



D11 Command Center
Contingency Network
(D11CCNET)
2022 Full Scale Exercise
After Action
Report/Improvement Plan

USCG D11 AUX North
05 AUG 2022

EXECUTIVE SUMMARY

The District Eleven Command Center Contingency Network (D11CCNET) Full Scale Exercise was carried out on 23 April 2022. The exercise tested the capabilities and design of a High Frequency (HF) and Very High Frequency (VHF) radio network. These networks are intended only to provide contingent capabilities and act as a replacement for, or supplement to, the data line and voice over internet protocol (VoIP) used to link the D11 Command Center with subordinate land units (i.e., Sectors, Boat Stations, Air Stations) when those “normal” communication tools have been degraded or destroyed as a result of a major seismic event or any other natural or man-made event. The purpose and mission is based on the “SOP District Eleven Command Center Contingency Network (D11CCNET)” dated 07 JUN 2021. (SOP-D11CCNET)

The operating elements of the D11CCNET are field deployed radio facilities consisting of equipment owned by USCG AUX members and “accepted for use” by the D11 Director of Auxiliary and in some cases by the telecommunications National Staff. In this exercise there were eight AUX D11 North Radio Facilities utilized and they were manned by 19 AUX members. AUX D11 South facilities were not part of this year’s exercise.

After several months of planning, and working in close conjunction with D11 D(t), it was decided to replicate the October 2020 event of the D11CCNET Full Scale Exercise with some relevant changes that came about as a result of the “Corrective Actions Recommended” in the 2020 evolution’s after-action report. The implementations included the following:

- Automatic Link Establishment (ALE) as a key element of high frequency operations;
- Automatic Repeat Query (ARQ) mode for formatted message exchange;
- Combined network of HF and VHF radio facilities to assist in reaching down below the Sector level to small boat stations.

There were five specific objectives established for the exercise:

1. Confirm the value of utilizing ALE as the operational frequency determinant for high frequency (HF) D11CCNET activities.
2. Confirm the value of using VARA-HF and VARA-FM (ARQ modes) as the digital messaging software tool of choice for D11CCNET.
3. Test a prototype implementation of a dual spectrum (D11 North HF and VHF) network to support Command Center and Station contingency communications.
4. Confirm continued capability of the D11 AUX telecommunications community to meet the requirements of D11CCNET as a contingency tool supporting the D11/Pacific Area Command Center.
5. Test and explore potential methods and protocols for integrated Active Duty and Auxiliary activity in telecommunications.

Objective 1 was performed without challenges, Objectives 2, 3, and 5 were performed with some challenges, and Objective 4 was performed with major challenges.

For the objectives as a group, a total of 13 “Corrective Actions Recommended” were specified. Nine were designated as “mission critical” and four were designated as “desirable but not critical”. In summary, the general areas of the corrective actions are as follows:

1. Training and practice policies;
2. Integration between AUX and Active-Duty communications communities to improve force multiplication effectiveness;
3. Consideration of administrative methods to ameliorate issues arising from organizational differences between USCG D11 and USCGAUX D11 North.

Several steps are already being implemented for these “Corrective Actions” and are listed as follows:

1. A revised training and practice schedule is set to begin in July of 2022. The new schedule is designed to create quarterly opportunities for practice and improve the performance of the D11CCNET in preparation for the next annual full-scale exercise, tentatively scheduled for the second quarter of CY2023.
2. A new training and support regimen is under development in D11 AUX North and is expected to be released in the third quarter of CY2022.
3. Discussions have begun involving the D11 Dt, D11 DIRAUX, representatives of the D11/PAC-6 Command Centers, and the D11 AUX North Communications Department to enhance integration and force multiplication.
4. A revised set of “drill sheets” and skill-based documentation is being constructed to support the new training.

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Exercise Overview

Exercise Name	D11 Command Center Contingency Network (D11CCNET) 2022
Exercise Date	23 April 2022
Scope	This exercise is a FULL-SCALE exercise, planned for 8 hours at 2 Sectors, 3 Boat Stations and 1 District HQ, geographically distributed between Monterey and Eureka, CA. Two fixed land AUX radio facilities were used as “on-demand” relay stations. Exercise play was limited to on-air activities on High Frequency and Very High Frequency radio spectrum assigned to USCGAUX by NTIA.
Mission Areas	Mitigation, Response, Recovery
Core Capabilities	Ability to field deploy HF/VHF infrastructure independent stations; ability to communicate voice and digital message traffic between deployed stations; ability to use Automatic Link Establishment to select HF frequencies; ability to use VARA-HF and VARA-FM software for digital message exchange; ability to use both HF and VHF spectrum in an integrated network.
Objectives	<ol style="list-style-type: none"> 1. To confirm the value of utilizing ALE as the operational frequency determinant for High Frequency (HF) D11CCNET activities. 2. To confirm the value of using VARA-HF and VARA-FM as the digital messaging software tool of choice for D11CCNET. 3. To test a prototype implementation of an integrated dual spectrum (HF and VHF) network to support Command Center and Station contingency communications. 4. To confirm continued capability of the D11 North CGAUX telecommunications community to meet the requirements of D11CCNET as a contingency tool for Eleventh District and PACAREA command centers. 5. To test and explore potential methods and protocols for integrated Active Duty and Auxiliary activity in telecommunications.
Threat or Hazard	Loss or degradation of VoIP and other infrastructure dependent communications capabilities due to earthquake, wildfire, and/or human caused events.
Scenario	Simulate loss of data lines and VoIP between the CG Eleventh District Command Center and the other Sector and Boat Stations within District 11. CG AUX North Contingency Communications Net Team (D11CCNET Team) deployed stations will substitute for the loss.
Sponsor	United States Coast Guard Eleventh District and USCG Auxiliary Communications System, D11 Northern region.
Participants	Six field deployed radio facilities were provided and staffed by the USCG AUX D11CCNET Team located at two Sector command centers (HB and SFO) and three “Boat Stations” in CGD11 plus the D11CC on Coast Guard Island. In addition, two fixed land radio facilities were activated by the D11CCNET Team to act as on demand relay stations. Counting the fixed land stations, total staffing of 19 individuals.

Point of Contact

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Results Summary

This exercise had five distinct objectives and the outcomes can be grouped into the following three categories:

1. Assessment of the value of two software tools new to the D11CCNET;
2. Definition and exploration of methods and protocols for integration of communications assets from both the AUX side and the Active-Duty side to enhance the AUX role as a force multiplier;
3. Confirmation of the AUX D11 North communications community's ability to support contingent efforts that will ensure that the D11 command centers will continue to function when normal communication channels performance is degraded.

New Software Tools: The 2020 instance of the D11CCNET successfully proved the operational concept of using deployed CGAUX radio facilities in D11 North and D11 South to act as contingent support elements to the District Command Centers. In the 2020 AAR it was mentioned that potential problems were seen where the relative inefficiencies of the operational procedures placed limits on the number of messages and their complexity; therefore, causing such an operation to be less than ideal in effectiveness. Recommendations were that Automatic Link Establishment (ALE) be used to mitigate some of the effects of HF propagation and that an Automatic Repeat Query (ARQ) protocol for exchanging messages be used to eliminate the need for “fills” and other repetitive operations.

Both of those recommendations were implemented in the 2022 instance of D11CCNET with favorable results. In this instance, the selection of a frequency on which to exchange traffic was simply not an issue because the stations which were deployed and had HF capability knew to select a group of channels, identify the station to be called, then start a calling sequence that stepped through the channels in the group until one was identified as successful, then a single mouse click would send the message. There were some 35 message exchanges that the exercise plan called for between pairs of stations during the active exercise period of five hours and logs indicate that only two of those failed to complete (a 95% success rate).

A simple graph of channel usage for receive by the fixed land relay station in Cascade, Idaho shows that while 14 possible channels were available for use, only six actually had traffic and of those six, two accounted for just over 70% of the successful exchanges. But without access to the other four channels, effectiveness would have been significantly reduced.

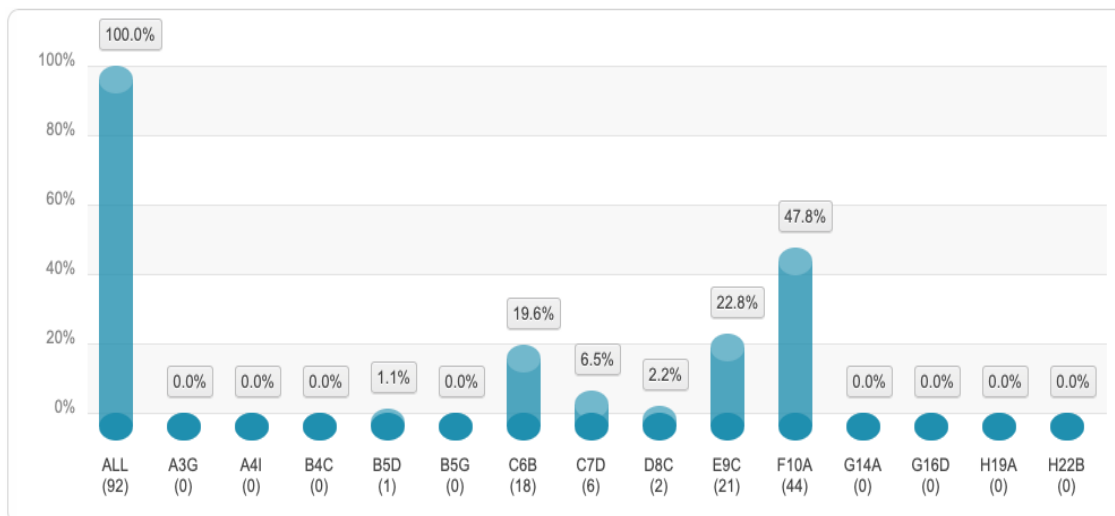


Figure: % age of calls per channel

Winlink Express and VARA: These message exchange software tools were used during the D11CCNET. During the exercise 115 message exchange attempts were conducted over a five-hour time period. Logs indicate that only seven (a 96% success rate) of those failed to complete. Additionally, the number of messages sent and/or received by station varied from a low of five (at Station Humboldt Bay) to a high of 35 (at the simulated D11 Command Center on CG Island). The true value from using the Winlink/VARA combination is that it is guaranteed that all of those 115 message exchanges were received exactly as sent or no message at all was received.

Active Duty and AUX Integration: This objective to explore potential and protocols for integrated Active Duty and AUX activities in Telecommunications has no specific numeric or countable results for evaluation. However, the subjective assessment based on a level of interest on the part of the AD personnel who observed and/or participated in exercise activities indicates that the objective was undoubtedly achieved. Details of potential outcomes are given in the Section below on Objective 5.

AUX ability to Support Contingent Operations: From the original concept of the 2019 D11CCNET, the thought was that if there were a communications emergency in D11, it would likely affect part of the District but not all and therefore it is likely that assets and resources from part of the District could be used to support operations in another part. In order to test for and practice the capability to achieve that, the Coast Guard may find it desirable that the AUX communications assets and resources be treated as a single integrated tool that can be applied anywhere in the District. Currently, AUX D11 South is using other means of contingent communications between AUX and Sector LA/LB and SD that is outside of the HF/VHF spectrum but does not address “command-center to command-center” strategic comms

D11CCNET -- Origin and Context of the Full Scale Exercise

In mid-2019, D11 Telecommunications Chief (D(t)) became aware of the fact that the only means of voice or data communications linking the seven command centers in D11 (4 Sectors, 2 AIRSTAs, and D11 HQ) was dependent on the operational status of the “data lines” and internet connectivity into and out of those units. Since D(t) was cognizant of the potential for a major earthquake, tsunami, or other event to disrupt all or part of those lines, D(t) elected to explore alternatives that were not subject to those sorts of disruptions. That exploration led to the identification of High Frequency (HF) and Very High Frequency (VHF) radio as an alternative and also the fact that while the active-duty communications capability in HF had been seriously degraded due to retirements and loss of physical assets such as antenna systems, the CG Auxiliary communications system had developed and continuously improved a District-wide network of stations that operated both in voice and digital messaging modes, that is “off-the-grid”.

Beginning in late 2019, and culminating in a face-to-face meeting in late February of 2020, a series of decisions were made that resulted in planning and implementing a network of “deployable” HF and VHF CGAUX radio facilities which could support voice and data communications linking the USCG’s active-duty units throughout D11 also known as the D11 Command Center Contingency Network (D11CCNET). A “Test” of that network was carried out in October of 2020 with modest success. An after-action report on that test was published in November of 2020 and distributed within D11, PACAREA, and National AUX telecommunications communities.

In addition to the activities described above, members of the D11 CGAUX HF communications community had been active in several table-top or full-scale COOP exercises with various Sectors and other units. The “lessons learned” there were very beneficial to the 2020 exercise plan and could be incorporated into an actual event.

That AAR contained several specific recommendations, including one that called for an annual repetition of the D11CCNET exercise. Hence the exercise conducted in April of 2022 and this AAR. Some of the other recommendations from the November report resulted in creation of a document called the AUXALE TTP which defines the use of Automatic Link Establishment as a fundamental part of D11CCNET operations and also for identification, testing, and adoption of a more effective software tool for exchange of record format messages in D11CCNET. This latter objective was also driven by parts of a document called the “Standard Operating Procedures for CA Link” which established communications requirements for a joint activity between D11 and the California Governor’s Office of Emergency Services (CalOES).

Two other elements of background and context deserve mention. As a follow-on to both FSE’s of D11CCNET, active-duty personnel from the D11 Command Center have requested that regular exercises of the D11CCNET be performed more often (probably Quarterly) and that an effort be made to directly involve D11 Command personnel. The second is an addition to

explore and assess methods by which there can be increasingly tight integration between the CGAUX and the Active-Duty telecommunications community. This will involve not just D11, but the USCG Communications Command located in Chesapeake, VA which has overall National responsibility for the CGAUX communications activities throughout the country.

Analysis of Core Capabilities

Objective	Core Capability	Performed without Challenges (P)	Performed with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Confirm Automatic Link Establishment (ALE) for operational frequency choice	ALE as basic tool at all facilities	P			
Confirm VARA-HF and VARA-FM as digital messaging software tools of choice	Effective use of VARA software		S		
Demonstrate Integrated HF and VHF network to support D11CC	HF and VHF deployed facilities		S		
Confirm D11 AUX comms capability to meet requirements of D11 and PACAREA CC	Field Deploy & staff HF/VHF stations			M	
Explore potential and protocols for integrated Active Duty and AUX activities in Telecomms	Use of CGAUX resources as a “force multiplier”		S		

Table 1. Summary of Core Capability Performance

Performance Definitions:

Performed without Challenges (P): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities.

Performed with Some Challenges (S): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. However, opportunities to enhance effectiveness and/or efficiency were identified.

Performed with Major Challenges (M): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to additional health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

Unable to be Performed (U): The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s).

Details of Individual Objective Results and “A Way Forward”

Objective 1.

Confirm Automatic Link Establishment for operational frequency choice as a viable and desirable tool for D11CCNET operations.

Based on a corrective action recommendation from the 2020 D11CCNET AAR, Automatic Link Establishment (ALE) was successfully tested and will be incorporated for future operations

Because there had been some difficulties in communicating to the deployed radio facilities what frequency to use at what time of day and between specific pairs of stations, the recommendation was made that “Automatic Link Establishment” (ALE) be used by the deployed and fixed stations in the 2022 test to determine whether or not the difficulties would be eliminated or at least mitigated. For a period of about 6 months before the 2022 D11CCNET test, various stations installed, implemented, and practiced with various ALE tools on an approximately weekly basis.

Results: During the actual 2022 test, seven of the eight active stations used ALE for the choice of a frequency to be used to exchange traffic between specific pairs of stations. The one which did not use ALE was located at Station Humboldt Bay and did not do so because it was a VHF facility only and had no need. While there were a small number of incidents in which the automated attempts to choose a frequency for traffic had to be repeated, the general impression, based both on subjective assessments and on the analysis of logs and message files is that the use of ALE produced much better results than the “manual” choice of frequencies which was used in the 2020 D11CCNET event and therefore should be permanently incorporated into the D11CCNET future operations.

Strength 1: Use of ALE meant that there was never a situation in which a lack of coordination regarding frequency choice caused either a delay in or a failure of the ability of stations to meet the implied objectives of 100% accuracy of message content and successful achievement of “speed of service” standards.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Because of the level of automation and use of technology in ALE, there is a significant demand for both careful attention to accuracy of the data supporting operations and inconsistency following procedures that have been specified for any given exercise or operation. It was noted by several operators and by some independent observers that some scheduled activities were not carried out according to defined procedures and schedules.

Area for Improvement 2: The same level of technology issue also caused some situations in which the station operators had not been adequately trained in, or had the opportunity to practice sufficiently with, the technological pitfalls that might occur. Such pitfalls caused a level of stress that was higher than it might have otherwise been. However, it should be noted that while the stress was perhaps higher than necessary, all the operators were able to “identify, adapt and overcome” and as a result no failures occurred that caused a failure to achieve the test objectives.

Corrective Actions Recommended

DESIRABLE BUT NOT CRITICAL:

It is believed that both of the “areas of improvement” can be addressed by two related changes for the future:

1. Much effort by the exercise management team was dedicated to the creation of training materials, on-line presentations, and documentation in the form of more or less traditional “manuals”. With hindsight from this event, it is now believed that some changes in format and focus of the materials and documentation to be more of the “checklist” variety for the majority of operators will bear positive fruit.
2. Two evolutions of the D11CCNET test/exercise have now been successfully completed. Because of the complexity of both events, there was of necessity a relatively long time from concept to implementation. That resulted in a situation in which not enough of the operators had frequent enough opportunities for on the air practice. Therefore, the recommendation is made that smaller, less complex tests and exercise (no less frequently than quarterly) be held, and that they be designed in such a way that they are focused on very specific accomplishments. ***(THIS ISSUE WILL ALSO BE ADDRESSED AS A RESPONSE TO A “MISSION CRITICAL” CORRECTIVE ACTION UNDER OBJECTIVE NUMBER 2 AND NUMBER 4).***

Objective 2.

Confirm VARA-HF and VARA-FM as digital messaging tools of choice

Tested a new software package for the use of VARA-HF & VARA-FM as a substitute for Olivia/FLDIGI

Because the addition of ALE as a functional part of D11CCNET operations made unattended station activities more practical, a better and more effective “digital messaging” (RTX) software than Olivia through FLDIGI was desirable. Testing and experimenting led to the choice of a mode called VARA which has as its “front end” a software package called WINLINK Express. Over a period of a few months, three or four CGAUX radio facilities tested the use of VARA and concluded that it was the best choice. Subsequently, a licensing arrangement at a significant discount was negotiated between individual stations and the software’s author.

It was decided that the D11CCNET 2022 exercise would be the “real” test of the practicality of the mode.

Results: All of the six deployed stations and the two fixed land stations used VARA-HF and/or VARA-FM to send and receive the messages that were transmitted scheduled to begin at 1035. During the period from then until about 1540 when the exercise was declared to be terminated, the eight stations sent and/or received a total of 115 messages with an average size of 250 to 300 characters. The number of messages per station ranged from a low of 5 (where the Station had only an FM link to one other facility) for an average of 1 per hour, to a high of 35 (at the simulated D11 Command Center) for an average of 7 per hour.

It should be remembered that these numbers represent messages that were sent/received with 100% accuracy and that there was never a need to request repeats of all or part of a message.

Strength 1: As stated above, the major strength of this tool is that it is what is called an “ARQ” or “automatic repeat query” mode and therefore if a message is logged as having been received, it is known to be an exact copy of what the transmitting station sent. Additionally, the tool has the capability of automatically generating an “acknowledgement” message to be sent from the receiving station to the transmitting station so that the originator has documentation that the message was received.

Strength 2: A major benefit of using WINLINK Express as the “front end” for the VARA mode, is that it automatically generates a unique identifying number for each message and also automatically generates a logged copy of each message sent or received.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: As mentioned in the section on ALE usage above, there is a need for more specifically targeted training materials and practice tools in order to assure the highest possible comfort level on the part of station operators.

Corrective Actions Recommended

[DESIRABLE BUT NOT CRITICAL]

1. As soon as possible implement a series of limited focus exercises and practice sessions on regularly scheduled nets using WINLINK Express and VARA. Implement a method of recording which operators participate in those exercises.
2. Develop and publish a set of “job aids”, “QRC’s” or “Drill Sheets” for the D11 Contingency Communications Team.

Objective 3.

Demonstrate Integrated HF and VHF network ability to support D11CC

While the 2020 D11CCNET exercise focused solely on HF communications, this instance included VHF links to support usage between a Sector and its Stations and/or between USCG AUX units in support of personnel accountability.

Results: Because of unplanned requirements to shift personnel between assigned geographic locations, only two Sector-to-Station circuits were able to be tested and only one of those utilized VARA-FM for radio traffic exchange (RTX) messages. The other circuit was tested only for voice comms. Nonetheless, both circuits tested successfully.

Strength 1: The circuits tested (voice and RTX) were 100% usable and were carried out using “simplex” VHF frequencies, that is, no support from any infrastructure such as repeaters.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: As mentioned under Corrective Actions related to Objective 2 above, job aids, checklists, and QRC’s are needed for the special situation of Sector to Station communications

Area for Improvement 2: Special focus needs to be directed at utilizing the tools of D11CCNET to support the personnel accountability requirements of the USCGAUX.

Corrective Actions Recommended

[MISSION CRITICAL]

1. If there is to be successful application of the D11CCNET tools at the Station and at the USCGAUX unit level, an initial focus needs to be dedicated to understanding and responding to the unique needs of those users/customers since they are likely to be very different from those at a Sector Command Center. It is recommended that the D11N ADSO-CM-Contingency and interested members work with the D11 D(t) to discuss how we can more fully integrate members and tools with the active-duty communications community including the USCG COMMCOM.

Objective 4.

Confirm D11 North AUX comms capability to meet requirements of D11 and PACAREA CC

In this instance of the D11CCNET exercise, only assets from D11N were used and their use was completely successful. Should the USCG decide that it wishes that assets from D11S be a part of the D11CCNET resources, that should be made known to the D11S leadership directly from the Dt's office.

Results: In the first test of the D11CCNET test or exercise, a total of 4 Sectors, 1 Air Station and the District 11 Command Center (plus two on-demand relay or “backup” stations) were simulated by deploying USCGAUX radio facilities and operators to an area bounded by Eureka on the North and San Diego on the south. In the 2022 exercise there were only two Sectors and three boat stations as sites for deployed CGAUX radio facilities, all located in AUX D11 North, and while the northern end was the same, the southern end of the exercise area was at Monterey. As a consequence, the results from the two exercises are not directly comparable. Nevertheless, the results achieved in the second exercise it should be noted were in fact better than those in the first exercise in terms of successful exchange of traffic over the intended circuits linking 2 Sector Command Centers, 3 Boat Stations and the District 11 Command Center (on Coast Guard Island) in Alameda. All circuits were successfully used and the value of using ALE for linking and VARA for message exchange was proven.

As noted earlier, Coast Guard Sectors LA/LB and SD have chosen to use the satellite phone system as their preferred contingency communications medium to interface with AUX D11 South. This is a departure from the D11CCNET and was not included in this exercise.

An ancillary benefit was the extended presence of two active-duty members at the Coast Guard Island site. As a result, both members were able to see an extended example of the AUX implementation of the D11CCNET and develop an understanding of how it actually would work in the event of a real activation. The end result is that both members (an LCDR and an OSC) expressed a strong interest in making the D11CCNET activity an integral part of CG unit contingency comms tools and especially as it could be used to link the District 11/PACAREA command center with subordinate units.

Strength 1: N/A

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Need procedures and methodologies where tasks originate at a USCG organizational level where there is no exactly corresponding CGAUX organization. For example, where one CG District needs to draw AUX resources from more than one AUX district

Area for Improvement 2: As indicated throughout this document, this exercise differed significantly as it did not include the southern half of Coast Guard D11 AOR in California. The D11 Coast Guard communications team should weigh the merits of having a fully integrated contingency communications system with current systems and technology.

Corrective Actions Recommended

[MISSION CRITICAL]

1. Determine if procedures and methodologies are needed for managing activities and tasks that deal with more than one AUX district or region, especially those where the tasking is at the CG District level and more than one AUX District or Region is involved.
2. Define appropriate positions for a CG District operational area (such as communications) so there can be appointed an “AUX Liaison” for that operational area even though no directly equivalent AUX unit exists. For example, the D11 Command Center.
3. Determine if a designated AUX communications specialist is needed as an “Auxiliary Communications Liaison” working in conjunction with each ASC who will be a team member for a Sector COOP planning team
4. Determine if the current Coast Guard contingency communications systems in use (CCNET in the North and Satellite Phones in the South) are sufficient to meet mission needs today and in the future.

Objective 5.

Explore potential and protocols for integrated Active Duty and AUX activities in Telecomms

With the exception of a few Auxiliary personnel acting as watchstanders at small boat stations, there have been, in the Eleventh District, few active attempts at integrating AUX personnel and their specialist knowledge into the Active-Duty Telecommunications Community. It is the intent of this objective to lay the foundation to change that.

Results: As a part of the preparation for the actual D11CCNET exercise activities, some contact was made between the AUX team leader for each of the active-duty units and one or more AD members. As a consequence, an exchange of information resulted in a better understanding of each other's perspective, requirements, knowledge, and skills.

This activity was only a beginning, but it is the intent of the D11 CGAUX Telecommunications Team that it provides a means of working toward a more effective integration of competent and knowledgeable AUX personnel into the AD and Reserve CG groups who have the responsibility for ensuring that communications capability in all its forms is never lost or seriously degraded. Specific areas of focus therefore are listed under the [Mission Critical] Areas of improvement, so that a plan and the "way forward" can be jointly developed and implemented.

Strength 1: Not Applicable

Areas for Improvement & Corrective Actions Recommended**[MISSION CRITICAL]**

1. Building on existing relationships, conduct an informal unit survey to determine if there are any communications issues that may be seen as "problems" where the background, experience, skills and knowledge of D11CCNET Team members can contribute to mitigating the negative impact of such issues.
2. Since all CG units are required to have a COOP Plan (Continuity of Operations) the D11 D(t) is requested to work with the appropriate active-duty person in each unit to determine if AUX comms resources can be used to enhance the effectiveness of the COOP Plan.
3. Where possible, work toward ensuring that whenever there is a "table top" or "full scale" COOP exercise for a unit, at least one AUX communications member is requested to be part of the exercise planning team.

Appendix A: Participant Feedback from Hotwash

Within a few days of the actual exercise, an on-line meeting of the participants in the exercise, both those deployed and those operating from fixed land stations, was held to gather “fresh” feedback about the exercise itself, but specifically about the impact of the deployed situation, the effectiveness of the software and computer tools used, and any other issues that were uncovered during the exercise.

The comments and related suggestions divided themselves into several categories and each of them are dealt with below:

Training and Pre-Exercise Preparation

1. Several members commented on the fact that it had been 18 months since the previous evolution of this exercise and that in their opinions, not enough practice time had been utilized in the interim.
2. A related issue was the belief that performance (and the related stress level) could have been better managed by more frequent and more narrowly focused exercises, not necessarily involving active-duty personnel and units.
3. An additional issue was that the real time telephone based technical support that was provided was overwhelmed by demand and at least some of that demand would have been avoided if more attention had been paid to documentation provided in advance of the exercise.

Operational & Circuit Discipline Issues

1. Two participants commented specifically on situations in which even though some station schedules had been distributed in the OPLAN for the exercise, they were not followed consistently and as a result other traffic during the exercise was delayed.
2. There was essentially universal agreement that the use of automatic link establishment (ALE) for frequency management, and an automatic repeat query (ARQ) mode for message transmission was a great improvement over previous styles of operation.
3. The OPLAN included some templates for specific types of messages and/or processes such as relays. Not all stations used those templates or processes as intended.
4. There was some interest (from one participant) in creating an opportunity to use and practice voice protocols in addition to RTX (digital messaging).
5. Because this evolution of the exercise is the first to be carried out at a time when HF radio propagation is rapidly improving, it was noticed that possible revision of the ALE scan groups for day-time use may be required.

Physical Facilities & Hardware

1. At least two of the deployed sites had no indoor facilities and consequently operations were impacted by weather conditions and there was an inability to set up operating positions that were even close to ideal. Closer assessment of the physical facilities at deployed is clearly required.

2. At least two of the deployed facilities were using a specific HF ALE radio for the first time and that made it difficult to be comfortable with the equipment.
3. The best result achieved however was that the HF antennas performed more than adequately and HF operations were generally successful.
4. It was universally agreed that except for operator errors from lack of familiarity with radios and some software, the equipment assets used in the exercise were remarkably trouble-free.

Responses to Hotwash Concerns

Many, if not almost all, of the concerns have been addressed in the “Corrective Actions Recommended” section under each of the five objectives above. Consequently, as the D11CCNET exercise annual evolution continues, it is expected that these concerns will be alleviated.

Appendix B: Excerpts from the 2022 D11CCNET Operations Plan

1. Background & CONOPS

1.1. As a part of the initial roll out of the D11CCNET activity under the oversight of the D11 Dt, a full-scale exercise was carried out in October of 2020. A formal after-action report was issued for that exercise and one of the conclusions was that such a full-scale exercise of D11CCNET should be held annually. A Memorandum signed by the then D11 Dt and the D11 DIRAUX on June 10, 2021, documents this as a goal for CY 2021. The remainder of this document is intended to be the working plan for the next 2021/22 D11CCNET FSE.

1.2. As was the case for the 2020 exercise, the intent of the D11CCNET is to provide and test a contingency communications tool utilizing HF and VHF radio spectrum between and among the command centers in CG District Eleven. That network is implemented using CG Auxiliary Radio Facilities, staffed by qualified (TCO) CGAUX members.

1.3. The radio facilities will be capable of receiving and transmitting formal message traffic (record format) using both voice and digital messaging. There will be two types of facilities active in the exercise:

1.3.1. Deployed facilities that will operate from locations on or near the USCG units for a period of approximately 8 hours completely independent from the power and internet grids.

1.3.2. Permanently located facilities (referred to as “fixed land”) will also be activated to provide “back up” services to any one or more of the deployed facilities should such be needed.

1.4. In very general terms the operation is defined as providing “strategic” (as distinct from tactical) communications between and among the command centers. This will be tested by originating and sending a message from the simulated D11 Command Center (D11CC) to all of the simulated subordinate units, acknowledgement of receipt of that message sent from the simulated subordinate units to D11CC, creation and transmission of response messages to the original message, and logging of those responses by D11CC.

2. Test Objectives

2.1. To confirm the value of utilizing ALE as the operational frequency determinant for High Frequency (HF) D11CCNET activities.

2.2. To test a prototype implementation of an integrated dual spectrum (HF and VHF) network to support Command Center and Station contingency communications.

2.3. To provide confirmation of the continued capability of the CGAUX comms community to meet the requirements of D11CCNET as a contingency tool for Eleventh District.

2.4. To test and explore potential and protocols for integrated Active Duty and Auxiliary activity in telecommunications.

3. AUX Radio Facilities & Call Signs

<i>Unit</i>	<i>Voice C/S</i>	<i>RTX ADR</i>	<i>ALE ADR</i>	<i>Location</i>
Station Monterey	AUX Monterey Bay	NM11MA	1MACGP	Monterey
Station Lake Tahoe	AUX Lake Tahoe	NF11BN	1BNCGN	Truckee
Sector Humboldt Bay	AUX Sector Humboldt	NM11JN	1JNCGP	McKinleyville
Station Humboldt	AUX STA Humboldt	NM11AQ		Eureka
Sector San Francisco	AUX Sector San Francisco	NM11MT	1MTCGP	Yerba Buena Island
D11CMD Center	AUX D ELEVEN	NT11WS	1WSCGP	Alameda
North Fixed Land	AUX Cascade	NF11CH	1CHCGN	Cascade
South Fixed Land	AUX Upland	NF114AG	4AGCGP	Upland

INCIDENT RADIO COMMUNICATIONS PLAN (ICS 205)

Incident Name: D11CCNET Full Scale Exercise		2. Date/Time Prepared: Date: 4/10/2022 Time: HHMM		3. Operational Period: Date From: 4/23/2022 Date To: 4/23/2022 Time From: 0900 PDT Time To: 1700 PDT						
4. Basic Radio Channel Use:										
Zone Grp.	Ch #	Function	Channel Name/Trunked Radio System Talkgroup	Assignment	RX Freq N or W	RX Tone/NAC	TX Freq N or W	TX Tone/NAC	Mode (A, D, or M)	Remarks
		Broadcast RTX	A4I		4.0486	NA	4.0486	NA	OLV 8/1K	
		Broadcast RTX	B5D		5.2535	NA	5.2535	NA	OLV 8/1K	
		Broadcast RTX	C6B		6.9728	NA	6.9728	NA	OLV 8/1K	
		Broadcast RTX	D8C		8.2003	NA	8.2003	NA	OLV 8/1k	
		VHF Voice & Data	AUX-6		150.6875	NA	150.6875	NA	A, VARA	
		HF ALE, USB Voice and HF VARA P2P	AUX NITE Scan Group						2GALE, USB, VARA	A3H, A4I, B4C, B5D, B5G, C6B, C7D, D8C, E9C, F10A
5. Special Instructions: ALL FREQUENCIES IN MEGAHERTZ.										
6. Prepared by (Communications Unit Leader): Name: William H. Scholz								Signature: _____		

APPENDIX C – Summary Scenario, Summary Procedures and role of Relay Stations

C.1 The Conceptual scenario is that as a result of a combination weather event and seismic activity, the usual VoIP circuits that link the Sectors, Stations, and the District command center in Alameda have seriously degraded performance. Consequently, there is a need to support those connections with a combined HF and VHF radio communications system passing “strategic traffic” between and among units as listed in Appendix A and Appendix B.

C.1.1 D11 Command center (D11CC) sends a record format message in broadcast mode using FLDIGI (Olivia 8/1000) on multiple frequencies to all five other units requesting to know the number of available watch standers at each unit for a 72-hour period. Message is immediate priority with a speed of service objective of 30 minutes or less. The D11CC transmit schedule is given in Appendix D.

C.1.2 D11CC shifts to ALE “night” scan group of ten channels and using VARA HF/VARA FM for RTX. Each of the addressees sends a message acknowledging receipt of the broadcast message, using ALE Night Group or VHF relay, and the VARA protocol within 30 minutes of receipt.

C.1.3 D11CC Logs receipt of acknowledgment messages.

C.1.4 Each of units then constructs an “off-line” response providing the information requested.

C.1.5 The response message is then sent by ALE and VARA to D11CC according to schedule given in Appendix D.

C.1.6 D11CC sends an “auto-generated” ACK message to each unit within the ALE link period when the message is received or within 8 minutes in the case of VHF Stations.

APPENDIX D – Script and Detailed Schedule

Date/Time	Activity	Facilities
22APR	Setup and test Antennas and all station equipment	D11CC
23APR 0700--0830	Setup and test Antennas and all station equipment	ALLDEP
0900	SEND STARTEX MESSAGE (see Appendix E) VIA FLDIGI (Olivia 8/1000) on A4I , then B5D , then C6B	D11CC
0915--0923	Send Info request message (Attachment 1) via OLV8/1000 on A4I	D11CC
0924—0932	Send Info request message via OLV8/1000 on B5D	D11CC
0933—0941	Send Info request message via OLV8/1000 on C6B	D11CC
0942—0950	Send Info request message via OLV8/1000 on D8C	D11CC
0951---1001	Info request message relayed to STAHB on AUX 6	HBSEC
1001---1008	Repeat Send of Info request message (Attachment 1) via OLV8/1000 on A4I	D11CC
1009---1017	Repeat Send of Info request message via on B5D	D11CC
1018---1026	Repeat Send of Info request message via on C6B	D11CC
1027---1035	Repeat Send of Info request message via on D8C	D11CC
1000---1300	Relay Period 1 (see Appendix C2 through C6)	ALLDEP HF
1035—1045	STAHB Acknowledges receipt of Info Request Message to HBSEC, via voice	STAHB
1035	D11CC shifts to ALE scanning of “night” frequency group and using VARA-HF and VARA FM as needed for RTX	D11CC
1035—1055	HBSEC + STAMO + STALT + SFSEC+ Relay 2 + Relay 1 send VARA ACK message for receipt of Info Request Message	HBSEC, STAMO, STALT, SFSEC
1030--1100	ALLDEP stations construct and enter response to Info Request Message into VARA as Peer-2-Peer message. The template for the response is given in Attachment 2	
1030-1045	STAHB sends the response to the Info Request Message via VARA to HBSEC	STAHB
1100--1119	Station uses ALE to establish link to D11CC and then sends response to Info Request Message to D11CC, D11CC sends ACK of response message immediately upon receipt	HBSEC
1120--1149	Station uses VHF to establish link to D11CC and then sends response to Info Request Message to D11CC, D11CC sends ACK of response message immediately upon receipt	SFSEC
1150--1219	Station uses ALE to establish link to D11CC and then sends response to Info Request Message to D11CC,	STAMO

	D11CC sends ACK of response message immediately upon receipt	
1220--1240	Station uses ALE to establish link to D11CC and then sends response to Info Request Message to D11CC, D11CC sends ACK of response message immediately upon receipt	STALT
1240--1300	Station uses ALE to establish link to D11CC and then sends response to Info Request Message to D11CC, D11CC sends ACK of response message immediately upon receipt	STAHB sends RESPONSE via relay by HBSEC
1300-1600	Relay Period 2 (see Appendix C2 through C6)	ALLDEP (HF)
1301—1330	Catch up and repeat of response transmission and ACK if needed	D11CC, ALLDEP, RELAY2, RELAY1
1301—1400	Break and Lunch	ALL STATIONS
1401-1500	ACK's of Response messages from D11CC to ALLDEP via VARA	D11CC
1501 -- 1700	All deployed stations must request permission to close down from D11CC. Request to close down and response from D11CC shall be logged	
1630	All deployed stations may begin breakdown and departure from the deployed site. Notify exercise director by text or radio of departure from site. (714-292-4271 or NF114AG)	
1700	D11CC Transmits ENDEX Message on B5D and D8C	D11CC
1700—1800	Breakdown and Departure	D11CC

APPENDIX E – Message Example

Example of message released from District Command Center to all appropriate stations announcing the beginning of the exercise.

P 222300Z APR 2022 NR xxx
FM COMCOGARD DISTRICT ELEVEN
TO COMCOGARD ALUNITS DISTRICT ELEVEN
BT
UNCLAS
EXERCISE EXERCISE EXERCISE
SUBJ STARTEX D11CCNET FULL SCALE EXERCISE
1. THE DISTRICT ELEVEN COMMAND CENTER CONTINGENCY NETWORK (D11CCNET) FULL SCALE EXERCISE WILL COMMENCE OPERATION AT 231600Z APR 2022.
2. THE SINGLE OPERATIONAL PERIOD IS PLANNED TO LAST UNTIL 240100Z APR 2022.
3. LCDR DIVISION CHIEF, USCG D11 DT, SENDS EXERCISE EXERCISE EXERCISE
BT

END OF MESSAGE

Example of message released from District Command Center to all appropriate stations announcing the termination of the exercise.

O 240025Z APR 2022 NR xxx
FM COMCOGARD DISTRICT ELEVEN
TO COMCOGARD ALUNITS DISTRICT ELEVEN
BT
UNCLAS
EXERCISE EXERCISE EXERCISE
SUBJ ENDEX D11CCNET FULL SCALE EXERCISE
1. OPERATIONS OF THE DISTRICT ELEVEN COMMAND CENTER CONTINGENCY NETWORK (D11CCNET) FULL SCALE EXERCISE HAVE COMPLETED AS OF 232359Z APR 2022.
2. LCDR DIVISON CHIEF, USCG D11 DT, SENDS EXERCISE EXERCISE EXERCISE
BT

END OF MESSAGE