Case Coverage Area:	2.9-3, NG-911 Applications - LPG (NIF and LIF) Service
Test Stage:	CLC Stage 1
Test Case:	Verify LPG (NIF and LIF) service related agents can be started successfully
Expected Results:	All LPG service related agents are able to be started successfully

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify LPG (NIF AND LIF) services related agents can be started successfully at CLC1	All LPG (NIF AND LIF) service related agents are able to be started successfully at CLC1		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC1
2	Execute following command to bring up agents: [12a] Verify command can be executed successfully, output show LPG (NIF AND LIF) related agents are being started on virtual machines for LPG (NIF AND LIF) components: [12a]
3	Execute following command to verify agents are in running state: [12a]
4	Open [1 message log and verify that only [12a] and [12a are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	Verify LPG (NIF AND LIF) services related agents can be started successfully at CLC2	All LPG (NIF AND LIF) service related agents are able to be started successfully at CLC2		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC2
2	Execute following command to bring up agents: [12a] Verify command can be executed successfully, output show LPG (NIF AND LIF) related agents are being started on virtual machines for LPG (NIF AND LIF) components: [12a]
3	Execute following command to verify agents are in running state: [12a]
4	Open [1 message log and verify that only [12a] and [12a are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.

Test Case Number and Test Case Coverage Area:	2.9-4, NG-911 Applications - ECRF Service					
Test Stage:	CLC Stage 1					
Test Case:	Verify ECRF service related agents can be started successfully					
Expected Results:	All ECRF service related agents are able to be started successfully					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Verify ECRF services related agents can be started successfully at CLC1	All ECRF service related agents are able to be started successfully at CLC1		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Login to server at CLC1					
2	Execute following command to bring up agents: [12a] Verify command can be executed successfully, output show ECRF related agents are being started on virtual machines for ECRF components: [12a]					
3	Execute following command to verify agents are in running state: [12a]					
4	Open [1 message log and verify that only [12a] and [12a are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	Verify ECRF services related agents can be started successfully at CLC2	All ECRF service related agents are able to be started successfully at CLC2		❑ Yes ❑ No		
Test Case Execution						

Step #	Method Description
1	Login to server at CLC2
2	Execute following command to bring up agents: [12a] Verify command can be executed successfully, output show ECRF related agents are being started on virtual machines for ECRF components: [12a]
3	Execute following command to verify agents are in running state: [12a]
4	Open [1 message log and verify that only [12a] and [12a] are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.

Test Case Number and Test Case Coverage Area:		2.9-5, NG-911 Applications – LIS Service				
Test Stage:		CLC Stage 1				
Test Case:		Verify LIS service related agents can be started successfully				
Expected Results:		All LIS service related agents are able to be started successfully				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Verify LIS services related agents can be started successfully at CLC1	All LIS service related agents are able to be started successfully at CLC1		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Login to server at CLC1					
2	Execute following command to bring up agents: [12a] Verify command can be executed successfully, output show LIS related agents are being started on virtual machines for LIS components: [12a]					
3	Execute following command to verify agents are in running state: [12a]					
4	Open [1 message log and verify that only [12a and [12a] are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	Verify LIS services related agents can be started successfully at CLC2	All LIS service related agents are able to be started successfully at CLC2		❑ Yes ❑ No		
Test Case Execution						

Step #	Method Description
1	Login to server at CLC2
2	Execute following command to bring up agents: [12a] Verify command can be executed successfully, output show tomcat-lis related agents are being started on virtual machines for LIS components: [12a]
3	Execute following command to verify agents are in running state: [12a]
4	Open [1 message log and verify that only [12a] and [12a are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.

Test Case Number and Test Case Coverage Area:	2.9-6, NG-911 Applications - LSRG Service
Test Stage:	CLC Stage 1
Test Case:	Verify LSRG service related agents can be started successfully
Expected Results:	All LIS service related agents are able to be started successfully

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify LSRG services related agents can be started successfully at CLC1	All LSRG service related agents are able to be started successfully at CLC1		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC1
2	Execute following command to bring up agents: [12a] Verify command can be executed successfully, output show LIS related agents are being started on [12a] for LSRG components: (agent names to be filled in)
3	Execute following command to verify agents are in running state: [12a]
4	Open [1 message log and verify that only [12a and [12a are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	Verify LSRG services related agents can be started successfully at CLC2	All LSRG service related agents are able to be started successfully at CLC2		❑ Yes ❑ No		

Test Case Execution

Step #	Method Description
1	Login to server at CLC2
2	Execute following command to bring up agents: [12a] Verify command can be executed successfully, output show tomcat-lis related agents are being started on virtual machines for LSRG components: (agent names to be filled in)
3	Execute following command to verify agents are in running state: [12a]
4	Open [1 message log and verify that only [12a and [12a are generated during agent start up, no error messages are logged for agent communication, databases connections, etc.

Test Case Number and Test Case Coverage Area:	2.9-7, NG-911 Applications Failover - LNG Service
Test Stage:	CLC Stage 1
Test Case:	Verify that when LNG service fails at CLC, LNG service at available CLC can successfully process requests
Expected Results:	Available LNG service at CLC can process services requests successfully

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	LNG service unavailable at CLC1, LNG service at CLC2 is available and can process requests.	LNG service at CLC2 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC1
2	Execute following commands to take LNG service down at CLC1 [redacted][12a][redacted]
3	Execute following command to make sure that LNG service is down at CLC1: [redacted][12a][redacted] LNG service related agents are in stopped state in the command output
4a	Provision system to route test calls to Legacy PSAP, send a call to SBC, SBC can choose available LNG service at CLC2
4b	Provision system to route test calls to IP enabled PSAP, send a call to SBC, SBC can choose available LNG service at CLC2
5a	Verify Legacy PSAP ALI bid/rebid are successful
5b	Verify IP-enabled PSAP ALI bid/rebid are successful

6	Restore system					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	LNG service unavailable at CLC1, LNG service at CLC2 is available and can process requests.	LNG service at CLC2 can process the requests successfully.		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Login to server at CLC2					
2	Execute following commands to take LNG service down at CLC2 [redacted][12a][redacted]					
3	Execute following command to make sure that LNG service is down at CLC2: [redacted][12a][redacted] LNG service related agents are in stopped state in the command output					
4a	Provision system to route test calls to Legacy PSAP, send a call to SBC, SBC can choose available LNG service at CLC1					
4b	Provision system to route test calls to IP enabled PSAP, send a call to SBC, SBC can choose available LNG service at CLC1					
5a	Verify Legacy PSAP ALI bid/rebid are successful					
5b	Verify IP-enabled PSAP ALI bid/rebid are successful					
6	Restore system					

Test Case Number and Test Case Coverage Area:	2.9-8, NG-911 Applications Failover - ESRP Service
Test Stage:	CLC Stage 1
Test Case:	Verify that when ESRP service fails at CLC, ESRP service at available CLC can successfully process requests
Expected Results:	Available ESRP service at CLC can process services requests successfully

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	ESRP service unavailable at CLC1, ESRP service at CLC2 is available and can process requests.	ESRP service at CLC2 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC1
2	Execute following commands to take ESRP service down at CLC1 [redacted][12a][redacted] [redacted]
3	Execute following command to make sure that ESRP service is down at CLC1: [redacted][12a][redacted] ESRP service related agents are in stopped state in the command output
4	Send a call to SBC, SBC can choose available ESRP service at CLC2 and calls are setup successfully
5	Restore system

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	ESRP service unavailable at CLC1, ESRP service at CLC2 is available and can process requests.	ESRP service at CLC2 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution

Step #	Method Description
1	Login to server at CLC2
2	Execute following commands to take ESRP service down at CLC2 [redacted] [12a] [redacted] [redacted]
3	Execute following command to make sure that ESRP service is down at CLC2: [redacted] [12a] [redacted] ESRP service related agents are in stopped state in the command output
4	Send a call to SBC, SBC can choose available ESRP service at CLC1 and calls are setup successfully
5	Restore system

Test Case Number and Test Case Coverage Area:	2.9-9, NG-911 Applications Failover – ECRF Service
Test Stage:	CLC Stage 1
Test Case:	Verify that when ECRF service fails at CLC, ECRF service at available CLC can successfully process requests
Expected Results:	Available ECRF service at CLC can process services requests successfully

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	ECRF service unavailable at CLC1, ECRF service at CLC2 is available and can process requests.	ECRF service at CLC2 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC1
2	Execute following commands to take ECRF service down at CLC1 [redacted][12a][redacted] [redacted]
3	Execute following command to make sure that ECRF service is down at CLC1: [redacted][12a][redacted] ECRF service related agents are in stopped state in the command output
4	Send a call to CLC1, load balancer at CLC1 can choose available ECRF service at CLC2 and calls are setup successfully
5	Restore system

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	ECRF service unavailable at CLC2, ECRF service at CLC1 is available and can process requests.	ECRF service at CLC1 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution

Step #	Method Description
1	Login to server at CLC2
2	Execute following commands to take ECRF service down at CLC2 [redacted] [12a] [redacted] [redacted]
3	Execute following command to make sure that ECRF service is down at CLC2: [redacted] [12a] ECRF service related agents are in stopped state in the command output
4	Send a call to CLC2, load balancer at CLC2 can choose available ECRF service at CLC1 and calls are setup successfully
5	Restore system

Test Case Number and Test Case Coverage Area:	2.9-10, NG-911 Applications Failover – LIS Service
Test Stage:	CLC Stage 1
Test Case:	Verify that when LIS service fails at CLC, LIS service at available CLC can successfully process requests
Expected Results:	Available LIS service at CLC can process services requests successfully

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	LIS service unavailable at CLC1, LIS service at CLC2 is available and can process requests.	LIS service at CLC2 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC1
2	Execute following commands to take LIS service down at CLC1 [redacted] [12a] [redacted] [redacted]
3	Execute following command to make sure that LIS service is down at CLC1: [redacted] [12a] [redacted] LIS service related agents are in stopped state in the command output
4	Send a call to CLC1, load balancer at CLC1 can choose available LIS service at CLC2 and calls are setup successfully
5	Restore system

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	LIS service unavailable at CLC2, LIS service at CLC1 is available and can process requests.	LIS service at CLC1 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**

1	Login to server at CLC2
2	Execute following commands to take LIS service down at CLC2 [redacted][12a][redacted] [redacted]
3	Execute following command to make sure that LIS service is down at CLC2: [redacted][12a][redacted] LIS service related agents are in stopped state in the command output
4	Send a call to CLC2, load balancer at CLC2 can choose available LIS service at CLC1 and calls are setup successfully
5	Restore system

Test Case Number and Test Case Coverage Area:	2.9-11, NG-911 Applications Failover – LPG (NIF and LIF) Service
Test Stage:	CLC Stage 1
Test Case:	Verify that when LPG (NIF and LIF) service fails at CLC, LPG (NIF and LIF) service at available CLC can successfully process requests
Expected Results:	Available LPG (NIF and LIF) service at CLC can process services requests successfully

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	LPG (NIF and LIF) service unavailable at CLC1, LPG (NIF and LIF) service at CLC2 is available and can process requests.	LPG (NIF and LIF) service at CLC2 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC1
2	Execute following commands to take LPG (NIF and LIF) service down at CLC1 [redacted][12a][redacted]
3	Execute following command to make sure that LPG (NIF and LIF) service is down at CLC1: [redacted][12a][redacted] LPG (NIF and LIF) service related agents are in stopped state in the command output
4	Send a call to CLC1, SBC can choose available LPG NIF service at CLC2 and calls are setup successfully
5	Legacy PSAP can receive ALI data from available LPG LIF at CLC2
6	Restore system

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)

B	LPG (NIF and LIF) service unavailable at CLC2, LPG (NIF and LIF) service at CLC2 is available and can process requests.	LPG (NIF and LIF) service at CLC1 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC2
2	Execute following commands to take LPG (NIF and LIF) service down at CLC2 [redacted][12a][redacted]
3	Execute following command to make sure that LPG (NIF and LIF) service is down at CLC2: [redacted][12a][redacted] LPG (NIF and LIF) service related agents are in stopped state in the command output
4	Send a call to CLC2, SBC can choose available LPG NIF service at CLC1 and calls are setup successfully
5	Legacy PSAP can receive ALI data from available LPG LIF at CLC1
6	Restore system

Test Case Number and Test Case Coverage Area:	2.9-12, NG-911 Applications Failover – LSRG Service
Test Stage:	CLC Stage 1
Test Case:	Verify that when LSRG service fails at CLC, LSRT service at available CLC can successfully process requests
Expected Results:	Available LSRG service at CLC can process services requests successfully

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	LSRG service unavailable at CLC1, LSRG service at CLC2 is available and can process requests.	LSRG service at CLC2 can process the requests successfully.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Login to server at CLC1
2	Execute following commands to take LSRG service down at CLC1 [redacted][12a][redacted] [redacted]
3	Execute following command to make sure that LSRG service is down at CLC1: [redacted][12a][redacted] LSRG service related agents are in stopped state in the command output
4	Send a call to CLC1, verify call to NGSR PSAP A is set up, NGSR PSAP A initiate call transfer the Legacy SR PSAP B, verify that LSRG at CLC2 can process the call transfer successfully
5	Verify ALI request from Legacy PSAP B can receive successful response
6	Restore system

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	LSRG service unavailable at CLC2, LSRG service at CLC1 is available and can process	LSRG service at CLC1 can process the requests successfully.		❑ Yes ❑ No		

	requests.					
Test Case Execution						
Step #	**Method Description**					
1	Login to server at CLC2					
2	Execute following commands to take LSRG service down at CLC2 [redacted][12a][redacted] [redacted]					
3	Execute following command to make sure that LSRG service is down at CLC2: [redacted][12a][redacted] LSRG service related agents are in stopped state in the command output					
4	Send a call to CLC2, Verify call to NGSR PSAP A is set up, NGSR PSAP A initiate call transfer the Legacy SR PSAP B, verify that LSRG at CLC1 can process the call transfer successfully					
5	Verify ALI request from Legacy PSAP B can receive successful response					
6	Restore system					

Test Case Number and Test Case Coverage Area:	2.9-13, NG-911 Applications – Call Test
Test Stage:	CLC Stage 1
Test Case:	Location of caller is determined and used to select PSAP to route call.
Expected Results:	Using a location for routing method, the location is sent to ECRF (LoST) and the correct PSAPURI is returned

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Originating call with ESRK is routed to proper PSAP ESRK's location provisioned in LNG (LNG Local LIS).	Expected PSAP URI is returned	Ex: URI [redacted][12a][redacted]	❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Verify applications are running and check proper ESRK's location is provisioned in LNG
2	Send call to CLC with provisioned ESRK
3	Collect TDRs and call trace during the call
4	Verify call is being routed to expected PSAP

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	Originating call with ESRK, where ESRK has not been provisioned in LNG or no ESRK delivered into the ESI network and/or the ESRK delivered is invalid. Routed based on originating carrier's trunk into ESI network. Default PSAP for trunk has been provisioned in LNG (LNG Local LIS).	PSAP's URI set for originating carrier's trunk is returned		❑ Yes ❑ No		

Test Case Execution						
Step #	**Method Description**					
1	Verify system state and check specified ESRK's location is not provisioned [redacted][12a][redacted] for incoming trunk group is provisioned in LNG					
2	Send call to CLC with specified ESRK					
3	Collect TDRs and call trace during the call					
4	Verify call is being routed to default PSAP for the trunk group					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
C	Originating call where ESRK has not been provisioned in LNG and no default PSAP for originating call trunk has been provisioned. Call is routed to the Last Route Option (LRO) PSAP provisioned in ESRP	LRO PSAP's URI identified for the Emergency Service Network is returned		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Verify applications are running and check specified ESRK's location is not provisioned, default PSAP for incoming trunk group is not provisioned in LNG, Last Route Option (LRO) is provisioned in PSAP					
2	Send call to CLC with specified ESRK					
3	Collect TDRs and call trace during the call					
4	Verify call is being routed to LRO PSAP					

Test Case Number and Test Case Coverage Area:	2.9-14, NG-911 Applications – Call Test
Test Stage:	CLC Stage 1
Test Case:	Unusual call handling situation occurring at intended PSAP, and intended PSAP's Alternative Routing Plan is utilized to determine call routing.
Expected Results:	Using a location for routing method the correct Policy Routing Option is selected and the correct Alternative Routing PSAP URI is returned.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Intended PSAP has [redacted][12a][redacted] rule indicating it is not available at time of a 911 call	Correct PSAP URI returned, based on Alternative Routing PSAP identified by the intended PSAP's [redacted][12a][redacted] rule.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Verify applications are running and check proper ESRK's location is provisioned in LNG; verify Intended PSAP has [redacted][12a][redacted] rule indicating it is not available at the time of test call and Alternative PSAP is provisioned in [redacted][12a][redacted]
2	Send call to CLC with provisioned ESRK
3	Collect TDRs and call trace during the call
4	Verify call is being routed to expected alternative PSAP

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	Intended PSAP selected returns a SIP 486 Busy.	Correct PSAP URI returned, based on Alternative Routing PSAP identified by the intended PSAP.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**

1	Verify applications are running and check proper ESRK's location is provisioned in LNG; verify Intended PSAP has [redacted][12a][redacted] rule indicating it is available at the time of test call and Alternative PSAP is provisioned in [redacted][12a][redacted]					
2	Verify Intended PSAP is busy					
3	Send call to CLC with provisioned ESRK					
4	Collect TDRs and call trace during the call					
5	Verify when intended PSAP returns SIP 486 Busy, call is being routed to expected alternative PSAP					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
C	Intended PSAP selected returns a SIP 486 Busy. The intended PSAP's first Alternative Routing choice is not available to take the call.	Correct PSAP URI returned, based on the next ranked Alternative Routing PSAP identified by the intended PSAP.		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Verify applications are running and check proper ESRK's location is provisioned in LNG; verify Intended PSAP has [redacted][12a][redacted] rule indicating it is available at the time of test call and Alternative PSAPs are provisioned in [redacted][12a][redacted]					
2	Verify Intended PSAP is busy and first alternative Routing PSAP is not available					
3	Send call to CLC with provisioned ESRK					
4	Collect TDRs and call trace during the call					
5	Verify when intended PSAP returns SIP 486 Busy, and first alternative Routing PSAP is not available, call is being routed to the next ranked alternative PSAP identified by the intended PSAP.					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
D	Intended PSAP's CPE is out-of-service.	Correct PSAP URI returned, based on Alternative Routing PSAP identified by the Intended PSAP.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Verify applications are running and check proper ESRK's location is provisioned in LNG; verify Intended PSAP has [12a] rule indicating it is available at the time of test call and Alternative PSAPs are provisioned in [12a]
2	Verify Intended PSAP's CPE is out of service
3	Send call to CLC with provisioned ESRK
4	Collect TDRs and call trace during the call
5	Verify call is being routing to correct alternative PSAP based on the provisioned alternative routing PSAPs

Test Case Number and Test Case Coverage Area:	2.9-15, NG-911 Applications – Call Test
Test Stage:	CLC Stage 1
Test Case:	Unusual call handling situation occurring at intended PSAP, and intended PSAPs Alternative Routing Plan is utilized to determine call routing.
Expected Results:	Using a location for routing method the correct Policy Routing Option is selected and the call is routed to the Alternative Routing PSAP's [redacted][12a][redacted].

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Intended PSAP selected returns a SIP 486 Busy.	Correct PSAP [redacted][12a][redacted] URI returned based on Alternative Routing PSAP identified by the intended PSAP		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Verify applications are running and check proper ESRK's location is provisioned in LNG; Verify Policy Routing Option is provisioned
2	Verify Intended PSAP is busy
3	Send call to CLC with provisioned ESRK
4	Collect TDRs and call trace during the call
5	Verify when the intended PSAP returns SIP 486 Busy, and correct Policy Routing Option is used so the call is routed to the alternative routing PSAP's [redacted][12a][redacted]

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	Intended PSAP selected returns a SIP 486 Busy. The PSAP's first Alternative Routing choice is not available to take the call.	Correct PSAP's [redacted][12a][redacted] URI returned based on the next ranked Alternative Routing PSAP identified by the intended PSAP		❑ Yes ❑ No		

Test Case Execution

Step #	Method Description
1	Verify applications are running and check proper ESRK's location is provisioned in LNG; Verify Policy Routing Option is provisioned
2	Verify Intended PSAP is busy and first alternative routing choice is not available
3	Send call to CLC with provisioned ESRK
4	Collect TDRs and call trace during the call
5	Verify that correct PSAP's [12a] URI is used for routing calls based on the next ranked alternative routing PSAP identified by the intended PSAP

Test Case Number and Test Case Coverage Area:	2.9-16, NG-911 Applications – Call Test
Test Stage:	CLC Stage 1
Test Case:	Unusual call handling situation occurring at intended PSAP, no Alternative Routing options have been Identified by intended PSAP. Using a location for routing method, where no policy routing rule exists, Calls route based on the Last Route Option (LRO) identified for the Emergency Service Network.
Expected Results:	Using a location for routing method, where no policy routing rule exists, the correct LRO PSAPURI is returned

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Intended PSAP selected returns a SIP 486 Busy. No policy rules exist.	LRO PSAP's URI identified for the Emergency Service Network is returned		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**
1	Verify applications are running and check proper ESRK's location is provisioned in LNG; Policy rules are not provisioned for intended PSAP
2	Verify Intended PSAP is busy
3	Send call to CLC with provisioned ESRK
4	Collect TDRs and call trace during the call
5	Verify that call is being routed to LRO PSAP's URI identified for the Emergency Service Network.

Test Case Number and Test Case Coverage Area:	2.9-17, NG-911 Applications – Call Test
Test Stage:	CLC Stage 1
Test Case:	Location of caller cannot be determined or used to select PSAP to route call.
Expected Results:	Call routes based on the LRO identified for the Emergency Service Network.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	ECRF is unavailable or not able to return a PSAP URI for location	LRO PSAP's URI identified for the Emergency Service Network is returned		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Verify applications are running and check proper ESRK's location is provisioned in LNG					
2	Verify ECRFs are unavailable					
3	Send call to CLC with provisioned ESRK					
4	Collect TDRs and call trace during the call					
5	Verify that call is being routed to LRO PSAP's URI identified for the Emergency Service Network.					
A	ECRF is unavailable or not able to return a PSAP URI for location	LRO PSAP's URI identified for the Emergency Service Network is returned		❑ Yes ❑ No		
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	PSAP URI returned by ECRF is not provisioned in ESRP	LRO PSAP's URI identified for the Emergency Service Network is returned		❑ Yes ❑ No		
Test Case Execution						

Step #	Method Description
1	Verify applications are running and check proper ESRK's location is provisioned in LNG
2	Verify ECRF returned PSAP URI is not provisioned in ESRP
3	Send call to CLC with provisioned ESRK
4	Collect TDRs and call trace during the call
5	Verify that call is being routed to LRO PSAP's URI identified for the Emergency Service Network.

Test Case Number and Test Case Coverage Area:		2.9-18, NG-911 Applications – ALI SOI Test				
Test Stage:		CLC Stage 1				
Test Case:		Verify CSP access to the ALI WebUI.				
Expected Results:		NG System delivers required data.				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Carrier can access WebUI and load ALI SOI records for processing	SOI file processing is successful and output files are generated.		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Verify applications are running and check proper configurations are done in the system.					
2	Carrier to login to the ALI WebUI and load the ALI SOI file.					
3	ALI system processes the ALI SOI files.					
4	Output files for the carrier are generated successfully.					
5	Verify the output files are generated for the carrier.					

Test Case Number and Test Case Coverage Area:		2.9-19, NG-911 Applications – MSAG SOI Test				
Test Stage:		CLC Stage 1				
Test Case:		Verify PSAP/Jurisdiction access to the ALI WebUI.				
Expected Results:		NG System delivers required data.				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	PSAP/Jurisdiction can access WebUI and load MSAG SOI records for processing	MSAG SOI file processing is successful and output files are generated.		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Verify applications are running and check proper configurations are done in the system.					
2	PSAP/Jurisdiction to login to the ALI WebUI and load the MSAG SOI file.					
3	ALI system processes the MSAG SOI files.					
4	Output files for the PSAP/Jurisdiction are generated successfully					
5	Verify the output files are generated for PSAP/Jurisdiction					

Test Case Number and Test Case Coverage Area:		2.9-20, NG-911 Applications – Call Test				
Test Stage:		CLC Stage 1				
Test Case:		Wireline Call delivered to PSAP, PSAP queries NG System for location data (i.e. ALI Bid in Legacy 9-1-1)				
Expected Results:		NG System delivers required data.				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Wireline call delivered to PSAP, PSAP queries ALI via NG System for location data (i.e. ALI Bid in Legacy 9-1- 1)	All required location data is delivered to the PSAP		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Verify applications are running and check proper configurations are done in the system					
2	Route call to PSAP using the ANI.					
3	PSAP queries ALI via NG911 system for location data					
4	Collect logs and call trace during the call and ALI bid/rebid					
5	Verify all required location data is delivered to PSAP					

Test Case Number and Test Case Coverage Area:		2.9-21, NG-911 Applications – Call Test				
Test Stage:		CLC Stage 1				
Test Case:		Wireless Call delivered to PSAP, PSAP queries NG System for location data (i.e. ALI Bid in Legacy 9-1-1)				
Expected Results:		NG System delivers required data.				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Call delivered to PSAP, PSAP queries ALI via NG System for location data (i.e. ALI Bid in Legacy 9-1- 1)	All required location data is delivered to the PSAP		❑ Yes ❑ No		
Test Case Execution						
Step #	**Method Description**					
1	Verify applications are running and check proper configurations are done in the system					
2	Route call to PSAP using ESRK					
3	PSAP queries ALI via NG911 system for location data. ALI to steer ALI query to obtain location data.					
4	Collect logs and call trace during the call and ALI bid/rebid					
5	Verify all required location data is delivered to PSAP					

2.10. Comtech TCS Monitoring and Alarming Components

Purpose of this test coverage is to prove that the Comtech TCS Network Operations Center (NOC) correctly receives alarms and can effectively monitor the NEW NG9-1-1 system interfaces and components.

Test Case Number and Test Case Coverage Area:	2.10-1, Monitoring and Alarming Components in the NG9-1-1 Platform
Test Stage:	CLC Stage 1
Test Case:	[12a] configuration - validate network routing and authorization for [12a]
Expected Results:	Network routing and authorization for [12a] valid based on system design.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify [12a] connectivity from the NMS to all network elements	The NMS will be able to poll the network element; adding the CI's into the DB		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)

Step #	Method Description –
1	From the NMS execute a demand [12] to each network element in the TCS Demarcation [12a]
2	Record actual network element result in a spreadsheet

Comments:

Test Case Number and Test Case Coverage Area:		2.10-2, Monitoring and Alarming Components in the NG9-1-1 Platform				
Test Stage:		CLC Stage 1				
Test Case:		[redacted] configuration – Verify [redacted] path from all network elements to the NMS				
Expected Results:		[redacted] path from all network elements to the NMS valid based on system design				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Validate network routing and authorization for [redacted]	The NMS will receive the trap, and send the alarm to the NOC view		❑ Yes ❑ No		
Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
1	From each network element send a test [redacted] to the NMS [redacted]					
2	Record actual network element result in a spreadsheet					
Comments:						

Test Case Number and Test Case Coverage Area:	2.10-3, Monitoring and Alarming Components in the NG9-1-1 Platform
Test Stage:	CLC Stage 1
Test Case:	Agent communication - validate network routing and authorization for agent communication
Expected Results:	Network routing and authorization for agent communication is valid based on system design.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify connectivity from all network element agents to the NMS	The communication will be relayed to the [redacted][12a][redacted]		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)

Step #	Method Description
1	From the primary NMS validate agent heartbeat is working to each agent deployed in the environment
2	Record result in a [redacted][12a][redacted] that lists each [redacted][12a][redacted]
3	Fail over agents the secondary Operations Manager instance
4	From the secondary NMS validate agent heartbeat is working to each agent deployed in the environment
5	Record result in a spreadsheet that lists each agent and associated platform

Comments:

Test Case Number and Test Case Coverage Area:	2.10-4, Monitoring and Alarming Components in the NG9-1-1 Platform
Test Stage:	CLC Stage 1
Test Case:	Agent communication - Verify performance manager is collecting metrics
Expected Results:	Performance manger has collected expected metrics

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify performance manager is collecting metrics	Performance statistics will be stored in the Performance manager [12a] for CPU, Memory and Disk		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)

Step #	Method Description
1	Login to Performance Manager
2	Validate system metrics are visible from the [12a]
3	Record result in a [12a] for each metric

Comments:

Test Case Number and Test Case Coverage Area:	2.10-5, Monitoring and Alarming Components in the NG9-1-1 Platform
Test Case Coverage Area:	
Test Stage:	CLC Stage 1
Test Case:	Template configuration - Validate the templates migrated to the CLC
Expected Results:	Templates in the CLC are same as templates tested and installed in lab

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify all application alarming templates are in place using checksum with the version copy	The checksums will match		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)

Step #	Method Description
1	From the [redacted][12a][redacted] seat verify the chksums match on each template
2	Record result in a spreadsheet for each template

Comments:

Test Case Number and Test Case Coverage Area:		2.10-6, Monitoring and Alarming Components in the NG9-1-1 Platform				
Test Stage:		CLC Stage 1				
Test Case:		Application alarming - validate application alarming				
Expected Results:		Application alarming is verified and working as expected				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Proceed with network failover and application component test cases verifying all alarms are sent the [12a] view instructions	The correct Severity, Thresholds, Correlations and Escalation instructions will be sent to the [12a]		❑ Yes ❑ No		
Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
1	From the [12a] view validate correct severity, thresholds, correlations and escalation instructions					
2	Record result in a spreadsheet for each event					
Comments:						

Test Case Number and Test Case Coverage Area:			2.10-7, Monitoring and Alarming Components in the NG9-1-1 Platform			
Test Stage:			CLC Stage 1			
Test Case:			Alarm Platform Reliability- validate application alarming works as expected in active-active configuration			
Expected Results:			Application alarming is verified and working as expected			
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Proceed with network failover testing of the NMS systems (Rebooting both the City1 and City 2 NMS systems) and application component test cases verifying all alarms are sent the [12a] view with correct Severity, Thresholds, Correlations and Escalation instructions	The correct Severity, Thresholds, Correlations and Escalation instructions will be sent to the [12a]		❑ Yes ❑ No		
Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
1	Reboot the City1 NMS system verifying al [12a] and agent communication are not impacted and an alarm is sent the [12a] view with correct severity, thresholds, correlations and escalation instructions					
2	Reboot the City 2 NMS system verifying all polling and agent communication are not impacted and an alarm is sent the [12a] view with correct severity, thresholds, correlations and escalation instructions					
3	Record result in a spreadsheet for each event					
Comments:						

Test Case Number and Test Case Coverage Area:	2.10-8, Monitoring and Alarming Components in the NG9-1-1 Platform
Test Stage:	CLC Stage 1
Test Case:	[12a] configuration - validate network routing and authorization for [12a]
Expected Results:	Network routing and authorization for [12a] valid based on system design.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify [12a] connectivity from the NMS to all network elements	The NMS will be able to [12 the network element; adding the CI's into the DB		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)

Step #	Method Description –
1	**From the NMS execute a demand poll to each network element in the Comtech TCS Demarcation [12a]**
2	Record actual network element result in a spreadsheet

Comments:

Test Case Number and Test Case Coverage Area:	2.10-9, Monitoring and Alarming Components in the NG9-1-1 Platform
Test Stage:	CLC Stage 1
Test Case:	[12a] configuration – Verify [12a] path from all network elements to the NMS
Expected Results:	[12a] path from all network elements to the NMS valid based on system design

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Validate network routing and authorization for [12a]	The NMS will receive the trap, and send the alarm to the [12a] view		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)

Step #	Method Description
1	From each network element send a test [12 to the NMS [12a]
2	Record actual network element result in a [12a]

Comments:

Test Case Number and Test Case Coverage Area:	2.10-10, Monitoring and Alarming Components in the NG9-1-1 Platform
Test Stage:	CLC Stage 1
Test Case:	Agent communication - validate network routing and authorization for agent communication
Expected Results:	Network routing and authorization for agent communication is valid based on system design.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify connectivity from all network element agents to the NMS	The communication will be relayed to the [12a] view		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)

Step #	Method Description
1	From the primary NMS validate agent heat beat is working to each agent deployed in the environment
2	Record result in a spreadsheet that lists each agent and associated platform
3	Fail over agents the secondary Operations Manager instance
4	From the secondary NMS validate agent heat beat is working to each agent deployed in the environment
5	Record result in a [12a] that lists each agent and associated platform

Comments:

Test Case Number and Test Case Coverage Area:	2.10-11, Monitoring and Alarming Components in the NG9-1-1 Platform
Test Stage:	CLC Stage 1
Test Case:	Agent communication - Verify performance manager is collecting metrics
Expected Results:	Performance manger has collected expected metrics

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify performance manager is collecting metrics	Performance statistics will be stored in the Performance manager [12a] for CPU, Memory and Disk		❑ Yes ❑ No		

Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)

Step #	Method Description
1	Login to Performance Manager
2	Validate system metrics are visible from the [12a]
3	Record result in a [12a] for each metric

Comments:

Test Case Number and Test Case Coverage Area:		2.10-12, Monitoring and Alarming Components in the NG9-1-1 Platform				
Test Stage:		CLC Stage 1				
Test Case:		Template configuration - Validate the templates migrated to the CLC				
Expected Results:		Templates in the CLC are same as templates tested and installed in lab				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Verify all application alarming templates are in place using checksum with the version copy	The checksums will match		❑ Yes ❑ No		
Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
1	From the Tier 3 engineering seat verify the chksums match on each template					
2	Record result in a [redacted][12a][redacted] for each template					
Comments:						

Test Case Number and Test Case Coverage Area:		2.10-13, Monitoring and Alarming Components in the NG9-1-1 Platform				
Test Stage:		CLC Stage 1				
Test Case:		Application alarming - validate application alarming				
Expected Results:		Application alarming is verified and working as expected				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Proceed with network failover and application component test cases verifying all alarms are sent the [12a] view instructions	The correct Severity, Thresholds, Correlations and Escalation instructions will be sent to the [12a]		❑ Yes ❑ No		
Test Case Execution (How Comtech TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
1	From the [12a] view validate correct severity, thresholds, and escalation instructions					
2	Record result in a spreadsheet for each event					
Comments:						

Test Case Number and Test Case Coverage Area:		2.10-14, Monitoring and Alarming Components in the NG9-1-1 Platform				
Test Stage:		CLC Stage 1				
Test Case:		Alarm Platform Reliability- validate application alarming works as expected in active-active configuration				
Expected Results:		Application alarming is verified and working as expected				
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	Proceed with network failover testing of the NMS systems (Rebooting both the City1 and City 2 NMS systems) and application component test cases verifying all alarms are sent the [12 C view with correct severity, thresholds, correlations and escalation instructions	The correct severity, thresholds, correlations and escalation instructions will be sent to the [12a]		❑ Yes ❑ No		
Test Case Execution (How TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
1	Reboot the City1 NMS system verifying all polling and agent communication are not impacted and an alarm is sent the [12a] view with correct severity, thresholds, correlations and escalation instructions					
2	Reboot the City 2 NMS system verifying all polling and agent communication are not impacted and an alarm is sent the [12a] view with correct severity, thresholds, correlations and escalation instructions					
3	Record result in a [12a] for each event					
Comments:						

2.11. ESInet Connection MPLS to CLCs

Purpose of this test coverage is to prove that the deployed MPLS network can pass the maximum specified bandwidth without problems, and validate that redundancy has been configured correctly.

Note: The Comtech TCS circuit-test acceptance standards for NG9-1-1 should be reviewed prior to Test Case Execution.

Test Case Number and Test Case Coverage Area:	2.11-1, ESINET Connection– MPLS to CLC - Circuit Connectivity [redacted]
Test Stage:	CLC Stage 1
Test Case:	Verify CLC to CLC connectivity via ESInet (CLC test case one of two)
Expected Results:	There should be [redacted] for [redacted] & They should be [redacted] If there are PSAP FWs active, neighbor count in [redacted] will be variable.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify CLC to CLC - [redacted]	There should be [redacted] and if PSAP FWs active neighbor count in [redacted] will be variable		❑ Yes ❑ No		

Low Level Expected Results Detail:

OUTPUT::: There should be [redacted] for [redacted] & They should be [redacted]

If there are PSAP FWs active, neighbor count in [redacted] may be variable.

[redacted]

Step #	Method Description
1	Log onto [redacted]
2	run the following commands: [redacted]

B	Verify CLC to CLC - [12a]	There should be [1] and if PSAP FWs active neighbor count in [12a] will be variable		❑ Yes ❑ No		
Low Level Expected Results Detail: OUTPUT::: There should be [12a] for [12a] & They should be [12a] If there are PSAP FWs active, neighbor count in [12a] may be variable. [12a]						
Step #	**Method Description**					
1	Log onto [12a]					
2	run the following commands: [12a]					
C	Verify CLC to CLC - [12a]	There should be [1] and if PSAP FWs active neighbor count in [12a] will be variable		❑ Yes ❑ No		
Low Level Expected Results Detail: OUTPUT::: There should be [12a] for [12a] They should be [12a] If there are PSAP FWs active, neighbor count in [12a] may be variable. [12a]						
Step #	**Method Description**					

1	Log onto [12a]					
2	run the following commands: [12a]					
D	Verify CLC to CLC - [12a]	There should be [and if PSAP FWs active neighbor count in [12a] will be variable		❑ Yes ❑ No		

Low Level Expected Results Detail:
OUTPUT::: There should be [12a] for [12a] & They should be [12a]
If there are PSAP FWs active, neighbor count in [12a] may be variable.
[12a]

Step #	Method Description
1	Log onto [12a]
2	run the following commands: [12a]
Comments:	

Test Case Number and Test Case Coverage Area:	2.11-2, ESINET Connection– MPLS to CLC - Circuit Connectivity
Test Stage:	CLC Stage 1
Test Case:	Verify Clean Interfaces facing ESInet {CLC test case two of two)

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Clean Interfaces facing ESInet	Expected output should contain all [12a] with one exception-[12 errors; There is a known condition when [12a] is enabled on an [12a] interface. [12a]		❑ Yes ❑ No		

Low Level Expected Results Detail:

[12a]

Step #	Method Description
1	Log onto all [12 CLC [12a]
2	Run the following command: [12a]
3	Wait 15 minutes; Then on each router, run the following commands [12a]
4	Wait 45 minutes and repeat steps 1, 2 and 3.
Comments:	

2.12. ESInet Connection MPLS to PSAPs

Purpose of this test coverage is to prove the link can transport the maximum specified bandwidth and that there are no concerns about using it to transport calls.

Test Case Number and Test Case Coverage Area:	2.12-1, ESINET Connection - MPLS to PSAP - Circuit Connectivity
Test Stage:	CLC Stage 2
Test Case:	Verify CLC to PSAP via MPLS
Expected Results:	Note: per variation low level expected results detail

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify CLC to PSAP FW ping connectivity	See low level		❑ Yes ❑ No		

Low Level Expected Results Detail:

[redacted][12a][redacted]

Step #	Method Description
1	Log onto all [redacted]1[redacted]CLC[redacted][12a][redacted]
2	Run the following commands, where[redacted][12a][redacted]
3	Required step if expected results of packet ping time not equal to [redacted][12a][redacted] Packet ping times greater than [redacted][12a][redacted] – noted as unacceptable deviation in comment section and TCS escalates to [redacted][12a][redacted] Packet ping times less than [redacted][12a][redacted] – noted as acceptable deviation in comment section

Comments:

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	Verify CLC to PSAP [12a] [redacted]	See low level		❑ Yes ❑ No		
Low Level Expected Results Detail: OUTPUT::: Along with the [redacted] other CLC routers, the PSAP FW address should be there and should show up in a [12a] state. [redacted]						
Step #	**Method Description**					
1	Log onto all [redacted] CLC routers [redacted] [12a] [redacted]					
2	Run the following commands [redacted] [12a] [redacted]					
Comments:						

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
C	Verify CLC to PSAP [12a] [redacted] connectivity	See low level		❑ Yes ❑ No		
Low Level Expected Results Detail: OUTPUT::: Ensure that the remote PSAP FW IP address shows an [12a] state [12a] [redacted]						

Step #	Method Description
1	Log onto all [CLC routers [12a]
2	Run the following commands [12a]
Comments:	

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
D	Verify CLC to PSAP [12a] ping connectivity	See low level		❑ Yes ❑ No		

Low Level Expected Results Detail:

[12a]

Step #	Method Description
1	Log onto all [CLC routers [12a]
2	Run the following commands, [12a]
3	Required step if expected results of packet ping time not equal to [12a] Packet ping times greater than [12a] – noted as unacceptable deviation in comment section and TCS escalates to [12a] Packet ping times less than [12a] noted as acceptable deviation in comment section

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
E	Verify CLC to PSAP [12a] connectivity	See low level		❑ Yes ❑ No		

Low Level Expected Results Detail:

[redacted] [12a] [redacted]

Step #	Method Description
1	Log onto all [redacted] CLC routers [redacted] [12a] [redacted]
2	Run the following commands. [redacted] [12a] [redacted]
3	Required step if expected results of packet ping time not equal to [redacted] [12a] [redacted] Packet ping times greater than [redacted] [12a] [redacted] – noted as unacceptable deviation in comment section and TCS escalates to [redacted] [12a] [redacted] Packet ping times less than [redacted] [12a] [redacted] – noted as acceptable deviation in comment section

Comments:

Test Case Number and Test Case Coverage Area:	2.12-2, ESINET Connection - MPLS to PSAP - 2 way Voice Testing
Test Case Coverage Area:	CLC via MPLS to far end PSAP test device
Test Stage:	CLC Stage 2
Test Case:	Validate 2 way Voice over CLC via MPLS to PSAP
Expected Results:	Test Entity validates voice recording and quality were normal

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	2 way Voice Testing – each voice path on circuit to PSAP-IP-Trunk	Test Entity validates voice and quality were normal		❑ Yes ❑ No		

Test Case Execution

Step #	Method Description (per each trunk/channel)

1	Provision ingress test number at CLC to point to Comtech TCS application					
2	Provision Comtech TCS application to forward the calling party phone number to route to LRO					
3	Initiate call to test number					
4	Answer call at PSAP					
Variation	***Variation Description***	***Expected Result/Value***	***Actual Result/Value***	***Expectation Met?***	***Tested By***	***Tested On (mm/dd/yy)***
B	Verify Circuit ID and # of channels Tested and verify	Test Entity validates voice recording and quality were normal		❑ Yes ❑ No		
Comments:						

2.13. PSAP Equipment Pre Cut-Over to NG9-1-1 Network

Purpose of this test coverage is to provide that the hardware Comtech TCS installs at the PSAP site is 100% operational and meets the agreed to specifications prior to PSAP cut-over onto the TCS Operated Network.

Test Case Number and Test Case Coverage Area:	2.13-1, PSAP TCS Hardware Installation – ALI connectivity 1
Test Stage:	Basic PSAP – CLC Connectivity
Test Case: ALI Connectivity 1	Objective: Verify the connectivity between the PSAP and the CLCs. Test Conditions: Use the configuration as indicated in this document or otherwise provided. Notification that the network is complete from the CLCs through the TCS [redacted] to the [redacted] at the PSAP.
Expected Results:	Observe a successful Ping from each CLC to the IP assigned to the [redacted] at the PSAP.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Execute a ping from LNG at CLC 1 to PSAP under test.	Observe ping was successful		❑ Yes ❑ No		

Test Case Execution (How TCS is testing to verify interface/system components perform as expected and/or handle failures tested)	
Step #	**Method Description**
1	Execute a ping from LNG at CLC 1 to PSAP under test.

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	Execute a ping from LNG at CLC 2 to PSAP under test.	Observe ping was successful		❑ Yes ❑ No		

Test Case Execution (How TCS is testing to verify interface/system components perform as expected and/or handle failures tested)	
Step #	**Method Description**
1	Execute a ping from LNG at CLC 2 to PSAP under test.
Comments:	

Test Case Number and Test Case Coverage Area:	2.13-2, PSAP TCS Hardware Installation – ALI connectivity 2
Test Stage:	Basic PSAP – CLC Connectivity
Test Case:	Verify PSAP PortServer Telnet connectivity for NENA/ALI
Expected Results:	See low level

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	Verify PSAP [12a] for NENA/ALI		See low level	❑ Yes ❑ No		

Low Level Expected Results Detail:

On [12a] s in state-City1 & state-City2, verify network connectivity exists between PSAP PS and [12a]

[12a]

Test Case Execution (How TCS is testing to verify interface/system components perform as expected and/or handle failures tested)

Step #	Method Description
1	At remote PSAP, plug laptop [12a]
2	Laptop should be previously configured with [12a]
3	User/Laptop should send a test pattern to [12a]

Comments:

Test Case Number and Test Case Coverage Area:	2.13-3, PSAP TCS Hardware Installation – ALI connectivity 3
Test Stage:	PSAP CPE – CLC Connectivity
Test Case:	Objective: Verify connectivity between the PSAP CPE and the LNGs at the CLCs. Test Conditions: Use the configuration as indicated in this document or otherwise provided. Test Case 2.12-1 was successfully completed. Notification that the connections are complete from the PSAP CPE to the [12a] at the PSAP.
Expected Results:	At the LNGs, observe heartbeats from the PSAP under test. At the PSAP, observe heartbeats sent and acknowledgements returned. These will be in the [12a]

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
A	For CLC 1 connection: Engineer at the PSAP under test starts the application on the Call Taking System [12a]	At the LNG in the CLC, observe Heartbeats and acknowledgements – [12a] At the PSAP, observe Heartbeats and acknowledgements.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
B	For CLC 2 connection: Engineer at the PSAP under test starts the application on the Call Taking System [12a]	At the LNG in the CLC, observe Heartbeats and acknowledgements – [12a] At the PSAP, observe Heartbeats and acknowledgements.		❑ Yes ❑ No		

Test Case Execution	
Step #	**Method Description**

Comments:	

Test Case Number and Test Case Coverage Area:	2.13-4, PSAP TCS ALI connectivity 4
Test Stage:	PSAP TCS Application – ALI connectivity
Test Case:	Objective: Verify the PSAP-CLC communication such that queries are sent and responses are received by the PSAP. Test Conditions: Use the configuration as indicated in this document or otherwise provided. The connections must have been previously established between the PSAP and the CLCs. The CLCs will be provisioned with staged data for the response. The Engineer at the PSAP is equipped with a laptop to be cabled into the [redacted] [12a] [redacted] and loaded with a test script that executes a query.
Expected Results:	The PSAP will send a query to the CLC. The CLC will respond with data.

Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
A	The test is executed between the PSAP and CLC 1.	CLC responds with data		❑ Yes ❑ No		

Test Case Execution (How TCS is testing to verify interface/system components perform as expected and/or handle failures tested)	
Step #	**Method Description**
1	The Engineer at the PSAP connects the laptop to the Comtech TCS [redacted] [12a] [redacted] allocated to CLC 1.
2	The Engineer at the PSAP executes the test and observes the data returned.

Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
B	The test is executed between the PSAP and CLC 2.	CLC responds with data		❑ Yes ❑ No		

Test Case Execution (How TCS is testing to verify interface/system components perform as expected and/or handle failures tested)	
Step #	**Method Description**
1	The Engineer at the PSAP connects the laptop to the Comtech TCS [redacted] [12a] [redacted] allocated to CLC 2
2	The Engineer at the PSAP executes the test and observes the data returned.

Comments:	

Blank Test Case Template

Test Case Coverage Area:	
Test Stage:	
Test Case:	
Expected Results:	

Variation	Variation Description	Expected Result/Value	Actual Result/Value	Expectation Met?	Tested By	Tested On (mm/dd/yy)
				❑ Yes ❑ No		
Test Case Execution (How TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
Variation	**Variation Description**	**Expected Result/Value**	**Actual Result/Value**	**Expectation Met?**	**Tested By**	**Tested On (mm/dd/yy)**
				❑ Yes ❑ No		
Test Case Execution (How TCS is testing to verify interface/system components perform as expected and/or handle failures tested)						
Step #	**Method Description**					
Comments:						

3. Test Coverage Results Summary

Summary of Test Results: Circuit Connectivity for Voice Trunks From WSP	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: Carrier COT Testing For [12a] Groups	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: Audio Quality For Voice Trunks From WSP	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: Circuit Connectivity For Voice Trunks From Legacy LEC	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: Carrier COT Testing To Legacy LECs	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: Audio Quality for Voice Trunks From Legacy LECs	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: Media Gateway Network Verification	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: Provisioning API through UAT	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: NG9-1-1 Selective Routing And Location Applications	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: Monitoring and Alarming Components	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: ESInet Connection MPLS To CLCs	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: ESInet Connection MPLS To PSAPs	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	

Summary of Test Results: PSAP Equipment Pre Cut-Over To NG9-1-1 Network	**Test Result**	**Deviation Number** ❍ Applicable?
Test Execution Completion Date:	❑ Pass ❑ Fail	
Approval Signatures:		
Test Engineer:_____	Signature:_____	Date:_____
Test Reviewer:_____	Signature:_____	Date:_____

4. Document Revision History

Revision Number	Revision Details	Date Revised
Rev 1	1st Draft – updated from 11/1/11 previous NG customer CLC API to reflect state of WA API changes.	5/13/16