CODE OF PRACTICE

FOR

OPERATIONS & SAFEWORKING

NETWORK INTERFACE

CO-ORDINATION PLAN

DOCUMENT No. TA02

ISSUE 2.1

30 June 2004

APPENDIX X

RADIOS AND COMMUNICATIONS DEVICES

DOCUMENT UNCONTROLLED WHEN PRINTED

Shaded Sections of this Document have been superseded by content in the ARTC ROUTE ACCESS STANDARD

TABLE OF CONTENTS

SCHEDULE OF AMENDMENTS

Number	Page or Clause	Summary of Amendments	Date Issued
Issue 2.1	Section 2.3	Details for Alice Springs line removed - TN 1424/2003	30/6/04

RADIOS AND COMMUNICATIONS DEVICES

1 VICTORIA

Note that the radio system used in Victoria is owned by VicTrack Communications. The radios are combined with either an MDC600 or an MDC 1200 (specially modified) interface unit. The MDC 600 unit is no longer manufactured or supported by the manufacturer Motorola. For these reasons hardware to talk to these systems can only be obtained from Victrack Communications at the present time. Motorola will not release the protocols so other equipment is not suitable.

Frequencies in use in Victoria for train control and roll by are as follows:-
Roll by frequency TX 469.7MHz RX 469.7MHz CTCSS 107.2Hz. PTC CH1

Train Control North East Line and West (Pyr to Serviceton) Channel 6
Tx 410.2 MHz Rx 419.65 Mhz.

Train Control ASW (Pyr to Newport)
Tx 409.9 MHz Rx 419.35
DICE Operation PTC Channel 1 Tx. 469.7 MHz. Rx 469.7MHz.
Please note: an LSDU unit must be interfaced to operate both DICE and train control in this territory.

Train Control Melbourne Metro.
Tx 408.75 MHz. Rx. 418.2MHz.

2 NON-VICTORIAN NETWORK

Mobile Radio Systems

The mobile radio systems provide voice and data communications to mobiles on locomotives and other rail and road vehicles. Currently only the voice services are in use.

2.1.1 *Train Control Radio*

This service provides a direct connection to train controllers and to voice logging recorders at Mile End. Train controllers communicate with train drivers, track repair gangs and other on rail vehicles through this system.

Transceivers are installed at all 45 radio sites, with overlapping coverage to protect against failure of one site.

2.1.2 *Maintenance and Engineering Channel*

Two separate voice channels are provided using alternate sites.

One is termed the Maintenance channel and is used by maintenance personnel to communicate with their office and management. This channel is now provided with additional transceivers to improve coverage. The extra transceivers have been taken from the Data system.

Telephone interconnect is available on this system to contact maintenance staff monitoring this channel.

The Engineering channel is used primarily for telephone interconnect via the ARTC PABX at Mile End.

Both of these channels are also accessible from the train control consoles.

2.1.3 *Equipment*

The radio systems comprise three Unilab UHF transceivers at each site (with additional transceivers at geographic section boundaries). Each transceiver has a separate diplexer, antennae feeder and a pair of yagi antennas pointing in opposite directions. The transceivers operate in the 400-420 MHz band and use a 12-volt power supply. Each transceiver, diplexer and antennae combination is independent, and can be remotely reconfigured to restore service to train control by sacrificing a lower priority function.

2.1.4 *Frequencies : Train Control*

Please note a scanning radio must be used but the equipment is not limited to any one manufacturer.

Section	Group	Mobile Receive	Mobile Transmit
Adelaide-Port Augusta & Tarcoola to Cook	UHF2	418.100	408.675
	UHF2	418.125	408.675
	UHF2	418.200	408.675
	UHF2	418.225	408.675
Section	**Group**	**Mobile Receive**	**Mobile Transmit**
Port Augusta to Tarcoola Cook to Kalgoorlie	UHF5	418.475	409.025
	UHF5	418.550	409.025
	UHF5	418.600	409.025

CTCSS 123Hz

Broken Hill System

2.1.5 *Mobile Radio System*

This system provides a single UHF voice radio channel, using six Telstra radio sites. Both train control and track maintenance is handled from this one channel between Crystal Brook and Broken Hill.

2.1.6 *Frequencies*

Section	Group	Mobile Receive	Mobile Transmit
Crystal Brook to Broken Hill	UHF4	418.450	409.075
	UHF4	418.525	409.075
	UHF4	418.575	409.075

CTCSS 123Hz

Tarcoola to Darwin – Refer ARG

Refer to ARG.

Adelaide Metro to Tailem Bend

2.1.7 *UHF Radio System*

This is a conventional UHF repeater system - it operates on UHF5. The scanning radios in the fleet will pick up this site and it will appear normal to the operators. There is no need for voting in this case as the site sees the Metro and the line to Tailem Bend.

2.1.8 *Frequencies*

Mobile Receive Frequency is 418.475 MHz
Mobile transmit Frequency is 409.025 MHz

CTCSS 123Hz