SEARCH DATA COLLECTION TRAINING
Introductions

- Name
- Agency
- Position on RTF4
Class Overview

• Basic Map Review
• Basic GPS Device Operation
  – Tracks
  – Waypoints
• Search Definitions
• Search Icons
• Computer Setup
• Search Data Collection Exercise
  – Gather Data
  – Convert Data
Objective

Upon the successful completion of this module, participants will be able to demonstrate the use of the GPS device to collect and display search data.
MAP REVIEW
Maps Review

• **Types of US&R maps:**
  – Unit maps
  – Action plan maps (IAP/OAP map)
  – Briefing maps
  – Display maps
  – Transportation maps
  – BoO maps
Maps Review

• **STAND(D)-L:**
  – Scale
  – Title
  – Author
  – North indicated
  – Date & time
  – Datum
  – Legend
GPS REVIEW
Primary Global Positioning Functions

• Position And Waypoint Coordinates:
• The Distance And Direction Between A Receiver’s Position And A Stored Waypoint, Or Between Two Remote Waypoints.
• Velocity Reports:
• Accurate Time Measurement:
Three Segments of the GPS

- **Space Segment**
  - 24 Satellites
  - 12 hour orbit

- **Control Segment**
  - 5 Stations
  - 1 Manned

- **User Segment**
GPS Accuracy

• 2D Mode Is Horizontal Coordinates Only
• 3D Mode Provides Horizontal Coordinates Plus Elevation
• Selective Availability (SA) Program:
  – 100 Meters.
• Typical GPS Accuracy Without Sa:
  – 15 Meters.
• DGPS Accuracy:
  – 1 To 5 Meters.
• WAAS Accuracy:
  – < 3 Meters.
Sources of GPS Error

- Receiver Clock Errors:
- Orbital Errors:
- Ionosphere/Troposphere Delays:
- Signal Multi-path:
- Selective Availability:
- Number Of Satellites Visible:
- Control Segment Blunders:
- User Mistakes:
- Errors In GPS Are Cumulative
GPS Key Layout
Basic GPS Device Operation

• Turning on the GPS:
  – Press & hold **Power** button
Basic GPS Device Operation

- Cycle through **Menu**, **Map**, **Compass**, **Trip Computer**, and **Elevation Plot** pages using Page or Quit
- Access **Satellite** page from Main Menu (scroll “up” from the default [Setup] to reach Satellite quickly)
Basic GPS Device Operation

- Press **Menu** button twice for Main menu
Basic GPS Device Operation

- **Device setup:**
  - Press **Menu** twice for Main menu
  - Select **Setup**
  - Press **Enter**
Basic GPS Device Operation

- **Setup menu:**
  - System
    - **GPS:**
      - Normal (everyday use)
      - Demo (indoor training)
    - **WAAS:** Enabled
  - **Battery Type:**
    - Alkaline
    - NiMH
  - **Proximity Alarms:** On
Basic GPS Device Operation

• Setup menu:
  – Display:
    • Backlight Timeout/Battery Save: Impact battery life
    • Color Mode and Setup: Auto
      – Switch between Day & Night modes at sunrise & sunset
    • Backlight Timeout:
      – On continuous or timed:
        » Setting ignored if external power used
Basic GPS Device Operation

• Setup menu:
  – *Time*:
    • *Time Format*:
      – Set to **24 Hour**
    • *Time Zone*:
      – For area of operation
Basic GPS Device Operation

• Setup menu:
  • Position Format:
    – USNG (DHS Standard)
    – MGRS
    – hddd°mm.mmm’
  • Map Datum:
    – WGS 84
    – NAD27 CONUS – USGS Maps
Basic GPS Device Operation

• Setup menu:
  – Heading:
    • North Reference:
      – Specifies type or north reference used to calculate your heading
        » True
Basic GPS Device Operation

• **Clearing out old GPSr data:**
  - Before each & every use, especially during deployment / exercise, clear all previously recorded trip data, waypoints, & track logs from each GPSr unit
  - Once reset, it can be used to record all activities related to new operational period
  - Only current tracks can be cleared, not saved tracks
Basic GPS Device Operation

• Clearing out old GPSr data:
  – Select SETUP > Reset
  – Select an item to reset
Basic GPS Device Operation

• Basic setup for US&R GPSr:
  – Used to set up Garmin GPSMAP for general use in US&R environment
  – Includes setting for datum, position format, & time zones where user currently assigned
Tracks

- **Track:**
  - Recording of your path

- **Track log:**
  - Contains information about points along traveled path including:
    - Time
    - Location
    - Elevation for each point
  - Before using track log feature, verify feature settings for use in US&R environment
Tracks

- **Track log settings:**

<table>
<thead>
<tr>
<th>Model 60</th>
<th>Model 62 and 64</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Select <strong>SETUP &gt; Tracks</strong></td>
<td>1. Select <strong>SETUP &gt; Tracks</strong></td>
</tr>
<tr>
<td>2. <strong>Track Log</strong> turn ON or OFF</td>
<td>2. <strong>Track Log</strong> turn ON or OFF</td>
</tr>
<tr>
<td>3. <strong>Record Method:</strong> Auto</td>
<td>3. <strong>Record Method:</strong> Auto</td>
</tr>
<tr>
<td>4. <strong>Record Interval:</strong> Normal</td>
<td>4. <strong>Record Interval:</strong> Normal</td>
</tr>
<tr>
<td>5. <strong>Auto Archive:</strong> On</td>
<td>5. <strong>Auto Archive:</strong> On</td>
</tr>
</tbody>
</table>
Tracks

• **Track log management:**
  – Track logs are sets of recorded data detailing travel path for given time period
  – Useful in wide area search
  – Use Colors in Search Definitions
Tracks

• **Track log management:**
  – Merging collection of track logs from all deployed resources in disaster area, visual representation of search area easily displayed on map
  – Resulting map analyzed for:
    • Search progression
    • Areas missed
    • Other planning purposes
Tracks

• Track log management:
  – Viewing current track:
    • Select Track Manager > Current Track
    • Select View Map
  – Saving current track:
    • Select Track Manager > Current Track
    • Select Save Track
Tracks

- Track log management:
  - Deleting a track:
    - Select Track Manager
    - Select a track
    - Select Delete
Waypoints

• Locations recorded & stored in GPSr unit
• Locations that need to be documented for operational purposes or need to be returned to
• Include:
  – BoO
  – Fuel supply
  – Work sites
  – Hazmat locations
  – Myriad of operational locations
Waypoints

• Before deployment:
  – All TF GPS units must have custom US&R Symbology loaded on them:
    • Allows unique US&R specific icon to be attached to each waypoint configured in field
Waypoints

• Marking waypoints:
  – Waypoints marked by pressing **MARK** on GPS
  – Mark Waypoint page will open with:
    • Coordinates marked in USNG format
    • Time & date waypoint marked
    • OK menu item highlighted
Waypoints

- **Marking waypoints:**
  - Changing waypoint symbol:
    - Symbol located in upper left corner on display
    - Highlight symbol using the ROCKER
    - Press ENTER
    - Select different symbol from menu
  - To record waypoint:
    - Highlight OK
    - Press ENTER
Operational Considerations for GPS Units

• Before GPS unit leaves BoO, Planning Team ensures:
  – GPS unit has fresh batteries
  – Unit has 4 additional fresh batteries to go with it
  – Track logs have been cleared
  – Waypoints have been cleared
Operational Considerations for GPS Units

• Before GPS unit leaves BoO, Planning Team ensures:
  – Units set to USNG
  – Datum set to WGS84
  – Squad leader GPSr operator marked on unit / waypoint card
  – Track logs set to ON when mission begins
Operational Considerations for GPS Units

- When GPS units return to BoO, planning team sets *Track Logs* to OFF when mission concluded
- When data has been collected & stored, Planning Team should:
  - Clear all track logs
  - Clear all waypoints
  - Verify units are set to USNG
  - Verify datum is set to WGS84
Search Definitions

- **RECON** - Preliminary survey of the area.
- **RAPID SEARCH** (Hasty Search) - Fast paced and methodical search of the area. (FEMA)
- **PRIMARY SEARCH** - Quick search of the structures likely to contain victims.
- **SECONDARY SEARCH** - Systematic search of every room of every structure in the assigned area of operation.
  - **LOW COVERAGE** Secondary Search:
    - Systematic search of every room and void space.
  - **HIGH COVERAGE** Secondary Search:
    - Exhaustive search of every room and void space.
- **TARGETED SEARCHES** - Searches of specific locations.
  - Shelter locations
  - High Occupancy locations
  - Critical Infrastructure Facilities
  - Areas of last refuge
  - Locations of Special Needs Individuals or At Risk Persons
Search Icons

- 24 Icons
- 20 Assigned
- 4 Extra for special items
# Search Icons

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>GPS Exported Data Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Structure No Damage Low risk, low probability of further collapse</td>
<td>Custom 0</td>
</tr>
<tr>
<td></td>
<td>Structure Damaged Medium risk, structure is moderately damaged</td>
<td>Custom 1</td>
</tr>
<tr>
<td></td>
<td>Structure Failed High risk, may be subject to sudden collapse</td>
<td>Custom 2</td>
</tr>
<tr>
<td></td>
<td>Structure Destroyed Complete destruction of structure</td>
<td>Custom 3</td>
</tr>
<tr>
<td>Name</td>
<td>Assisted Material assistance provided to residents</td>
<td>Custom 4</td>
</tr>
<tr>
<td></td>
<td>Evacuated Survivors transported to collection point</td>
<td>Custom 5</td>
</tr>
<tr>
<td></td>
<td>Rescued Technical rescue that required physical intervention</td>
<td>Custom 6</td>
</tr>
<tr>
<td></td>
<td>Follow-Up Form Additional info required not adequately described by symbol set</td>
<td>Custom 7</td>
</tr>
<tr>
<td>Name</td>
<td>Victim Detected Potential victim detected (including canine alert or intelligence)</td>
<td>Custom 8</td>
</tr>
<tr>
<td></td>
<td>Confirmed Victim Confirmed live survivor (visual, audible, physical confirmation)</td>
<td>Custom 9</td>
</tr>
<tr>
<td></td>
<td>Human Remains Confirmed victim determined to be deceased</td>
<td>Custom 10</td>
</tr>
<tr>
<td></td>
<td>Human Remains Removed Confirmed victim determined to be deceased</td>
<td>Custom 11</td>
</tr>
<tr>
<td>Name</td>
<td>Shelter in Place Survivors have chosen to remain at location</td>
<td>Custom 12</td>
</tr>
<tr>
<td></td>
<td>Animal Issue Issue including aggression, location, assistance needed, etc.</td>
<td>Custom 13</td>
</tr>
<tr>
<td></td>
<td>Fire Incident General fire occurrence</td>
<td>Custom 14</td>
</tr>
<tr>
<td></td>
<td>Hazardous Material Incident Complete destruction of structure</td>
<td>Custom 15</td>
</tr>
<tr>
<td>Name</td>
<td>Targeted Search Specific location or condition requiring increased search effort</td>
<td>Custom 16</td>
</tr>
<tr>
<td></td>
<td>Flood/Water Level Predetermined site for documentation of water line</td>
<td>Custom 17</td>
</tr>
<tr>
<td></td>
<td>Helicopter Landing Site Appropriate site for landing zone</td>
<td>Custom 18</td>
</tr>
<tr>
<td></td>
<td>Route Blocked Inaccessible route by land or water</td>
<td>Custom 19</td>
</tr>
<tr>
<td>Name</td>
<td>Mission-specific placeholder TBD (e.g., abandoned structure, evidence)</td>
<td>Custom 20</td>
</tr>
<tr>
<td></td>
<td>Mission-specific placeholder TBD</td>
<td>Custom 21</td>
</tr>
<tr>
<td></td>
<td>Mission-specific placeholder TBD</td>
<td>Custom 22</td>
</tr>
<tr>
<td></td>
<td>Mission-specific placeholder TBD</td>
<td>Custom 23</td>
</tr>
</tbody>
</table>

![Image of search icons](image-url)
CONVERTOR SETUP AND USE
Summary

This training discussed basic GPS use, search definitions, an processing search data collected on GPS units used by RTF members during an operational period & how to support this task using Garmin BaseCamp per the FEMA US&R PD 2014-013.