



## 2-METER SIMPLEX TEST

AFTER-ACTION REPORT

JULY 30, 2025

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## EXERCISE OVERVIEW:

<b>Exercise Name</b>	July 2025 2-Meter Simplex Test
<b>Exercise Dates</b>	July 30, 2025
<b>Scope</b>	To evaluate the feasibility, reliability, and effectiveness of 2-meter simplex amateur radio communications in supporting Emergency Management operations by relaying messages between a remote Command Post and the Emergency Operations Center (EOC) during a simulated emergency scenario.
<b>Focus Area</b>	Radio Programing, Response Times, Communication Capabilities.
<b>Objectives</b>	#1 – Respond to “Staging Area” #2 – Operators to program their own radios to specific frequency #3 – Determine optimal deployment locations for radio communications
<b>Sponsor</b>	Sweetwater County Emergency Management
<b>Participating Organizations</b>	Sweetwater County Emergency Management Sweetwater Amateur Radio Club (SARC) [WY7u]
<b>Point of Contact</b>	<b>Zach Gunyan</b> <i>Club President</i> 307-922-6326 <a href="mailto:Ke7wyg@wy7u.org">Ke7wyg@wy7u.org</a>

### Scenario:

Search and Rescue is working on locating an individual who is around the area East of Wyoming Machinery, north of Desert View Elementary School and south of Lion Kol Road. With major thunderstorms rolling into the area, Aspen Mountain is currently without power. The repeaters located on Aspen Mountain are not operational, forcing radio operators to use simplex frequencies.

### Objective:

Radio operators will deploy and help aid Search and Rescue with communications. Radio Operators will relay information back and forth from search area back and EOC utilizing Simplex Frequency 146.400.



## ANALYSIS OF CAPABILITIES:

Objective	Performed without Challenges (P)	Performed with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Call-out Response Time		x		
Radio Programing		x		
Relay Locations		x		

**Table 1** – Summary of Core Capability Performance

### Ratings Definitions:

**Performed without Challenges (P):** The targets and critical tasks associated with the capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

**Performed with Some Challenges (S):** The targets and critical tasks associated with the capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified.

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

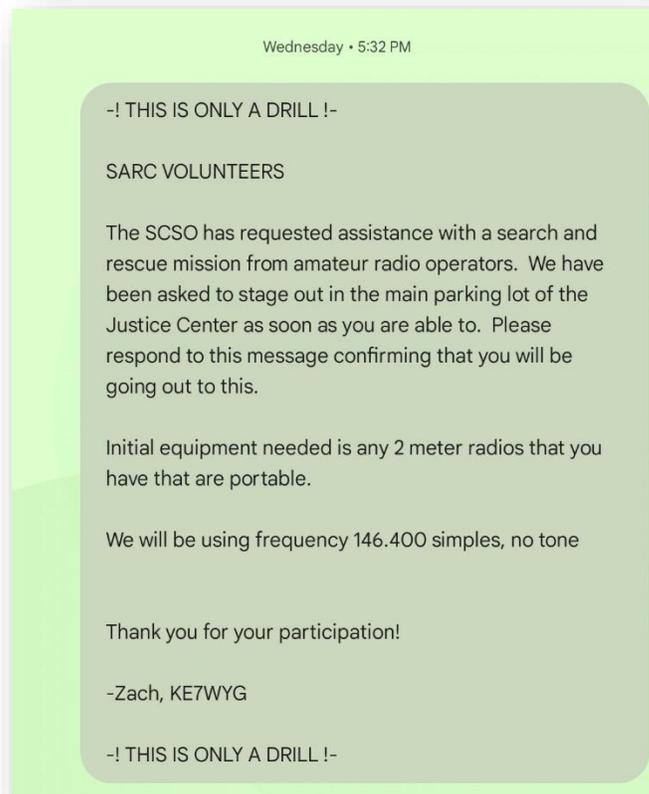
**Unable to be Performed (U):** The targets and critical tasks associated with the capability were not performed in a manner that achieved the objective(s).

The following sections provide an overview of the performance related to each exercise objective and associated capability, highlighting strengths and areas for improvement.

## OBJECTIVE 1 – CALL-OUT REPOSE TIME

The response time following a call-out is a critical indicator of operational readiness, particularly in rural environments where infrastructure may be limited and rapid deployment can be life-saving. This objective aimed to assess the effectiveness of our alerting process and the ability of volunteers to mobilize swiftly under simulated emergency conditions.

July 30, 2025, a text message was sent out to the volunteers for Sweetwater Amateur Radio Club at 17:32. Message was sent to a total of 19 total individuals.



## SUMMARY OF RESPONSE:

- The first operator arrived at 17:41
- The last operator arrived at 17:57
- One notable volunteer made the trip from Green River to the staging within this time frame.
- In total, we had eight total volunteers participate, with a response time of 25 minutes

## STRENGTHS:

### *Rapid Mobilization and Preparedness*

Volunteers responded promptly with minimal delay between alert and arrival. This reflects strong coordination protocols and a well-understood alerting system. Notably:

- Most volunteers were in transit within minutes of the initial message
- Response times aligned with expectations for rural deployment scenarios
- Alert clarity contributed to efficient routing and team assembling

## AREAS FOR IMPROVEMENT:

### **Communication Protocols**

In true emergency scenarios, cellular networks may be unreliable or unavailable. Exploring alternative methods—such as APRS, radio paging systems, or satellite messaging—could reinforce communications in low-connectivity settings.

### **Alerting System Efficiency**

Fine-tuning notification channels will ensure redundancy and enhance resilience:

- Evaluate layered alerting systems (e.g., SMS, voice calls, Radio Nets)
- Establish secondary and tertiary alert channels in case primary systems fail
- Consider staggered call trees to reduce bottlenecks in information flow

### **Instruction Fidelity**

Although instructions were shared via the initial text alert, not all volunteers received complete or consistent information. Improvements could include:

- Standardized templates for call-out messages
- Immediate follow-up via secondary channels
- Pre-deployment briefings or group check-ins to confirm tasking clarity

## OBJECTIVE 2 – RADIO PROGRAMING

Operators are often accustomed to using familiar frequencies in their day-to-day activities, and some rely on others to program their radios entirely. While this reliance isn't inherently negative, there may come a time when it becomes necessary to switch to a new frequency—particularly in dynamic field scenarios where teams are split and multiple simultaneous conversations must take place.

This objective was deliberately designed to encourage operators to use their radios' Variable Frequency Oscillator (VFO) capabilities to tune to a frequency not typically used in regular operations. The aim was to promote greater understanding and confidence in manual radio programming under field conditions

### STRENGTHS:

All responding volunteers successfully transmitted on the designated frequency of 146.400 MHz within minutes of arrival—many even programmed their radios prior to deployment. This demonstrated:

- Solid familiarity with VFO usage
- Proactive readiness before arriving on-site
- High functional coordination across the group

### AREAS OF IMPROVEMENT:

#### **Continual Practice**

While many operators freely shared knowledge and helped one another program their radios, building toward independent programming skills would enhance overall team efficiency. Encouraging ongoing practice with diverse radio models and settings can reduce reliance and increase resilience in future deployments.

## OBJECTIVE 3 – RELAY LOCATIONS

Following the initial mobilization and radio operations, the exercise transitioned into a tabletop scenario to simulate message relay operations between the Emergency Operations Center (EOC) and a remote command post. The goal was to identify strategic locations for placing radio operators who would serve as relay nodes, receiving and re-transmitting messages along the designated path.

Operators worked collaboratively to map out potential relay points based on terrain features, line-of-sight limitations, and accessibility. This planning phase was critical in visualizing how amateur radio could support communication continuity during real-world Search and Rescue (SAR) operations.

## MAPPED LOCATIONS

The following sites were identified for potential relay placement:

- **Century Park** – Serving as the Remote Command Post
- **Stagecoach & Foothill Blvd Intersection** – First leg of the relay path
- **College Hill Parking Lot (near the water tower)** – Elevated vantage point for optimized signal clarity
- **Crossroads Park** – Ideal mid-point for signal capture and retransmission
- **Cruel Jacks Area** – Considered for its elevated terrain, providing advantageous coverage over surrounding lowlands

These locations were selected with operational realism in mind and offer a strong framework for future field deployment planning.



## EXERCISE FEEDBACK SUMMARY

### What Went Well

- **Strong Volunteer Response & Participation**  
Volunteers arrived ready to support operations and showed excellent initiative throughout the exercise.
- **Rapid Reporting**  
Most operators were able to report to their assigned stations within 20–25 minutes, demonstrating solid coordination.
- **Efficient Radio Programming**  
Operators successfully programmed radios in under three minutes, showcasing technical readiness and familiarity with the equipment.
- **Acknowledging Priorities**  
The team affirmed that family comes first—a critical value that supports sustainable volunteer engagement.

### Areas for Improvement

- **Signal Reach Between Cities**  
Participants in Green River could not reliably receive simplex transmissions from Rock Springs. Even repeater usage may remain constrained depending on elevation and placement.
- **Power Management**  
Some batteries were not fully charged, which impacted operational reliability during the exercise. Pre-checks and backup power options should be emphasized.
- **Limited Signal Propagation**  
Geographic conditions and elevation differences hindered consistent message delivery, especially on simplex frequencies.
- **Communication Coverage**  
Given the distance between locations, contacting all operators via simplex proved unrealistic. Alternative methods should be pre-planned to supplement radio communication.
- **Reliance on Cell Phones**  
While cell phones were used during gaps in radio coverage, a real emergency may restrict or disable cellular service, underlining the need for redundancy and contingency planning.

## NEXT STEPS

### Next Steps: Field Validation

- **Operator Deployment**  
Assign volunteers to each mapped relay location: Century Park, Stagecoach & Foothill Blvd, College Hill Parking Lot, Crossroads Park, and Cruel Jacks. Ensure each operator is briefed on relay procedures and message formats.
- **Live Signal Testing**  
Conduct test transmissions from the EOC through each relay point back to the Remote Command Post. Monitor clarity, strength, and relay timing to evaluate coverage gaps and signal degradation.
- **Documentation & Evaluation**  
Record each operator's experience, including signal quality, transmission success rates, and any field-level challenges. Use this data to adjust relay points or add additional locations as needed