

LEARNING OBJECTIVES:

- 2.02.01 Explain the importance and general attributes of good communication.
- 2.02.02 Identify the methods of communication, verbal and non-verbal, and determine different types of each.
- 2.02.03 Describe the types of communication systems available at LANL.
- 2.02.04 Describe the FCC and DOE rules and regulations regarding proper use of communication systems.
- 2.02.05 Explain the importance of knowing how to contact key personnel, and the methods available during an emergency.

Reference: DOE Order 5480.19 chapter 4

2.02.01 Explain the importance and general attributes of good communication.

IMPORTANCE OF COMMUNICATION

Good communication is important in everyday life to make sure our message is clear, understood, and received. A clear concise communication eliminates confusion and the possibility of misunderstanding.

For a good communication process there must be a sender, a clear concise message, a medium of transmission (i.e. telephone, telegraph, E-mail, letter, signal flag, etc.), and a receiver.

The receiver is the person or group that the communication is intended. It is important that the receiver understand the communication without unnecessary interpretation or guess work. Too often we often assume, without checking, that the receiver understood.

If a response is required, this can serve as confirmation of reception of the communication; however, a response does not indicate the communication was understood correctly. Misunderstanding of communication can potentially cause personal injury as well as physical damage to equipment and surroundings.

In all communication processes, the sender of the communication must not assume knowledge that is needed by the receiver. The communication should contain all pertinent information. Assuming or hoping the receiver has an understanding of a process can lead to an unsafe condition. This is especially true in emergency situations that require immediate action or response. Make sure in all communications that desired responses are not outside the abilities or scope of the individual or group.

GENERAL ATTRIBUTES OF GOOD COMMUNICATIONS

- Minimize the use of abbreviations and acronyms. Only abbreviations and acronyms from an approved list should be used in facility communication.
- Make all oral instructions clear and concise. Do not include multiple actions in a verbal instruction which may get confused or misunderstood.
- Ensure the identity of the person(s) is/are clearly understood. Identify yourself and your position, and ensure that you know to whom you are speaking.
- Use clear, precise terminology. Do not use slang. Avoid words that sound alike. Use commonly agreed upon terms. Employ the phonetic alphabet for clarification. (See Table 1)

Table 1. Phonetic Alphabet and Numbers

A - Alpha	J - Juliet	S - Sierra	1 - One
B - Bravo	K - Kilo	T - Tango	2 - Two
C - Charlie	L - Lima	U - Uniform	3 - Three
D - Delta	M - Mike	V - Victor	4 - Fo wer
E - Echo	N - November	W - Whiskey	5 - Fife
F - Foxtrot	O - Oscar	X - X-Ray	6 - Six
G - Golf	P - Papa	Y - Yankee	7 - Se ven
H - Hotel	Q - Quebec	Z - Zulu	8 - Eight
I - India	R - Romeo	. - Point	9 - Nin er
			0 - Ze ro

- Repeat back messages, either paraphrased or verbatim.
- Speak distinctly and deliberately.
- Acknowledge all communications.

2.02.02 *Identify the methods of communication, verbal and non-verbal, and be able to determine different types of each.*

METHODS OF COMMUNICATION

Communication can be verbal or nonverbal. More generally, communication can be oral, written, or non-verbal. (Sometimes the term "verbal" is limited just to "oral", sometimes "verbal" is used to include both "oral" and "written".)

Oral methods of communication include talking directly to another person, telephone conversation, voice mail, video tele-conferencing, and various other available media. These methods generally allow discussion of details followed by questions and/or an immediate response. Oral communication allows flexibility in the message along with added information. Misunderstandings can arise if there is noise or other distractions.

Written communication includes letters, memos, documents, and E-mail. In this form of communication, misunderstandings may arise because there is a delay between asking and responding to questions. What I mean to say is not necessarily what you think I mean.

Nonverbal methods of communication include signs, signals, gestures, and various other media. Nonverbal methods can limit the amount of information transmitted.

Misunderstandings can be minimized by agreeing on a standard set of signals beforehand.

All three methods of communication are subject to misunderstanding. The clearest communication often combines all three methods, e.g. you might state some instructions orally, while using facial expressions and gestures, and confirm the information with a written document.

A similar example is the use of the "3 t" method of communication that could be used at a pre-job briefing: "Tell them what you are going to tell them, then tell them, and finally tell them what you told them".

Exercise: In class, be prepared to discuss examples of different types of communication. The following exercises are suggested.

Choose one of the following subjects and try to explain it either (a) with words but no gestures, or (b) with gestures but no words.

1. a technical subject, job, or hobby you are familiar with.
2. how to get to your house, or workplace.
3. how to use chopsticks.
4. the rules of baseball, basketball, etc.
5. how to do a contamination survey.
6. how to response-check a portable radiological-survey instrument.

2.02.03 *Describe the different types of communication systems available at LANL.*

COMMUNICATION SYSTEMS

There are many communication systems available at LANL. These include public address systems, telephones, two-way radio, pagers, computer mail system, and computer based bulletin boards. Following is a brief generic description of each of these communication systems. The description is not meant to be all inclusive, but an overview of key aspects of each system.

Exercise: Classify each of these as either oral, written, or non-verbal, and discuss the possible misunderstandings that might arise in using these methods of communication.

Public Address

The public address system consists of loud speakers and calling stations located throughout an area to provide audible notification to all personnel within the area. The public address system may be used for routine messages, contacting large groups, items of interest to the general population, and emergency notifications or warnings. The public

address system should be administratively controlled to ensure effectiveness in contacting facility personnel and availability during emergency conditions.

Telephones

Telephones provide a means for oral communication between two people. The telephone may be considered semiprivate when compared to the public address system; however, while on a DOE facility, all calls are subject to monitoring for security reasons.

Voice Mail

The LANL telephone system allows you to leave a voice message whenever the receiving party is unavailable. You have no way of knowing, however, if the other person received or understood your message, unless you leave a return number and ask for confirmation.

Two-way Radio

Two-way radio communication provides a direct link to other individuals on your frequency or net. Although "traffic" on the radio may impair your message from being clearly understood, usage is controlled by possession of a radio with the correct frequency. Radio communication is subject to interference by outside sources, which may garble or mask the message. This may be of significance during emergency situations when location or type of emergency in progress must be relayed to response teams. Two-way radios do provide mobility and access while at remote locations.

Pagers

Most ESH-1 personnel carry pagers. These are small electronic devices capable of receiving signals from the telephone system to alert the carrier of intended communication from another party. Pagers provide access to personnel while away from the work location, but they provide only a voice message or phone number to contact. Pagers do not allow the carrier to respond directly to the page. Pagers provide a means of contacting a person immediately when their whereabouts are unknown, but they are assumed to be nearby and wearing their pager.

Some ESH-1 personnel carry pagers that receive a voice message. A different type of pager, used by many ESH-1 personnel, requires the caller to use a digital (touch-tone) phone to enter a telephone number. The person receiving the page then phones the sender.

Exercise: find a member of the class who has a type of pager (digital or voice) that you have not used before, and page them.

FAX

Most group and team offices have a fax, which can be used to send or receive a facsimile of a sheet of paper containing typed or handwritten instructions, sketches, diagrams, etc. Transmission takes a few minutes, but it may take longer for the message to get to the individual for whom the message is intended.

Computer Mail Systems

Computer mail systems provide communication between computer terminals. Most systems are linked via a network. This links enable users to contact individuals or groups directly and leave written messages for these individuals to receive. This is called e-mail. Not everyone at LANL has access to e-mail.

Computer Bulletin Boards

Computer bulletin boards provide communication to anyone with access to the bulletin board. The sender provides messages or information without knowing who will receive the information. Usually messages and information of general subject matter or routine information that apply to most users are available on a bulletin board. Most bulletin boards are controlled with minimal requirements for access. Bulletin boards provide a means for communicating with a large diverse group.

2.02.04 Describe the FCC and DOE rules and regulations regarding proper use of communication systems.

FCC AND DOE RULES AND REGULATIONS

By Federal Communications Commission and DOE rules and regulations, it is illegal to:

- Use profane, indecent, or obscene language.
- Willfully damage or permit radio equipment damage.
- Cause malicious interference with any radio communications.
- Intercept and use or publish the contents of any radio message without the permission of the proper authorities.
- Make unnecessary or unidentified transmissions.
- Transmit without first making sure that the transmission will not cause harmful interference.
- Make any adjustments, repairs, or alterations to a radio transmitter without licensing by the FCC or acceptable equivalent.
- Transmit a call sign, letter, or numeral which has not been assigned to your station.
- Rebroadcast another transmission (i.e. radio station music).

Conviction of any of the above offenses can result in a fine, imprisonment or both.

2.02.05 Explain the importance of knowing how to contact key personnel, and the methods available during an emergency.

CONTACT OF KEY PERSONNEL

One of the first steps in any emergency is: **get help**.
Another essential step is: **inform your supervisor**.

It is important to know how to contact key personnel during an emergency. The importance lies in getting the knowledgeable people to the location where they are needed. This can apply to emergency situations, routine circumstances, or non routine circumstances. The ability of the

RCT to contact key personnel can reduce personnel injury, equipment damage, uncontrolled radioactive release, unrestricted movement of controlled materials, and other important actions.

The RCT must be aware of the location of communication equipment, phone numbers or pager numbers, and/or emergency numbers regardless of location. Familiarity with the working environment will reduce time needed to contact key personnel. The RCT must be aware of the location, situation, and personnel or equipment involved. This information must be relayed without misinterpretation to key personnel to afford proper response.

In an emergency, the first thing to do is usually: get help. This may mean: shout "Help"; or phone 911; or send someone to call for help. The fire department and emergency response team responds to a 911 call. Check your ES&H Quick Reference Badge to ensure that it includes all the other important phone numbers you might need in an emergency.

When placing an emergency call, dial 911 and be prepared to give the following information.

- The nature of the emergency
- The location of the emergency

Do not hang up until the operator confirms that she/he has all the information needed.

After calling 911, you should inform your supervisor and remain in the area, if possible, to direct the emergency response team.

Emergencies are discussed in more detail in RCT lessons 2.13 and 2.15. See also the ESH-1 Emergency Response Standard, ESH-1-09-01, and the procedures ESH-1-09-02 through -07.

SUMMARY

This lesson has covered topics related to effective communications, contacting key personnel, and emergency communications. As an RCT you should be aware of your location and what communication systems are available to you while working on any job.