LEARNING OBJECTIVES:

2.02.01 Explain the importance of communication systems.

2.02.02 Identify characteristics of the following types of communication equipment:

a. Public Address System
b. Telephones
c. Pagers
d. Radios
e. E-mail

2.02.03 Recognize what are illegal actions when using communication systems.

2.02.04 Identify general attributes of good communication with any form of communication systems.

2.02.05 Identify requirements that apply to basic radio and phone communications.

IMPORTANCE OF COMMUNICATION

2.02.01 Identify the importance of communication systems.

Since accurate communications are essential for the safe and efficient operation of facilities, guidance in the use of the various forms of audible and verbal communication is necessary. These communications must be controlled to ensure that they do not detract from normal operations and are available in an emergency.

Audible communications are used to transmit operating, administrative, and emergency information within a facility. Face-to-face, telephone, radio, public address announcements, sound-powered phones, and special sounds (e.g., horns and bells) are examples of audible communications. This includes repeating back instructions to ensure accurate transmission and receipt of verbal instruction. Standardized terminology and the use of phonetic alpha-numerics (Table 1) are other means of ensuring that verbal communication are understood.
Table 1. Phonetic Alphabet and Numbers

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<tr>
<td>A - Alpha</td>
<td>N - November</td>
<td>1 - One</td>
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<tr>
<td>B - Bravo</td>
<td>O - Oscar</td>
<td>2 - Two</td>
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<tr>
<td>C - Charlie</td>
<td>P - Papa</td>
<td>3 - Three</td>
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<tr>
<td>D - Delta</td>
<td>Q - Quebec</td>
<td>4 - Four</td>
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<tr>
<td>E - Echo</td>
<td>R - Romeo</td>
<td>5 - Five</td>
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<tr>
<td>F - Foxtrot</td>
<td>S - Sierra</td>
<td>6 - Six</td>
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<tr>
<td>G - Golf</td>
<td>T - Tango</td>
<td>7 - Seven</td>
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<tr>
<td>H - Hotel</td>
<td>U - Uniform</td>
<td>8 - Eight</td>
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<tr>
<td>I - India</td>
<td>V - Victor</td>
<td>9 - Nine</td>
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<td>J - Juliet</td>
<td>W - Whiskey</td>
<td>0 - Zero</td>
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<td>K - Kilo</td>
<td>X - X-Ray</td>
<td>. - Point</td>
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<td>L - Lima</td>
<td>Y - Yankee</td>
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<td>M - Mike</td>
<td>Z - Zulu</td>
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TYPES OF EQUIPMENT

2.02.02 Identify characteristics of the following types of communication equipment:

a. Public Address System

Public Address Systems (PAX)

The Public address system uses a system of loud speakers and calling stations to make general announcements throughout the facility. Not all facilities at Hanford have this system.

The use of the facility public address system shall be administratively controlled to ensure it retains its effectiveness in contacting facility personnel. Excessive use of the public address...
system for paging of personnel and for unnecessary announcements shall be avoided because excessive use can reduce the impact of important announcements and can be distracting.

Facility telephones and other point-to-point communication channels shall be used in lieu of the public address system whenever practical. Consideration shall be given to dedicating certain paging system channels to specific groups or functions (i.e. a dedicated channel for routine operations or a dedicated channel used only for emergencies).

2.02.02 Identify characteristics of the following types of communication equipment:

b. Telephones

Telephones

General

The Hanford site is serviced by U. S. West Communication telephone system. The system allows offsite calls to be dialed directly to the desired office rather than through a plant-wide switchboard. Dial the standard seven digit number. Not all phones have the ability to make local or long distance calls. Phones at some facilities have a voice mail system as a means of leaving messages. Use of site telephones is for local calls only and only for official business. For information or directions on how to use the telephone system, call Quest at 376-6001.

Always answer the telephone with your location and name (i.e. "RCT Shift Office, This is John Smith"). The caller should identify him/herself and state his/her message.

The Hanford Local Area Network (HLAN) contains the Hanford Phone Directory program for locating personnel. This program provides the person's location, phone number, mail stop, organization code and manager's name. Alternate directories are also available by selecting Listings while in the program which provides phone numbers of services available at the site.

Cellular Phones

Cellular phones are also common to the Hanford site. These phones work the same as the line phones but can be transported to remote work locations and used as a means to transmit information. A limitation for cellular phones is the short battery life. Leave phones turned off until needed and have additional batteries available.

Examples of circumstances that constitute authorized use of a cellular telephone are as follows: (All examples assume that a standard wire line telephone service is not available.)
1. An employee injured on-the-job may call to notify family, doctor, or others.

2. An employee required to work overtime without advance notice may call within the local service area to advise her or his family of the change in schedule, or to make alternative transportation or child care arrangements.

3. An employee may make a brief call to locations within the local service area to speak to spouse or minor children, or those responsible for them. NOTE: Health and welfare considerations are the only acceptable reasons for the call.

The following uses of government owned cellular telephones are prohibited:

1. Personal long distance calls.

2. Transfer of cellular telephone property, unless management approval is obtained for organization to organization transfer.

3. Use of a cellular telephone in secure conference rooms.

4. Discussing classified information over unprotected cellular telephones.

5. Providing the cellular telephone number to callers not authorized to conduct official business with the government.

6. Local personal cellular telephone calls, unless and only if, wire line telephone service is not available.

The users are responsible for the cellular telephone assigned to them and will take necessary precautions to protect the equipment from loss or theft. Discussion of unclassified controlled nuclear information, business sensitive, proprietary, applied technology, or personal information over unprotected cellular telephones should be limited to the prevention of emergencies. Each user will take precautions to control what is being said. Discussing unclassified communication is allowed; however, the user must ensure that sensitive unclassified information is not divulged over an unprotected cellular telephone unless emergency conditions make it necessary. The use of cellular phones around certain radiological and plant monitoring equipment can cause detrimental effects to the operation of the equipment. Equipment such as Continuous Air Monitors (CAM), Area Radiation Monitors (ARM), and some portable radiation monitoring instruments are known to be effected. Exercise caution when operating cellular phones around these types of equipment until the effects are known.
Crash Phones

Some telephones are designated as "crash phones". These phones will ring with one continuous ring until picked up. Pick up the receiver but do not speak. Emergency information will be transmitted by the calling station after enough stations have picked up. Directions to respond to a given emergency will also be given.

2.02.02 Identify characteristics of the following types of communication equipment:

   c. Pagers

Pagers

Personal pagers can be provided to personnel working away from office areas where a facility paging system cannot be heard. In addition to beeping, pagers can vibrate and flash a light to get the person's attention. To contact someone with a pager, dial 85 with a site phone or 373-PAGE (7243) at any phone. Using a touch tone phone, press the four digit pager number, and a recording will ask you to enter the phone number that you wish to be displayed on the pager. HLAN also has a pager program called Hanford Pager that allows for the transmitting of printed messages to the pager in addition to phone numbers.

NOTE: There are areas on the Hanford site where pagers will not work reliably (e.g., inside of the 327 building).

2.02.02 Identify characteristics of the following types of communication equipment:

   d. Radios

Radios

Portable radios can be an effective means of providing mobile point-to-point communications and may be used for this purpose. Radio usage shall not be allowed in areas where electronic interference with facility equipment may result. Areas where radio usage is prohibited shall be posted. Instructions regarding frequencies (channels) and postings should be provided by the facility. Certain radio channels are dedicated to specific groups or functions (i.e. a dedicated channel for security or a dedicated channel employed for integrated surveillance tests).
The use of radios around certain radiological and plant monitoring equipment can cause detrimental effects to the operation of the equipment. Equipment such as Continuous Air Monitors (CAM), Area Radiation Monitors (ARM) and some portable radiation monitoring instruments are known to be effected. Exercise caution when operating radios around these types of equipment until the effects are known.

2.02.02 Identify characteristics of the following types of communication equipment:

   e. E-mail

**E-mail**

Employees with access to HLAN can also use an electronic mail service called E-mail or Microsoft Outlook which can provide written information to many people and facilities or groups that also have E-mail. Computer files can be sent electronically as well. This system is not intended for transmitting official copies of policy or procedures. Those should be formally promulgated by official channels. E-mail is for official company business and shall not be used for personal messages.

The E-mail system is designed to be an informal information delivery medium. It is not intended to be a permanent filing system and repository. Operational procedures are in place that automatically prune E-mail messages from message logs, in boxes, and sent item folders after a 30-day aging period. This gives the E-mail user a reasonable period of time to take action to disposition messages to a personal filing system, such as a subject folder or archive on their hard drive.

E-mail requirements include the following:

1. E-mail messages shall be created and used without any expectation of privacy.

2. E-mail shall not be used for personal, commercial, religious, political, or other activities unrelated to government business.

3. E-mail messages will be businesslike, courteous, and civil; will not contain expressions of bias against individuals or groups; and will not disseminate offensive or prurient material.

4. Because the electronic communication network is unsecured, the E-mail system shall not be used to transmit information for which access is restricted.
5. Appropriate program personnel, such as program managers or attorneys, may review any messages on the E-mail system, may use any messages for legal purposes, and may disclose such messages to third parties including responses to requests for information Under the Freedom of Information Act. Users of the E-mail system give their consent for this by their use of the system.

6. The E-mail system is not a private communication medium. Violation of this policy may subject the employee to disciplinary measures, including termination.

7. Only E-mail messages suitable to be retained for business purposes will be saved to senders and receivers.

FCC AND DOE RULES AND REGULATIONS

2.02.03 Recognize what are illegal actions when using communication systems.

By Federal Communications Commission and Department of Energy rules and regulations, it is illegal to:

1. Use profane, indecent or obscene language.
2. Willfully damage or permit radio equipment to be damaged.
3. Cause malicious interference with any radio communications.
4. Intercept and use or publish the contents of any radio message without the permission of the proper authorities.
5. Make unnecessary or unidentified transmissions.
6. Transmit without first making sure that the transmission will not cause harmful interference.
7. Make any adjustments, repairs or alterations to a radio transmitter without being licensed by the FCC or accepted equivalent.
8. Transmit a call sign, letter or numeral which has not been assigned to your station.
9. Rebroadcast another transmission (i.e. radio station music).
Conviction of any of the above offenses could result in a fine, imprisonment or both.

**GENERAL ATTRIBUTES OF GOOD COMMUNICATIONS**

1. Minimize the use of abbreviations and acronyms. Only abbreviations and acronyms from an approved list should be used in facility communications.

2. Make all oral instructions clear and concise. Do not include multiple actions in a verbal instruction, which could get confused or misunderstood.

3. Ensure the identity of the people are clearly understood. Identify yourself and your position, and ensure that you know to whom you are speaking by name and position.

4. Use clear, precise terminology. Do not use slang terms. Avoid words that sound alike (i.e. avoid the use of "increase" and "decrease", rather use "raise" and "lower"). Use commonly agreed upon terms.

5. Use both the noun name and number of equipment.

6. Repeat back messages, either paraphrased or verbatim, orders must be repeated back verbatim.

7. Speak distinctly and deliberately.

8. Acknowledge all communications.
2.02.05 Identify requirements that apply to basic radio and phone communications.

The following requirements are normally applicable to verbal directions:

1. The instructions are given using clear, concise expressions and terminology. When alpha-numeric information is being communicated, use the phonetic alphabet to minimize misinterpretation. (See Table 1).

2. Directions are explicit and understandable. A good format for a radio transmission would include:

   - Who am I? (sender's identification)
   - Who am I calling? (intended receiver's identification)
   - Where am I? (sender's location)
   - What do I want? (information or direction)
   - What else do I have? (clarification or additional information)

   i.e. "P-39 to Station 13. Need a personnel check out at 242-S. Three people to survey out."

3. If the operator is given an action to perform and the operator cannot or believes that he/she cannot follow the directive, then the operator is obligated to communicate those concerns to the originator of the directive or to management.

4. If the recipient repeats or paraphrases the message incorrectly, the originator immediately shall correct the recipient by saying "Wrong" and repeats the message.

5. If the recipient does not understand the message, the recipient shall ask the originator to repeat or rephrase the message.

6. Some verbal instructions may need to be supplemented with written guidance to ensure important information is not forgotten.

7. Sender and receiver identification shall be included in each radio message. Once initial identification has been established on the telephone or other point-to-point system, it need not be repeated with each message.
8. The radio or microphone should be held about 3 to 4 inches in front of and slightly to the side of the mouth. The radio or microphone should also be turned sideways so that you are not speaking directly into the microphone.

9. Speak slowly and in a normal tone of voice. The most common cause of unintelligible transmissions is holding the microphone directly in front of the mouth and shouting.

10. Always practice radio courtesy including:
   - Wait until the airway is clear before sending a message.
   - Never interrupt another station unless you have emergency traffic for the network and he/she does not.
   - Identify yourself by your unit number at all times. Do not use personal names.
   - When calling another unit and receive no answer, call twice only, then clear the net.
   - Keep conversations brief and confined to business.

11. Remember to state: "This is a drill message" before and after each drill communication.

SUMMARY:

The Hanford site covers an area of about 560 square miles and employs several thousand individuals. To effectively coordinate the activities of this size project, important information must be shared by many people. The public address system, telephone, radio and paging system all contribute to the individual's ability to work as a unit. During emergencies, these same systems are used to alert people and direct activities to protect personnel and control the situation.

REFERENCES:

1. HNF-PRO-2149 (FH); “Electronic Mail Messaging System”