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	A	SMS Work party	Committee	SOP-013
	12/12/2018			
	Two Way Radios			

Document Status

Version	Date	Revision	Prepared	Reviewed	Approved
A	12/12/2019		SMS Working Party	Committee	12/12/2018

Revision Record

Revision	Date issued	Description of Changes

Two-Way Radios

SOP-013

Two-way radios, in particular hand-held two-way radios have become a vital part in the safe operating of today's railways. Their introduction and subsequent use in the industry has enabled the safe shunting and operating of trains and has helped reduced the chance of an incident. Whilst being a useful tool for train crews, the basic procedures around their safe use must be strictly adhered to. Two-way radios come in many shapes and sizes, but their basic principle all remain the same. All radios share the same basic functions and are operated in the same manner. They all transmit and receive in our case, voice communications from one to another.



Radio Basics

Most radios have at least 3 main controls. These are;

1. Power on / off & volume control knob. Usually a rotary knob with integral power switch for turning the radio on / off and for adjusting volume.
2. Channel selector knob / buttons. Either a rotary type knob or push buttons for selecting multiple channels (when programmed).
3. Push to talk (PTT) button. Push type toggle switch to enable transmitting. Radio is in the receiving mode unless this button is pushed.

Unlike mobile phones, a two-way radio can't receive and transmit at the same time. As such, a conversation requires one party to listen then reply once the other party has finished transmitting. Before transmitting, monitor the radio for approximately 5 seconds to ensure the channel is not busy, press the PTT button for 2 seconds before talking and keep holding the PTT button for a further 2 seconds after talking before releasing. This will prevent the beginning or end of a message being cut off.

Radio Protocol

Purpose

To describe the rules and protocols for effective radio communications within the OTHR.

Responsibility

All Train Crews and other personnel required to communicate using radios are responsible for complying with this procedure.

Process

All Radio Communications at OTHR must be:

Clear, brief and unambiguous;

Relevant to the task at hand;

Agreed as to its meaning before being acted upon.

Spoken and written Safeworking communication must use the 24-hour clock to give the time of day.

Communication equipment used for rail traffic or work on track must be tested and checked for its intended operation.

Confirmation of Communication

The receiver must confirm the content of a message by repeating the message back to the sender, where the communication is about:

A proceed authority;
An instruction not to proceed;
Working on track authority;
Train running Information;
Special working;
Any conditions affecting our network.

When shunting, If an instruction has not been received or understood correctly, the movement **MUST** be brought to a stand until clarification of that instruction. The receiver must not act on the communication until the sender confirms that the message has been repeated correctly.

Relaying Communication

If it is not possible for a sender to communicate directly with an intended receiver, Qualified Workers may relay the content. The content of a communication must be relayed exactly as received.

Emergency Communication

Emergency communications must be:
Given priority; and
Answered immediately.

If there is an emergency message transmitted over the radio, all other users of the channel must stop transmission immediately.

In an emergency, Qualified Workers should use whatever communication method is available.

In an emergency

Say: "Emergency, emergency, emergency, this is (your identification)".

Give brief details about the emergency, situation and location.

If there is no immediate answer, pause.

Repeat as necessary until you are answered.

When a receiver answers give your location and the emergency message.

Exchange necessary information and directions.

Spoken Communication

All communications must use the standard terms and protocols as listed in this procedure. (ie. Spoken numbers, phonetic alphabet and standard terms).
Spoken communication must be promptly acknowledged.

WARNING

Qualified Workers must not assume that a receiver has understood a message before the receiver confirms that the message has been understood.

If the meaning of a spoken communication is not understood:

The receiver must ask that it be repeated; or

If necessary, the sender and receiver must use the phonetic alphabet and spoken numbers to clarify and confirm the message.

The receiver must try again as soon as practicable or arrange alternative means to communicate with the sender if:

The receiver cannot understand the message;

The sender cannot hear or understand the reply.

Spoken Communication Protocols

Senders and receivers of communications must start the communication with identification of the receiver first and the sender second. E.g. “Driver of 7321, this is the Guard calling, over!”

Crews controlling train shunting and marshalling movements **MUST** maintain communications with the Locomotive Driver(s) and themselves in accordance with this procedure. Unless more than one locomotive and driver are involved in a shunt and once initial contact has been made, it is not necessary for the sender and receiver to identify themselves. E.g. (Shunter) “Driver of 7321 you are right to come back”, (Driver) Roger coming back”, (10 seconds time lapse) (Shunter)” All clear keep coming” (Driver) “Roger coming back” etc....

10 Second shunting Rule

Crews controlling train shunting and marshalling movements **MUST** communicate with the Locomotive Driver at least once every ten (10) seconds. If this does not occur;

The Locomotive Driver must immediately stop the movement and check with the employee controlling the shunt.

The employee controlling the shunt movement must endeavour to stop the movement by;

Contacting the locomotive driver by radio

Waving any light violently, using STOP hand signals

Use radio to contact other personnel who may be in the area to assist in obtaining driver’s attention

Phonetic Alphabet

Qualified Worker

1. If it is necessary to spell words, use the spoken letter names in the following table.
2. Stress the syllables in Capital letter.

For	Letter Name	Say	For	Letter Name	Say
A	ALPHA	AL-fah	N	NOVEMBER	No-VEM-ber
B	BRAVO	BRAH-voh	O	OSCAR	OSS-cah
C	CHARLIE	CHAR-lee	P	PAPA	pah-PAH
D	DELTA	DELL-tah	Q	QUEBEC	Keh-BECK
E	ECHO	ECH-oh	R	ROMEO	ROW-me-oh
F	FOXTROT	FOKS-trot	S	SIERRA	see-AIR-rah
G	GOLF	GOLF	T	TANGO	TANG-go
H	HOTEL	Hoh-TEL	U	UNIFORM	YOU-nee-form
I	INDIA	IN-dee-ah	V	VICTOR	VIC-tah
J	JULIET	JEW-lee-ETT	W	WHISKY	WISS-key
K	KILO	KEY-loh	X	X-RAY	ECKS-ray
L	LIMA	LEE-mah	Y	YANKEE	YANG-key
M	MIKE	MIKE	Z	ZULU	ZOO-loo

Spoken Numbers

Use the spoken numbers in the following table.

Stress the syllables in capital letters.

For a decimal point, say “point”.

For digit	Say	For digit	Digit
0	ZEE-roh	5	FI-yiv
1	WUN	6	SIX
2	TOO	7	Sev-EN
3	THUH-ree	8	ATE
4	FO-wer	9	NINE-uh

Standard Terms

Use only these standards terms to convey the meaning:

TERM	MEANING
Emergency, Emergency, Emergency	This is an emergency.
Correct	Yes. You are right.
I read again.	I am going to repeat all, or part, of your statement exactly as I received it.
I say again.	I am going to repeat all, or part, of my last statement.
I spell.	I am going to use the phonetic alphabet.
Loud and Clear.	Your signal is strong, and every word is understood.
Message received.	I clearly received and understand your message.
Negative.	No. Not correct
Out	My transmission is complete
Over	I have finished speaking and I am waiting for a reply.
Read back	Repeat all, or a specified part, of my message back to me exactly as you received it.
Receiving	I acknowledge your call. Proceed with the message.
Roger	All your last statement is received and understood
Say again	Please repeat your last statement
Speak slower	Repeat what you said, speaking more slowly. It is hard to understand you.
Stand by	Wait. I will back soon.

Spoken and Written Communications

Except in an emergency, make sure that no one else is speaking before you begin to transmit on the radio.

Sender	Start your message with the Safeworking designation, location and/or train number or track vehicle number as appropriate, and of the person you are calling.
	Say:“(Receiver) this is (Sender) over”.
	Identify yourself by Safeworking designation, location, and/or train or track vehicle number as appropriate.
Receiver	Start your reply with the Safeworking designation, location and/or train or track number as appropriate of the person calling you.
	Say:“(Sender) this is (Receiver), over”.

	Identify yourself by Safeworking designation, location, and/or train or track vehicle number as appropriate.
Sender	Make your statement ending with "over".
Receiver	Reply, ending with "over".
Sender and Receiver	Use standard terms as required in the communication
Sender or Receiver	At the end of the communication say: "out".

Standard Shunting terms

Use these standard shunting terms to convey the meaning

TERM	MEANING
Run Ahead	Pull or haul the wagons that are attached to the locomotive
Ease Off	Slowly pull or haul the wagons that are attached to the locomotive
Set back	Propel or push the wagons with the locomotive
Set Back Slowly	Slowly propel or push the wagons with the locomotive
Ease Up	When about to couple to another wagon. To bunch up wagons to uncouple
Reduce Speed	During the course of a propelling or pushing move, when it is necessary to reduce the speed of the movement.
Red Light	Stop all movements

How to Use Radio Equipment

General

MAIN STEPS OBSERVE SAFETY RULES	KEY POINTS
Keep radio on at all times	Take care when using radio that you are aware of other activities in your work area. Observe RADIO PROTOCOL AT ALL TIMES. Ensure the radio is switched on and the volume is adjusted so that calls can be heard. Keep the volume at a reasonable level so that calls do not interfere with other nearby operations.
Check radio operation frequently.	Listen to ensure that the radio is still receiving communications. Recharge the battery or replace it with a fully charged one when communications "break-up" or when indicated by the battery indicator on the radio. If the radio does not work or is found to be faulty, place the radio out of service clearly labelled with the identified problems and report asap.

Related Documents

- SOP-005 Yard shunting
- SOP-012 Shunting with a Tractor
- TRG-001 TMV training
- TRG-002 Shunting guide