Section 4

Radio Procedures

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RADIO PROCEDURES

INSTRUCTIONS IN THE USE OF RAILWAY RADIO COMMUNICATIONS SYSTEMS

1.0 General

1.1 A railway radio communication system is one employing radio for the transmission of information between moving equipment/track units, between moving equipment/track units and a fixed point, between fixed points, and/or between employees provided with portable radios.

1.2 These instructions comply with current Transport Canada Railway Employee Radio Communication Rule and do not modify or supersede any rule in Canadian Rail Operating Rules or Special Instructions.

1.3 Only authorized radio equipment may be used. Citizen band radios must not be used to direct train or engine movements, or the operation of track units.

1.4 Only authorized technicians are permitted to make technical adjustments to radio equipment.

1.5 No employee shall transmit any unnecessary, irrelevant or unidentified communication, nor utter any obscene, indecent or profane language via radio.

1.6 Employees must not transmit or cause to be transmitted any false or fraudulent distress signal, call or message, or knowingly interfere with or obstruct any radio communication.

1.7 When there is a possibility of misunderstanding in areas of different time zones, then the time zone should be given after the time.

Example:

0045 PST: *Nought nought forty-five, Pacific Standard Time*

1.8 Time table station columns will indicate:

- the channel to use to contact the Rail Traffic Controller or other parties;
- the channel to stand by on for two way conversations; and
- the channel to use in case of emergency.

Procedures to follow in case of emergency will be found in time tables or special instructions.

2.0 Operation of Locomotive Radio Units

2.1 The radio must be properly adjusted so that calls may be received by all occupants in the cab until the trip is completed.

3.0 Operation of Portable Radios

3.1 When a rechargeable type battery is used, every effort should be made to begin each tour of duty with a fully charged battery. Employees must not tamper with, add, or use unauthorized batteries in radios.

3.2 To optimize portable radio reception, rotate the volume control to a point halfway between the low and high volume setting then rotate the squelch control (if so equipped) until a rushing noise is heard, then back off this control until the noise just ceases.

Note: Adjusting the volume and squelch controls on the radio will enable the receiving person to receive a clearer and stronger voice signal, but these controls do not in any way affect transmitting or sending power. Once a radio conversation begins, further adjustment to the volume and squelch controls will only enable the receiving person to adjust the incoming volume to the desired audio level.

4.0 Transmitting Technique

4.1 The efficient use of a radio depends on the speech and articulation of the sender. Speak all words plainly in a clear, distinct tone to prevent the running together of consecutive words. DO NOT SHOUT. Avoid any tendency to accent syllables artificially, or talk too rapidly. Speak slowly and clearly.

4.2 The following points should be kept in mind when using a radio:

POSITION OF MICROPHONE: Microphone should be angled at approximately 45 degrees, not more than 2 to 3 inches from the mouth of the sender.

SPEED: Keep the rate constant, neither too fast nor too slow. Remember in many cases the person receiving your message has to write it down.

PITCH: Remember, that high pitched voices transmit better than low pitched ones.

RHYTHM: Preserve the rhythm of ordinary conversation. To separate words so that they do not run together, avoid the introduction of sound that does not belong such as "er" and "um." Attempt to maintain the pitch and rhythm of voice to the end of each sentence.

5.0 Calling Procedures

5.1 Trains will be identified by;
- their clearance designation (e.g. 6032 East) or
- by their train schedule identification (e.g. 402, 505, etc).

Engines will be identified by their engine number.

5.2 The following are proper examples when a radio communication is initiated.

Initiating	Responding
"CP 6032 East, this is RTC (Calgary), OVER."	"CP RTC (Calgary), this is Engr 6032 East."

This example may be used when the train number is used rather than the clearance designation.

"CP train 505, this is RTC (Montreal), OVER."	"CP RTC (Montreal) this is Engr train 505."

The following is an example of a train calling a foreman:

"CP Foreman Brown, this is Engr 5550 East, OVER."	"CP Engr 5550 East, this is Foreman Brown."

The following is an example of an RTC calling a CN train:

"CN 4035 East, this is CP RTC (Thompson Sub), OVER."	"CP RTC (Thompson Sub) this is Engr CN 4035 East."

The following is an example of a CN train calling a foreman:

"CP Foreman Brown, this is Engr CN 4035 East, OVER."	"Engr CN 4035 East, this is CP Foreman Brown."

5.3 Except as prescribed by CROR Rule 123, instructions and messages received by radio must be acknowledged or repeated to the sender by the person receiving them. If necessary, the receiving person shall request the sender to repeat or clarify the transmission. An acknowledgement of receipt must not be given until the receiving person is certain that the transmitted message or information has been completely and correctly received and understood.

5.4 A radio conversation must always be ended by both the receiving person and the sender transmitting his/her own name or identification, followed by the word "OUT".

Example:

"*Foreman Mercier...OUT.*"
"*Locomotive engineer 5550 West...OUT.*"

6.0 Emergency Communication Procedures

6.1 An emergency call and distress message shall be repeated at intervals until an answer is received. The intervals between repetitions of an emergency call and distress message shall be sufficiently long to allow time for employees who have received the message to reply.

6.2 Should it not be possible to initiate an emergency call on the channel designated by Special Instructions, any available channel should be used.

6.3 The RTC may designate another channel for emergency communication after an initial emergency call has been made on the designated channel.

7.0 CROR Rule 12.2

7.1 In the application of CROR Rule 12.2 and Rule 123, the following is an acceptable example, after positive identification has been established:

Conductor
"Engine 5550 move backward five car lengths."

Locomotive engineer
"Engine 5550 move backward five car lengths."

Conductor
"Engine 5550, three cars."

Locomotive engineer
"Engine 5550, three cars."

Conductor
"Two cars."

Locomotive engineer
"Two cars."

Conductor
"One car."

Locomotive engineer
(Need not repeat when less than 2 cars) ...

Conductor
"Half a car... 20 feet... 10 feet... etc."

7.2 In the event of failure of radio equipment, or when radio communication cannot be maintained during switching operations, the movement must be stopped and no further movement made until radio communication is restored or arrangements are made to use hand signals in lieu of radio.

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8.0 Procedure for Changing Radio Channels

8.1 Except as provided in item 8.2, when required to change radio channels during a tour of duty, each crew member of a train or engine must be advised of the intention to change and all crew members must change channels simultaneously.

8.2 At locations where time table indicates a radio channel change, train or engine radios should be switched to the next frequency progressively. Prior to entering a new territory;

- switch channel on the first radio sufficiently in advance;

- progressively, bring all radios to the next frequency;

- to ensure continuous monitoring, the last radio should be changed when the entire train is in the new standby channel territory.

8.3 As soon as possible after changing to the new channel, each radio must be tested to ensure all radios have been changed to the correct channel.

9.0 CROR Rule 119

In the application of CROR Rule 119, when travelling on a main track, all trains and engines must have at least one radio set to monitor the appropriate train standby channel as indicated in time table station column footnotes.

When switching on the main track, if using another channel to perform switching, at least one radio, when practicable, should be set to the train standby channel to receive EMERGENCY communications.

RAILWAY EMPLOYEE RADIO COMMUNICATION RULE

1.0 Scope

1.1 This rule shall apply to railway employees required by their railway company to transmit and receive radio communications.

1.2 It shall be the responsibility of the railway company and its employees to comply with the terms of this rule.

1.3 The railway company shall provide instruction so that its employees use of radio communications conforms with the terms of this rule.

1.4 The railway company shall ensure it identifies for the employee the radio channels the employee is to use, including channels to be used in case of emergency.

1.5 Except in cases of emergency, all radio transmissions shall be restricted to matters pertaining to railway operations.

2.0 Definitions

In this rule:

2.1 "Channel" means the radio frequency designated by the railway company for the purpose of voice communications.

2.2 "Designation" means the clearance designation or the train, engine or track unit number.

2.3 "Employee" means an employee of a railway company who is required to use radio communication devices in connection with railway activities.

2.4 "Radio Communication" means a series of voice transmissions made utilizing radio communication devices.

3.0 Emergency Radio Transmissions

3.1 Emergency radio transmissions shall have priority over all other transmission.

3.2 Emergency radio transmissions shall be initiated by repeating the word "emergency" three times.

3.3 The employee initiating an emergency call shall in addition to requirements stated in Section 4.0, also state the nature of the emergency, the location and identify the assistance required.

3.4 Employees shall ensure they do not interfere with emergency radio transmissions.

4.0 Radio Communication

4.1 Radio communication shall be made clearly and concisely and in accordance with the following requirements;

a) numbers may be pronounced in full or their digits may be stated separately.

b) a decimal point shall be indicated by the word "point."

c) the twenty-four hour system shall be used for expressing time.

4.2 Except in the case of an emergency, employees shall not initiate a radio transmission on a channel that is known to be in use.

4.3 When a radio communication is initiated, the employee shall:

a) state the railway;

b) state the name or occupation of the person being called and/or, if applicable, the designation of the train, engine or track unit being called;

c) identify himself/herself, and, if applicable, the train, engine or track unit designation; and

d) end the initial call with the spoken word 'OVER.'"

4.4 Where an employee responds to an initial call, he/she shall provide the name of the railway, his/her name and/or occupation and if applicable, the train, engine or track unit designation.

4.5 Each party to a radio communication shall end their final transmission with the spoken word "out."

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Spectra Railroad Radio Operating Instructions
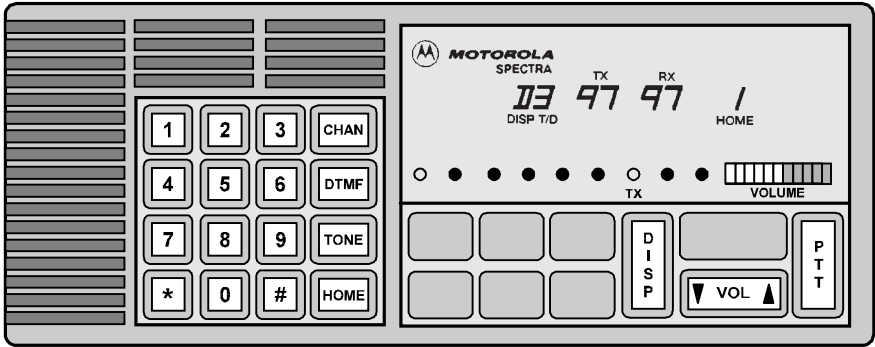
⬚ 0	Keypad	With no mode selected, pressing the keypad buttons will transmit DTMF tones. When a mode is selected, the keypad is used to enter AAR & home channels, tone and DTMF digits.
▼ VOL ▲	Volume up/dn	Press to adjust receive volume.
CHAN	Channel mode	Use to select channel when using AAR channel number. Press once, then select four digit number. e.g. 95 91
HOME	Home mode	Use to select home channels 01 to 22 only. Press once, select two digit CP channel number. Include leading zeros for channels 01 to 09.
DTMF	DTMF mode	Press once, then select one digit designated for call-in to RTC or DISP. Not currently used on CPR Canada. Used in some locations in U.S.A.
TONE	Tone mode *	Use to call RTC when specified in time table. Press once, enter tone digit designated for RTC or DISP call-in. Not currently used on CPR Canada. Use in some locations to call CN RTC, also used in U.S.A.
DISP	DISP Key	In home mode, unless otherwise provided by subdivision footnote, the "DISP" key automatically switches the radio to the RTC call-in channel. Use of this key eliminates the need to change channels when calling the RTC. Press "DISP" once, follow the procedures for calling the RTC in "Special Instructions," press "DISP" again to return to standby channel.

Where subdivision footnote states "DISP feature does not apply," the RTC call-in channel must be selected by first pressing the "HOME" or "CHAN" key and then entering the CP or AAR channel number.
PTT	PTT Key	If handset fails, press and talk into the front microphone located in the speaker grill.

*** See time table for additional instructions ***
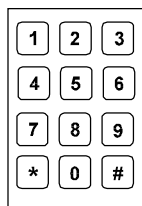* **Note:** CN tone T1 is CP tone T3, CN tone T2 is CP tone T6

Aerotron 1700 Radio Operating Instructions
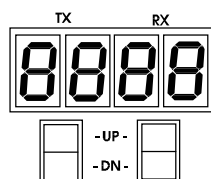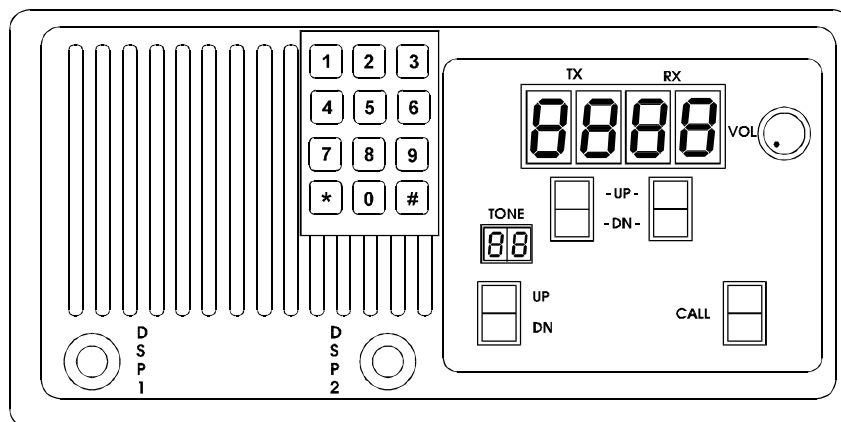
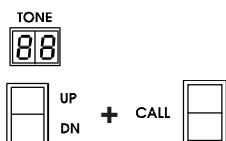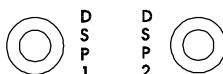|		
	Channel Selection	Pressing the TX "UP/DN" button changes both TX and RX radio channels at the same time. If the RX channel is different than the TX, press the RX "UP/DN" channel button to change the RX channel only.
		Press and hold the "UP/DN" button to increase the speed of the channel change (the display shows the AAR designation of frequency: e.g. "91 91" indicates CP1).
	DTMF Keypad	Pressing any key on the DTMF keypad will transmit a DTMF tone used to call DISP/RTC on designated subdivisions only.
	Tone Transmission	There are seven tones stored in the radio used to call DISP/RTC on designated subdivisions. Select the tone by pressing the "TONE UP/DN" button. Transmit the tone by pressing the "CALL" button.

TONE 1 ....2600 Hz
TONE 2 ....2200 Hz
TONE 3 ....900 Hz
TONE 5 ....1748 Hz
TONE 6 ....1800 Hz
TONE 7 ....2400 Hz
TONE 8 ....1477 Hz

Pressing "DSP 1" will transmit a 2600 Hz tone.   Pressing "DSP 2" will transmit a 2200 Hz tone.

AAR TO CP RADIO CHANNEL CROSS REFERENCE
COMMONLY USED CHANNELS IN CANADA

AAR CHANNEL NUMBER		SPECTRA RADIO HOME CHANNEL	CP CHANNEL NUMBER	CHANNEL NAME
TX	RX			
91	91	01	CP1	TRAIN STANDBY
95	91	02	CP2	RTC CALL IN
21	91	03	CP3	RTC CALL IN
67	67	04	CP4	TRAIN STANDBY
81	81	05	CP5	TRAIN STANDBY
21	81	06	CP6	RTC CALL IN
95	95	07	CP7	TRAIN STANDBY
21	95	08	CP8	RTC CALL IN
21	67	09	CP9	RTC CALL IN
21	41	10	CP10	RTC CALL IN
49	49	11	CP11	MAINTENANCE OF WAY
15	49	12	CP12	UTILITY REPEATER
71	71	13	CP13	MAINTENANCE OF WAY
15	71	14	CP14	UTILITY REPEATER
09	49	15	CP15	UTILITY REPEATER
77	77	16	CP16	MAINTENANCE OF WAY
09	77	17	CP17	UTILITY REPEATER
35	71	18	CP18	UTILITY REPEATER
93	93	19	CP19	MAINTENANCE OF WAY
35	93	20	CP20	UTILITY REPEATER
33	77	21	CP21	UTILITY REPEATER
33	93	22	CP22	UTILITY REPEATER
09	93		CP23	UTILITY REPEATER
21	66		CP25	RTC CALL IN
47	47		CP82	TRAIN STANDBY
66	66		CP92	TRAIN STANDBY
69	51		CP145	UTILITY REPEATER
11	11		CP59	SOUTHERN RLY BC
39	39		CP77	BC RAIL
41	41		CP78	TRAIN STANDBY
98	98		CP197	TRAIN STANDBY
95	98		CP198	RTC CALL IN
87	87		CP101	CN 1
73	73		CP95	CN 2
55	55		CP85	CN 3
37	37		CP76	CN 4
17	17		CP63	CN 5
79	25		CP157	CN 6
63	02		CP201	CN 7
61	61		CP88	CN 8