WSG EmComm: Transmitting Digital Emergency Communications Instructional Plan

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Contents

Performance Analysis

Descriptive Title

Transmitting Digital Emergency Communications

Gap Analysis

	Target Population	Performance	Standard
Desired Performance	New Washington State Guard Emergency Communication (WSG EmComm) Team Members	Will transmit digital messages	Within 4 minutes of message receipt and with less than 2 errors in the message when deployed in emergency situations dealing with communications regarding the protection of life, property, and the preservation of peace.
Actual Performance	New Washington State Guard Emergency Communication Team Members	Are using voice transmission	Within 5 minutes of message receipt and make 3 or more errors in message transmission in emergency situations dealing with communications regarding the protection of life, property, and the preservation of peace.

Organizational Analysis

About the Washington State Guard

Per the Washington State Guard (WSG) website, "The Washington State Guard is an all-volunteer unit organized under the Military Department of the State of Washington. Its members come from all walks of life. They normally serve without remuneration and meet monthly, or more often as needed, within organized units stationed at strategic locations throughout the State.

The Washington State Guard serves at the direction of the state's Adjutant General. It is always ready to provide trained personnel to support civil government authority, provide for the protection and preservation of life or property during natural or manmade disasters or civil emergencies, and rapidly and effectively respond to search, rescue, or recovery operations. Additionally, the members of the Washington State Guard effectively execute State Homeland Defense missions and participate as active members and contributing citizens of our local communities."

About the Washington State Guard Emergency Communications Team

The Washington State Guard Emergency Communications (WSG EmComm) team was created in early 2013 and was created to augment the National Guard's communications group and to work with local emergency operation centers (EOCs). The team has not been activated yet for any emergencies and has been focusing on recruiting and training. There are qualification standards (Personal Qualification Standards or PQS) that the team is working to have every member meet so that they may be fully deployable members of the team.

The team is made up of 28 members with most the team having a military background, though this is not a requirement. They meet once a month for WSG drills and then once a month for specific EmComm drills. The EmComm team also has a community of practice, called a Net, that meets once a week for a half-hour. Because the WSG is volunteer-based, attendance is not required at the drills or the Nets. Budgetary constraints dictate that team members be able to provide their own digital transmission equipment.

Washington State Guard Mission Statement

"The mission of the Washington State Guard is to provide organized units that are equipped and trained in the protection of life or property and the preservation of peace, order and public safety under competent orders of State authorities."

Washington State Guard Emergency Communications Unit Goals

1. Recruit Emergency Communications personnel
2. Train and qualify EmComm personnel
3. Qualify and deploy EmComm personnel
4. Meet with Stakeholders and report progress to WSG Chief of Staff

The Importance of Closing this Performance Gap

The focus of this project is on enabling new WSG EmComm team members to transmit digital messages. The EmComm team uses a set of standards and qualifications that each team member must meet to become a full-fledged, deployable member of the team and transmitting digitally is one of these qualifications. The reason it is important for the team to be able to transmit digital messages is because it is a communication method that ensures accuracy and digital transmission penetrates through interference, thus making it a more reliable mode of communication. Communication inaccuracies can cause errors that are detrimental to the safety of people and property and being able to penetrate through interference ensures that the team is able to do their job in protecting life or property and preserving peace, order and public safety in emergency situations. Triangulating between the WSG mission statement of providing equipped and trained personnel for protection of life or property and the preservation of peace, order and public safety, the WSG goal of training and qualifying WSG EmComm personnel and digital communication transmission being a qualification of deployment, this proves to be a worthy project.

During the February 2017 drill, the team conducted an accuracy audit of their voice communication transmissions. Team leaders were amazed to see how voice messages, when transmitted through several team members, were riddled with mistakes and how inaccurate the

message was from the original request. After seeing this in action, leadership confirmed that being able to transmit messages with speed and accuracy is a focus for the team and that all team members need to be up leveled to be able to transmit digitally. With digitally transmitted messages, team members have a greater chance of being accurate as they can physically see what is being requested of them to transmit. With the team being proficient in digital message transmission, leadership does not have to worry that the EmComm team members would be considered the weak link in emergency message delivery.

Also, in June 2016, the EmComm team took part in an earthquake simulation event with the National Guard and during this event two SMEs on the EmComm team demonstrated how digital communications could be beneficial. This demonstration was successful and caught the eye of the Washington Adjutant General (AG) and he saw how messages sent digitally could be sent quickly and accurately. The AG suggested this be the primary mode of communication for not only the WSG EmComm team but for all emergency operations centers in Washington. Following the chain of command, CW4 Goo has made this a priority for the team. Leadership within the WSG EmComm team also wants to become subject matter experts in digital communication and wants to share their digital transmission knowledge with other state guard emergency communication teams.

Based on interviews conducted, a review of the extant data and an exercise observation, we know that transmitting digitally requires not only knowing how to configure the software but knowing what type of message to send in a scenario and how to prioritize these messages. Digital communication is a critical task that the WSG EmComm team performs and must be learned to mastery as when the team is deployed to emergency situations, they do not have time to use a job aid.

Cause Analysis

Data sources	Data gathering methods	Findings
WSG CSM (Ret) Doyle Burke	Phone Interview	• Fldigi has a lot of configurations and settings but only some of them are used by the WSG EmComm team. • The WSG EmComm team has a standard way that they need all qualified team members to be operating under. • Motivation to learn outside of official training events is low. Some team members even lack the motivation to attend the practice exercises. • The types of messages that are sent digitally vs. voice are messages that require a high degree of accuracy. • The advantage of sending a digital message vs. voice is that digital gives better opportunity for accuracy, less power is required, it penetrates interference, and runs on a narrower bandwidth. This means that team members that can use digital transmission can be relied upon when all other forms of communication are down. It also means that there is trust that large amounts of information and long lists will reach the recipient with fewer errors than voice transmissions. • It is standard practice to use both digital and voice in emergency situations. • The target audience for Fldigi training is for team members that are not yet qualified as full-fledged, deployable EmComm team members.

		- Training has not been developed for Fldigi training, even though it is a qualification requirement. - The EmComm team has a goal of recruiting 9 new people this year. - The EmComm team shares training and best practices with other emergency operations centers and these people do not have a military background. - Leadership would like to share Fldigi training with other emergency operation centers. - Fldigi is not yet the dominant form of communication between organizations. - Past trainings have been interactive, and scenario based.
WSG CW4 Micha Goo	Phone Interview	- The WSG EmComm team was created in 2013. - The team was created so they could augment the National Guard's communication group, and they want to work with the local emergency operation centers (EOCs). - The EmComm team drills once a year with the National Guard. - The EmComm team has separate drills from the rest of the Washington State Guard. Team members attend both drills. - There are 28 EmComm team members. 12 are actively involved in drills 21 have their technician license 3 have their general license

		○ 4 have their extra license - There are 109 people total in the Washington State Guard. - Being proficient in Fldigi is a qualification to being deployable. - There is no current formal Fldigi training – what has been done in the past is things will be pulled from different training manuals, YouTube videos, and other organization's trainings, or team members learn digital transmissions on their free time. There is no repeatable, standardized digital communications training. - They are looking to create a training that is unique to the state guard and that can be shared with other state guards. - There are 7 EmComm team members that are deployable, meaning they have passed the Personal Qualifications Standards which includes being proficient in sending messages via Fldigi. - The SME believes that there are 5 team members that do not know how to transmit digital messages. His belief is based off the team members not having passed the Personal Qualifications Standards. - Team members are not required to attend drills. - Complexities of digital communication include knowing your personal radio set-up, troubleshooting when messages do not go through. - The EmComm team has not been officially deployed to any emergencies yet. The team is in an incubation stage where they are recruiting and getting all members deployable.

		• The current digital training does not have any time and accuracy proficiency requirements.
WSG Website	Extant Data	• WSG history • WSG mission statement • WSG organizational structure • Overview and FAQs regarding the WSG and who can join • How to apply to the WSG • Time commitment of volunteers
WSG EmComm team weekly Net (This is the team's community of practice.)	Observation	• Besides the client, one EmComm team member checked in via voice transmission. • The team member was on the road and not able to set up Fldigi, so they could not practice their digital skills. • The client said that this was an unusually low turn out to the Net and that they normally get 4 – 6 participants, which he admitted was less than he would like to see. • Digital transmission is not always practiced during Nets.
WSG EmComm team	13 question survey through Qualtrics	• Sent to the 28 members of the WSG EmComm team and we received an 18% response rate. • Findings show that we did not get responses from our target audience of team members that do not use digital communications. • Of the 5 replies that we did get, we learned: o They all have experience with Fldigi.

		- All 5 respondents have a military background. - They would all like additional digital communications training. 4 out of 5 respondents are comfortable using Fldigi.
WSG Emergency Communication Team Personal Qualification Standard	Extant Data	- Tasks EmComm team members need to complete before they are considered full-fledged members of the team and ready to deploy including: - Being an active amateur radio license holder - Geographic knowledge of Washington state - Checking in and out of a Net - Completion of multiple FEMA courses - Being CPR/FA certified - Familiarity with equipment on EMD's trailer - Demonstrating the ability to - Set up and use your personal amateur radio equipment - Operate on Fldigi - Set up and operate amateur radio equipment at an EOC - Set up EMD communication mobile trailer and operate the amateur radio - Use military phonetics - Prepare, send and receive a message using the ARRL radiogram

		• Use personal hand held radio • Properly handle messages both informal and formal • Safely handle equipment
Pierce County Amateurs Radio Emergency Services Digital Communications Course	Extant Data	• History of digital communications • Why digital communication is superior to voice • Basic mode of preference • Description of the macro buttons • Configuration scripts • Fldigi Settings • Explanation of Fldigi features • Wired and digital vox sound card interfaces • Using FLMSG *This training makes note of there being many modes and methods of how digital communications can be handled.
Santa Clara County Introduction to Emergency Communications Course	Extant Data	• Voice training and the knowledge team members have before they start Fldigi training. o Voice technology o Voice operating techniques o Additional EmComm modes o Radios and accessories • Exercises conducted for voice transmission • Amateur radio clubs and resources
Beginners Guide to Fldigi	Extant Data	• Definition and explanation of Fldigi

		• Explanation of Fldigi settings
		• Description of Fldigi components
		• Waterfall tuning
		* Note that the beginner's guide makes note of the complexity of using Fldigi and that to get a full understanding of how to use the software with your particular set-up, additional training is needed.
WSG EmComm Training – Message Traffic	Extant Data	• Responsibilities of message traffic handlers
		• The use of pro-words and phonetics
		• How to use different message forms for voice communications

Survey Data Limitations

Because of our low response rate from the survey, we do not have solid data about the needs of digital communication training for current EmComm team members. We can assume that because there are 5 team members that have not passed the Personal Qualification Standards (PQS) and being proficient in Fldigi is part of the standards, that these team members do not know how to use Fldigi with the required speed and accuracy. We are also assuming that any newly recruited members will need digital communication training so that they may also pass the PQS. Because of this data limitation, a pre-test is recommended before training events to evaluate if the team member knows how to use Fldigi and to what degree they are proficient.

Job Aid / EPSS Analysis

Question	Yes	No	How do you know? What evidence (data/findings) can you provide to support your answer?
1. Is it important for people to practice the task to mastery? Or can people perform the job task without a significant amount of practice?	x		This task must be practiced to mastery. Team members need to know how to send digital messages quickly and accurately because life or property may depend on the transmission. When EmComm team members are deployed in emergency situations the environment is both volatile and stressful, thus placing a cognitive load on their working memory. When the task of transmitting digital messages has been committed to long-term memory, the team member is able to respond with muscle memory and concentrate on personal equipment related problem solving.
2. Is it important for people to obtain both: ° Coaching (including error detection and correction) as they perform a task? ° Delayed feedback (about the extent to which performance met standards and how to improve it) after they perform a task?	x		With the speed and accuracy performance standard leadership wishes to see, team members will need error detection and delayed feedback about their technique so that they know they are meeting the requirements. Delayed feedback will also allow the team member to know if their message transmission was successful and coaching will be able to provide problem solving support if the message did not transmit.
3. Is it important to provide learners with a safe, controlled environment in which they can make mistakes as they learn?	x		Team members need to practice their transmitting in a safe, controlled environment because the environment they will be transmitting in has a very low threshold for error as life and property may be at stake.
4. Is there an expectation of interactive learning?	x		Yes, because the team is made up of volunteers and communications require more than just yourself, the team expects interactive learning. Motivation to learn digital transmission when there is nobody on the other side receiving and transmitting back is low. The team members use the drills and weekly get togethers (called Nets) to hone their communications skills – digital and other wise.
5. Are people required to perform the task quickly and smoothly in the workplace?	x		Yes – life and property can depend on the successful message transmission. Often, the team will be spread out during an emergency and there are no other team members to give you feedback.
6. Are people required to perform the task in situations that are unpredictable?	x		Yes – each emergency is different and has its own set of challenges. Included in those challenges are the different points of contact the team

			will be working with whether it be other Emergency Operation Centers, the National Guard or possibly working by themselves in the field.
7. Does one or more of the following reasons for <u>NOT</u> relying on a job aid alone exist in the on-the-job environment: ° A physical barrier that makes it difficult to use a job aid on the job ° A social barrier that makes it difficult to use a job aid on the job	x		Yes – people need to transmit digital messages as quickly as possible in emergency situations and reading a job aid would slow down the transmission. Emotions run high, and the message transmission process needs to be quick and smooth. There is not time for people to sit and read a job aid when life and property are on the line.

Gilbert's Behavior Engineering Model (BEM)

Environment	Data	Resources	Incentives
	Does the team have relevant and frequent feedback on their performance? To some extent – there is a community of practice that is set up that meets every Thursday for a half hour so that people can practice their message transmission and receive feedback. There is no formal feedback system that provides regular, accurate, and actionable information about the extent to which their digital messaging meets standards **Is there a description of what is expected of the team members?**	**Does the team have the right tools for performance?** Yes, one of the requirements of being on the team is that team members be able to provide their own voice and digital transmission gear. **Does the team have resources, time, and materials to match performance needs?** Yes, there are separate EmComm drills that are set up so that the team may practice and hone their communication skills. **Is there a safe environment that the team members can practice their skills?**	**Are monetary incentives available?** No – the WSG is volunteer only. **Are non-monetary incentives available?** Yes – since being proficient in digital transmission is a qualification standard, it means that this skill counts towards being deployable. **Are team development opportunities available?** Yes – you cannot be considered a full member of the team until you have met the qualification standards and digital transmission is part of the standards.

	No - Other than listing proficiency in digital transmission in the Personal Qualification Standards, no. There are no standards that state what "proficiency" means or what it means to send a message with "speed and accuracy." **Are there clear and relevant guides to aid in their performance?** No – there is nothing customized on how the WSG EmComm team operates. There are guides, but, the information is so complex and dense that it is hard to know what to concentrate on to be a successful member of the team. **Are team members aware if this guide exists?** N/A as it doesn't exist.	Yes – the community of practice that virtually meets every Thursday. The team practices message transmission from their homes.	**Are there clear consequences for poor performance?** To some extent – team members join the WSG EmComm team with the goal of being deployed for real life emergency situations. If the team member cannot transmit digital messages with speed and accuracy and pass the PQS, then they are sidelined and cannot participate. No there are no consequences with volunteers fail to use EmComm meetings to practice their digital skills.
Individual	**Knowledge**	**Capacity**	**Motives**
	Do team members have the skills and knowledge needed to perform as expected? No – new team members typically have their technician	**Is performance scheduled for when people are at their best?** No – when the team is deployed, they are in high stress, emergency situations	**Are people recruited to match the realities of the job?** Yes – people are generally recruited from amateur radio clubs or former military

	license, and this is not a skill that they have at this level. **Is there well-designed training that matches this requirement?** No – the current training is from subject matter experts that have taken bits and pieces from other trainings (i.e. YouTube, training manuals, other organization's trainings) and they have cobbled together something that is customized to the team. Note that the SMEs we interviewed said that there is no standard training and no way to measure results and that the digital transmission training that has been delivered is different every time.	and are often taken away from their day jobs to be on active duty. **Do people have the aptitude and physical ability to perform the job?** Yes - the pre-requisite that team members have their amateur radio license means that they have a background in ham radio operations. **What previous experience is needed to succeed?** Must be a licensed radio operator. It is helpful to have a military background, but, this is not a requirement.	communications roles, and we found that most the team members are amateur radio hobbyists. **Is there anything preventing the team members from taking the training on their own?** Yes - time and team culture. Because the team is made up of volunteers and they are not being paid for their services and training they engage in is on their own time. There is also an expectation that because transmitting digitally is a qualification standard that and because of the many ways the tool can be used, the expectation is that there will be customized training from the WSG EmComm team leadership. **What do team members care about and how does this tie into the task?** Team members care about meeting all the qualification standards and being able to deploy in emergency situations so that they may be of service.

Figure 1. Gilbert's BEM. Adapted from *Human Competence: Engineering Worthy Performance* (p. 88), by T.F. Gilbert, 1978, New York, NY: McGraw Hill.

Summary: State the Case for Training

After analysis, we recommend training for digital message transmission to new members of the WSG EmComm team. Given the low response rate to the survey and the assumptions we have made, we also recommend conducting a pre-test to determine whether these new members need training or not.

The mission statement of the WSG EmComm team states that they provide personnel that are "equipped and trained in the protection of life or property and the preservation of peace." Digital message transmission is one of the fastest and most reliable ways to communicate when other modes of communication are down. Training the WSG EmComm team to transmit digital messages means that the team can provide these personnel that are equipped and trained to communicate in emergency situations. The client and other stakeholders believe that it's important to close this gap because after the audit conducted using voice transmission and seeing how slow and inaccurate messages were relayed, they see the value in having team members being quick and accurate. They do not want any team members to be a blocker when it comes to delivering life or property saving messages. The client also wants to have the team considered subject matter experts in digital transmission and per the Adjutant General's suggestion would like this mode of communication to become standard with all Washington emergency operation centers.

One of the goals of the WSG EmComm team is train and qualify new members. A prerequisite to joining the team is to be amateur radio licensed and to be a qualified and deployable member of the team, one of the standards that must be met is to be proficient in digital message transmission. The team does not currently have a customized, repeatable training that tests for speed and accuracy and digital transmission is not a skill that is gained with obtaining an amateur radio license. Coupled with this information, Fldigi (the interface for digital transmission) is a complex tool with many ways of interacting with it making it difficult for novice communicators to transmit digitally for the WSG EmComm team.

Because the EmComm team will be deployed in emergency situations that are volatile and stressful, there is low tolerance for error in message transmission. The environment that team members will be working in is always different and stress levels will be running high. Practicing in a safe environment where stress can be artificially induced will test the speed and accuracy of message transmission in a way where if there are errors, time is not of the essence and there is not actual life, property, or a disturbance of peace on the line. During the training, team members will receive immediate coaching for error detection, and they will be steered in the proper direction. And, feedback will be given that shows whether the team member is on target to meet the speed and accuracy requirement.

Using the Job Aid/EPSS analysis, we see that the primary source for training lies in the fact that the team cannot use job aids during an emergency scenario. This is because the safety of life and property are in jeopardy during emergencies and messages need to be transmitted with speed and accuracy and there is not time to reference job aids. To that end, the team must perform the task of digital message transmission to mastery. Because there is little room for error in emergency scenarios, the team also must have a safe environment where they can practice and receive coaching that they receive error detection and correction.

Note that we found other causes to this performance gap besides a lack of knowledge. The performance gap will remain until WSG EmComm addresses these other environmental and individual causes of the performance gap.

Data: Currently, there are no customized WSG EmComm digital communication guides or standards. The standards for the PQS need to align with WSG EmComm goal of transmitting digital messages with speed and accuracy. We also recommend setting an expectation regarding participation in Net emergency preparedness practices and monthly drills. Creating a simple job aid that can help with the set-up and configuration of Fldigi is also recommended. Guidance is to store the job aid in an easily discoverable place and alerting team members of its existence, and that is the standard configuration the team will use going forward.

We also recommend creating and using an instructional aid in early practices while team members are coming up to speed. Like a job aid, the instructional aid will describe exemplary performance. Unlike a job aid that is used in the workplace, the instructional aid will act as a crutch for learners while they are learning to send digital messages within the speed and accuracy standards. Volunteers who complete their training will have no further need of the instructional aid and won't be able to use it in the workplace.

Motivation: We found that because of the team being made up of volunteers and there is an expectation that there will be a customized training for the WSG EmComm team, there is little motivation for members to learn digital transmission on their own. There are some members that are amateur radio hobbyists and understand digital transmission, but, because the tool is so complex and there are so many ways to operate within it, it is difficult to learn on your own. Our recommendation is to have a scenario based, instructor led training that is customized to how the team uses the tool.

Incentives: Gilbert's BEM showed that there are no consequences for poor performance. When volunteers join the team, they are guided to make their way through the qualification standards to be a fully deployable member of the team and if someone does poorly during a drill or their Net (community of practice), there is no consequence to this poor performance and thus no incentive to hone their skills. Guidance to the team is that once the standards (mentioned above), are put into place, that team members are given a consequence for their poor digital transmission performance and recognition for proficiency.

Task Analysis

Data Sources

- Interview and observation of the procedure being completed by two SMEs (SG CSM (Ret) Doyle Burke, and CW4 Micha Goo).

- Review of:

    - User's Manual

    - Data published for ARES Emergency communications group

    - Beginners Guide to FLDigi from www.w1hkj.com/beginners.html

Task Characteristics

Prerequisites:
- Transmit and receive voice messages in compliance with the regulations set forth by the Federal Communications Commission (FCC) title 47 CFR part 97.
- Transmit and receive voice messages in accordance to the Federal Emergency Management Agency FEMA (Incident Command System (ICS) standards.

Resources:
- Laptop w/speakers and microphone
    - Back-up battery
- FLDigi software
- Handheld radio
    - Minimum 5 watts output
    - Dual band
    - Back-up battery
- Pen and paper
- Washington State Guard ID card
- Amateur radio license

Major Tasks	Goals	Cue	Standards
Launch FLDigi software	Have the program open successfully.	Program not open and need to send or receive a message.	Operator opens program within 10 minutes.
Configure Software	Set the frequency to allow for communication between team and outside agencies.	When frequency does not work, and adjustments need to be made or on first use.	Operator will configure to correct frequency based on Communication Plan (issued by operational command).
Transmit digital message	Successful digital transmission.	Need to send a test or actual transmission.	Operator will receive color confirmation (text changes from black to red) when transmission was sent.
Receive transmission	Successfully receive digital transmission.	Information will show on yellow portion of the screen.	Operator will document the information accurately.
Relay digital message to emergency personnel	Prioritize and handoff information verbatim.	Received transmission that requires action.	Operator provides clear, concise message to appropriate personnel.

Task Analysis

Key to symbols

☺ Hot tip: Hints or advice about performing the task

☞ Note: Additional information

💣 Caution: Use for safety and potential mistakes

Highlighting in Blue – Job Aid

Highlighting in Yellow – Critical, Difficult, and/or Complex

1. Install FLDigi.

   1.1. Download the FLDigi software from https://sourceforge.net/projects/fldigi/files/

      1.1.1. Click on the latest version listed at the top.

         ☞ Note: Setup.exe is for Windows.

      1.1.2. Save as and create a separate folder for FLDigi for your drive.

      1.1.3. Navigate to FLDigi folder.

      1.1.4. Click on Setup.exe file.

      1.1.5. Click continue on the user agreement.

      1.1.6. Click next.

         ☞ Note: This is the default installation and is what the EmComm Team will use.

      1.1.7. Click install.

      1.1.8. Click Close.

2. Configure software.

   2.1. Launch FLDigi.

      ☺ Hot Tip: When the program launches, it will automatically launch FLAMP and FLMSG – keep these windows open as they work in conjunction with FLDigi.

   2.2. Set the waterfall display.

      ☞ Note: The waterfall display is on the lower portion of the FLDigi main screen. This shows the activity on the chosen frequency range.
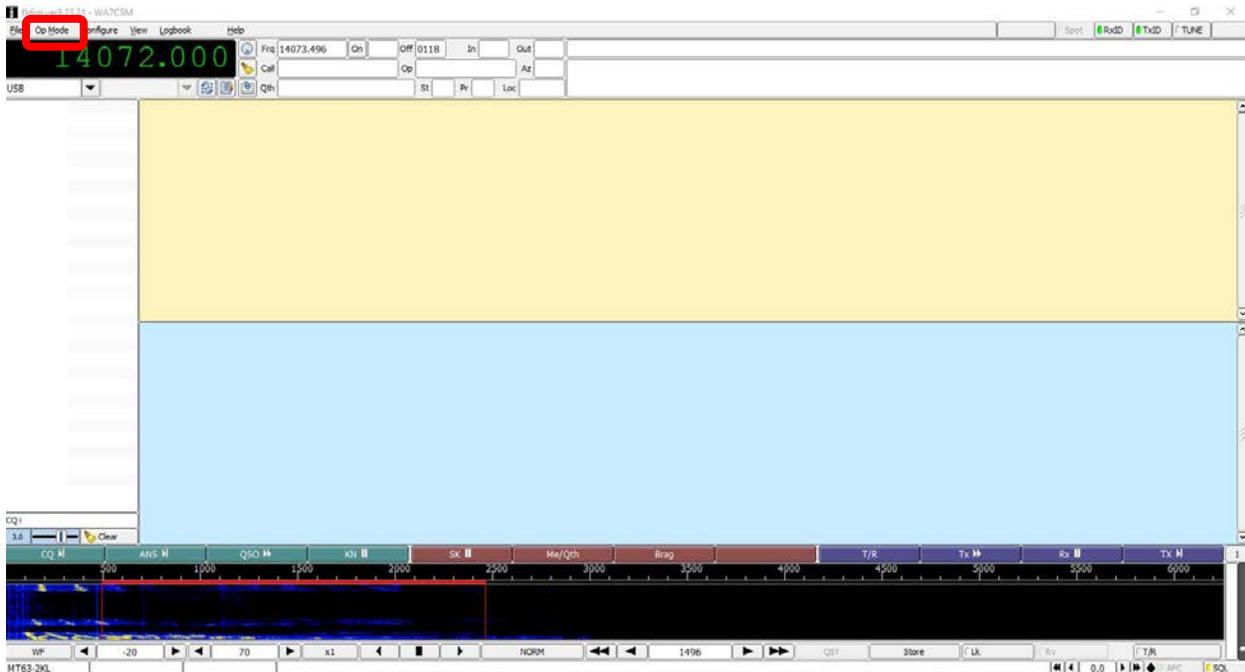
      Center on 1500.
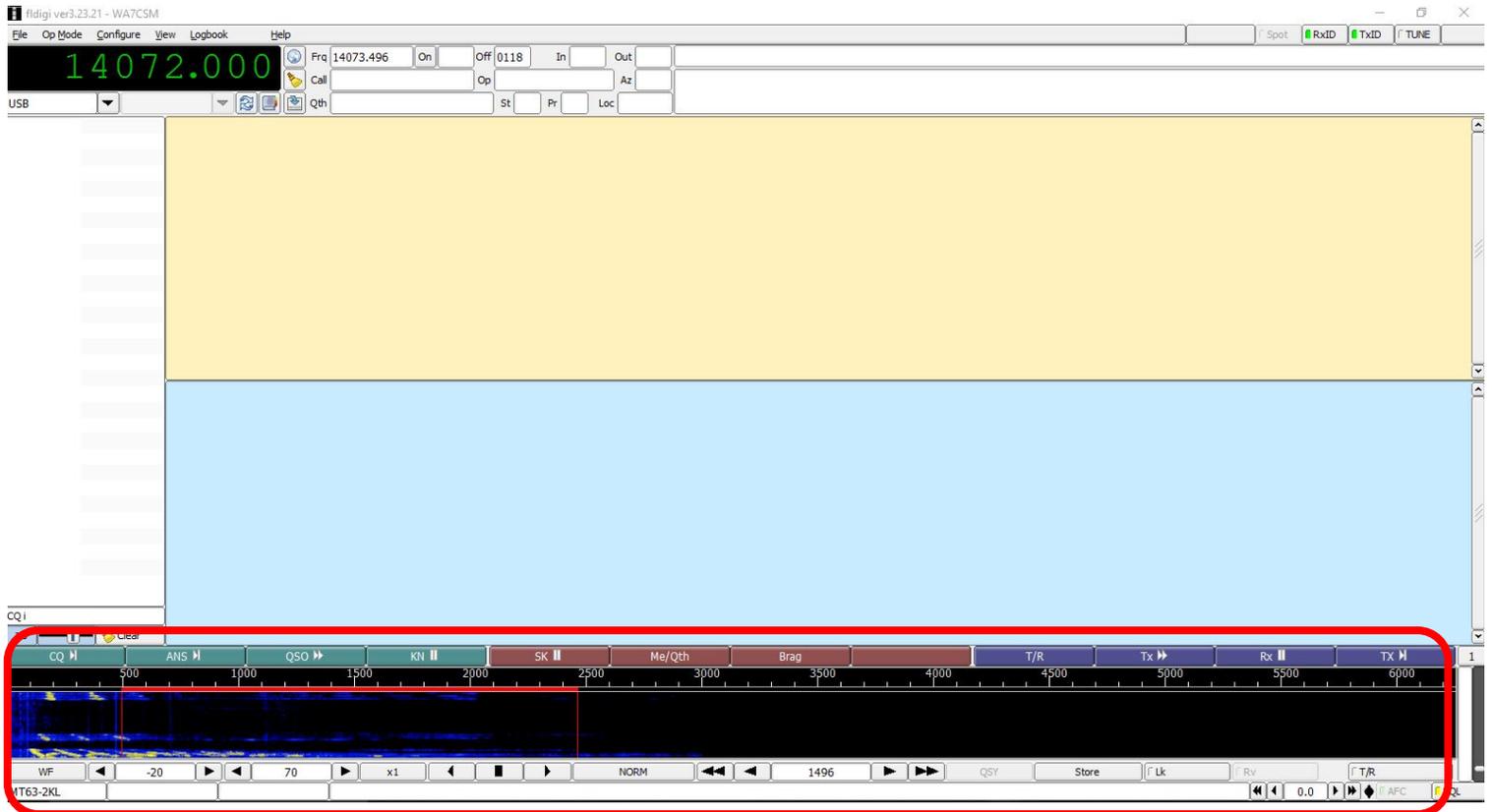
2.3. Set the operational mode.

    2.3.1. Click on OpMode

        ☞ Note: OpMode is located along the top menu bar.

2.3.2. Scroll down to MT63.

2.3.3. Choose MT63-2000L.

☨ Hot Tip: You will know when your mode is set when the lower left-hand corner of the interface shows   MT63-2KL.

2.4. Set the operator.

2.4.1. Click the configure tab.

☨ Hot Tip: The configure tab is located in the upper left-hand corner of the interface.

2.4.1.1.   Click on Operator.

2.4.1.1.1. In the Station Callsign field enter the operator's amateur radio call sign.

2.4.1.1.2. In the Station QTH field enter the operator's current city and state.

2.4.1.1.3. In the Operator Callsign field enter the operator's call sign.

☞ Note: This is the second time that you must enter your callsign.

2.4.1.1.4. In the Operator Name field, enter the operator's first name.

2.5. Set the ID.

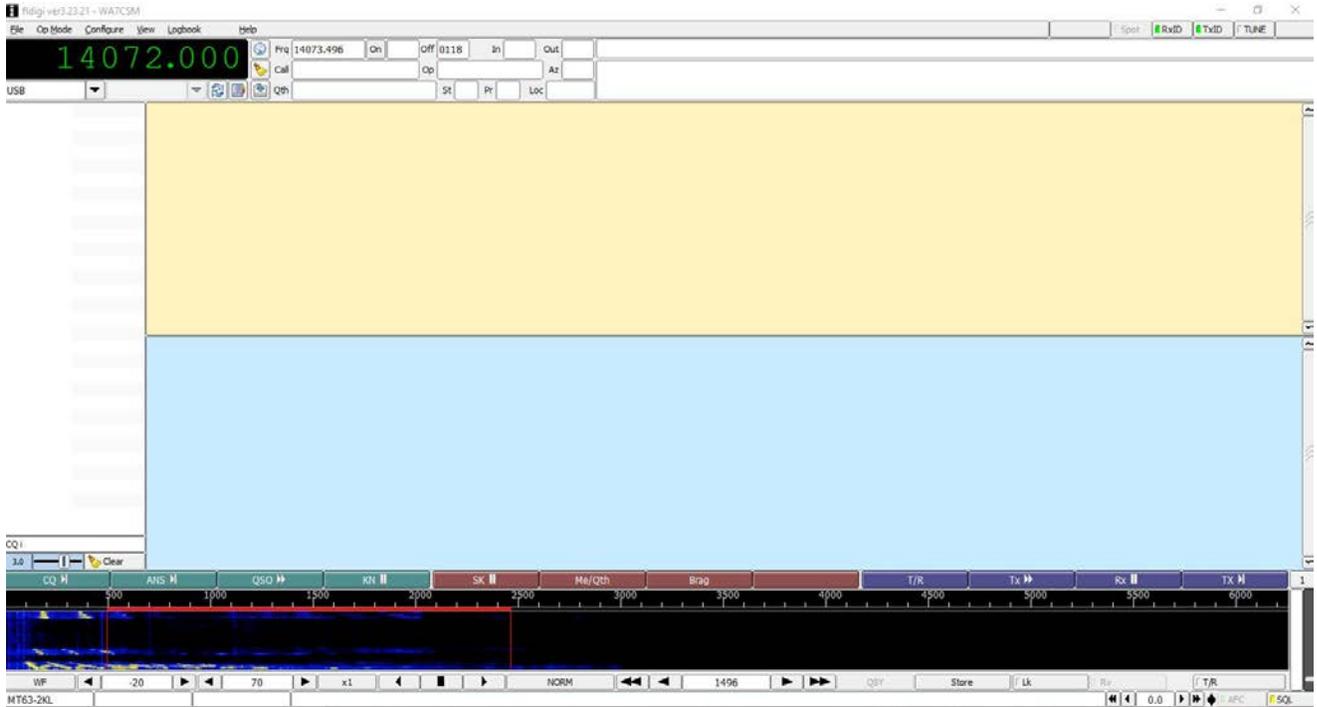2.5.1. Click on the Configure tab.

2.5.1.1.   Click on IDs.

2.5.1.2.   Check the transmit call sign in the center of the box.

2.6. Set the squelch.

2.6.1. Drag the squelch level bar up to where the SQL indicator turns from green to yellow.
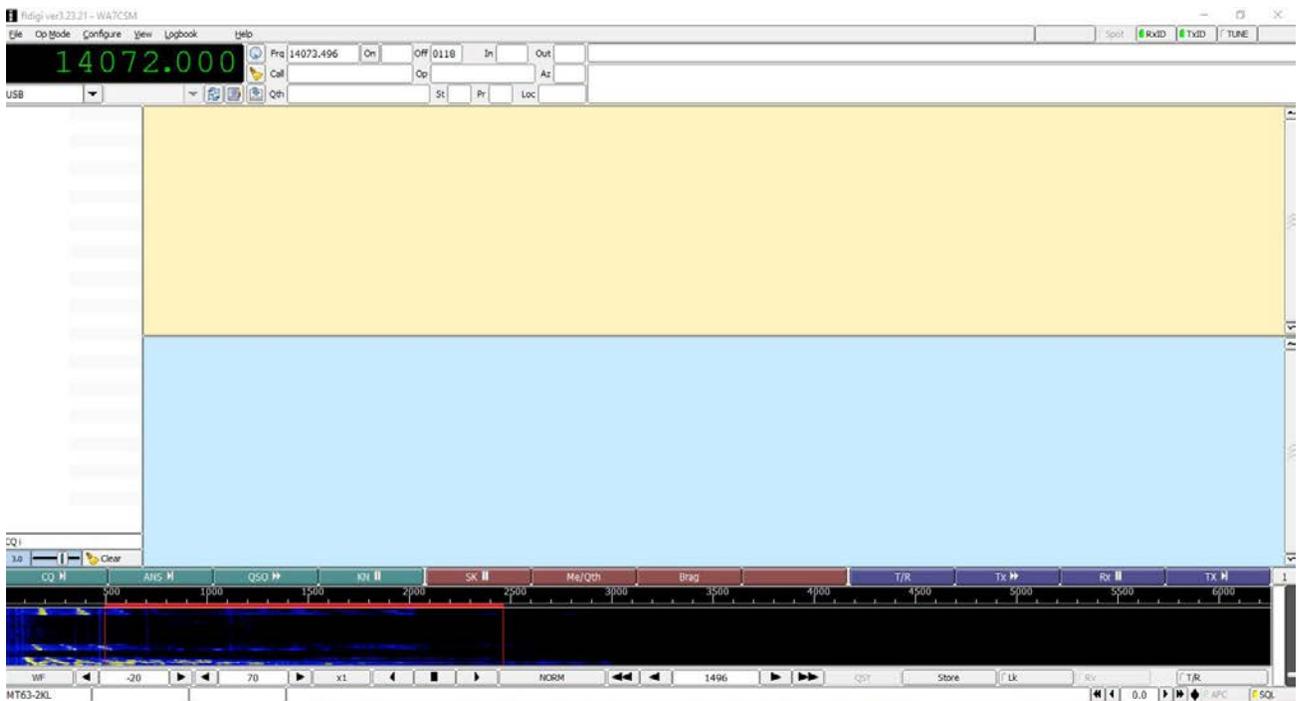
☨ Hot Tip: The SQL indicator is in the lower right-hand corner of the interface.

2.7. Set the automatic detection of the receive and transmit mode.

    2.7.1. Click on the RxID button.

    2.7.2. Click on the TxID button.

3. Transmit a digital message.

Input – Request Communication for	Process Activities	Decision Rule	Output
• Supplies • Human safety • Property protection • Welfare checks • Staff updates/changes • Incident update • Commander's update brief	• Determine if an ISC preformatted form will be used • Determine if a radiogram will be used	1. Are you communicating with an emergency operations center? 1.1. Yes – use ISC preformatted forms ☞ Hot Tip: Inquire which message format they are using 1.2. No – use a radiogram	ISC preformatted form message or radiogram

3.1. Confirm that the person you are sending the message to is ready to receive.

    3.1.1. Announce yourself on your handheld radio indicating your callsign and let the other party know to standby for digital traffic.

    3.1.2. Receive confirmation from other end.
    ☞Note: Once you have received confirmation from the other end, you are now cleared to send your transmission.

If you are transmitting	Then

A free text message
 	
⚲ Hot Tip: Use free text when you don't have communication traffic that fits into a preformatted message, establishing communications, and coordinating alternate modes and frequencies.
	1. Type message in to the light blue area
	
	1.
	
	  1.1. Click T/R in the menu bar above the waterfall display
	
	  1.2. Rekey your handheld radio and hold it near the speaker of your laptop
	
	  1.3. Release the key when the message is finished
	
	  ⚲ Hot tip: You will hear your call sign transmitted in Morse code at the end of the message
	
	  1.4. Click T/R button again to release

A preformatted message
 	
☞ Hot Tip: Use preformatted messages when you are communicating with other emergency
	1. Locate the FLMSG window
	
	  ☞ Note: This loads when you start FLDigi
	
	2. Select a form and fill in required fields
	
	    If you need to send **Then Use** **And send**

operations centers that use the ICS format.		**this ICS form number**	
	An update	203	- Initial communications - Change of personnel
	A communications form	205	- Your radio set up – the mode, frequencies - The communications plan
	Your assignment	205a	- Your name and call sign - Methods of contact
	A medical plan	206	- Where medical aid stations are being set up - Ambulance names and location - Medical procedures
	A basic message	213	- Free text - Position of addressee and originator - Routine communications 💣Caution: Basic messages are never to be used for emergency, priority, or welfare communications.
	Communications Log	309	- A record of the transmissions sent and received

2.1. Click on From menu

2.2. Select the message format Plaintext

2.3. Fill in the To field

    ⌂ Hot Tip: This can be a call sign, a tactical call sign, or personal name.

2.4. Fill in Fm field

    ⌂ Hot Tip: This is the originator of the message and can be a call sign, tactical call sign, or personal name

2.5. Fill in Sub. Field with the subject of your message

2.6. Fill in the date field with the current date

2.7. Fill in the time field with the current time

3.   Click AutoSend

	☞ Note: This is located on the menu bar of the FLMSG window
	4. Save the message
	☞ Note: As soon as you save, the message automatically sends

A pre-formatted radiogram message.
 	
☞ Note: This is a pre-formatted message authorized by the ARRL that is used when not communicating with emergency operations centers.
	1. Locate the FLMSG window
	
	2. Click on Form
	
	 2.1 Click Radiogram
	
	  2.1.1 Enter a sequential message number from your station of origin
	
	   ⌂ Hot Tip: These numbers will come from your send communications log
	
	  2.1.2 Select a precedence from the *PREC drop down
	
	{{TABLE}}

Table inside cell 2.1.2:

If the message	Then Choose
Requires no immediate action	Routine
Is regarding the status of a person or persons	Welfare
Needs quick handling	Priority
Is urgent ☞ Note: This is a top priority message and will take precedence over any other message category	Emergency
Is testing a routine function	Test Routine
Is testing the welfare function	Test Welfare
Is testing the priority function	Test Priority
Is testing the emergency function	Test Emergency

4. Receive transmission

4.1. Monitor the yellow area of the interface for acknowledgement of your transmission.

🖑 Hot Tip: Acknowledgement of a transmission means you have been successful in your sending and receiving of your digital communication.

☞ Note: You may receive acknowledgement of your digital transmission via voice through your handheld radio.

If you do not get acknowledgement of receipt through	Then
FLDigi	1. Seek alternate forms of communication to receive acknowledgement 1.1. Voice communication 1.2. Text messaging 1.3. Phone call
The alternate communication channels	Retransmit through FLDigi
Either FLDigi or alternate channels	1. Switch to a pre-agreed upon alternate operating mode 2. Adjust the antenna for optimal propagation

5. Relay digital communication to emergency personnel.

5.1. Record transmissions.

5.1.1. Convert digital transmission to hard copy for emergency personnel.

5.1.1.1. Copy or print transmission verbatim with a minimum of pen and paper, or any available means to copy or print.

5.2. Prioritize hardcopy messages of received digital communications.

If the message is in regard to	The priority is
Human life	# 1
Critical infrastructure	# 2
Property	# 3
Animals	# 4
Supplies	# 5
Welfare checks	# 6
Status reports	# 7

5.3. Relay message to emergency personnel

5.3.1. Receive verbal acknowledgement from emergency personnel that message is clear and concise

5.4. Reply to the message originator that the message was received and disseminated to emergency personnel

List of What is Critical, Difficult, and/or Complex

1. Troubleshooting when acknowledgement is not received.
2. Knowing what type of message to send.
3. Prioritizing messages as they are received.

Learner Analysis

Brief Description of the Learners

The learners are new Washington State Guard Emergency Communications (WSG EmComm) team members and current team members that have not completed the digital communications component of the Personal Qualification Standards (PQS). Team recruiters target a basic qualification of having an amateur radio Technician Class license, being between the ages of 18 and 64, and being a US citizen who is a resident of Washington State. Team members are amateur radio enthusiasts and come from all walks of life. Having a military background is not a requirement although 20 of the 28 team members are prior military or government trained personnel. Currently 16 of team members have not completed the PQS. Leadership has a goal of recruiting 10 people into the EmComm team by 2018. The goal of a recruit is to complete the PQS within 12 months to become a deployable member of the team. Proficiency in Fldigi is a fundamental qualification for digital communication within the PQS.

The WSG EmComm team is a volunteer organization and all radio equipment is provided by the team member. Members may serve as long as their age permits but must serve for a minimum of one year. The team meets once a month for their drill and members have the opportunity to participate in a weekly Net (WSG EmComm community of practice). There is a requirement to attend the WSG drills, but, there is no requirement to attend any additional EmComm team meetings or the Net.

The WSG EmComm team has not yet had the opportunity to be deployed in a live emergency situation and the team members are working on honing their skills and passing the PQS.

Methods

Data Sources	Data Collection Method(s)
• WSG website	Extant Data
• WSG EmComm PQS	Extant Data
• WSG EmComm team members	Survey
• Two SMEs	Observations Interviews
• WSG EmComm Net (community of practice)	Observation

Data-Gathering Instruments

- Survey: A Qualtrics survey of 10 questions was sent to the client to disseminate to the 28 EmComm team members. The survey was open from 02/26/17 to 03/05/17. Respondent information was collected directly from the Qualtrics reporting function.
- Observation:

  02/11/17 - One BSU team member was present with Doyle Burke and a "Go to Meeting" was set up with Chief Goo and the other two BSU team members to observe the setup of Fldigi and transmission of a digital message.
  03/02/17 - A BSU team member had a Face-Time call with the client and observed the WSG EmComm Net.
- Interviews:

  02/11/17 - The BSU team interviewed both Doyle Burke and Chief Goo after the observation. One BSU team member was in person with Doyle. Chief Goo and the other two team members were on "Go to Meeting" for a conference call.

  03/03/17 - A "Go to Meeting" conference call was conducted with Chief Goo and all three members of the BSU team.

  03/26/17 - A BSU team member conducted an interview over the phone with Doyle Burke.

Findings and Implications: What you found out about Learners and their Instructional Implications

During the distribution of the survey, Chief Goo indicated that the team has 12 actively involved members out of the 28 total members. We received 5 survey replies, and we are assuming that those respondents fall into this group of actively involved members (18% of the total members, and 42% of actively participating individuals participated in the survey). Due to this limitation, the data gathered was skewed to team members that have a greater knowledge of Fldigi and digital communications then what the client indicated as the focused learner population.
Also, because of our low response rate from the survey, we do not have solid data about the needs of digital communication training for current EmComm team members. We are making the operating assumption that because there are 16 team members that have not completed the Personal Qualification Standards (PQS) and being proficient in Fldigi is part of the standards, that these team members do not know how to use Fldigi with the required speed and accuracy. We are also assuming that any newly recruited members will need digital communication

training so that they may also complete the PQS. Because of this data limitation, a pre-test is recommended before training events to evaluate if the team member knows how to use Fldigi and to what degree they are proficient. Team members who can pass the pretest will receive a pass for the digital communications component of the PQS and will not need to complete digital communication training.

Relevant Skills

Learner Characteristic	Findings: What you found out about each characteristic	Data Source/Method: List a data source/method for each finding	Instructional Implications: Ideas for the instruction in the form of "therefore" statements
Prior Knowledge—what the target population already knows and does	As a prerequisite for assignment to the EmComm team, a prospective recruit must have the basic amateur radio operator level of technician and be familiar with hand-held radio operations.	WSG EmComm PQS Client interview regarding recruiting	Therefore, during the demonstration phase, the instructor will reinforce the consistency between digital and voice communications by showing a voice transmission and a digital transmission. The instructor will demonstrate that when it comes to prioritizing messages, the use of call signs, and transmitting in English, this is the same across both platforms.
Targeted Skills—what the target population will specifically need to learn—and what's critical, difficult, or hard about that	5 of the 5 respondents to the survey requested hands-on training using digital communications for speed and accuracy.	SME interviews Survey	Therefore, during the application phase, WSG EmComm team members will practice transmitting digital communications and troubleshooting in an environment that simulates an earthquake emergency scenario. They will practice sending real messages that come up during this type of emergency. Learners will work towards the goal of the speed and accuracy criteria.

Relevant Contextual Factors

Learner Characteristic	Findings: What you found out about each characteristic	Data source/method List a data source/method for each finding	Instructional Implications: Ideas for the instruction in the form of "therefore" statements
Orienting Context— Learner motivations related to the job and any corresponding job training	There is definable lack of motivation within the team's members. The Net (WSG EmComm community of practice) is poorly attended. The Net that was observed had a total of two attending team members. The 16 team members that have not completed the PQS have been on the team for over a year. They only practice their amateur radio skills when there is an EmComm drill.	SME interviews Survey Observation	Therefore, the instruction should be application based using real world scenarios thus making learning relevant to the team members. Instruction will be based on WSG EmComm team standards and the practices will be based on digital message transmission that would take place in an earthquake scenario. The training will further use Keller's (1987) ARCS model to gain motivation by using variability during the application phase practices to gain attention. Messages will be delivered to the EmComm team member via different methods, and the messages will be different and pertain to the earthquake scenario.

Learner Characteristic	Findings: What you found out about each characteristic	Data source/method List a data source/method for each finding	Instructional Implications: Ideas for the instruction in the form of "therefore" statements
Instructional Context—Any factors in the learning environment that may affect learning	EmComm team members are utilizing different radio equipment (personally owned) that they are familiar with.	SME interviews	Therefore, a check list will be created for the configuration of Fldigi. The check list will lead team members through the WSG EmComm team standard configuration and ensure there is consistency in the software setup. Team members will be required to have this configuration complete before arriving to the training. During the application phase the learners will be encouraged to reference a handout describing message forms and priority. This will be slowly removed to build confidence as well as build speed and accuracy.
Transfer Context—Any factors related to the workplace that could facilitate or hinder application of learned skill on the job	The environment that the WSG EmComm team operates in during emergency deployment hinders the ability to use job aids, due to the need to meet timely communication requirements.	Information recovered from SME interviews and survey.	Therefore, during the integration phase, the learners' will be given the opportunity to join the weekly Net where they will practice their digital message transmission to maximize speed and accuracy. Drills will also be used to setup simulated scenarios, thus building their confidence and skills for any emergency situation.

Mode of Delivery

Delivery Mode (select one or more)	Rationale
☑ Instructor-led training. Can include: 　☑ Traditional classroom 　☐ Virtual classroom ☐ Self-paced training. Can include: 　☐ Print-based workbooks 　☐ Online/eLearning that learners 　　complete individually ☐ Structured on-the-job training ☐ Flipped classroom	ILT: The small amount of WSG EmComm team members make instructor-led training ideal as the cost to produce and maintain a self-paced training program would be more expensive for this volunteer driven organization than an as needed ILT approach. As well as the fact that the team already meets monthly for drills and training, this would not place any undue hardships on the team members or the organization. The instructor-led training will also allow the WSG EmComm team to better simulate the actual events of an emergency situation, including increasing stress levels. A check list will also be created that will lead EmComm team members through the standard configuration and setup of Fldigi. Learners will be required to configure and setup Fldigi prior to their arrival and be ready to transmit digital messages. The check list will ensure that there is consistency with the configuration and will leave face-to-face time for learning the task of transmitting messages and troubleshooting.

Job-Focused Objectives

Critical Tasks that the Training Will Address (with corresponding numbers from the task analysis)

1. Transmit a digital message (Step 3)

2. Troubleshooting when receipt of transmission not received (Step 4)

Job-Focused Instructional Objectives

#	Performance (include TA #)	Conditions on the job	Criteria on the job

1	WSG EmComm team members will transmit digital messages (3)	Given:
		• A message to transmit about
		    o Human safety
		    o Property protection
		    o Supplies
		    o Welfare checks
		    o Staff updates/changes
		    o Incident update
		    o Commander's update brief
		• An emergency situation involving the protection of life, property, and/or the preservation of peace.
		• A recipient to receive the message.
		• A message to transmit received from
		    o A runner
		    o Email
		    o Text message
		    o Handwritten
		
		Resources:
		• Internet access
		• Laptop with Fldigi installed and configured to WSG EmComm team standards
		• Speakers
		• Microphone
		• Handheld radio
		• Pen and paper
		• Amateur radio license
			• Confirms recipient's readiness to receive message.
			
			• Uses appropriate message priority
			    o 1st – Human life
			    o 2nd – Critical infrastructure
			    o 3rd – Property
			    o 4th – Animals
			    o 5th – Supplies
			    o 6th – Welfare checks
			    o 7th – Status reports
			
			• Within 4 minutes of message receipt.
			
			• With less than 2 errors in the message.
			
			• In compliance with Title 47 – Part 97 regulations set forth by the Federal Communications Commission.
			    o Utilizing call sign at the end of every transmission (and every subsequent 10 minutes)
			    o Message transmitted in English
			
			• In accordance to the Federal Emergency Management Agency FEMA Incident Command System (ICS) message format standards, utilizes correct preformatted message.

#	Performance (include TA #)	Conditions on the job	Criteria on the job
			o An update - 203 o Communications plan – 205 o Assignment – 205a o Medical plan – 206 o Basic message – 213 o Communication log - 309
2	WSG EmComm team members will apply troubleshooting techniques (4).	Given: • An attempt to transmit a message has been made. 　o Human safety 　o Property protection 　o Supplies 　o Welfare checks 　o Staff updates/changes 　o Incident update 　o Commander's update brief • A recipient to receive the message. • 3 minutes and there is no acknowledgement of receipt of message transmission. • An emergency situation involving the protection of life, property, and/or the preservation of peace. Resources: • Internet access • Laptop with Fldigi installed and configured to WSG EmComm team standards • Speakers • Microphone • Handheld radio • Pen and paper • Amateur radio license • Cell phone	• Confirmation that acknowledgement has not been received. • Alternate retransmission method used until receipt of transmission acknowledged. • Message retransmitted and acknowledgement of receipt within 6 minutes. 　o Standard Fldigi configuration 　o Alternate communication channel within Fldigi 　o Alternate operating mode within Fldigi 　o Voice through handheld radio 　o Text message 　o Phone call 　o Antennae adjusted for optimal propagation and retransmission through Fldigi standard configuration

#	Performance (include TA #)	Conditions on the job	Criteria on the job
			- Message retransmitted in original form. - With less than 2 errors in the message. - In compliance with Title 47 – Part 97 regulations set forth by the Federal Communications Commission. - Utilizing call sign at the end of transmission (and every subsequent 10 minutes) - Message transmitted in English

Performance Assessment Instrument

Objectives

#	Performance (include TA #)	Conditions on the job	Criteria on the job

1	WSG EmComm team members will transmit digital message. (3)	Given:
		• A message to transmit about
		  o Human safety
		  o Property protection
		  o Supplies
		  o Welfare checks
		  o Staff updates/changes
		  o Incident update
		  o Commander's update brief
		• An emergency situation involving the protection of life, property, and/or the preservation of peace.
		• A recipient to receive the message.
		• A message to transmit received from
		  o A runner
		  o Email
		  o Text message
		  o Handwritten
		Resources:
		• Internet access
		• Laptop with Fldigi installed and configured to WSG EmComm team standards
		• Speakers
		• Microphone
		• Handheld radio
		• Pen and paper
		• Amateur radio license
			• Confirm recipient's readiness to receive message.
			
			• Uses appropriate message priority
			  o 1st – Human Life
			  o 2nd – Critical infrastructure
			  o 3rd – Property
			  o 4th – Animals
			  o 5th – Supplies
			  o 6th – Welfare checks
			  o 7th – Status reports
			
			• Within 4 minutes of message receipt.
			
			• With no more than 2 errors in the message.
			
			• In compliance with Title 47 – Part 97 regulations set forth by the Federal Communications Commission.
			  o Utilizing call sign at the end of every transmission (and every subsequent 10 minutes).
			  o Message transmitted in English
			
			• In accordance to the Federal Emergency Management Agency (FEMA) Incident Command System (ICS) message format standards, utilizes correct preformatted message.
			  o Status report – 203
			  o Communications plan – 205
			  o Assignment – 205a
			  o Medical plan – 206
			  o Basic message – 213

#	Performance (include TA #)	Conditions on the job	Criteria on the job
			o Communication log - 309

2	WSG EmComm team members will apply troubleshooting techniques (4)	Given:
		• An attempt to transmit a message has been made regarding:
		  o Human safety
		  o Property protection
		  o Supplies
		  o Welfare checks
		  o Staff updates/changes
		  o Incident update
		  o Commander's update brief
		• A recipient to receive the message.
		• 3 minutes and there is no acknowledgement of receipt of message transmission.
		• An emergency situation involving the protection of life, property, and/or the preservation of peace.
		
		Resources:
		• Internet access
		• Laptop with Fldigi installed and configured to WSG EmComm team standards
		• Speakers
		• Microphone
		• Handheld radio
		• Pen and paper
		• Amateur radio license
		• Cell phone
			• Confirmation that acknowledgment has not been received.
			• Alternate retransmission method used until receipt of transmission acknowledged.
			• Digital message will be retransmitted within 6 minutes of not receiving acknowledgement.
			  o Standard Fldigi configurations
			  o Alternative communication channel within Fldigi
			  o Alternate operating mode within Fldigi
			  o Voice through handheld radio
			  o Text message
			  o Phone call
			  o Antennae adjusted for optimal propagation and retransmission through Fldigi standard configuration
			• Message retransmitted in original form.
			• With no more than 2 errors in the message.
			• In compliance with Title 47 – Part 97 regulations set forth by the Federal Communications Commission.
			  o Utilizing call sign at the end of every transmission (and every subsequent 10 minutes).
			  o Message transmitted in English

Type of performance assessment and rationale

Type of assessment	Rationale
☒Product assessment ☒Process assessment	Both types of assessments will be used for this project. By utilizing a product assessment, the evaluator will properly compare the finished product (the transmitted message) for accuracy in comparison with the original message, as well as whether FCC and ICS standards were met. Due to the activity of speed and troubleshooting activities, that aren't visible in the product, a secondary need for a process assessment would be used to capture these aspects of the performance. Therefore, a combination assessment will be utilized to cover all aspects of the objectives.

Assessment instrument

Instructor's Directions:

Setup:

- Roles: Learner, Evaluator, Runner, and Recipient (1 person for each role)
- Materials:
  - Stopwatches – 1 per learner
  - Internet access
  - Laptops with Fldigi installed and configured to WSG EmComm team standards
  - Speakers
  - Microphones
  - Handheld radios
  - Pens and paper
  - Amateur radio licenses
  - Cell phones
  - Email
  - Standard Fldigi configuration checklist
  - 5 messages from the assessment toolbox.
    - The toolbox will contain four parts:
      - 1 – The message that is given the learner
      - 2 – Instructions for the runner – how to provide the message to the learner (text, verbal, oral, email)
      - 3 – Instructions for the receiving party – whether they will respond immediately or not.
      - 4 – Answer key – the correct message, priority level, correct pre-formatted message (ICS form number)
- Collect the email addresses and cell phone numbers from the learners.
- Receiving Location: Position a recipient in a separate location to receive and confirm messages.
  - Field instructor will verify prior to starting the assessment that they can send and receive transmissions with the recipient using standardized setup configurations in Fldigi.

- Transmitting Location: The learner will setup their gear prior to starting the assessment.
- Utilize a stopwatch to measure the speed criteria.
    - To verify the following requirements:
        - Initial transmission occurring within 4 minutes of receipt
        - Repeat transmission within 6 minutes if confirmation is not received.
- Stopwatch will also be used to determine when the runner will provide messages.

Administer:

- Provide the 5 messages to the learner in the following sequence:
    - 00:00:00 1st message
    - 00:01:00 2nd and 3rd messages
    - 00:12:00 4th message
    - 00:13:30 5th message
- Make sure to overlap enough that they need to prioritize which to send first.
- As part of the scenario, the receiving party will not respond to one of the messages.
- As the learner proceeds with sending the messages, evaluate for the following criteria.

Objective	Did the learner:	Mark the box, if criterion is met					Comments
		Messages					
		1	2	3	4	5	
1	Confirm readiness of recipient prior to sending message?	☐	☐	☐	☐	☐	
1	Prioritize the messages, sending the highest priority first?	☐	☐	☐	☐	☐	
1	Transmit the message using Fldigi within 4 minutes of receipt?	☐	☐	☐	☐	☐	
1	Were there no more than 2 errors in each message transmitted?	☐	☐	☐	☐	☐	
1 & 2	Use call signs at the end of message?	☐	☐	☐	☐	☐	
1 & 2	Transmit all messages in English?	☐	☐	☐	☐	☐	
1	Was the correct pre-formatted message used for the type of message being sent?	☐	☐	☐	☐	☐	
2	Resend the message within 6 minutes if they did not receive receipt (either by Fldigi or alternative communication channels) after the first message was sent?			☐			

2	Utilize alternative forms of communication when Fldigi was not received a second time?	☐	
	Total number of boxes checked (Initial Competency Pass criteria: ≥ 25)		

Mastery level:
- Learners will perform the criteria with 100% accuracy for all 5 messages and transmit the messages in less than 2 minutes with zero errors.

Remediation:

- Learners that are not able to meet the criteria, will be required to participate in the weekly Nets for the next month, and repeat the assessment at the next drill weekend. This will allow for more practice with feedback from the instructors.

Learner's Directions:

- Review the criteria listed in the assessment table above, this will be what your instructor will be looking for in your performance.

- Ask any questions you might have about the assessment, prior to starting.

- Scenario provided: You were just deployed due to an earthquake in the Pacific, and there is a high likelihood of a tsunami hitting the west coast of Washington in the next hour. You will need to set up your gear per the required WSG EmComm requirements and be prepared to transmit messages as needed.
  - o Preparation:
    - Receive instruction from the test administrator regarding where you will be assigned for your field testing location.
    - Setup Fldigi per WSG EmComm standard configurations.
    - Gather all required materials you will need for being out in the field.
      - Wi-Fi Hot Spot for Internet access
      - Laptop with Fldigi installed and configured to WSG EmComm team standards
      - Speakers
      - Microphone
      - Handheld radio
      - Pen and paper
      - Amateur radio license
      - Cell phone
      - Email open

Assessment Toolbox

Pool of messages

a. Three casualties found at camp ground number 9 at Cama Beach State Park, 1880 SW Camano Dr, Camano Island. Send medical personal.

b. 3 children and 1 adults are missing from the Small Talk Child Care & Preschool 950 SW Upland Ct, Oak Harbor. Please dispatch Search and Rescue unit to this area for immediate deployment. The names of the children are Blake Ronsom, Robbie Eichenberger, and Abeline Burke. The missing adult is Deloris Maven.

c. South Whidbey High School rooves have collapsed and teachers and students are stuck inside. Casualty count unknown at this time. Mobilize National Guard and Search and Rescue teams. Address: 5675 Maxwelton Rd, Langley, WA 98260, and GPS coordinates: N 48.00462° W 122.40995°

d. A section of Interstate 5 has washed away between mile markers 198 and 200. Mobilize the state patrol and the Everett and Marysville police department.

e. Water and wastewater systems have been critically damaged in Island and King county. Immediate mobilization of the Environmental Protection Agency and the National Guard requested to the rendezvous spot of the Island County EOC located at 855 East Whidbey Ave. Oak Harbor, WA 98277

f. The Everett Naval station has been hit by the tsunami and has been badly damaged. Alert the Department of Homeland Security and deploy the National Guard to the corner of Nimitz Ave. and Fletcher Way.

g. Heavy damage has been reported at the Oak Harbor Marina located at 1401 SE Catalina Dr, Oak Harbor, WA 98277. Alert media for public information distribution.

h. The following neighborhoods have reported extensive property damage and request mobilization of clean up team and hazmat:

> Crestview
>
> Silverfirs
>
> Mountain View
>
> Upper Ridge
>
> Crescent Court

i. Best Western in Oak Harbor reporting structural issues and requests deployment of survey crew. Location 33175 State Route 20, Oak Harbor, Whidbey Island, WA 98277-8713

j. 4 Horses, last spotted running along what is left of Main Street in Coupville. Request the mobilization and services of Animal Control to round up and transport horses to the large pet emergency shelter located at the Green Bank Farm located 765 Wonn Rd, Greenbank, WA 98253.

k. An emergency pet sheltering facility at the Green Bank Farm located at 765 Wonn Rd, Greenbank, WA 98253 has been set up. They will be accepting the following domestic pets:

> Dogs
>
> Cats

Birds

Horses

Goats

Pigs

Sheep

Cows

Llamas

Alpacas

l. Request rescue of a stranded cat that cannot come out of a tree. Location is the corner of Main street and Howell in Langley.

m. Please send 2,000 meals-ready-to-eat (MREs) and 2,000 bottles of water to the Broadview Emergency Shelter, 1501 N 45th St, Seattle · (206) 694-6700

n. The Island County emergency shelter located at 855 East Whidbey Ave. Oak Harbor, WA 98277 is at capacity and needs the following supplies:

Toothbrushes and toothpaste

Toilet paper

Hair brushes

Men's, women's, children and infant clothing

Blankets

Pillows

Clorox wipes

Towels

Soap

Toiletries

o. Harbor View Medical Center in Seattle – located at 325 9th Ave, Seattle, WA 98104 is in immediate need of the following supplies:

Blood

Beds

Pillows

Sheets

IV supplies

Generators

Meals-ready-to-eat

Bleach

p. The tsunami has reached land, please mobilize the Island County Red Cross to check on the residents living on the coast line of Whidbey and Camano Island. Instruct the Red Cross to report findings to Whidbey and Camano Island EOCs.

q. Please mobilize the Island County Red Cross to check on the residents of the Regency on Whidbey Retirement & Assisted Living located at 1040 SW Kimball Dr, Oak Harbor, WA 98277. The director's name is Alicia Rubin.

r. Please mobilize the Washington State Guard for a welfare check on the homeless population in Pioneer Square. Guidance will be to evacuate to the Seattle EOC.

s. At 8:55 am this morning, there was an 8.8 magnitude earthquake centered at the Devil's Mountain fault, 50 miles off the coast of in the Whidbey Island. Please stand by on Fldigi for the evaluation and escalation to a tsunami warning.

t. At 10:17 am the PTWC has issued an official tsunami warning. Please grab your go-kit (laptop, cell phone, amateur radio, speakers, pen and paper, back-up batteries, head lamp, protein bars, microphone, driver's license, and amateur radio license) and assemble at the Camp Murray EOC as soon as possible. Radio operations will commence with the sound of the state warning sirens at 1:00 pm. Assignments will be given at the EOC. If you have a mobile hot spot, please bring this with you.

u. 11:23am 6 members of the WSG EmComm team have assembled at the Camp Murray EOC. The field assignments are as follows:

> Chief Goo: Camp Murray EOC activating nets on the BIWARN around the state VHF/UHF repeater system and the emergency VHF repeater atop the summit of Tiger Mountain,
>
> Doyle Burke: State Civil Defense EOC in Seattle to operate nets on the State RACES VHF repeater network and 7088 kHz HF
>
> Stan Gates: Department of Emergency Management EOC in Langley
>
> Bob Waters: WA State EOC in Seattle
>
> Jerry Barker: EOC in Coupville operating the HealthComm net for hospitals on VHF and UHF
>
> Brent Robins: Oak Harbor EOC

Runner Instructions
1. Print out messages and modes of receipt
2. Cut the messages and modes of receipt out so there is one per strip of paper
3. Place messages in a container
4. Place modes of receipt in a container
5. Draw a message
6. Draw a mode of receipt
7. Deliver the message for transmission to the learner in the indicated mode of receipt
   a. Cell phone call
       i. Call the learner and relay the message to them via phone call
   b. Text message
       i. With your cell phone, send a text message to the learner with the message for transmission
   c. Email

> i. From your email account, send the learner an email with the message for transmission
>
> d. Runner
>
> > i. Physically approach the learner with a verbal or handwritten message for transmission

Receiving Party Instructions

You will be positioned at the Camp Murray EOC communications room.

1. Setup laptop with Fldigi configured to WSG EmComm standards.
2. Open Fldigi
3. Be prepared for the receipt of digital message transmissions – 5 messages per learner will be transmitted to you
4. Provide receipt of transmission confirmation to the learner for 4 out of 5 messages.
5. Choose one transmission that you do not respond to. The learner will go through troubleshooting techniques and resend the message. When the message is resent, provide receipt of transmission confirmation to the learner.

Answer Key

a. Three casualties found at camp ground number 9 at Cama Beach State Park, 1880 SW Camano Dr, Camano Island. Send medical personal.

   Message Priority 1: Human Life
   Form: Basic Message - 213

b. 3 children and 1 adults are missing from the Small Talk Child Care & Preschool 950 SW Upland Ct, Oak Harbor. Please dispatch Search and Rescue unit to this area for immediate deployment. The names of the children are Blake Ronsom, Robbie Eichenberger, and Abeline Burke. The missing adult is Deloris Maven.

   Message Priority 1: Human Life
   Form: Medical Plan - 206

c. South Whidbey High School rooves have collapsed and teachers and students are stuck inside. Casualty count unknown at this time. Mobilize National Guard and Search and Rescue teams. Address: 5675 Maxwelton Rd, Langley, WA 98260, and GPS coordinates: N 48.00462° W 122.40995°

   Message Priority 1: Human Life
   Form: Medical Plan - 206

d. A section of interstate 5 has washed away between mile markers 198 and 200. Mobilize the state patrol and the Everett and Marysville police department.

   Message Priority 2: Critical Infrastructure
   Form: Basic Message - 213

e. Water and wastewater systems have been critically damaged in Island and King county. Immediate mobilization of the Environmental Protection Agency and the National Guard requested to the rendezvous spot of the Island County EOC located at 855 East Whidbey Ave. Oak Harbor, WA 98277

Message Priority 2: Critical Infrastructure
Form: Basic Message – 213

f. The Everett Naval station has been hit by the tsunami and has been badly damaged. Alert the Department of Homeland Security and deploy the National Guard to the corner of Nimitz Ave. and Fletcher Way.

Message Priority 2: Critical Infrastructure
Form: Basic Message - 213

g. Heavy damage has been reported at the Oak Harbor Marina located at 1401 SE Catalina Dr, Oak Harbor, WA 98277. Alert media for public information distribution.

Message Priority 3: Property
Form: Basic Message - 213

h. The following neighborhoods have reported extensive property damage and request mobilization of clean up team and hazmat:

Crestview

Silverfirs

Mountain View

Upper Ridge

Crescent Court

Message Priority 3: Property
Form: Basic Message - 213

i. Best Western in Oak Harbor reporting structural issues and requests deployment of survey crew. Location 33175 State Route 20, Oak Harbor, Whidbey Island, WA 98277-8713

Message Priority 3: Property
Form: Basic Message – 213

j. 4 Horses, last spotted running along what is left of Main Street in Coupville. Request the mobilization and services of Animal Control to round up and transport horses to the large pet emergency shelter located at the Green Bank Farm located 765 Wonn Rd, Greenbank, WA 98253.

Message Priority 4: Animals
Form: Basic Message – 213

k. An emergency pet sheltering facility at the Green Bank Farm located at 765 Wonn Rd, Greenbank, WA 98253 has been set up. They will be accepting the following domestic pets:

Dogs

Cats

Birds

Horses

Goats

Pigs

Sheep

Cows

Llamas

Alpacas

Message Priority 4: Animals
Form: Basic Message – 213

l. Request rescue of a stranded cat that cannot come out of a tree. Location is the corner of Main street and Howell in Langley.

Message Priority 4: Animals
Form: Basic Message – 213

m. Please send 2,000 meals-ready-to-eat (MREs) and 2,000 bottles of water to the Broadview Emergency Shelter, 1501 N 45th St, Seattle · (206) 694-6700

Message Priority 5: Supplies
Form: Basic Message – 213

n. The Island County emergency shelter located at 855 East Whidbey Ave.Oak Harbor, WA 98277 is at capacity and needs the following supplies:

Toothbrushes and toothpaste

Toilet paper

Hair brushes

Men's, women's, children and infant clothing

Blankets

Pillows

Clorox wipes

Towels

Soap

Message Priority 5: Supplies
Form: Basic Message – 213

o. Harbor View Medical Center in Seattle – located at 325 9th Ave, Seattle, WA 98104 is in immediate need of the following supplies:

Blood

> Beds
>
> Pillows
>
> Sheets
>
> IV supplies
>
> Generators
>
> Meals-ready-to-eat
>
> Bleach

Message Priority 5: Supplies
Form: Basic Message – 213

p. The tsunami has reached land, please mobilize the Island County Red Cross to check on the residents living on the coast line of Whidbey and Camano Island. Instruct the Red Cross to report findings to Whidbey and Camano Island EOCs.

Message Priority 6: Welfare Check
Form: Basic Message – 213

q. Please mobilize the Island County Red Cross to check on the residents of the Regency on Whidbey Retirement & Assisted Living located at 1040 SW Kimball Dr, Oak Harbor, WA 98277. The director's name is Alicia Rubin.

Message Priority 6: Welfare Check
Form: Basic Message – 213

r. Please mobilize the Washington State Guard for a welfare check on the homeless population in Pioneer Square. Guidance will be to evacuate to the Seattle EOC.

Message Priority 6: Welfare Check
Form: Basic Message – 213

s. At 8:55 am this morning, there was an 8.8 magnitude earthquake centered at the Devil's Mountain fault, 50 miles off the coast of in the Whidbey Island. Please stand by on Fldigi for the evaluation and escalation to a tsunami warning.

Message Priority 7: Status Report
Form: Status Report - 203

t. At 10:17 am the PTWC has issued an official tsunami warning. Please grab your go-kit (laptop, cell phone, amateur radio, speakers, pen and paper, back-up batteries, head lamp, protein bars, microphone, driver's license, and amateur radio license) and assemble at the Camp Murray EOC as soon as possible. Radio operations will commence with the sound of the state warning sirens at 1:00 pm. Assignments will be given at the EOC. If you have a mobile hot spot, please bring this with you.

Message Priority 7: Status Report
Form: Assignment – 205a

u. 11:23am 6 members of the WSG EmComm team have assembled at the Camp Murray EOC. The field assignments are as follows:

Chief Goo: Camp Murray EOC activating nets on the BIWARN around the state VHF/UHF repeater system and the emergency VHF repeater atop the summit of Tiger Mountain,

Doyle Burke: State Civil Defense EOC in Seattle to operate nets on the State RACES VHF repeater network and 7088 kHz HF

Stan Gates: Department of Emergency Management EOC in Langley

Bob Waters: WA State EOC in Seattle

Jerry Barker: EOC in Coupville operating the HealthComm net for hospitals on VHF and UHF

Brent Robins: Oak Harbor EOC

Message Priority 7: Status Report
Form: Assignment – 205a

Instructional Plan Worksheet

A. Overall length of the training program

How long (in minutes) is the entire training program?	140 minutes
How many units will you include in the training program?	1 unit

B. Elements of the training program

Introduction to the training program

Prerequisite: Learners will have Fldigi installed and configured per WSG EmComm standards.

How much time (in minutes) will be allocated to the introduction?	5 minutes

Write a brief (2-3 sentences) description of the introduction	Class will begin with:
	  A. Greetings from training staff and review of trainer background
	  B. Overall class intent and objectives of course
	  C. WSG EmComm team member introduction
	  D. Agenda distribution

Transmission, receiving, and troubleshooting of digital communications during emergency situations.

#	Performance (include TA #)	Conditions on the job	Criteria on the job

1	WSG EmComm team members will transmit digital messages (3)	Given:
		• A message to transmit
		   o Human safety
		   o Property protection
		   o Supplies
		   o Welfare checks
		   o Staff updates/changes
		   o Incident update
		   o Commander's update brief
		• An emergency situation involving the protection of life, property, and/or the preservation of peace.
		• A recipient to receive the message.
		• A message to transmit received from
		   o A runner
		   o Email
		   o Text message
		   o Handwritten
			• Confirms recipient's readiness to receive message.
			
			• Uses appropriate message priority
			   o 1st – Human life
			   o 2nd – Critical infrastructure
			   o 3rd – Property
			   o 4th – Animals
			   o 5th – Supplies
			   o 6th – Welfare checks
			   o 7th – Status reports
			
			• Within 4 minutes of message receipt.
			
			• With no more than 2 errors in the message.
			
			• In compliance with Title 47 – Part 97 regulations set forth by the Federal Communications Commission.
			
			   o Utilizing call sign at the end of every transmission (and every subsequent 10 minutes)
			
			   o Message transmitted in English
			
			• In accordance to the Federal Emergency Management Agency FEMA Incident Command System (ICS) message format standards, utilizes correct preformatted message.
			   o An update - 203
			   o Communications plan – 205
			   o Assignment – 205a
			   o Medical plan – 206
			   o Basic message – 213
			   o Communication log - 309

#	Performance (include TA #)	Conditions on the job	Criteria on the job
		Resources: • Internet access • Laptop with Fldigi installed and configured to WSG EmComm team standards • Speakers • Microphone • Handheld radio • Pen and paper • Amateur radio license	

2	WSG EmComm team members will troubleshoot emergency message transmissions (4).	Given:
		• An attempt to transmit a message has been made.
		    o Human safety
		    o Property protection
		    o Supplies
		    o Welfare checks
		    o Staff updates/changes
		    o Incident update
		    o Commander's update brief
		• A recipient to receive the message.
		• 3 minutes and there is no acknowledgement of receipt of message transmission.
		• An emergency situation involving the protection of life, property, and/or the preservation of peace.
		
		Resources:
		• Internet access
		• Laptop with Fldigi installed and configured to WSG EmComm team standards
		• Speakers
		• Microphone
		• Handheld radio
		• Pen and paper
		• Amateur radio license
		• Cell phone
			• Confirmation that acknowledgement has not been received.
			• Alternate retransmission method used until receipt of transmission acknowledged.
			• Message retransmitted and acknowledgement of receipt within 6 minutes.
			    o Standard Fldigi configuration
			    o Alternate communication channel within Fldigi
			    o Alternate operating mode within Fldigi
			    o Voice through handheld radio
			    o Text message
			    o Phone call
			    o Antennae adjusted for optimal propagation and retransmission through Fldigi standard configuration
			• Message retransmitted in original form.
			• With no more than 2 errors in the message.
			• In compliance with Title 47 – Part 97 regulations set forth by the Federal Communications Commission.
			    o Utilizing call sign at the end of transmission (and every subsequent 10 minutes)
			    o Message transmitted in English

Phase	How much time (in minutes) will be allocated to each phase?	Write a brief (2-3 sentences) description of each phase. Provide enough detail to show that each phase meets Merrill's relevant corollaries.
Activation	10 minutes	**Previous Experience** The instructor will draw on the learners' previous experiences regarding standards of amateur radio communications by asking the learners if they have ever gotten a voice message transmission that was incorrect or didn't make sense and what they did when they did not receive receipt of confirmation of their transmission. **Structure** An advanced organizer is shown here that visually depicts the difference between voice and digital communications. It shows why digital is so much faster and more accurate than voice and why this is valued in emergency situations. **New Experience** The organizer also shows how using voice and non-digital options are part of the troubleshooting process.
Demonstration	20 minutes	The instructor will start the demonstration by showing how to successfully transmit a digital message without any issues. The instructor will then demonstrate a message transmission where there is no receipt of confirmation and show the troubleshooting techniques used to ensure the message was received. Informing the learners that when out in the field, they will frequently encounter issues that they will need to troubleshoot, the demonstration will continue with message transmissions using different priorities and forms along with issues that learners will encounter needing troubleshooting. The scene will be set with the instructor describing an emergency scenario of a terrorist attack on the Washington State Ferry system wherein several ferries were targeted as well as the Department of Transportation building in Seattle. A SME will be setup in an adjacent room and will act as the receiver of messages and will send confirmations of receipt of transmission. The SME will also act as the runner and will present messages to the instructor in various modes of communication. • Demo 1: The runner gives the instructor a verbal message regarding critical infrastructure that needs to be transmitted to the Camp Murray EOC. The instructor writes down the message on a notepad and double checks the message with the runner to ensure that the message has been accurately captured. The instructor then uses the handout to determine the priority and message form, explaining his decisions as he goes. The instructor also mentions that the handout is for

Phase	How much time (in minutes) will be allocated to each phase?	Write a brief (2-3 sentences) description of each phase. Provide enough detail to show that each phase meets Merrill's relevant corollaries.
		instructional purposes only. In emergency situations, EmComm team members will need to digitally transmit and troubleshoot messages unassisted. The message given is regarding critical infrastructure, priority 2, basic message form 213 (see bullet below for actual message). The instructor also notes the difference between critical infrastructure and property and that they require different message priorities. The instructor then types the message into the correct message form and demonstrates where he will place his call sign and explains how this complies with the FCC regulation. The message is double checked against the written message for accuracy and then transmitted. The instructor points out that speed is critical in emergency situations as people rely on message transmission to know what actions to take or for status updates. The instructor waits for confirmation of transmission and once this is received, the demonstration is complete. o The Seattle and Bainbridge Island ferry docks have been bombed and are inoperable. Request National Guard to both locations. • Demo 2: Instructor will focus on the critical aspect of sending a message with speed and accuracy while also troubleshooting. A runner will give the instructor a written status report that needs to be transmitted to National Guard leadership. The instructor will read the message aloud to the class and will remind learners to use the handout during the practices but that again, they will not be able to use it while deployed. The given message has a 7th priority status and the message form used is the Assignment – 205a form. The instructor will point out the complex step of choosing the message form and that though the runner indicated this is a status report, after reading through the message you can see that the message contains the assignment of where and what team members will be operating. The instructor will then transmit the message through Fldigi and while typing the message into the send field. The instructor will double check the typed message in the transmit box of Fldigi with what was given in the written message, and do this before transmitting the message. After the double-check, the instructor will then show how using your call sign with the message complies with the FCC regulations. The instructor will demonstrate exactly where in the message the call sign in used. Once the message has been transmitted, the instructor will wait for receipt of transmission. The message is transmitted, but, there is no receipt of transmission. The instructor then shows how the troubleshooting checklist is used for the practice exercises and what steps to take when your message does not go through. The instructor informs the learners that the checklist will not be used during the assessment and that it cannot be

Phase	How much time (in minutes) will be allocated to each phase?	Write a brief (2-3 sentences) description of each phase. Provide enough detail to show that each phase meets Merrill's relevant corollaries.

		used while deployed. The instructor first checks on the settings in Fldigi to ensure they are the WSG EmComm standard configuration. Showing that these are correct, the instructor then demonstrates that within the standard configurations, there is also an agreed upon alternate channel or mode that can be used. The instructor will change the channel in Fldigi and retransmit the message and transmission of receipt will be received. The instructor will point out the importance of speed when you don't receive confirmation of receipt, the need to troubleshoot and the target time of getting a message of receipt within 6 minutes. The demonstration is then complete.
		Another learner will verify the received message to the original message the runner presented, to ensure accuracy.
		    o Message for transmission: 1:12 pm 3 members of the WSG EmComm team have assembled at the Camp Murray EOC. The field assignments are as follows:
		        Chief Whitaker: Camp Murray EOC activating nets on the BIWARN around the state VHF/UHF repeater system and the emergency VHF repeater atop the summit of Mount Rainier.
		        Adam Spingola: State Civil Defense EOC in Seattle to operate nets on the State RACES VHF repeater network and 7088 kHz HF.
		        Jeff Robbins: Department of Emergency Management EOC in Seattle.2
		
		The instructor asks the learners to compare demo 1 and 2. After a comparison is made, the instructor then asks what made demo 2 more complex, prompting the learners if needed to recognize that the message was more complex and that troubleshooting makes the entire process harder.
		
		• Demo 3: Focusing on speed and accuracy, the instructor will have a learner time this demonstration with a stopwatch. The runner texts a message to the instructor's cell phone that needs to be transmitted to the Camp Murray EOC. The instructor reads the message aloud to the class and then talks through the choice made for message priority and message form. This message is regarding human life and is message priority 1 and the message form is medical plan – 206. The instructor types the message into the message form and demonstrates the usage of the call sign in the message. A double check of accuracy is done, and an attempt to transmit the message is made. The instructor asks the learner to stop the stopwatch to check for speed in the

Phase	How much time (in minutes) will be allocated to each phase?	Write a brief (2-3 sentences) description of each phase. Provide enough detail to show that each phase meets Merrill's relevant corollaries.
		attempted message transmission. The instructor reminds the learners that the target for transmitting messages is four minutes. The learner with the stopwatch is then instructed to start the stopwatch over and the class is informed that there is no receipt of transmission. The instructor then demonstrates using the troubleshooting checklist for methods that are outside of Fldigi. The instructor reminds learners that the checklist will be used for practice purposes only and that during a deployment, there is not time to use handouts. The instructor first uses their handheld radio to send a message via voice to check with the receiving party that they received the message and does not receive confirmation of receipt. Next, the instructor demonstrates using their cell phone to send a text message to the receiving party asking if their digital message was received, and again, no confirmation is received. The instructor then makes a cell phone call to the receiving party to ask for receipt of transmission and again, no response. The instructor then shows that the last troubleshooting step is to manually adjust the antennae to ensure there is optimal propagation and starts the process over by resending the message through Fldigi. Once the message is resent, the runner responds through Fldigi that the message was received. The stopwatch is stopped and the instructor impresses on the learners that the troubleshooting steps should be followed in this sequence. If there is no receipt of transmission after the antennae has been adjusted and the message is resent through Fldigi, the runner then needs to be notified that their message was not received. The instructor also states the target time of getting a receipt of transmission within 6 minutes. Message to transmit: 1 child and 3 adults have found injured. Please dispatch Medical to the Seattle ferry terminal. The name of the child is Maddie Johnson, and the adults are Bill Angle, Stephanie Andvik, and Jillian Wakefield. They are located on the north-west corner of the building. The instructor asks learners to compare the three demonstrations.
Application	95 minutes	a. Number of practices: 4 b. Number of assessments: 1 c. **Descriptions** **Setting:** Camp Murray in Tacoma, WA, on the north side of the field located on Militia Dr.

Phase	How much time (in minutes) will be allocated to each phase?	Write a brief (2-3 sentences) description of each phase. Provide enough detail to show that each phase meets Merrill's relevant corollaries.
		Scenario: (5 minutes) The practices will take place in a setting that is designed to simulate an actual disaster that the WSG EmComm team will be deployed in. To match the conditions encountered on-the-job, WSG EmComm team members will be working independently. Coaching will be given on a 1:1 basis with assistance given by qualified job incumbents that have previously passed the Fldigi training. This scenario is based on a 7.0 magnitude earthquake centered in King County with several casualties and damage to major roads and critical infrastructure. Before setting up in the field, the WSG EmComm team members view PowerPoint slides of a similar 7.0 magnitude earthquake and see the destruction that is caused. After the slides, the simulation starts, and the team members are sent to their field location.
		Practice 1: (10 minutes) A runner from the Camp Murray Emergency Operation Center (EOC) approaches the WSG EmComm team members with a verbal message that a section of I-5 has been destroyed and police are needed to direct traffic.
		WSG EmComm team member will capture the message and the instructor will remind them of the priority and message form handout, state the message priority and the proper message form for this scenario. They will also give a reminder about the target of transmitting a message within 4 minutes and with no more than 2 errors. Message will be checked for accuracy, use of call sign, correct message priority given, and that the correct form was used before it is transmitted. The WSG EmComm team member will receive confirmation that their transmission was received. Feedback on time of transmission will be given. Delayed feedback will be given after the message has been transmitted.
		Practice 2: (12 minutes) The WSG EmComm team members receives an email that needs transmission to another EOC regarding the loss of human life and emergency personnel is needed at the Tacoma Dome. The message to transmit includes the first and last names of the deceased, an address, and a point of contact. A second message, at the same time is hand delivered by the runner and given to the learner to transmit. The message is regarding required supplies needing to be transported to the Tacoma Dome. Handout is present if learners need it, and the instructor is available for coaching as necessary. WSG EmComm team members will choose the message priority, and transmit the message with the highest priority, using their call sign. Goal time for the message transmission attempt is

Phase	How much time (in minutes) will be allocated to each phase?	Write a brief (2-3 sentences) description of each phase. Provide enough detail to show that each phase meets Merrill's relevant corollaries.
		decreased by 3 more minutes (with 4 minutes being the goal). This time, there is no confirmation of transmission, and the learner must go through the troubleshooting checklist to try to have their message received. Instructor will remind learners that they need to work through the methods within Fldigi before trying methods outside of Fldigi. The leaner will check the standard configuration of Fldigi to make sure everything is set to WSG EmComm standards, and then will switch to the alternate communication channel. Confirmation of transmission will be given once the message has been transmitted through the alternate channel. Delayed feedback is given after confirmation of transmission is received.
		Practice 3: (15 minutes) A text message from the Camp Murray EOC is sent to the WSG EmComm team member's cell phone and is a request to send a status update to the EmComm leadership regarding WSG EmComm team assignment. Further increasing the complexity, the message will include frequencies and modes that different team members are manning, first and last names and names of points of contact at the field locations. Confirmation of message receipt is not given, and team members use the troubleshooting checklist to work through the methods to retransmit their message. Receipt of transmission will be sent to the team members when they have used voice to transmit their message. Handout is taken away for the message priorities and forms and there is no coaching or chunking regarding the initial message. The troubleshooting checklist is present for the troubleshooting steps. Time is decreased to the target of 4 minutes for initial message transmission and 8 minutes is given for the troubleshooting. Delayed feedback is given after the message has been retransmitted regarding speed and accuracy and use of the troubleshooting techniques.
		Practice 4: (20 minutes) A runner approaches the WSG EmComm team member with a verbal message that there are suspected aftershocks centered in Wallingford and Fremont areas of Seattle and a public service announcement needs to be made to ensure residents are prepared. A second message is also texted to the team member regarding a list of supplies that are needed at a drop off at a local high school football field. The team member will capture the messages, choose the message priorities. The message with the highest priority will be transmitted. The learners will choose the corresponding message form for this message and will transmit. No receipt of transmission will be given, and the team member will troubleshoot without the use of a checklist. Receipt of transmission will

Phase	How much time (in minutes) will be allocated to each phase?	Write a brief (2-3 sentences) description of each phase. Provide enough detail to show that each phase meets Merrill's relevant corollaries.
		be given once all the troubleshooting steps have been gone through (checked the Fldigi configuration, used an alternate communication channel and mode within Fldigi, used their handheld radio for a voice confirmation, sent a text message with their cell phone, called the recipient on their cell phone) and the team member has adjusted their antennae and retransmitted the message through Fldigi. No coaching is given for the initial message transmission and time for the initial message transmission is set at the target of 4 minutes and 6 minutes for the troubleshooting and receipt of transmission. Delayed feedback is given regarding use of the troubleshooting techniques.

Assessment: (30 minutes)
The assessment will be a combination of objectives 1 and 2. The learners will be setup in a field location and will be given 5 different messages to transmit. The messages will be real life scenarios that are based on the message types in the conditions. One of the five messages will have no acknowledgement of receipt (non-receipt of the message will be determined at random by the runner drawing from a pool of the different troubleshooting techniques and this will determine when confirmation of receipt will be sent back to the learner), and the learners will have to use the troubleshooting techniques to transmit their message and gain receipt of transmission. The learners will be assessed on speed, accuracy and whether or not they were successfully able to troubleshoot the failed message transmission.

Practice Consistency:
The practices and assessment are designed so that they are both consistent with the objectives and with how the WSG EmComm team members will be performing on the job. Practice 1 ensures a simple message transmission and practices 2-4 encompass the entire task of message transmission with troubleshooting.

Diminishing Coaching:
Per the coaching table, during practice one the instructor proactive in giving feedback, detecting errors, pointing out what is difficult critical and complex and reminding learners to use the handout and checklist. Practice two, the instructor is still proactive in their coaching, but reminders are withdrawn for the handout and checklist, messages are checked for accuracy, but error detection has diminished. Practice three is similar to practice two but coaching is as requested. Practice four,

Phase	How much time (in minutes) will be allocated to each phase?	Write a brief (2-3 sentences) description of each phase. Provide enough detail to show that each phase meets Merrill's relevant corollaries.
		the coaching is as requested by the learners. And, practice five is a mirror of the assessment and the only coaching is delayed feedback after the practice takes place. Varied Problems: To give learners practice at the breadth of the problems they will encounter, each practice has a different way of receiving the message from the runner, the priorities and message forms are different and the problems they encounter to troubleshoot have different solutions. The collection of practice exercises and assessment should provide sufficient experience for radio operators to transfer this newly learned skill to the emergency situations.

Diminishing Coaching Table

Strategy	Practice Exercise 1	Practice Exercise 2	Practice Exercise 3	Practice Exercise 4	Assessment
Reminder to use handout and checklist	Instructor provides a reminder to use the handout before practice begins. The handout will list out the message priorities and the communication form associated with message type, and the checklist will provide the steps and explanation of the troubleshooting techniques to use when confirmation of transmission is note received.	Handout and troubleshooting checklist is present if needed.	Handout and troubleshooting checklist is present if needed.	Handout and troubleshooting checklist are taken away.	N/A
Reminder of what is critical, difficult, or complex	Instructor provides a reminder of how to react during stressful situation and that transmitting messages with speed is critical, but, they must be precise. WSG EmComm team members are reminded of the goal of transmitting	Instructor provides a reminder that to be precise in message transmission, they need to slow down and not be reactive. Instructor provides a reminder to use the troubleshooting techniques within Fldigi first before trying other methods	As requested or needed.	N/A	N/A

Strategy	Practice Exercise 1	Practice Exercise 2	Practice Exercise 3	Practice Exercise 4	Assessment
	messages within 4 minutes with less than two errors.	and that the target goal of receiving confirmation of receipt of transmission is 6 minutes.			
Chunking	Instructor provides immediate feedback after each discrete step comprising the process - Verbal messages are to be written down and confirmed with the runner that they have copied it accurately - This is a priority 2 message as it involves critical infrastructure - The message form is 213 – Basic message	Instructor provides feedback after the message priority and form have been chosen. - This is a priority 5 message -The message form is 213 – Basic message Instructor provides immediate feedback after each step in the troubleshooting process.	As requested or needed	N/A	N/A

Strategy	Practice Exercise 1	Practice Exercise 2	Practice Exercise 3	Practice Exercise 4	Assessment
Coaching (error detection and correction)	Instructor observes message transmission (as learners perform the task) and points out errors and offers corrections. Messages are checked for accuracy.	Instructor checks messages for accuracy. Instructor observes troubleshooting (as learner performs the tasks) and points out errors and offers corrections.	As requested or needed	N/A	N/A
Delayed feedback	Given after receipt of confirmation.	Given after receipt of confirmation.	Given after receipt of confirmation.	Given after receipt of confirmation.	Given upon completion of the assessment.

Application		**Assessment:** (30 minutes) The assessment will be a combination of objectives 1 and 2. The learners will be setup in a field location and will be given 5 different messages to transmit. The messages will be real life scenarios that are based on the message types in the conditions. One of the five messages will have no acknowledgement of receipt (non-receipt of the message will be determined at random by the runner drawing from a pool of the different troubleshooting techniques and this will determine when confirmation of receipt will be sent back to the learner) and the learners will have to use the troubleshooting techniques to transmit their message and gain receipt of transmission. The learners will be assessed on speed, accuracy and whether or not they were successfully able to troubleshoot the failed message transmission.
Integration	<u>10</u> minutes	**End of Training** Reflect: The learners will be given time to discuss with their teammates techniques and styles learned. During this time, the instructors will ask the learner why they found certain techniques or processes helpful. Create: The instructor will leave time for questions and create a parking lot if there are things that can be discussed during the Net. This integration allows the learner to recognize the fluidity of

		troubleshooting issues and techniques used to improve speed and accuracy of transmitting and receiving messages. **After Training** - Watch Me: The learners will be required to participate in the next Net meeting to demonstrate their knowledge to the team. The Net will setup a mock emergency preparedness exercise wherein learners will transmit messages of varying content and priority. Leadership will also setup scenarios where no confirmation of transmission is received, and learners will show how they are able to troubleshoot to make sure their message has been received. - Reflect and create: The instructor leads the learners through an after-action review that occurs after the mock preparedness exercise where the class reflects upon what they learned, why they learned it, and what potential obstacles they foresee in digitally communicating and how to overcome them.

Conclusion to the training program

How much time (in minutes) will be allocated to the conclusion?	<u>5</u> minutes
Write a brief (2-3 sentences) description of the conclusion	Upon conclusion of the training, the instructor will review the course objectives and the learnings from the training. The instructor will also conduct a general review of the practices for speed and accuracy and reinforce the seriousness of emergency communications and the WSG EmComm Team standards. The instructor will then talk about how learning to transmit digital messages with speed and accuracy benefits people involved in emergencies and learning this skill aligns team members with the initiative set forth by the Adjutant General. A slide will be presented that shows additional Fldigi training, amateur radio hobbyist clubs, and links to Fldigi YouTube videos. A reminder will be given to attend the weekly WSG EmComm Net community of practice.

Detailed Instructional Plan

Course Information

Performance Gap(s)	Mission Statement
What we want our new Washington State Guard Emergency Communication (WSG EmComm) team members to do is transmit digital messages within 4 minutes of message receipt and with less than 2 errors in the message when deployed in emergency situations dealing with communications regarding the protection of life, property, and the preservation of peace. What new WSG EmComm team members are doing now is using voice transmission within 5 minutes of message receipt and make 3 or more errors in message transmission in emergency situations dealing with communications regarding the protection of life, property, and the preservation of peace.	The mission of the Washington State Guard is to provide organized units that are equipped and trained in the protection of life or property and the preservation of peace, order and public safety under competent orders of State authorities.

Mode of Delivery	Rationale
☑ Instructor-led training (ILT) ☑Traditional classroom ☑ Job Aid (pre-training)	ILT: The small amount of WSG EmComm team members make instructor-led training ideal as the cost to produce and maintain a self-paced training program would be more expensive for this volunteer driven organization. The team also already meets monthly for drills and training and this would not place any undue travel hardships on the team members or the organization. The ILT will also allow the WSG EmComm team to better simulate the actual events of an emergency situation using a "low-tech" simulation approach. WSG EmComm could later explore the feasibility of converting the ILT to an online simulation. A check list will also be created that will lead EmComm team members through the standard configuration and setup of Fldigi. Learners will be required to configure and setup Fldigi prior to their arrival and be ready to transmit digital messages. The check list will

		ensure that there is consistency with the configuration and will leave face-to-face time for learning the task of transmitting messages and troubleshooting. Before the start of the training, the instructor will verify that the program is configured correctly.	

Sequencing of Objectives

#	Performance (include TA #)	Conditions on the job	Criteria on the job

1	WSG EmComm team members will transmit digital messages (3)	Given:
		 • A message to transmit
		     o Human safety
		     o Property protection
		     o Supplies
		     o Welfare checks
		     o Staff updates/changes
		     o Incident update
		     o Commander's update brief
		 • An emergency situation involving the protection of life, property, and/or the preservation of peace.
		 • A recipient to receive the message.
		 • A message to transmit received from
		     o A runner
		     o Email
		     o Text message
		     o Handwritten
			• Confirms recipient's readiness to receive message.
			
			 • Uses appropriate message priority
			     o 1st – Human life
			     o 2nd – Critical infrastructure
			     o 3rd – Property
			     o 4th – Animals
			     o 5th – Supplies
			     o 6th – Welfare checks
			     o 7th – Status reports
			
			 • Within 4 minutes of message receipt.
			
			 • With no more than 2 errors in the message.
			
			 • In compliance with Title 47 – Part 97 regulations set forth by the Federal Communications Commission.
			
			     o Utilizing call sign at the end of every transmission (and every subsequent 10 minutes)
			
			     o Message transmitted in English
			
			 • In accordance to the Federal Emergency Management Agency FEMA Incident Command System (ICS) message format standards, utilizes correct preformatted message.
			     o An update - 203
			     o Communications plan – 205
			     o Assignment – 205a
			     o Medical plan – 206

#	Performance (include TA #)	Conditions on the job	Criteria on the job
		Resources: • Internet access • Laptop with Fldigi installed and configured to WSG EmComm team standards • Speakers • Microphone • Handheld radio • Pen and paper • Amateur radio license	o Basic message – 213 o Communication log - 309

#	Performance (include TA #)	Conditions on the job	Criteria on the job

2	WSG EmComm team members will troubleshoot emergency message transmissions (4).	Given:
		• An attempt to transmit a message has been made.
		    ○ Human safety
		    ○ Property protection
		    ○ Supplies
		    ○ Welfare checks
		    ○ Staff updates/changes
		    ○ Incident update
		    ○ Commander's update brief
		• A recipient to receive the message.
		• 3 minutes and there is no acknowledgement of receipt of message transmission.
		• An emergency situation involving the protection of life, property, and/or the preservation of peace.
		
		Resources:
		• Internet access
		• Laptop with Fldigi installed and configured to WSG EmComm team standards
		• Speakers
		• Microphone
		• Handheld radio
		• Pen and paper
		• Amateur radio license
		• Cell phone
			• Confirmation that acknowledgement has not been received.
			• Alternate retransmission method used until receipt of transmission acknowledged.
			• Message retransmitted and acknowledgement of receipt within 6 minutes.
			    ○ Standard Fldigi configuration
			    ○ Alternate communication channel within Fldigi
			    ○ Alternate operating mode within Fldigi
			    ○ Voice through handheld radio
			    ○ Text message
			    ○ Phone call
			    ○ Antennae adjusted for optimal propagation and retransmission through Fldigi standard configuration
			• Message retransmitted in original form.
			• With no more than 2 errors in the message.
			• In compliance with Title 47 – Part 97 regulations set forth by the Federal Communications Commission.
			    ○ Utilizing call sign at the end of transmission (and every subsequent 10 minutes)
			    ○ Message transmitted in English

Division of objectives into units
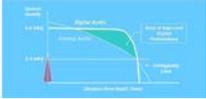Objectives 1 and 2 (listed above) are combined into one unit, thus meeting Merrill's whole problem corollary.

Introduction

Course Element	Description / Explanation	Resources	Graphics	Estimated Time

Course introduction	Instructor will begin class with:
	A. Greetings from training staff with background
	B. Overall intent and objective of course
	   1. Learning Fldigi is part of the Personal Qualification Standards and one of the skills needed to become a fully deployable member of the WSG EmComm team
	   2. The Adjutant General has set forth an initiative that Washington state emergency operations centers be proficient in digital communications
	   3. Learning to communicate digitally with speed and accuracy is a benefit to society and people involved in emergencies
	C. WSG EmComm team members introductions
	D. Distribute agenda providing course expectations and objectives.
		Hard copies of the course agenda
		
		PowerPoint
		
		Laptop
		
		Projector
		
		Screen
			Photos of people in emergency situations using digital communication
			
			1.
			
			2.
			
			3
				5 minutes

Plan for the training

Prerequisite: Learners will have Fldigi installed and configured per the WSG EmComm standards checklist. The instructor will check to make sure the program has been installed and configured correctly prior to class starting.

Transmitting Digital Emergency Communications

Course Element	Description / Explanation	Resources	Graphics	Estimated Time
Objectives	Objectives 1 and 2 (listed above) are combined into one unit, thus meeting Merrill's whole problem corollary.			
Activation	**Previous Experience** The instructor will draw on the learners' previous experiences regarding standards of amateur radio communications by asking the learners if they have ever gotten a voice message transmission that was incorrect or didn't make sense and what they did when they did not receive receipt of confirmation of their transmission. **Structure** An advanced organizer is shown here that visually depicts the difference between voice and digital communications. It shows why digital is so much faster and more accurate than voice and why this is valued in emergency situations. **New Experience** The organizer also shows how using voice and non-digital options are part of the troubleshooting process.	Advanced organizer showing the difference between voice and digital communications.	Infographic regarding the accuracy and speed of digital vs. voice. 4. 	10 minutes
Demonstration	The instructor will start the demonstration by showing how to successfully transmit a digital message without any issues. The instructor will then demonstrate a message transmission where there is no receipt of confirmation and show the troubleshooting techniques used to ensure the message was received. Informing	Internet access Laptop with Fldigi installed and configured to WSG	Picture of the aftermath of explosion on a ferry boat	20 minutes

	the learners that when out in the field, they will frequently encounter issues that they will need to troubleshoot, the demonstration will continue with message transmissions using different priorities and forms along with issues that learners will encounter needing troubleshooting. The scene will be set with the instructor describing an emergency scenario of a terrorist attack on the Washington State Ferry system wherein several ferries were targeted as well as the Department of Transportation building in Seattle. A SME will be setup in an adjacent room and will act as the receiver of messages and will send confirmations of receipt of transmission. The SME will also act as the runner and will present messages to the instructor in various modes of communication. • Demo 1: The runner gives the instructor a verbal message regarding critical infrastructure that needs to be transmitted to the Camp Murray EOC. The instructor writes down the message on a notepad and double checks the message with the runner to ensure that the message has been accurately captured. The instructor then uses the handout to determine the priority and message form, explaining his decisions as he goes. The instructor also mentions that the handout is for instructional purposes only. In emergency situations, EmComm team members will need to digitally transmit and troubleshoot messages unassisted. The message given is regarding critical infrastructure, priority 2, basic message form 213 (see bullet below for actual message). The instructor also notes the difference between critical infrastructure and property and that they require different message priorities. The instructor then types the message into the correct message form and demonstrates where he will place his call sign and explains how this complies with the FCC regulation. The message is double checked against the written message for accuracy and then transmitted. The instructor points out that speed is critical in emergency situations as people rely on message transmission to know what actions to take or for status updates. The instructor	EmComm team standards Speakers Microphone Handheld radio Pen and paper Amateur radio license PowerPoint Overhead projector Screen SME to act as a runner and receiver of messages Handout with message descriptions and priorities Hand out with the troubleshooting process	5. Picture of the aftermath of an explosion at a government building 6.

waits for confirmation of transmission and once this is received, the demonstration is complete.

  o The Seattle and Bainbridge Island ferry docks have been bombed and are inoperable. Request National Guard to both locations.

• Demo 2: Instructor will focus on the critical aspect of sending a message with speed and accuracy while also troubleshooting. A runner will give the instructor a written status report that needs to be transmitted to National Guard leadership. The instructor will read the message aloud to the class and will remind learners to use the handout during the practices but that again, they will not be able to use it while deployed. The given message has a 7th priority status and the message form used is the Assignment – 205a form. The instructor will point out the complex step of choosing the message form and that though the runner indicated this is a status report, after reading through the message you can see that the message contains the assignment of where and what team members will be operating. The instructor will then transmit the message through Fldigi and while typing the message into the send field. The instructor will double check the typed message in the transmit box of Fldigi with what was given in the written message, and do this before transmitting the message. After the double-check, the instructor will then show how using your call sign with the message complies with the FCC regulations. The instructor will demonstrate exactly where in the message the call sign in used. Once the message has been transmitted, the instructor will wait for receipt of transmission. The message is transmitted, but, there is no receipt of transmission. The instructor then shows how the troubleshooting checklist is used for the practice exercises and what steps to take when your message does not go through. The instructor informs the learners that the checklist will not be used during the assessment and that it cannot be used while deployed. The instructor first checks on the settings in Fldigi to ensure they are the WSG EmComm standard configuration. Showing that these are correct, the instructor then

demonstrates that within the standard configurations, there is also an agreed upon alternate channel or mode that can be used. The instructor will change the channel in Fldigi and retransmit the message and transmission of receipt will be received. The instructor will point out the importance of speed when you don't receive confirmation of receipt, the need to troubleshoot and the target time of getting a message of receipt within 6 minutes. The demonstration is then complete.

Another learner will verify the received message to the original message the runner presented, to ensure accuracy.

- o Message for transmission: 1:12 pm 3 members of the WSG EmComm team have assembled at the Camp Murray EOC. The field assignments are as follows: Chief Whitaker: Camp Murray EOC activating nets on the BIWARN around the state VHF/UHF repeater system and the emergency VHF repeater atop the summit of Mount Rainier. Adam Spingola: State Civil Defense EOC in Seattle to operate nets on the State RACES VHF repeater network and 7088 kHz HF. Jeff Robbins: Department of Emergency Management EOC in Seattle.2

The instructor asks the learners to compare demo 1 and 2. After a comparison is made, the instructor then asks what made demo 2 more complex, prompting the learners if needed to recognize that the message was more complex and that troubleshooting makes the entire process harder.

• Demo 3: Focusing on speed and accuracy, the instructor will have a learner time this demonstration with a stopwatch. The runner texts a message to the instructor's cell phone that needs to be transmitted to the Camp Murray EOC. The instructor reads the message aloud to the class and then talks through the choice made for message priority and message form. This message is regarding human life and is message priority 1 and the message

form is medical plan – 206. The instructor types the message into the message form and demonstrates the usage of the call sign in the message. A double check of accuracy is done, and an attempt to transmit the message is made. The instructor asks the learner to stop the stopwatch to check for speed in the attempted message transmission. The instructor reminds the learners that the target for transmitting messages is four minutes. The learner with the stopwatch is then instructed to start the stopwatch over and the class is informed that there is no receipt of transmission. The instructor then demonstrates using the troubleshooting checklist for methods that are outside of Fldigi. The instructor reminds learners that the checklist will be used for practice purposes only and that during a deployment, there is not time to use handouts. The instructor first uses their handheld radio to send a message via voice to check with the receiving party that they received the message and does not receive confirmation of receipt. Next, the instructor demonstrates using their cell phone to send a text message to the receiving party asking if their digital message was received, and again, no confirmation is received. The instructor then makes a cell phone call to the receiving party to ask for receipt of transmission and again, no response. The instructor then shows that the last troubleshooting step is to manually adjust the antennae to ensure there is optimal propagation and starts the process over by resending the message through Fldigi. Once the message is resent, the runner responds through Fldigi that the message was received. The stopwatch is stopped and the instructor impresses on the learners that the troubleshooting steps should be followed in this sequence. If there is no receipt of transmission after the antennae has been adjusted and the message is resent through Fldigi, the runner then needs to be notified that their message was not received. The instructor also states the target time of getting a receipt of transmission within 6 minutes.

Message to transmit: 1 child and 3 adults have found injured. Please dispatch Medical to the Seattle ferry terminal. The name of

	the child is Maddie Johnson, and the adults are Bill Angle, Stephanie Andvik, and Jillian Wakefield. They are located on the north-west corner of the building. The instructor asks learners to compare the three demonstrations.			

Application	a. Number of practices: 4
	b. Number of assessments: 1
	c. **Descriptions**
	
	    Setting: Camp Murray in Tacoma, WA, on the north side of the field located on Militia Dr.
	
	    Scenario: (5 minutes) The practices will take place in a setting that is designed to simulate an actual disaster that the WSG EmComm team will be deployed in. To match the conditions encountered on-the-job, WSG EmComm team members will be working independently. Coaching will be given on a 1:1 basis with assistance given by qualified job incumbents that have previously passed the Fldigi training. This scenario is based on a 7.0 magnitude earthquake centered in King County with several casualties and damage to major roads and critical infrastructure. Before setting up in the field, the WSG EmComm team members view PowerPoint slides of a similar 7.0 magnitude earthquake and see the destruction that is caused. After the slides, the simulation starts, and the team members are sent to their field location.
	
	    Practice 1: (10 minutes) A runner from the Camp Murray Emergency Operation Center (EOC) approaches the WSG EmComm team members with a verbal message that a section of I-5 has been destroyed and police are needed to direct traffic.
		Internet access
		
		Laptop with Fldigi installed and configured to WSG EmComm team standards
		
		Speakers
		
		Microphone
		
		Handheld radio
		
		Pen and paper
		
		Amateur radio license
		
		PowerPoint
		
		Overhead projector
		
		Screen
		
		SME to act as a runner and receiver of messages
			Pictures of the aftermath of a 7.0 magnitude earth quake that centered in a major metropolitan area
			
			7.
			
			8.
			
			9.
				95 minutes

	WSG EmComm team member will capture the message and the instructor will remind them of the priority and message form handout, state the message priority and the proper message form for this scenario. They will also give a reminder about the target of transmitting a message within 4 minutes and with no more than 2 errors. Message will be checked for accuracy, use of call sign, correct message priority given, and that the correct form was used before it is transmitted. The WSG EmComm team member will receive confirmation that their transmission was received. Feedback on time of transmission will be given. Delayed feedback will be given after the message has been transmitted.	Handout with message descriptions and priorities Hand out with the troubleshooting process		
	Practice 2: (12 minutes) The WSG EmComm team members receives an email that needs transmission to another EOC regarding the loss of human life and emergency personnel is needed at the Tacoma Dome. The message to transmit includes the first and last names of the deceased, an address, and a point of contact. A second message, at the same time is hand delivered by the runner and given to the learner to transmit. The message is regarding required supplies needing to be transported to the Tacoma Dome. Handout is present if learners need it, and the instructor is available for coaching as necessary. WSG EmComm team members will choose the message priority, and transmit the message with the highest priority, using their call sign. Goal time for the message transmission attempt is decreased by 3 more minutes (with 4 minutes being the goal). This time, there is no confirmation of transmission, and the learner must go through the troubleshooting checklist to try to have their message received. Instructor will remind learners that they need to work through the methods within Fldigi before trying methods outside of Fldigi. The leaner will check the standard configuration of			

Fldigi to make sure everything is set to WSG EmComm standards, and then will switch to the alternate communication channel. Confirmation of transmission will be given once the message has been transmitted through the alternate channel. Delayed feedback is given after confirmation of transmission is received.

Practice 3: (15 minutes) A text message from the Camp Murray EOC is sent to the WSG EmComm team member's cell phone and is a request to send a status update to the EmComm leadership regarding WSG EmComm team assignment. Further increasing the complexity, the message will include frequencies and modes that different team members are manning, first and last names and names of points of contact at the field locations. Confirmation of message receipt is not given, and team members use the troubleshooting checklist to work through the methods to retransmit their message. Receipt of transmission will be sent to the team members when they have used voice to transmit their message. Handout is taken away for the message priorities and forms and there is no coaching or chunking regarding the initial message. The troubleshooting checklist is present for the troubleshooting steps. Time is decreased to the target of 4 minutes for initial message transmission and 8 minutes is given for the troubleshooting. Delayed feedback is given after the message has been retransmitted regarding speed and accuracy and use of the troubleshooting techniques.

Practice 4: (20 minutes) A runner approaches the WSG EmComm team member with a verbal message that there are suspected aftershocks centered in Wallingford and Fremont areas of Seattle and a public service announcement needs to be made to ensure residents are prepared. A second message is also texted to the team member regarding a list of supplies that are needed at a

drop off at a local high school football field. The team member will capture the messages, choose the message priorities. The message with the highest priority will be transmitted. The learners will choose the corresponding message form for this message and will transmit. No receipt of transmission will be given, and the team member will troubleshoot without the use of a checklist. Receipt of transmission will be given once all the troubleshooting steps have been gone through (checked the Fldigi configuration, used an alternate communication channel and mode within Fldigi, used their handheld radio for a voice confirmation, sent a text message with their cell phone, called the recipient on their cell phone) and the team member has adjusted their antennae and retransmitted the message through Fldigi. No coaching is given for the initial message transmission and time for the initial message transmission is set at the target of 4 minutes and 6 minutes for the troubleshooting and receipt of transmission. Delayed feedback is given regarding use of the troubleshooting techniques.

Assessment: (30 minutes)
The assessment will be a combination of objectives 1 and 2. The learners will be setup in a field location and will be given 5 different messages to transmit. The messages will be real life scenarios that are based on the message types in the conditions. One of the five messages will have no acknowledgement of receipt (non-receipt of the message will be determined at random by the runner drawing from a pool of the different troubleshooting techniques and this will determine when confirmation of receipt will be sent back to the learner), and the learners will have to use the troubleshooting techniques to transmit their message and gain receipt of transmission. The learners will be assessed on speed, accuracy and whether or not they were successfully able to troubleshoot the failed message transmission.

	Practice Consistency: The practices and assessment are designed so that they are both consistent with the objectives and with how the WSG EmComm team members will be performing on the job. Practice 1 ensures a simple message transmission and practices 2-4 encompass the entire task of message transmission with troubleshooting. Diminishing Coaching: Per the coaching table, during practice one the instructor proactive in giving feedback, detecting errors, pointing out what is difficult critical and complex and reminding learners to use the handout and checklist. Practice two, the instructor is still proactive in their coaching, but reminders are withdrawn for the handout and checklist, messages are checked for accuracy, but error detection has diminished. Practice three is similar to practice two but coaching is as requested. Practice four, the coaching is as requested by the learners. And, practice five is a mirror of the assessment and the only coaching is delayed feedback after the practice takes place. Varied Problems: To give learners practice at the breadth of the problems they will encounter, each practice has a different way of receiving the message from the runner, the priorities and message forms are different and the problems they encounter to troubleshoot have different solutions. The collection of practice exercises and assessment should provide sufficient experience for radio operators to transfer this newly learned skill to the emergency situations.			
Integration	**End of Training** Reflect: The learners will be given time to discuss with their teammates techniques and styles learned. During this time, the instructors will ask the learner why they found certain techniques or processes helpful. Create: The instructor will leave time for questions and create a parking lot if there are things that can be discussed during the	PowerPoint Laptop Projector Screen	Slide depicting the WSG EmComm Net meeting schedule	10 minutes

	Net. This integration allows the learner to recognize the fluidity of troubleshooting issues and techniques used to improve speed and accuracy of transmitting and receiving messages. **After Training** • Watch Me: The learners will be required to participate in the next Net meeting to demonstrate their knowledge to the team. The Net will setup a mock emergency preparedness exercise wherein learners will transmit messages of varying content and priority. Leadership will also setup scenarios where no confirmation of transmission is received, and learners will show how they are able to troubleshoot to make sure their message has been received. • Reflect and create: The instructor leads the learners through an after-action review that occurs after the mock preparedness exercise where the class reflects upon what they learned, why they learned it, and what potential obstacles they foresee in digitally communicating and how to overcome them.		
Estimated total time			135 minutes

Coaching Table

Strategy	Practice Exercise 1	Practice Exercise 2	Practice Exercise 3	Practice Exercise 4	Assessment
Reminder to use handout and checklist	Instructor provides a reminder to use the handout before practice begins. The handout will list out the message priorities and the	Handout and troubleshooting checklist is present if needed.	Handout and troubleshooting checklist is present if needed.	Handout and troubleshooting checklist are taken away.	N/A

Strategy	Practice Exercise 1	Practice Exercise 2	Practice Exercise 3	Practice Exercise 4	Assessment
	communication form associated with message type, and the checklist will provide the steps and explanation of the troubleshooting techniques to use when confirmation of transmission is note received.				
Reminder of what is critical, difficult, or complex	Instructor provides a reminder of how to react during stressful situation and that transmitting messages with speed is critical, but, they must be precise. WSG EmComm team members are reminded of the goal of transmitting messages within 4 minutes with less than two errors.	Instructor provides a reminder that to be precise in message transmission, they need to slow down and not be reactive. Instructor provides a reminder to use the troubleshooting techniques within Fldigi first before trying other methods and that the target goal of receiving confirmation of receipt of transmission is 6 minutes.	As requested or needed.	N/A	N/A
Chunking	Instructor provides immediate feedback after each discrete step comprising the process	Instructor provides feedback after the message priority and form have been chosen.	As requested or needed	N/A	N/A

Strategy	Practice Exercise 1	Practice Exercise 2	Practice Exercise 3	Practice Exercise 4	Assessment
	- Verbal messages are to be written down and confirmed with the runner that they have copied it accurately - This is a priority 2 message as it involves critical infrastructure - The message form is 213 – Basic message	- This is a priority 5 message -The message form is 213 – Basic message Instructor provides immediate feedback after each step in the troubleshooting process.			
Coaching (error detection and correction)	Instructor observes message transmission (as learners perform the task) and points out errors and offers corrections. Messages are checked for accuracy.	Instructor checks messages for accuracy. Instructor observes troubleshooting (as learner performs the tasks) and points out errors and offers corrections.	As requested or needed	N/A	N/A
Delayed feedback	Given after receipt of confirmation.	Given after receipt of confirmation.	Given after receipt of confirmation.	Given after receipt of confirmation.	Given upon completion of the assessment.

Summary

Course Element	Description / Explanation	Resources	Graphics	Estimated Time
Course summary	Upon conclusion of the training, the instructor will review the course objectives and the learnings from the training. The	PowerPoint	Clipart to help	5 minutes

instructor will also conduct a general review of the practices for speed and accuracy and reinforce the seriousness of emergency communications and the WSG EmComm Team standards. The instructor will then talk about how learning to transmit digital messages with speed and accuracy benefits people involved in emergencies and learning this skill aligns team members with the initiative set forth by the Adjutant General. A slide will be presented that shows additional Fldigi training, amateur radio hobbyist clubs, and links to Fldigi YouTube videos. A reminder will be given to attend the weekly WSG EmComm Net community of practice.	Projector Laptop Large screen	illustrate the resources information

Total course estimated time = 140 minutes

References

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McGraw-Hill.

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[PowerPoint slides]. Retrieved from Doyle Burke.

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Greenman, M., Freese, D., & Bounanos, S. (2008). [*Beginners' Guide to Fldigi.*] Unpublished

manual.

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Merrill, M. D. (2002). First principles of instruction. Educational Technology, Research and Development, 50(3), 43-59.

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communications.] Unpublished manual.

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http://mil.wa.gov/wsg-home

Washington District 5 ARES Pierce County WA. (n.d.) [*Digital communications course.*]

Unpublished manual.

Appendix

Graphics links:

1. When all else fails:
   http://www.bing.com/images/search?view=detailV2&ccid=B7zHmYXn&id=0361CBECB4
   9B208F8476E5675ECA50F7B850AD56&thid=OIP.B7zHmYXn5bfBKuApexyYTQErEs&
   q=ham+radio%2c+emergency+communications&simid=608000064416580692&selected
   Index=0&ajaxhist=0

2. Female digitally communicating:

   http://www.bing.com/images/search?view=detailV2&ccid=7Au4WYfP&id=80F52C11C14
   1B46C70151BF5C6E1CEE2C1893F18&thid=OIP.7Au4WYfPkF09-
   aMUtDmufAEsDP&q=ham+radio%2c+emergency+communications&simid=6080488896
   03948785&selectedIndex=174&ajaxhist=0

3. Emergency communicating

   http://www.bing.com/images/search?view=detailV2&ccid=E0WZSRSq&id=9EE6D583EA
   CED7BF33A67DC1DAB311C2473593CF&thid=OIP.E0WZSRSqldAfneW0bOCRgAEsD
   h&q=amateur+radio+emergency+communication+centers&simid=6080273760936292977
   &selectedIndex=214&ajaxhist=0

4. Infographic

   http://forums.radioreference.com/attachments/digital-voice-amateur-
   use/40342d1360635425-audio-quality-dstar-vs-p25-vs-dmr-digital-vs-analog-daq.jpg

5. Ferry explosion

   http://www.bing.com/images/search?view=detailV2&ccid=6pgG6ewg&id=CDB4629ACB
   85465648228457A1E16B86DE3F472C&thid=OIP.6pgG6ewg5w7BVunI5Bxc4QEsDH&q
   =ferry+boat+explosion&simid=608036988238168712&selectedIndex=20&ajaxhist=0

6. Government building explosion

   http://www.bing.com/images/search?view=detailV2&ccid=tYlaTOT%2b&id=A219656F2F
   3E2F69F354FBEAE12C4C2557856FDD&thid=OIP.tYlaTOT-
   05ZjMAGGi0oQGgEsDh&q=government+building+bombing&simid=6079941588275695
   81&selectedIndex=0&ajaxhist=0

7. Earthquake

   http://www.bing.com/images/search?view=detailV2&ccid=xVMEPzQK&id=0BB0020EA6
   CA08E0D54E08874994842819708AA6&thid=OIP.xVMEPzQKPdm4YLuLepMHxAEsDI
   &q=7.0+earthquake&simid=608044251038613535&selectedIndex=29&ajaxhist=0

8. Earthquake

http://answersafrica.com/wp-content/uploads/2015/05/Earthquake-e1431700006526.jpg

9. Earthquake

http://guardianlv.com/wp-content/uploads/2014/01/Kesennuma-earthquake-in-japan-16.jpg