

**South Central Emergency Communications Board  
Allied Radio Matrix for Emergency Response (ARMER)  
Standards, Protocols, Procedures**

Document Section 3	<b>Interoperability Standards</b>	<b>Status:</b> Completed
Region Standard Number	<b>SR 3.33.1</b>	
Standard Title	<b>STR – Radio Cache and Transportable Tower/Repeater</b>	
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Date Revised	<b>N/A</b>	

**1. Purpose or Objective**

To establish policies and procedures for the deployment and use of the following Strategic Technology Reserve (STR) components:

- 800 MHz Radio Cache
- 50 foot Transportable Tower and associated cross band repeaters.

**2. Technical Background**

▪ **Capabilities**

As part of the Public Safety Interoperable Communication grant program, a radio cache of 30 ARMER capable radios is established in each of the six non-metro radio regions in the state. The ARMER radio cache capabilities are described as follows:

Resource	Description
ARMER Radio Cache	30 Motorola XTS1500 Portable Radios (Model 1.5) Note: The radios are programmed for trunked operation on the ARMER system. They are not provisioned with encryption software.
Extra Batteries and Chargers	Each radio cache contains an extra battery for each radio and three (3) Impress multi-unit chargers with two hardened plastic storage cases.
Transportable Tower	50' trailer based, crank up aluminum tower, assembled with 800 MHz, VHF and amateur radio antennas and transmission cables.
Repeaters	Repeaters-Transportable 800 MHz and VHF repeater capable of cross-band operation and operating in either analog or digital P25 modes. The 800 MHz repeater is equipped to support 5-800 MHz frequency pairs and a VHF frequency pair for repeater operation. The repeaters are enclosed in a case that can be transported in the back of an SUV, weight of approximately 70 lbs. The repeater is battery operated and can be connected to a 12 volt vehicle battery or 120 VAC power source.

The STR radio cache radios are programmed with statewide interoperability talkgroups (Zone 1), 800 MHz Scene of Action (SOA) channels and all National Public Safety Planning

Advisory Committee (NPSPAC) interoperability channels (Zone 2), and regional interoperability talkgroups (Zone 3). A fleetmap for the STR Radio Cache radios is attached to this standard.

Through the allocation of the STR resource and STR transportable towers and repeaters, each region of the state should have an ability to respond immediately to any catastrophic loss of the existing public safety communications resources, to provide additional communication resources under certain circumstances and to provide local responders with a transportable communication resource should they respond to a major event or natural disaster in another state.

#### ▪ **Constraints**

With a statewide footprint, the ARMER system is capable of providing immediate communication resources in locations where independent public safety radio systems are maintained. The deployment of an ARMER radio cache and transportable tower/repeater are capable of providing substantial regional and statewide communication resources under circumstances where the ARMER backbone remains intact.

Although more limited, the deployment of an ARMER radio cache in conjunction with the STR transportable tower and repeater provides added resources, operation without the ARMER backbone (or the STR Satellite Connected Communications Site on Wheels-SATCOW) will be limited to NPSPAC repeater channels and Scene of Action-SOA channel (radio to radio) operation.

Although maintenance demands are minimal, STR radio cache batteries must be periodically rotated through chargers to assure availability and radio users should be familiar with characteristics of trunked radio operation and critical radio features before radio assignment. The assignment and deployment of STR cache radios (as a unit of 30 radios and individually) must be documented to make sure radios and batteries are accounted for and returned to the proper location. (See Section 5)

### **3. Operational Context**

The STR radio cache is one element of a comprehensive STR capability available within the state. Additional elements include transportable tower / repeater, Satellite Connected Communications Site on Wheels-enabled ARMER base radio site, SATCOW (Standard 3.33.3) and Satellite enabled Remote Communication Platform (RCP) (Standard 3.33.4). The allocation of an STR radio cache and an STR transportable tower/repeater to every Regional Radio Board (RRB) provides them with a resource that can be placed into service within the region very quickly. Upon deployment to the scene or area of operation, a STR radio cache can be put into operation very quickly, depending upon the configuration (for use on the ARMER backbone, for use on Scene of Action (SOA) channels, for use in conjunction with STR transportable tower/repeater, for use with STR SATCOW).

To maintain operational readiness and availability of the equipment, the South Central Regional Emergency Communications Board, hereafter the SRECB designates the following:

- Points of Contact for access to the equipment:  
Blue Earth County Sheriff's Office  
401 Carver Rd.  
Mankato, MN 56002-0228  
507-304-4861

An STR radio cache may be deployed individually or used in conjunction with other STR resources to include the transportable tower and repeater. There are 180 identically equipped and programmed radios available (30 in each non-metro region) as part of the STR radio cache resources that are available for rapid deployment throughout the state. Additional ARMER radio caches are available at various locations throughout the state, including a substantial ARMER Radio Cache of 180 radios maintained by the Division of Emergency Networks as part of the Urban Area Security Initiative (UASI) capability. Depending upon the configuration, the range of operation of this resource may be limited.

Users should be advised of operational expectations at the time of deployment, as follows:

- ARMER Backbone Operation-Operational characteristics are consistent with normal backbone operation and are limited only by capacity (number of trunked channels available) and coverage (standard coverage characteristics).
- Scene of Action Channels (Radio to Radio) – depending upon the environment reliable communication may be expected at a distance of 2-3 miles between radios. Portable to mobile radio communication may provide better communications and at the fringes of coverage minor positioning shifts may re-establish communication between radios. Users should be advised that when operating on Scene of Action mode, they should not assume other users have received all communications unless the area of operations is very small.
- STR Transportable Tower/Repeater – While operating on a repeated NPSPAC channel, a range of operations of 3-7 miles might be expected. Actual coverage will vary depending upon tower placement, terrain, and the composition of structures within the area of operation.
- STR SAT-COW – while operating from the STR SAT-COW, a range of 7-10 miles from the SAT-COW location might be expected. Actual coverage will vary depending upon the SAT-COW placement, terrain, and the composition of structures within the area of operation.

- Users assigned to critical operations should all be made aware of one SOA channel that will be resorted to should system resources (ARMER backbone, Satellite enabled ARMER base radio site, NPSPAC repeater) become unavailable.

#### **4. Standardized Policy**

Every region of the state should have access to basic STR components (radio cache and transportable tower/repeater) necessary to immediately respond to any loss of basic public safety communications. The Standard defines the steps necessary to make sure the STR radio cache is available for deployment by addressing the requirements to maintain, operate and deploy the STR radio cache.

To the greatest extent possible, SR ECB basic STR components (radio cache and transportable tower/repeater) will be made available to support operations in other regions of the state and to provide communication resources for public safety personnel responding to an event or disaster in another state.

#### **5. Recommended Procedure**

The SR ECB shall provide for the STR radio cache and STR transportable tower/repeater as follows:

##### **Maintenance and Storage**

- The STR radio cache must be maintained in a temperature controlled secured inside area to prevent loss or disturbance to equipment.
- Battery chargers must have uninterrupted access to an electrical power supply to provide for proper battery maintenance.
- STR radio batteries should be rotated through Impres charges at least once per month. Any deficiencies or issues should be reported to the primary point of contact for the resource immediately. In addition to rotation through Impres chargers provided for here, batteries should be operationally tested at least once every 18 months.
- STR radio cache radios should be shop tested at least every 18 months or at any other time a specific problem is noted.
- STR transportable tower/repeater must be maintained in a secured area to prevent intentional and unintentional damage to the equipment.
  1. Transportable towers may be stored outside in a secured or otherwise protected area and covered to protect coaxial cables and connectors from corrosion.

2. Cased repeaters must be stored inside with access to an electrical power supply to keep on-board batteries fully charged at all times.
  3. **Safety note:** Repeaters weigh approximately 70 pounds and should be carried by two people when loading or transporting.
- STR transportable repeater should be tested by a qualified technician at least once every year, including tests of the frequency, power output and controller.

### **Tower Deployment Team**

- A South Central Radio Region Tower Deployment Team (SR-TDT) shall be established.
- The team shall consist of two representatives from each member entity.
  - Representatives can be from any public safety discipline including Emergency Management Ham radio volunteers.
  - COMLs or COMTs should be a part of the team.
  - Team members commit to a minimum two years membership.
  - Team members shall attend training sessions and prove proficiency as determined by the team commander.
  - Team members and their employers, if their employer is a public safety entity, agree to make their representative available for call out as required.
  - Team members will be compensated for their time by their employing agency as determined by the policy of the employing agency.
  - Compensation for employees' or volunteers' time and/or reimbursement of expenses to individuals or agencies by the SR ECB will be determined by the SR ECB.
  - Team members will be insured and indemnified by the SR ECB regarding operations of the STR equipment. Start and end times of coverage will be determined by the SR ECB.
- The SR RAC shall appoint a command team consisting of a commander and an assistant.
  - The commander and the assistant commander positions will be expected to serve a two year term.
  - With the exception of the first appointment, the commander shall be a team member in good standing for a minimum of one year before being eligible to serve as team commander.
- The commander team shall be responsible for:
  - Creating and maintaining a team call-out and equipment activation procedure plan.
    - The call-out plan shall establish a staffing plan for each phase of the

- activation process; delivery and set-up; in-service; take-down and deactivation staffing plan to include number of team members required and experience/expertise level of team members for each phase of the activation.
- The call-out procedure will balance expertise and frequency concerns such that work load is distributed as evenly as possible.
  - The activation plan will include issues such as:
    - Staff plan for entire activation period.
    - Assignment of responsibility for negligent damage to the tower and related equipment.
    - The Call-Out plan must be approved by the SR ECB.
  - Creating a training plan, with practical exercises, that ensures that every team member maintain proficiency with the STR tower set-up and take-down.
    - Plan must be approved by the SR RAC.
    - The Plan at a minimum shall include the following:
      - A minimum of three deployments, actual or training, must be conducted each year.
      - Every team member must attend a minimum of one actual or practice deployment each year.
  - Creating and executing an annual budget for the tower.
    - Budget shall include maintenance, repair and training expenses.
    - The budget must be approved by the SR RAC and the SR ECB and be included in the annual SR ECB budget.
  - Creating and executing an annual technical inspection and maintenance plan that ensures that the tower apparatus is in a constant state of readiness.
    - Plan must be approved by the SR RAC.
    - The SR RAC must be notified immediately if the tower must be down for any period for repairs or maintenance.
  - Supervising team members relative to performance, availability and attendance concerns.
    - If a team member is found to be performing sub-standard in any regard, the team commander or assistant commander will notify in writing the SR RAC Chair, the employer if the member is a public safety agency employee or the respective sheriff if the member is a volunteer.
      - The report shall describe the issue and make a recommendation for remediation.
      - The report must be received within one calendar week of the date of the incident that caused the performance concern.
  - Writing and presenting an annual report to the SRRAC and the SRECB.
    - The report shall include team activities, training sessions,

deployments and maintenance/repair issues and expenses for the past year.

- The annual report shall include proposed budget for the tower team for the coming year.

### **Resource Activation**

- The Region's designated point of contact and alternate contact should be listed in Regional Tactical Interoperable Communication Plan (TICP) and must have access to the STR radio cache and transportable tower/repeater at all times.
- When practical, a person capable of and authorized to program the radios should deliver the radios to the incident scene and be available for on-scene support during the deployment.
- Deployment of the STR tower must be supervised, at a minimum, by at least one SR-TDT member in good standing. It is preferred that all persons involved with deploying and setting up the tower will be SR-TDT members but it is recognized that in extreme circumstances only one TDT member may be available.(See Section describing "Tower Deployment Team")
- A pre-deployment checklist shall be maintained with the equipment that includes a thorough list of the equipment (including serial numbers of radios) and STR Tower set up procedures. Written step by step set up procedures, including safety notices must be maintained with the equipment at all times.
- Each radio should be labeled with the owning agency's identification.
- Copies of equipment lists, which may be combined with the pre-deployment check list, shall be maintained with each STR radio cache to document assignment of the STR radio cache as a unit or the assignment of individual pieces of equipment for the STR radio cache.
- A user deployment checklist should be maintained with each STR ARMER radio cache outlining the basic elements of use of cache radios (such as talkgroup selection, maintenance of assigned zone, and other relevant information) for users who have not previously participated in ARMER equipment use training.
- Laminated fleetmap lists shall be available for deployment with each STR radio cache radio and should be reviewed periodically to assure accuracy and legibility.
- Deployment of a STR radio cache or of individual radios from a STR radio cache or deployment of the transportable tower/repeater may be for any purpose authorized by the SR ECB, provided that such deployments must be temporary and provide for immediate return where the resource is needed for assignment to an STR purpose.
- Deployment outside the region to support public safety response to an event or natural disaster shall be provided for in the SR ECB local standard which may contain

reasonable prerequisites. Note: STR radio caches and STR transportable tower/repeater are standardized to assure compatibility of the resource across the state. Once the cache radios have arrived at the incident scene, the Incident Commander is responsible for resource tracking of the radio cache.

### **Resource Deactivation**

- The requesting agency shall be responsible for the return of any cache radios/equipment to the owner agency. Unless other terms have been approved, the requesting agency shall return all cache radios/equipment within 72 hours of the closing of the event for which the request was made.
- The requesting agency shall ensure that all STR cache radios are returned to the owning agency with the programming in which they were issued.
- The requesting agency assumes full risk for cache radios which are lost, stolen, damaged, consumed, and inoperable or destroyed until the radios are returned to the owner agency.
- The requesting agency shall reimburse the owner agency for the repair or replacement cost of any radio, accessories, batteries or other equipment which are lost, stolen, damaged, consumed, and inoperable or destroyed.
- Deactivation of the transportable tower/repeater shall be performed under the supervision and guidance of at least one person that must be a member in good standing of the SR Tower Deployment Team.

### **Operational Training**

- All trained Communication Unit Leaders (COM-L) in the SR region should be familiar with the STR radio cache and STR transportable tower/repeater capability and configuration and with basic operational characteristics of STR radio cache radios and STR transportable tower/repeater.
- Prior to the assignment of individual STR radio cache radios, users who have not been trained in the use of similar ARMER radios shall be provided with a short explanation of the basic elements of operation and of the radio fleetmap.
- The SR STR radio cache and SR STR transportable tower/repeater shall be made available for local disaster exercises, local events (fairs or celebrations) or other activities through which operational personnel will become familiar with the deployment procedures and operational characteristics of the equipment.

## **6. Management**

The SR ECB and the entity to which the STR radio cache has been transferred are responsible for assuring compliance with the standard. The Statewide Emergency Communications Board (ECB) STR subcommittee shall conduct an annual review of this standard and make adjustments as necessary. In that process, the subcommittee shall seek comment and suggestion from the STR ARMER radio cache and STR transportable tower points of contact and may inspect equipment to determine needs.



# Standard Operating Procedures

## **Maintenance and Storage:**

- A. The STR Radio Cache must be maintained in a temperature controlled, secured, inside area to prevent loss or disturbance to equipment.

### **Designated Location:**

Blue Earth County Sheriff's Office  
401 Carver Rd.  
Mankato, MN 56002-0228  
Ph# (507) 304-4861

- B. Battery chargers must have uninterrupted access to an electrical power supply to provide for proper battery maintenance.
- C. STR radio batteries should be rotated through "Impres" chargers at least once per month. Any deficiencies or issues should be reported to the primary point of contact for the resource immediately. In addition to rotation through the "Impres" chargers, batteries should be operationally tested at least once every 18 months.

### **Weekly Rotation Procedure:**

- Week 1 – Radios SR-STR-01 thru SR-STR-15 (GROUP A)
- Week 2 – Radios SR-STR-16 thru SR-STR-30 (GROUP B)
- Week 3 – Battery Group C
- Week 4 – Battery Group D

### **Documentation:**

- Appendix E: Battery Maintenance Log

- D. STR Cache radios should be shop tested at least every 18 months or at any other time a specific problem is noted.

### **Documentation:**

- Appendix D: Radio Maintenance Log

## **Operational Training:**

- A. All trained Communication Unit Leaders (COM-L) in the South Central Radio Region should be familiar with the STR Radio Cache, STR Transportable Tower capability and configuration, and with basic operational characteristics of STR radio cache radios and STR transportable tower.
- B. Prior to the assignment of individual radios from the STR Radio Cache, users who have not been trained in the use of similar ARMER radios shall be provided with a short explanation of the basic elements of operation and of the radio talkgroup layout.

- C. The SR STR Radio Cache and SR STR Transportable Tower shall be made available for local disaster exercises, local events (Fairs or Town Celebrations), or other activities through which personnel will become familiar with the deployment procedures and operational characteristics of the equipment.

**Resource Activation:**

- A. The South Central Region’s designated and alternate point of contact shall be listed in the SR TICP and have access to the STR Radio Cache and STR Transportable Tower/Repeater at all times.

**Designated Point of Contact:**

Blue Earth County Sheriff’s Office  
401 Carver Rd.  
Mankato, MN 56002-0228  
Ph# (507) 304-4861

- B. Resource Request Procedure:

- a. The SR STR Deployment Request Form (**Appendix A**) must be completed by either the requesting agency or the Designated Point of Contact prior to the deployment of any SR-STR equipment.
- b. Requested resources will be shown as “In Use” on the ARMER Status Board application. The agency that has checked out the equipment will be listed in the “Current Administration Notes” section and the calendar portion will be updated to reflect the expected return date of the equipment.

- C. Resource Deployment Procedure:

- a. A signed and completed copy of the Deployment Request Form (**Appendix A**) must be provided to the deployment agency at the time of equipment pick-up. The Deployment Request Form can be faxed to:  
**Blue Earth County Sheriff’s Office – Dispatch**  
**FAX# (507) 304-4818**
- b. The Deployment Checklist (**Appendix B**) must be completed at the time of pick-up.
- c. The requesting agency point of contact must initial the “Check Out” column of the Deployment Checklist (**Appendix B**) as receipt of requested STR equipment.
- d. A signed and completed copy of the Deployment Request Form (**Appendix A**) will be held with the Deployment Checklist (**Appendix B**) as a permanent record in the STR Deployment Binder.

- D. Deployment of the transportable tower/repeater shall be performed in the presence of at least one person that is a member in good standing of the South Central Tower Deployment Team (SR-TDT).

## **Resource Deactivation:**

- A. The requesting agency shall be responsible for the return of any cache radios/equipment to the owner agency.
- B. Unless other terms have been approved, the requesting agency shall return all cache radios/equipment within 72 hours of the closing of the event for which the request was made.
- C. The requesting agency assumes full risk for equipment which is lost, stolen, damaged, consumed, and inoperable or destroyed until the radios are returned to the owner agency.
- D. The requesting agency shall reimburse the owner agency for the repair or replacement cost of any radio, accessories, batteries, antennae, belt clip, charger, transportation case, or other equipment which is lost, stolen, damaged, consumed, inoperable or destroyed.
- E. Deactivation of the transportable tower/repeater shall be performed in the presence of at least one person that is a member in good standing of the South Central Tower Deployment Team (SR-TDT).
- F. Resource Deactivation Procedure:
  - a. A representative of the owner agency shall inspect and initial the return or "Check In" of all SR STR equipment listed as "Checked Out" on the Deployment Checklist (Appendix B).
  - b. Programming changes, damage, or issues with the use of the SR STR Cache Radios/Transportable Tower/Repeater shall be noted and reported to the SR-TDT Commander or Assistant Commander.
  - c. A representative of the owner agency shall ensure that returned SR STR equipment is listed as "Available" on the ARMER Status Board application.

**Appendix A**  
**SR STR Deployment Request Form**

Please complete all information requested to ensure timely fulfillment of the deployment request. Please return this form to the Deployment Agency Point of Contact. Voice contact via telephone should be made to ensure that the request has been received and understood.

Name of Requesting Agency: \_\_\_\_\_

Agency Point of Contact: \_\_\_\_\_

Voice Number: \_\_\_\_\_

FAX Number: \_\_\_\_\_

Event/Incident Name: \_\_\_\_\_

Event/Incident Location: \_\_\_\_\_

Event/Incident Date: \_\_\_\_\_

Expected Duration of Event: \_\_\_\_\_

Equipment Requested: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Party Picking up STR Equipment: \_\_\_\_\_

Voice Number: \_\_\_\_\_

Title/Signature: \_\_\_\_\_

Title/Printed Name: \_\_\_\_\_

Note: Request for deployment of the STR equipment indicates acceptance of fiscal responsibility for the replacement of any lost or damaged equipment.

Fax to:

Blue Earth County Sheriff's Office – Dispatch  
FAX# (507) 304-4818

Please bring this form when picking up the SR STR equipment.

**Appendix B**  
**SR STR Deployment Checklist**

Serial Number	Radio Alias	1 or 2 Batteries	Belt Clip	Checked OUT	Checked IN
				Initial by Requestor	Initial by Owner Representative
	SR-STR-01				
	SR-STR-02				
	SR-STR-03				
	SR-STR-04				
	SR-STR-05				
	SR-STR-06				
	SR-STR-07				
	SR-STR-08				
	SR-STR-09				
	SR-STR-10				
	SR-STR-11				
	SR-STR-12				
	SR-STR-13				
	SR-STR-14				
	SR-STR-15				
	SR-STR-16				
	SR-STR-17				
	SR-STR-18				
	SR-STR-19				
	SR-STR-20				
	SR-STR-21				
	SR-STR-22				
	SR-STR-23				
	SR-STR-24				
	SR-STR-25				
	SR-STR-26				
	SR-STR-27				
	SR-STR-28				
	SR-STR-29				
	SR-STR-30				
Radio Case	N/A	N/A	N/A		

Charger Case	N/A	N/A	N/A		
Charger 1	N/A	N/A	N/A		
Charger 2	N/A	N/A	N/A		
Charger 3	N/A	N/A	N/A		

**Appendix C**  
**SR STR Equipment Contacts**

<b>Point of Contact</b>	<b>Agency</b>	<b>Phone #</b>	<b>Cell #</b>	<b>Responsibility</b>
PSAP				

**Appendix D**  
**SR STR Radio Maintenance Log**

SN	R ALIAS	Battery Operationally Tested	Aligned	Initial
	SR-STR-01			
	SR-STR-02			
	SR-STR-03			
	SR-STR-04			
	SR-STR-05			
	SR-STR-06			
	SR-STR-07			
	SR-STR-08			
	SR-STR-09			
	SR-STR-10			
	SR-STR-11			
	SR-STR-12			
	SR-STR-13			
	SR-STR-14			
	SR-STR-15			
	SR-STR-16			
	SR-STR-17			
	SR-STR-18			
	SR-STR-19			
	SR-STR-20			
	SR-STR-21			
	SR-STR-22			
	SR-STR-23			
	SR-STR-24			
	SR-STR-25			
	SR-STR-26			
	SR-STR-27			
	SR-STR-28			
	SR-STR-29			
	SR-STR-30			



