Effective damage control communications is one of the most important elements in successfully combatting casualties. There are a number of damage control communications systems available on every ship ranging from sound powered phones and circuits to various wireless communications systems. The design of the damage control communication systems found on ships is determined by complexity of the ship. It is critical that each person become familiar with their particular ships systems and capabilities in the event of damage or loss to their primary communication system(s).

Information on your ship’s particular damage control communication systems can be found within your ship’s Damage Control book, Ships Information books (SIBs) and Damage Control Plates/Diagrams for Emergency Communications Directory.

There are a number of installed and portable Emergency Communication systems and equipment available onboard with some of the systems available in various spaces and DCRS and all or some portable equipment available in DCRS, DCUL, DCUPS or DCREL that can be used to establish effective communications during shipboard casualties. Some of these communication systems are used on a regular basis for general communicating but are also considered to be for use as an Emergency Communication system.

Emergency Damage Control Communications Systems/Equipment
- General Announcing System (1MC)
- Integrated Voice Communications System (IVCS)
- Sound Powered Phones/Circuits
- X40J and Cable reel (Salt & Pepper lines)
- WIFCOM
- Standard Damage Control message blanks
- Damage Control Action Management Software and equipment
- Damage Control Tactical Management System
- Portable Radios
- Damage Control Plate/Diagram (Communication Directory)
Each ship is required to have an Emergency Communication plan. This plan contains the stations FROM / TO and then the primary, secondary and tertiary circuits in the event there is loss of communications. Ships should practice loss of primary communications during various drills to ensure the crew is aware of secondary circuits for re-establishment when their primary circuits are lost. When major shipboard casualties occur it is almost certain that there will be a loss of communications, it is critical to re-establish communications as quickly as possible. Ships are also recommended to maintain a Damage Control Communication Bill which lists circuits alphabetically with the location of their outlets. The systems are also cross-indexed, listing individual stations and showing the various circuits installed at these stations. This information not only duplicates the damage control circuits shown on communication diagram, but also lists all sound-powered telephone circuits in the ship. It is not enough to lists the circuits and locations as shown on the diagram. The bill must be created by actually sighting the circuits and locations. This physical check validates the diagram and can find discrepancies or undocumented changes.

Sound-powered telephone systems or IVCS are the principal means of communications between DCC and command ship control and engineering stations. Sound-powered telephone and IVCS circuits are classified according to function

- **Primary** - Sound powered telephone/IVCS circuits designated for primary control and operating functions associated with ship, weapons, aircraft, engineering and DC.
- **Auxiliary** - Additional sound-powered telephone/IVCS circuits providing alternate means of communication for select stations serviced by primary sound-powered telephone circuits.
- **Supplementary** - Circuits providing sound-powered/IVCS communications for various subordinate control, operating and service functions.
- **Miscellaneous** - Any sound-powered telephone circuits not included in the above classifications.

Principal shipboard battle stations such as the bridge, CIC, main engineering control, and secondary conn are most likely linked by primary and auxiliary sound-powered phone circuits. All sound powered phone circuits are designated by a combination of numbers and letters such as 2JZ, X2JZ, X40J, etc.

Ships which have Integrated Voice Communications Systems (IVCS) installed will utilize IVCS as their primary communications circuit and the sound-powered telephone circuits will be designated as secondary communications circuits.

Ships service telephones, where installed, maybe used as an alternate means of damage control communication. They should not be solely relied upon because they are not durable and can be easily damaged in shipboard casualties and battle conditions.
**Wireless Communications.** There are a number of wireless communications systems onboard ships, some designated solely for damage control purposes such as Damage Control Wire free Communications (DCWIFCOM) to various others such as Hierarchical Yet Dynamically Reprogrammable Architecture (HYDRA), Wireless Interior Communication System (WICS) and Ship-wide Interior Wireless Communication System (SWICS) which can also be used in the event they are needed. Wireless communications provide a very flexible and easy to use system and are constantly evolving. Many ships use these systems today as a primary communication system since the portable hand held radios can go virtually anywhere are always attached to key personnel in command and control and damage control positions. There are however some limitation and personnel must be aware of specific areas of reduced transmission and dead zones as well as emissions control in effect on system availability.

In damage control scenarios, portable radios are issued to key personnel (i.e., the Investigators, On Scene Leader and Attack Team leader) to be used as the primary means of communications within the DCRS AOR. An alternate means of communications must be established in the event that this system for any reason becomes unavailable. Sound powered phones with portable cable reels and messengers with message blanks are always a viable and reliable alternative.

Lesson learned from the USS COLE incident indicated that portable hand held radios were the primary source for communicating, however there were limitation to its capabilities due to the magnitude and extent of damage that impacted the ship. Keep in mind when power is lost that there will be reduced capabilities and that portable radio batteries require charging. Battery management is vital to the continued performance of radios during an incident especially when power is reduced or lost. Depending on the location and duration that power is lost recharging of batteries may become an issue and wherever power and chargers are available these location will become the major hub for recharging of radio batteries and must be known. If there is a total loss of power then recharging of portable radios can only be done so by operating the portable damage control generator with portable battery chargers and then so radio communications most likely will only be line of site since all other ancillary equipment used to operate the wireless system will be OOC. If the coaxial cable/antenna is damaged from the casualty then radio transmission will be reduced and communications becomes more challenging. If assistance is alongside then batteries can be passed to and recharged by the ship rendering assistance but they must have the same type system unless the chargers are passed along with the batteries to the rendering ship. Knowing and being prepared for these limitations is a key to recoverability of communications.

**X40J Circuits.** The X40J is an emergency damage control communication system and it is normally employed in the event of a major casualty where primary, auxiliary and supplementary communications circuits fail. The X40J is comprised of permanently installed risers with sound-powered jack boxes in various locations usually between decks with some risers on the weather decks. Two-gang or four-gang jack boxes installed at the risers are normally wired in parallel to allow for multiple connections. Portable cables (salt and pepper lines) can be strung from these riser jack boxes to various locations to re-establish communications between repair parties or command and control stations.

**Damage Control Symbology.** Damage Control Symbolgy is shorthand used by the Damage Control organization to communicate and plot damage throughout the ship. DC symbology is written on standard DC message banks and then plotted on DC subdivision plates to summarize damage in each compartment and to illustrate the ships overall survivability status. All personnel shall be trained in writing and reading DC symbology since they may be assigned as a messenger during any casualty.
Electronic plotting using casualty ICONS within the Damage Control Action Management Software (DCAMS) is now being installed in various ships. Computer generated ICONS are used in place of the standard DC symbology to communicate and plot damage to illustrate the ships overall survivability status. Training with standard DC symbology on message blanks and DC plates should still be conducted for ships with DCAMS in the event that the system is lost due to a casualty.