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DELSAR® LIFE DETECTOR® LD3

Function
Used to detect signs of a victim’s presence in the voids of a collapsed building or similar entrapment situation using seismic or acoustic sensors. The system uses vibrations generated by a victim’s movement or activity traveling through the structural members of a building. It also detects sound vibrations traveling through the surrounding airspace.

LD3 Display Interface

Sensor Selection Keys

Function:
- Seismic sensor audio response selection.
- Acoustic sensor audio response selection.
- Audio Playback (Pause, Rewind, Play, Fast Forward).
Amplitude Graph LEDs

- Provides visual sensor responses from each sensor. Each bar corresponds to a single numbered sensor.
- Displays sensor detection signals during startup.
- Provides peak signal displays to aid in strongest signal detection.
- Provides incremental signal strengths and also provides record and play back time measurement.

Function Keys

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Power Key]</td>
<td>Powers the LD3 on and off. Press the key once to turn the system on. Hold down the key for 3 seconds to turn the system off.</td>
</tr>
<tr>
<td>![Record Key]</td>
<td>Activates the record feature. Press to begin recording audio being sent to the headphones.</td>
</tr>
<tr>
<td>![Playback Key]</td>
<td>Activates the play back feature. Press this key to listen to recorded sensor responses. Use in conjunction with the 3, 4, 5, and 6 sensor selection keys to control how the recording is played back.</td>
</tr>
</tbody>
</table>
Amplitude Graph LEDs

Function:
- Provides visual sensor responses from each sensor. Each bar corresponds to a single numbered sensor.
- Displays sensor detection signals during startup.
- Provides peak signal displays to aid in strongest signal detection.
- Provides incremental signal strengths and also provides record and play back time measurement.

Function Keys

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<tbody>
<tr>
<td><img src="image" alt="Power Key" /></td>
<td>Powers the LD3 on and off. Press the key once to turn the system on. Hold down the key for 3 seconds to turn the system off.</td>
</tr>
<tr>
<td><img src="image" alt="Rec Key" /></td>
<td>Activates the record feature. Press to begin recording audio being sent to the headphones.</td>
</tr>
<tr>
<td><img src="image" alt="Play Back Key" /></td>
<td>Activates the play back feature. Press this key to listen to recorded sensor responses. Use in conjunction with the 3, 4, 5, and 6 sensor selection keys to control how the recording is played back.</td>
</tr>
</tbody>
</table>
LD3 System Setup

• Determine whether to use seismic sensors or acoustic sensors.
• Insert a fresh battery into the DI console.
• Connect the headphones to the DI console. The boom microphone should originate from the right ear cup when the headphones are placed on the head.
**Seismic Sensors**

- Connect the seismic sensors to the DI console in a daisy-chain configuration using the spooled cables. Up to six seismic sensors can be used. Duplicate sensor numbers cannot be used.
- Cables are identical on each end, so connections are not directional.

---

**LD3 Connection Locations**

- Sensor Port
- Data I/O Port
- Headphone Ports
- Battery Compartment

Use red marks to align

DO NOT TWIST!
A single string can be used or a dual string can be established using both sensor ports.

Determine proper placement of the sensors. A straight line for victim detection typically works best.

Ensure that seismic sensors are properly placed. Pay attention to proper orientation, spacing, surface contact, and material uniformity.

Do not attempt to use seismic and acoustic sensors simultaneously.

**Acoustic Sensors**

Use red marks to align

*Note: Tube end has been shortened for illustrative purposes.*
• Determine whether or not the acoustic sensor will be attached to an acoustic probe.
• Ensure that you have at least a two-inch wide opening to insert the acoustic sensor.
• If using the acoustic probe, run the cable through the probe and attach the connector to the acoustic sensor. Attach the other end of the cable to the DI console. Then attach the acoustic sensor to the probe.
• If not using the acoustic probe, attach one end of the cable to the acoustic sensor and the other end to the DI console. Up to two acoustic sensors can be used.
• Do not attempt to use seismic and acoustic sensors simultaneously.

LD3 Operation

• Turn on the DI console.
• View the Sensor Response Graphs for signal strength and ensure that all sensors are detected by the DI console.
• Use the sensor selection keys to turn on audio to the headphones to listen to sensor responses. The boom microphone can be muted to eliminate unwanted noise.
• Make headphone volume adjustments as required using the Gain up and down arrows.

Do not twist! Use red marks to align
Victim Detection

- Signal “All Quiet”: one long blast using whistle, air horn, or bullhorn.
- Stimulate a victim response by knocking on the structure or calling into the rubble pile. Request that the victim taps three times.
- Listen and observe sensor responses.
- Use filters to eliminate any interference.
- If no response is detected, release “All Quiet”, relocate the sensors, and repeat Victim Detection.
- If a victim responds, acknowledge the response and proceed with Victim Location procedures.

Victim Location

Seismic Sensors

- Request that the victim repeats tapping on the structure.
- Isolate the sensor with the best response using filters if required.
- Relocate all other sensors around the loudest sensor. Do not move the loudest sensor.
- Pay close attention to sensor orientation, spacing, surface contact, and material uniformity.
- Review sensor readings and audio. Use Stereo Listening Mode if desired.
- Note response intensity of all sensors. Use Zoom mode to visually enhance sensor response strength.
- Continue to isolate the area with the loudest sensor response by moving the sensors closer to the sensor(s) with the highest readings.
- Continue with this process until the scope of the search is sufficiently narrowed.
**Acoustic Sensors**

- Lower the acoustic sensors into the rubble pile and listen for sounds such as tapping, yelling, or crying.
- If a response is received, talk to the victim using the built-in speaker element in the acoustic sensor. Push the PTT key to talk to a victim. Release the key to listen.
- Obtain information from the victim such as severity and type of injuries, type of entrapment, other hazards, other victims.

**Primary Search (Hasty)**

- Connect two sensors to the DI console, seismic or acoustic, each on their own port.
- Use a team of three, one to monitor the DI console and two to place seismic sensors in various locations while sweeping the building or rubble pile to detect viable victims.
- Move quickly through the area and mark the general area of the detection point. Location should also be marked on a search map.

**Secondary Search**

- Assign one person per sensor and one to man the DI console.
- Move seismic sensors in a line until a response is detected.
- Leave the loudest sensor in place while positioning the other sensors in closer proximity to the potential source.
- Continue moving sensors until all sensor responses are relatively equal thereby isolating the victim’s location.
- Mark the location on a search map and at the site.

**LD3 Maintenance**

- Ensure that appropriate battery charging and storage guidelines are followed.
- Use protective rubber caps on cables for storage and do not let cable connectors strike the ground.
- Roll the cables back onto the cable spool after use.
- Remove possible acoustic sensor debris from an acoustic sensor by removing the dome shaped headpiece only.
• Test the system after each use.
• Clean cables, sensors, and DI console after use.
• Keep battery cap threads lubricated.
• Do not store batteries in DI console when the system is not in use.
• Inventory all system components after use.
• Do not remove screws on the DI console or sensors.
• Dry equipment thoroughly after wet weather use.
• Do not seal the case until all components are dry.
• Ensure that the foam inside case is dry before storing components.
**DELSAR® LIFE DETECTOR® LD3-MINI**

**Function**

Used to detect signs of a victim’s presence in the voids of a collapsed building or similar entrapment situation using seismic or acoustic sensors.

**LD3 Mini Display Interface**

![Image of LD3 Mini Display Interface]

**Sensor Selection Keys**

![Image of Sensor Selection Keys]

**Function:**

- Seismic sensor audio response selection.
- Acoustic sensor audio response selection.
Amplitude Graph LEDs

**Function:**
- Provides visual sensor responses from each of two sensors. Each bar corresponds to a single numbered sensor.
- Displays sensor detection signals during startup.
- Provides peak signal displays to aid in strongest signal detection.

**Function Keys**

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Power" /></td>
<td>Powers the LD3 Mini on and off. Press the key once to turn the system on. Hold down the key for 3 seconds to turn the system off.</td>
</tr>
<tr>
<td><img src="image" alt="Low" /> <img src="image" alt="High" /></td>
<td>Controls the signal filters. Filters reduce the effects of certain types of interfering noises when listening to seismic sensors. Low activates a low frequency filter that reduces signal frequencies below 200 Hz. High activates a high frequency filter reducing signal frequencies above 1000 Hz.</td>
</tr>
<tr>
<td><img src="image" alt="Zoom" /></td>
<td>Changes the resolution of the bar graph to better differentiate the signals in high level conditions.</td>
</tr>
<tr>
<td><img src="image" alt="Stereo" /></td>
<td>Activates the stereo feature allowing the operator to listen to one sensor in one ear and other sensor in the other ear.</td>
</tr>
</tbody>
</table>
Key | Function
---|---
PTT | Push to Talk activates the intercom feature built into the acoustic sensors. PTT allows two-way communication with the victim.

Controls the gain level of the system. Up increases and down decreases amplification. Gain level is displayed on the channel 2 bar graph. In Zoom mode, these keys control Zoom level.

**LD3 Mini System Setup**

- Determine whether to use seismic sensors or acoustic sensors.
- Insert a fresh battery into the DI console.
- Connect the headphones to the DI console.
LD3 Mini Connection Locations

Seismic Sensors

• Connect the seismic sensors to the DI console, one sensor per connector.

Acoustic Sensors

• Determine whether or not the acoustic sensor will be attached to an acoustic probe.
• If using the acoustic probe, run the cable through the probe and attach the connector to the acoustic sensor. Attach the other end of the cable to the DI, then attach the sensor to the probe.
• If not using the acoustic probe, attach one end of the cable to the acoustic sensor and the other end to the DI console.
• Do not attempt to use seismic and acoustic sensors simultaneously.
**LD3 Mini Operation**

- Turn on the DI console.
- View the Sensor Response Graphs for signal strength and ensure that both sensors were detected by the DI console.
- Turn on audio to the headphones to listen to sensor responses by using the sensor selection keys. The boom microphone can be muted to eliminate unwanted noise when using seismic sensors.
- Make headphone volume adjustments as required using the gain up and down arrows.

**Victim Detection**

- With one person monitoring the DI console, use two other people to place sensors while sweeping through a building (one person per sensor).
- Stimulate a victim response by knocking on the structure or calling into the rubble pile. Request that victims tap three times.
- Listen to and observe sensor responses and use filters to remove any interference.
- If no response is detected, relocate the sensors and repeat the process.
- If a response is detected, mark the location with the appropriate markings and mark the location on the map.

**LD3 Mini Maintenance**

- Ensure that appropriate battery charging and storage guidelines are followed.
- Use protective rubber caps on cables for storage and do not let cable connectors strike the ground.
- Roll cables back onto the cable spool after use.
- Remove possible acoustic sensor debris from an acoustic sensor by removing the dome shaped headpiece only.
- Test the system after each use.
- Clean cables, sensors, and DI console after use.
- Keep battery cap threads lubricated.
- Do not store batteries in the DI console when the system is not in use.
• Inventory all system components after use.
• Do not remove screws from the DI console or sensors.
• Dry equipment thoroughly after wet weather use.
• Do not seal the case until all components are dry.
• Ensure that the foam inside case is dry before storing components.
DELSAR® VICTIM SIMULATOR (DVS-100)

Function
The Victim Simulator is designed to provide a controlled seismic input to allow realistic training in the use of the LifeDetector.

Precautions:
Always remove the batteries from the unit for storage. If the batteries run down, they can leak and cause damage to the unit.
Do not lift or carry the simulator by Antenna. This will severely damage it.
Do not submerge the unit in water. It is not watertight.
Remote control range may be reduced by environmental conditions.

Battery Installation
The Delsar® Victim Simulator is shipped with the batteries removed and the remote control antenna detached. Both must be installed to operate the unit.

To install the batteries, remove the battery compartment door which is located on the bottom of the housing between the rubber feet. To open the compartment, remove the two screws with thumb and forefinger.

Install the batteries, observing the correct polarity. Be careful not to pull the battery wires more than one inch (25 mm) from the battery housing.

**NOTE:**

Overextending the wire may cause damage to the wires. The unit will run on one battery, however run time will be reduced to less than two hours. With the batteries installed, carefully nest the battery into each compartment and push the wires back into the upper housing to prevent them from getting pinched. Reinstall the battery cover plate.

**Antenna Installation**

With the battery cover plate reinstalled, set the unit on its four rubber feet. Install the remote control antenna by carefully threading the antenna onto the antenna mounting stud located on the top of the Victim Simulator. The antenna should thread easily onto the stud. If it does not, it may be cross threaded. Gently tighten the antenna until it seats into the recessed pocket. Over tightening the antenna will damage the antenna.
DVS-100 Operation

To operate, place the Victim Simulator on a smooth surface that is free of loose debris, such as sand or soil. Depress the switch to the left to activate unit immediately or press the switch to the right to select the remote control operation. When remote control operation is selected, the unit can be turned on or off from the remote control transmitter. Push the remote control once to activate the thumper and push once again to turn off. Leaving the rocker switch in the remote control position will cause battery drain even when the thumper is not running.

The remote control can be programmed with a unique code to prevent interference when using multiple Victim Simulators. The code is set in the Victim Simulator unit by removing the top cover and selecting the desired code switch. To remove top cover, remove the four screws with a number two Phillips screwdriver.

Carefully lift the lid out of the housing and turn over to expose the circuit board attached to the underside of the lid.
Use a small screwdriver to slide the switch to set the code. Any combination may be used. When reinstalling the lid, align the lid so that the rocker control switch is directly over the hammer shaft and make sure that all the wires are clear of pinch points.

Once the code is selected in the main unit, the exact same code must be selected in the remote control transmitter. To set the transmitter code, open the transmitter housing by inserting a coin into the rear of the housing near the key chain slot. Pry the housing open and locate the code circuit wire traces on the circuit board. Matching the exact same code that was set in the Victim Simulator, scratch the trace to select the proper code sequence. When the circuit trace is scratched, it is the same as setting it to “off”. Reassemble the transmitter housing and test the remote control to verify correct operation.
The Void Orientation Guide (VOG) is a valuable tool for search and rescue operations. This guide provides rescuers with estimated victim locations within a void space. Search personnel create these guides as victims are detected and located, then pass them to the rescue teams for extrication.

In simple terms, a searcher, using a SearchCam system peers into a small void and locates a trapped victim. The VOG provides a means of visually indicating where the victim is located under the rubble pile in relationship to the void and the outside world.

If a victim is located using a SearchCam system through a void opening, draw a clock around the opening with the 12, 3, 6 and 9 o’clock positions shown. Use spray paint or a suitable marker.
1. After locating the victim, estimate how many feet the victim is from the void hole.

2. Based on the clock drawn, estimate the victim’s position in relationship to the hole.

3. Mark the two coordinates on the VOG.

This example shows a victim at approximately the 2 o’clock position at a distance of six feet from the void hole.

For greater accuracy, the actual depth and camera head articulation can be specified.
1. With the camera probe perpendicular to the external surface plane, determine the camera articulation. This is shown on the SearchCam video display in 15 degree increments.

2. Determine the probe’s penetration depth below the surface and list on VOG.

3. Estimate the depth of the victim from the void surface.

4. Plot coordinates on the VOG.

This example shows that the victim is approximately 6 feet (2 meters) away from the void opening with the camera head articulated 60 degrees. The probe’s penetration depth is 18 inches (45.75cm).

After the markings are made, the VOG is available as a resource for the rescue team. With this information, the rescue team knows exactly where to look in relationship to the void hole.
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SEARCHCAM® 3000 VICTIM LOCATION SYSTEM

Function

Used to visually locate victims trapped in collapsed structures, this system provides the ability to see into crevices as small as two inches. A camera and illumination system located on the ends of each type of system can be electronically articulated 120 degrees in two directions to give the operator a look into the voids of the damaged structure. On-screen graphics direct the rescue team to where and how to begin extraction. The two-way audio allows rescuers to communicate with the victim. Rescuers can record video and voice, as well as take still photos of the search. The 3000 is modular and can be configured to meet the needs of any rescue situation. This section describes the various configurations of the 3000.
SearchCam® 3000

Long Tube Set Configuration

All Systems

• Connect the Standard Length Coiled Cable stored inside the Standard Length Tube Set to the Camera Head and on one side and to the Power Module on the other side. Make sure the cable is inside the tube set. All 3000 cables use Push-Pull action connectors.

• Make sure the smaller end of the Tube Set points towards the camera head.

• Plug the display cable into either of the 7-pin video out ports on the rear of the control console.

• Screw on the collars of the Tube Set onto the Camera Head and the Power Module respectively. Make sure both collars are tight. Collars are design for hand installation. DO NOT use tools to install collars.
SearchCam® 3000 Setup

Display Connection

• Install the Video Display Unit (VDU) onto the Power Module. Position the VDU over the Power Module and slide in the locking plunger into the receiving socket.

• Align guiding pin on the plunger with the guiding channel on the socket.

• Twist VDU clockwise until the plunger locks securely in place.

• Connect cable from the VDU to the back of the Power Module.

• Optionally attach lanyard straps and sunshield.
• Make sure the ON/OFF Switch on the Power Module is in the OFF position. Remove the battery caps from the battery holders and slide two batteries into the Power Module. Install the caps back onto the battery holders. Make sure the batteries are charged.

Camera Probe Configuration in Air

• Feed the 75 foot (23 meter) Camera Extension Cable through the long, oval shaped slot on the Camera Head Rope Coupler and connect it to the back of the Camera Head.

• Screw the Camera Head Rope Coupler onto the Camera Head as shown. The Coupler is design for hand installation. DO NOT use tools to install the Coupler.
• Clip the snap hook, part of the 70 foot (21 meter) Rope with carabiner into the Coupler as shown. Connect the other end of the extension cable to the front of the Power Module.

• Lower the Camera Head into an air void by unwinding the Rope from its Reel. Make sure that the weight of the Camera Head is always taken by the rope, NOT the cable. The Reel may be used as an anchor.

**Camera Probe Configuration in Water**

• Audio is NOT available in this configuration.

• Follow instructions for Camera Probe Configuration in Air.

• Slide Environmental Sleeve onto the Camera Head. Align upper edge of sleeve with lower edge of the previously installed Rope Coupler. Screw the two outer rings of sleeve in closed direction, until the two Red Arrows on the labels align.

• Lower the Camera Head into a void filled with water up to 75 feet (23 meters) deep by unwinding the Rope from its Reel. Make sure that the weight of the Camera Head is always taken by the rope, NOT the cable. The Reel may be used as an anchor.
Super Probe Configuration in Air

- Super Probe Configuration requires two operators. One to hold the Power Module and the other to maneuver the Camera Head.
- Remove the Long Coiled Cable from the Long Tube Set.
- Screw the back end of Long Tube Set onto the Extension Tube.
- Feed the 75 feet Extension Cable through the tubes.
- Connect Extension Cable to Camera Head on one side and to the Power Module on the other. Screw on small collar of Long Tube Set onto Camera Head. Connect the other end of the cable to the Power Module.

- Standard Length Tube Set with Extension Tube Reach Limits: 82” – 133” (208cm – 338cm)
- Long Tube Set with Extension Tube Reach Limits: 103” – 223” (261cm – 566cm)

Super Probe Configuration in Water

- Audio is NOT available in this configuration.
- Follow Super Probe Configuration in Air Instructions.
- Slide the Environmental Sleeve onto Camera Head. Align upper edge of the sleeve with the lower edge of the Tube Set Collar. Screw the two outer rings of the sleeve in the close direction, until the two Red Arrows on the labels align.
- Lower the Camera Head into an void filled with water up to 75 feet (23 meters) deep by unwinding the Rope from its Reel.
- Make sure that the weight of the Camera Head is always taken by the rope, NOT the cable. The Reel may be used as an anchor.
SearchCam® 3000 Operation

**Powering Up**

- Make sure the 3000 has been assembled as per one of the configurations described in the previous section and batteries are installed inside the Power Module.
- Turn ON the Power Module using the ON/OFF switch located on the back of it. The camera will move to the 0 degree position indicating that the Camera Head has been powered up.
- Turn on the VDU using the RED ON/OFF button located in the center of the control pad. The system will take about 15 seconds to “boot up”.

**Shutting Down**

It is important to power down the system in the following sequence, failure to do so could result in lost video images and may corrupt the SD card.

- Press and hold down the RED ON/OFF button for 3 seconds until the Red LED turns off. The system will take about 10 seconds to shut down.
- Wait until the VDU has fully shut down, then switch OFF the Power Module.
- Shut down the system when not in use.

SearchCam® 3000 Controls

**Rocker Switches**

Rocker Switches are located on the hand grip of the Power Module. These switches are used to control the camera’s articulation, illumination, headset volume, and PTT functions. There is also a still image switch.

- The Articulation Rocker Switch moves the camera at the end of the Camera Head left or right. The Camera moves 240 degrees from full left to full right. Hold the left or right side of the rocker switch down to move the camera in either direction. The camera will pause in the center when moving right or left while crossing the 0 degree position.
• Release the switch and then depress again to continue actuating the head. The Camera Head is equipped with a safety clutch.

• The Illumination Rocker Switch turns ON, increases, decreases and turns OFF illumination. Move the rocker switch Right to turn ON and again to increase or left to decrease and eventually turn OFF the illumination. The LED ICON is displayed on the VDU screen when illumination is ON. Intensity level bar is displayed on the bottom of the screen while the switch is operated.

• This Rocker Switch increases (right) or decreases (left) the headset volume. This function is also duplicated on the Video Display Unit.

• The PTT Rocker Switch (with headset installed) controls the communication with the victim. Push the switch left or right to talk to the victim. The switch must be released to listen to the victim’s response.

• The Image Capture Switch allows you to capture a specific image shown on the display and store it onto the SDHC Card. This function is also duplicated on the Video Display Unit. By default, this button is inactive to prevent accidental image capture.
Display Controls

Display controls are located on the Video Display Unit. These buttons control all display functions in addition to recording video and taking photos.

- The Image Capture Switch allows you to capture a specific image being shown on the display and store it onto the SDHC Card.
- Press this button to capture a video clip and store it onto SDHC card. Press it again to stop the video capture. The camera icon will be displayed while the video is being processed and saved. Wait for the icon to disappear before recording another video. Examine the camera lens assembly.
- Press this button to review the last saved video clip or the last saved picture. The playback icon will be displayed during the file review. Press this button again to stop the reviewing.

**NOTE:** Audio is not available during the 3000 recorded video playback. When viewing the recorded video on a PC audio track is available. Inspect the switches and rubber switch cover.

- Press this button to enter the Menu.
- Use these buttons to navigate through the Menu.
- Press the arrow buttons to adjust headset volume up or down. This function is also duplicated on the Hand Grip.
- Press the arrow buttons to adjust display brightness.
- Press the arrow buttons to adjust display contrast.
Look. Listen. Locate.
Using the SearchCam® 3000

**Safety Clutch**

- The 3000 is equipped with a clutch which prevents damage to the gears that move the Camera. During a search operation the Camera may be forced out of its position by an obstacle.

- If the camera if forced away from the center, it will try to return to its last position. If the camera if forced towards the center, it will move to the 0 degree position. The latter feature is designed to ease the extraction of the Camera Head out of a void or a cavity.
Using the SearchCam® 3000

Camera Quick Disconnect (QD)

Change the cameras in dry condition only.

• The 3000 cameras are interchangeable using the Camera QD. Color and Infrared cameras are available. KIT 1 is supplied with the Color Camera installed on the Gearbox/Audio Module. The cameras can be changed while the system is ON or OFF.

• Move the camera to the 90 degree left position. If the system is ON use the Articulation Rocker Switch to do so, if the System is OFF move the camera by hand.

• With your right thumb pull the Quick Disconnect Latch away from the camera. With your left hand hold the camera, twist it counterclockwise then pull it away.
• To install the Camera onto the Gearbox/Audio module align the Guide Pin with the round entry point of the Guide Channel.

• Position the camera concentric with the Gearbox/Audio module.

• Push the camera in and turn it clockwise until the latch “clicks” into place.
Using the SearchCam® 3000

Using the Camera in a Vertical Orientation

- To see an upright image while using the camera in a vertical application, position the VDU as shown below. With this setup the operator can turn his body 360 degrees while holding the camera to explore the cavity under search.
- This technique of using the system can be compared to a submarine periscope.
Connecting the Headset

• To communicate with a victim or listen to the sounds inside a cavity under search, wear the provided headset and connect it to the bottom of the VDU.

• The PTT Rocker Switch controls the communication with the victim. Push the switch left or right to talk to the victim. Release the switch to listen to the victim’s response.
SearchCam® 3000 Maintenance

Camera Quick Disconnect (QD) Maintenance

• Every month the Camera should be removed from the Gear Box/ Audio Module for cleaning and lubrication of the QD connection. Keeping the QD clean and well lubricated will ensure easy Camera replacement.

• Remove the Camera as per Step 1 and 2 of Changing the Camera section on.

• Remove any dirt that has accumulated in the outer part of the Camera QD Cavity.

• DO NOT touch or damage the spring loaded contact pins located in the inner cavity.

• Apply a thin layer of silicon grease to the two orange sealing “O” ring(s). *Note: Some Gear Box/Audio Modules may only come with one “O” Ring.

• Install the Camera back onto the Gearbox/Audio Module as per Step 3, 4 and 5 of Changing the Camera section on.

General Maintenance

• Clean all the parts of the system before storing it. Pay attention to the cable connectors, sockets and all threaded connections, including tube set collars. Keeping dirt from the threads is critical for their smooth operation.

Environmental Considerations

• Collapse and rescue missions occur during all weather conditions. The 3000 is designed to function under most of these conditions. The following are guidelines for operating under more extreme environmental conditions. It is imperative that these recommendations be followed in order to prevent damage to system.

Cold Temperature Conditions

• The system is designed to function at temperatures as low as 14º F (-10º C). However, at temperatures below 32º F (0º C), changes in system operation may occur.
Temperature Guidelines

- Recommended system storage temperature: Between 40°F (5°C) and 80°F (26°C)
- Absolute Minimum Storage Temperature: -10°F (-23°C)
- Absolute Maximum Storage Temperature: 140°F (60°C)

High Temperature Conditions

- The maximum recommended continuous ambient operating temperature for the 3000 is 110°F (43°C). The system is designed to operate at this temperature indefinitely.
- The system can be operated at higher temperatures for shorter periods of time when necessary.
- Avoid leaving the system in direct sunlight when not in use.

High Moisture Conditions

- The entire 3000 system is designed to be water-resistant. The Camera Head is waterproof and can be submersed in water up to 75 feet (26.86m) deep.
- The VDU and Power Module are splash proof only, DO NOT submerge these modules in water.

Post Incident Inspection

- After the 3000 system is cleaned, it is recommended that it is inspected and tested before storage. Once the system has been tested, it should be visually inspected for mechanical damage.

System Packing and Storing

- Store the 3000 Camera System in its original case. This storage arrangement ensures quick rescue launch time.
- Charge the batteries before storage. This a good practice and will allow the system to be used when needed.
- Make sure the Power Module is switch OFF for storage.
- Clean all the parts of the system before storing it. Pay attention to the cable connectors, sockets and all threaded connections, including tube set collars. Keeping dirt from the threads is critical for their smooth operation.
SEARCHCAM® MONGOOSE EXTRICATION CAMERA

Function

Allows rescuers to look into small voids to conduct detailed searches. The lightweight Mongoose can be used by the rescue team to extricate the patient after the search team has moved on to continue the search. The camera head articulates in one direction a total 120 degrees. The probe length is fixed at 22 inches (55.88cm) long.

Mongoose Setup

• Connect the battery pack. The battery pack can be worn on the belt or slung around the shoulder using the lanyard strap shipped with the system.
• Attach the video display to the probe. Align the display plunger with the keyway inside the mating socket. Be sure the collar locks the display into position. The display plugs into the 7-pin connector on the rear of the Mongoose handle.

If using the system in bright areas, install the display sunshield.

**Mongoose Operation**

• Turn the system on by pushing the red button on the rear of the handle.

• Adjust video display brightness and contrast using the controls on the top of the video display.

• The articulation lever protruding from the handle controls the camera head articulation. Pull back on the lever to articulate the camera head up. Release the lever to return the camera head to its straight position.

• The battery saver feature powers the system down after 30 minutes of inactivity.

• Battery run time is approximately 2 hours.
SEARCHCAM® RECON III

Function

The Recon III strikes a balance between the sophisticated SearchCam® 3000 designed primarily for search operations in structural collapse incidents, and the Mongoose, designed to aid in victim extrication.

The Recon III is small enough to be easily manoeuvrable in the rubble for rescue work, yet will extend long enough to be effective in multi-floor search operations. The range of the camera telescopic tube is 27 inches (69 cm) to 46 inches (117 cm).

Recon III Setup

Connecting the Video Display to Recon III Camera

- Pull down the locking collar.
• Slide in the plunger located on the Video display into the locking socket. It may be required to twist the display left or right in order to align the internal keyway of the locking mechanism.

• Release the locking collar.

• Make sure that the Video Display is properly seated in the locking collar mechanism.

• Connect the Video Display cable to the Recon III camera. The connector has a push-pull design.

• Align the guide pin of the connector with the guide slot on the socket and push it in to connect.

• Pull the connector out while holding it by the collar to disconnect.

• Connect Optional Shoulder Sling and Sun Shield if desired.
Recon III Operation

Powering Up

• Remove the battery cap from the battery holder and slide one of the provided batteries sticks into it; hand screw cap back in place.

• Press the Red Power Button located on the back of the Recon III camera for 1 second or until the image appears on Video Display.

• The same button controls camera illumination.

Shutting down

• Press and hold the Red Power Button located on the back of the Recon III camera for 3 seconds or until the image disappears from the Video Display.

• Remove the battery stick from the battery holder before storing the camera.
Telescopic Tubes

• To extend the camera length, loosen the tube collar and pull the telescopic section of the tube out to the desired length.

• Hand tighten the tube collar.

Articulating the Camera

• The camera head articulates 240 degrees from full left to full right.

Drive Collar

• The drive collar controls camera head articulation. Turn the collar to the right to move the camera head to the right. Turn the collar to the left to move the camera head to the left.
• The drive collar has built-in detents feedback. Each detent represents 15 degrees of camera head movement. The arrow located on the drive collar points to a camera head angle position as indicated on the angle indicating label. This angle readout can be used in locating the victim as described in the Void Orientation Guide.

**NOTE:** The drive collar will indicate an incorrect angle readout if the safety clutch is disengaged.

**Safety Clutch**

• The camera head is equipped with a safety clutch. This clutch is designed to prevent any damage to the drive components and it will disengage if the camera is forced against an obstacle during articulation. A symptom of a disengaged clutch is a still image on the display while the drive collar is being turned in the same direction the camera head was being moved before encountering the obstacle.

• To reset the clutch to zero position turn the drive collar all the way in the opposite direction, the clutch will then reset.

• To confirm that the safety clutch is correctly engaged twist the drive collar fully left or right then turn it fully the opposite direction. Observe the screen while doing so, if the image moves during the entire 240 degree articulation of the camera head, the clutch is correctly engaged. This can be done at any time during the search.

**Inserting the Camera into the Cavities Under Search**

• The camera head requires a minimum 2 inches (51 mm) diameter access hole. If debris is encountered impeding passage, the camera should be removed and the path cleared with a breaker bar or suitable tool. Never intentionally push an object with the camera head.

**Extracting the Camera from the Cavities Under Search**

• Extracting the camera from the void under search is generally just a matter of returning the camera head to center position and carefully pulling it out of the void.
Using the Camera Underwater

• The camera head is water proof and can be used underwater up to 46 inches (117 cm) deep.

• While under water the telescopic tube will fill with water. Drain the water out of the tube before collapsing it or before storing the camera in the case. The drain hole is located in front of the control housing.

Camera Head Illumination

• Illumination is controlled by the same red button that controls power.

• Once system is powered ON, momentarily pressing this button toggles camera head illumination from HIGH to LOW to OFF setting.

• In the top left corner of the display two light bulb icons are displayed for illumination HIGH setting and one light bulb icon is displayed for illumination LOW setting. As the rest of the camera screen displays information both icons stay on for only few seconds.
Video Display Brightness and Contrast

• Video display brightness and contrast controls are located on the top of the video display housing.

• To change display brightness, press the Brightness control button. If the button is held down, the display brightness “cycles” from brighter to darker continuously until the button is released.

• Contrast adjustments are made in the same manner as brightness adjustments.

Batteries

• A fully charged battery will typically last for about 120 minutes (2 hours).

• The battery level icon is located in the upper right corner of the display screen. This icon is momentarily displayed when the red power button is pressed. The battery icon will flash when the battery need to be replaced.

• The camera automatically shuts down when battery voltage reaches critical level.

• The camera always draws a small amount of current when connected to a battery, even if the system is turned off.

• When storing the Recon III, remove the battery from the camera.
Recon III Maintenance

- Clean all the parts of the system before storing it. Pay attention to the cable connector, socket, display quick connect and the tube collar. Keeping dirt from the tube collar threads is critical for smooth operation.

- Wipe the display screen using only a small amount of pressure. Whenever possible, blow the screen off with compressed air to remove any abrasive dust before cleaning the screen with glass cleaner. Never spray glass cleaner directly on the display face.

- Apply cleaner to a soft cloth and wipe gently.

- Clean the telescopic tube and the control housing with compressed air first to remove most of the dirt then wipe it down with a damp cloth. Cleaning wipes or a water with detergent can be used to make the cleaning more effective.

Environmental Considerations

The following are guidelines for operating under the more extreme environmental conditions. It is imperative that these recommendations be followed in order to prevent damage to the system.

Cold Temperature Conditions

- The system is designed to function at temperatures as low as 14º F (-10º C). However, at temperatures below 32º F (0º C), changes in system operation may occur.

Temperature Guidelines

- Recommended system storage temperature:
  Between 40º F (5º C) and 80º F (26º C)

- Absolute Minimum Storage Temperature: -10º F (-23º C)

- Absolute Maximum Storage Temperature: 140º F (60º C)

High Temperature Conditions

- The maximum recommended continuous ambient operating temperature for the Recon III is 110º F (43º C). The system is designed to operate at this temperature indefinitely.

- The system can be operated at higher temperatures for shorter periods of time when necessary.

- Avoid leaving the system in direct sunlight when not in use.
High Moisture Conditions

- The entire Recon III system is designed to be water-resistant. The Camera Head is waterproof and can be submersed in water up to 46” (117cm) deep. (see page 15)
- The VDU and Power Module are splash proof only, DO NOT submerge these modules in water.

Post Incident Inspection

After the Recon III system is cleaned, it is recommended that it is inspected and tested before storage. Once the system has been tested, it should be visually inspected for mechanical damage.

System Packing and Storing

Clean all the parts of the system before storing it. Store the Recon III Camera in its original case.

If possible Charge the batteries before storage. This a good practice and will allow the system to be used when needed.
Look. Listen. Locate.
SEARCHCAM® 2000 VICTIM LOCATION SYSTEMS

Searchcam 2000 Victim Location System
Standard Probe

Searchcam 2000 SuperProbe

Searchcam 2000 CableProbe
Function

Used to visually locate victims trapped in collapsed structures, providing the ability to see into crevices as small as two inches. A camera and illumination system located on the ends of each type of system can be electronically articulated 90 degrees in two directions to give the operator a look into the voids of the damaged structure. The three models are all designed to extend the reach of the camera. Searchcam® 2000 models have two-way audio for use in the search process and for communicating with victims. Camera position is displayed on a bar graph on the display in 15 degree increments to facilitate precise victim location.

Searchcam® 2000 Setup

- Attach the video display to the control console. Align the plunger with the keyway inside the mating socket. Be sure that the collar locks the display into position.
- Optionally attach lanyard straps and sunshield.
- Plug the display cable into either of the 7-pin video out ports on the rear of the control console.
• Attach the battery cable from the control console to the connector on the top of a fully charged battery.

• If equipped with the audio package, connect the headphones to the bottom port located on the back of the control console.

**SuperProbe Users**

• Attach the SuperProbe cable to the cable coming from the back of the control console.

**CableProbe Users**

• Attach the CableProbe cable to the cable coming from the back of the control console.

**Searchcam® 2000 Operation**

• Make sure that the system is connected to the battery source.

• Check all cable connections.

• Depress the rocker switch on the control grip to activate system.
To turn the system off, depress and hold down rocker switch for approximately three seconds. The built-in three second delay feature prevents accidental shutdown during use.

Disable Battery Saver Mode if required. With the unit off, simultaneously push and hold the articulation button left, the illumination button right, and then turn the unit on.

Articulate the camera head left or right using the rocker switch. The camera head can be articulated 90 degrees in either direction.

Check camera head direction and position on video display bar graph. Set illumination as required using the illumination rocker switch. Illumination levels are indicated on the video display. Xenon (single lamp) illumination levels are variable. New model LED illumination is on or off.

Set brightness and contrast to desired levels using the controls on the top of the video display.

If using the Searchcam in a vertical position, rotate the camera head 90 degrees to correct the video image. If viewing overhead, rotate the camera head to the right and articulate the head to the left. If viewing below, rotate the camera head to the left and articulate to the right.

If the system is equipped with the audio option, press the PTT switch to talk with a victim. Release PTT key to listen to victim’s response.

Increase or decrease audio levels as required. A microphone status indicator temporarily appears in the center of the video display. A mic symbol remains in the upper row of the display when the mic is on.

Adjust headphone volume using the knob on the ear cup.

Extend the telescoping probe as desired by loosening the clutch collars, pulling out the desired probe length, then retightening the collar. Repeat for each section until the desired length is achieved.

Monitor battery status using the battery status indicator in the upper right corner of the video display.

Battery run time is approximately 3 hours.

System shut-down occurs when residual battery voltage reaches 10.6 volts.

Do not leave a discharged battery connected to the system.
LDC TO LD3 MIGRATION

LDC operators may be presented with a scenario where they have to use the newer LD3 system. Migrating from one system to the other is relatively simple. The general principles are the same. This section highlights special considerations that an operator must know when using each system. It is not designed as an Operator’s Guide. For more detail on each system, refer to the appropriate section in this guide.

LDC Display

LD3 Display
System Setup And Use Considerations

Batteries

• The LD3 uses a single Lithium Ion battery pack that is inserted into the side of the DI console and must be recharged. The LDC uses only disposable batteries.

• A low battery condition on the LDC can cause loss of functions and errors. The LD3 is designed with an automatic low battery shutdown. Battery change in both models should be performed when the LED indicators light.

Sensor Response Graphs

• The LDC model can display responses from only two sensors at a time. The operator selects which sensors will be viewed for comparison on channels A and B.

• The LD3 model displays responses from all six sensors simultaneously for instant visual comparison.

Summing

• The LDC model will sum the visual and audible sensor responses when the channel is set to “A” for “All”.

• The LD3 model will sum all audible responses of all sensors which are selected for listening.

Connections

• There are two sensor ports on the LD3. A T-Cable junction is not required to run two separate strings of sensors.

• There are two headphone ports on the LD3. A headphone splitter is not required.

• Seismic sensor connector polarity is not an issue with the LD3.

Sensor Operation

• Sensors are detected automatically by the DI console of the LD3 models. All sensors will provide at least a low level reading on the sensor bar graphs.

• The LD3 displays the readings of all six sensors simultaneously.

• The operator of the LDC model must choose two sensors at the same time to be viewed and compared.
Sensor Placement

- There are no special considerations between the LDC and LD3.

Intercom Probe/Acoustic Sensors

- Acoustic sensors are used to detect airborne sounds and communicate with a victim in both models.
- In the LD3, acoustic sensors connect directly to the DI console in the same way as the seismic sensors. Up to two acoustic sensors can be used.
- In the LD3, acoustic sensors cannot be mixed with seismic sensors in the same string.
- Acoustic sensors are assigned to sensor keys 1 and 2 on the LD3 model.

Microphone

- The mic on the LDC model is located on the face of the control console. The boom microphone on the LD3 is part of the headphone assembly. The boom mics are muted on the LD3. To allow the two operators to communicate with each other and provide voice-over narration during recording, the microphones on the LD3 can be muted to isolate sensor responses as the only sounds heard. Press the PTT and L-R keys simultaneously to unmute the microphones.

Filtering

- The LD3 uses only Low and High filters. The Low filter activates a low-frequency cut filter that reduces frequencies that are below 200 Hz. The High key activates the high-frequency filter that reduces frequencies that are above 1000 Hz.

Auxiliary Output

- The LD3 is equipped with built-in recording and playback features. There is no need for external recording or playback devices. Remote control commands are not required.
## LDC/LD3 Functional Difference

### Quick Reference

<table>
<thead>
<tr>
<th>LDC Key</th>
<th>LD3 Key</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="SENSOR" /></td>
<td><img src="image" alt="1 ACOUSTIC 2 ACOUSTIC" /></td>
<td>The LDC sensor key selects which sensor will be viewed on the channel A and B bar graphs. Since all six sensors are displayed on the LD3 bar graphs, the sensor selection keys are used to select which of the sensors will be heard in the headphones.</td>
</tr>
<tr>
<td><img src="image" alt="Headphone" /></td>
<td><img src="image" alt="L R" /></td>
<td>The LDC headphone key is used to select which channel will be heard; A, B, or one in each ear for stereo mode. The LD3 headphone key is used only to select two sensors for stereo listening.</td>
</tr>
<tr>
<td><img src="image" alt="Up Down" /></td>
<td><img src="image" alt="Down Up" /></td>
<td>The gain keys function as amplification keys for headphone level in both models and for the zoom level in the LD3.</td>
</tr>
<tr>
<td><img src="image" alt="RUMBLE PWR HISS" /></td>
<td><img src="image" alt="LOW HIGH" /></td>
<td>The Low filter key on the LD3 covers the filter range of both the Rumble and PWR filters of the LDC. The High filter is equivalent to the Hiss filter.</td>
</tr>
<tr>
<td>LDC Key</td>
<td>LD3 Key</td>
<td>Differences</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td><img src="icon" alt="TALK" /></td>
<td><img src="icon" alt="PTT" /></td>
<td>Equivalent keys used for “Push to Talk”. Key must be released to hear a victim response. This key on the LD3, when pressed simultaneously with the L-R Headphone key, mutes the boom microphone in the headsets.</td>
</tr>
<tr>
<td><img src="icon" alt="ON/OFF" /></td>
<td><img src="icon" alt="REC" /></td>
<td>Equivalent keys for On/Off. Activates the Record feature only available on the LD3. Press this key to begin recording the audio being sent to the headphones.</td>
</tr>
<tr>
<td>N/A</td>
<td><img src="icon" alt="PLAYBACK" /></td>
<td>Activates the Playback feature. Press this key to listen to recorded sensor responses. Use in conjunction with the 3,4, 5, and 6 keys to control how the recording is played back.</td>
</tr>
<tr>
<td><img src="icon" alt="HIGH" /> <img src="icon" alt="LOW" /></td>
<td><img src="icon" alt="ZOOM" /></td>
<td>Indicates gain level in both models. Also indicates battery level and zoom level in the LD3. Changes the resolution of the bar graph to better differentiate the signals in high level conditions. Only available in the LD3.</td>
</tr>
</tbody>
</table>
Seismic and acoustic sensors

Seismic and acoustic sensors are unique to each model and cannot be mixed. Seismic and acoustic sensors cannot be connected simultaneously on the LD3 model. The LD3 model can use two acoustic probes.

---

<table>
<thead>
<tr>
<th>LDC Key</th>
<th>LD3 Key</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Alert LED" /></td>
<td><img src="image" alt="LO BATT LED" /></td>
<td>Low battery level is indicated by the Alert LED on the LDC and by the LO BATT LED on the LD3. The LD3 has automatic low battery shutdown. The LED will flash 10 minutes prior to shutdown. Pushing this button on the LD3 will display the residual battery level on the green bar graph.</td>
</tr>
</tbody>
</table>
Useful Information
Look. Listen. Locate.

Look. Listen. Locate.
HAND SIGNALS

Helicopter Hand Signals

CLEAR TO START ENGINE

HOLD ON GROUND

MOVE UPWARD

MOVE DOWNWARD

HOLD HOVER

CLEAR TO TAKE OFF

LAND HERE, MY BACK IS TO THE WIND

MOVE FORWARD

MOVE REARWARD

MOVE LEFT

MOVE RIGHT

MOVE TAIL ROTOR

SHUT OFF ENGINE

FIXED TANK DOORS

RELEASE SLING LOAD

WAVE OFF DO NOT LAND
Crane Hand Signals

Always stand in clear view of your crane hoist engineer. Be sure to stay a safe distance from hook, block or boom.

- **HOIST**
  - With forearm vertical, forefinger pointing up, move hand in small horizontal circles.

- **LOWER**
  - With arm extended downward, forefinger pointing down, move hand in small horizontal circles.

- **USE MAIN HOIST**
  - Tap fist on head, then use regular signals.

- **USE WHIP LINE**
  - (Auxiliary Hoist) Tap elbow with one hand, then use regular signals.

- **RAISE BOOM**
  - Arm extended, fingers closed, thumb pointing upward.

- **LOWER BOOM**
  - Arm extended, fingers closed, thumb pointing downward.

- **MOVE SLOWLY**
  - Use one hand only to give motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example).

- **RAISE THE BOOM & LOWER THE LOAD**
  - With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.

- **LOWER THE BOOM & RAISE THE LOAD**
  - With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.

- **SWING**
  - Arm extended, point finger in direction of swing of boom.

- **STOP**
  - Arm extended, palm down, move arm back and forth horizontally.

- **EMERGENCY STOP**
  - Both arms extended, palms down, move arms back and forth horizontally.

- **Look. Listen. Locate.**

- **Forearm vertical, forefinger pointing up, move hand in small horizontal circles.**

- **Arm extended, fingers closed, thumb pointing up.**

- **Arm extended, fingers closed, thumb pointing down.**

- **Use one hand only to give motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example).**

- **With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.**

- **Arm extended, point finger in direction of swing of boom.**

- **Arm extended, palm down, move arm back and forth horizontally.**

- **Both arms extended, palms down, move arms back and forth horizontally.**
Arm extended forward, hand open and slightly raised, making pushing motion in direction of travel.

Clasp hands in front of body.

Both fists in front of body with thumbs pointing outward.

Both fists in front of body with thumbs pointing towards each other.

One hand signal, one fist in front of chest with thumb tapping chest.

One hand signal, one fist in front of chest, with thumb pointing outward and heel of fist tapping chest.
GRAPH PAPER
VOID ORIENTATION GUIDE

Date ___________________ Time __________________ (HRS)

Search Team _______________________

Search Team Name(s) _______________________

Rescue Team Agency _______________________

Rescue Team Name(s) _______________________

Void Access Location _______________________

GPS Coordinates _______________________ Handoff Time ___________ (HRS)

VICTIM AGE & GENDER

☐ Adult □ Male

☐ Child □ Female

VICTIM STATUS

☐ Deceased

☐ Life Threatening

☐ Serious

☐ Minor

VICTIM LOCATION MARKING PLACED AT ACCESS POINT

VOC ______ - ______ - ______

PROBE PENETRATION DEPTH:

List probe depth below surface.

MARK CAMER ARTICULATION AND VICTIM’S APPROXIMATE DEPTH

MARK VICTIM’S DISTANCE AND LOCATION

TYPE OF VOID ACCESS

☐ Existing

☐ Bore Hole

LEFT ARTICATION

RIGHT ARTICATION

0° 15° 30° 45° 60° 75° 90°
Instructions

Use this Void Orientation Guide (VOG) to indicate a victim’s position. The guide can then be handed off to other rescue personnel.

1. After locating the victim, estimate the distance the victim is from the void hole.
2. Based on the clock drawn, estimate the victim’s position in relationship to the hole.
3. Mark the two coordinates on the VOG.

4. With the camera probe perpendicular to the external surface plane, determine the camera articulation. This is shown on the Searchcam video display in 15 degree increments.
5. Determine the probe’s penetration depth below the surface and list on the VOG.
6. Estimate the depth of the victim from the void surface.
7. Plot coordinates on the VOG.
8. Mark VOC (Void Orientation Coordinates) along with appropriate FEMA victim location markings on void surface and the VOG. See flap for more information and marking examples.
# Void Orientation Guide

## Mark Victim’s Distance and Location

<table>
<thead>
<tr>
<th>Distance</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0 m</td>
<td>15°</td>
</tr>
<tr>
<td>3.7 m</td>
<td>30°</td>
</tr>
<tr>
<td>4.3 m</td>
<td>45°</td>
</tr>
</tbody>
</table>

## Mark Camera Articulation and Victim’s Approximate Depth

<table>
<thead>
<tr>
<th>Articulation</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>0 m</td>
</tr>
<tr>
<td>Right</td>
<td>0 m</td>
</tr>
</tbody>
</table>

## Probe Penetration Depth

Fill in the probe depth below the surface.

## Deceased Marking

- Placement at access point
- VOC format (e.g., 33-24-3)

## Type of Void Access

- Existing
- Bore Hole

## Victim Age & Gender

- Adult
- Child
- Male
- Female

## Victim Status

- Deceased
- Life Threatening
- Serious
- Minor

## Victim Location Marking

### Place at Access Point

- VOC format

---

**Date** ____________________________ **Time** __________________ (HRS)

**Search Team** ____________________________

**Search Team Name(s)** ____________________________

**Rescue Team Agency** ____________________________

**Rescue Team Name(s)** ____________________________

**Void Access Location** ____________________________

**GPS Coordinates** ____________________________ **Handoff Time** ___________ (HRS)
Instructions

Use this Void Orientation Guide (VOG) to indicate a victim’s position. The guide can then be handed off to other rescue personnel.

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8. Mark VOC (Void Orientation Coordinates) along with appropriate FEMA victim location markings on void surface and the VOG. See flap for more information and marking examples.
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