Field Service Bulletin

Bulletin No:	TASC_CROSS-CONNECT_06_01
Date Issued:	Dec, 13 2006
Product Effected:	TASC_Cross-Connect Interface

Description:	Cross-Zone Interface locks up on simulations transmissions into the system when using 2 MCS2000 base radios.
Issue:	When keying two standalone radios on each of the fixed radios' talk groups at the same time, both PTT lights on the Cross-Zone interface illuminate and CALL deny tones are heard on one or both of the fixed radios. When you de-key the standalone radios, both Cross-Zone PTT lights remain illuminated.
Purpose:	This issue was fixed with a hardware change to the interface cable between the Cross-Zone Interface and the MCS2000 radio. This change included a diode and resistor as well has some software changes. This document is created to understand the problem. Cartel Communication Systems Inc. will provide a firmware upgrade in the near future, which will correct this issue. All cables provided have been modified already.
Assistance:	Please contact Jeff Stemler with Cartel Communication Systems Inc. Technical Support at 604-888-9711 for assistance.
Procedure:	Please see the following pages for a step-by-step procedure for identifying and having your units upgraded.
Equipment Required	- Common diode, 1N4148 - Through hole 47K resistor - SBOSS programming software - Serial Cable - Laptop Computer - Soldering station

Cartel Communications Systems Inc. - Head Office
9415 - 202 Street, Langley, BC V1M 4B5 Canada
Bus. 604·888·9711 · Fax. 604·888·2712

Regional Address, Ontario
#42 - 750 Oakdale Road, Toronto, ON M3N 2Z4
Bus. 416·747·6444 · Fax. 416·747·9933

Regional Address, Alberta
8842 - 60th Avenue, Edmonton, AB T6E 6A6
Bus. 780·461·5945 · Fax. 780·468·1265

Toll Free. 800·663·0070 · Email: info@cartelsys.com · Web. www.cartelsys.com

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1. Introduction

To date it had been assumed that the Cross-Zone Interface SZ to SZ version would always operate with VOX on both channels. VOX is normally required if the system's tail times are relatively long (a typical value is 3 seconds).

In this case, however, there appears to be no need for VOX operation and, as always, if VOX can be avoided, then it is always better to do so.

Without VOX enabled Cross-Zone Interface operates in a full duplex mode and using COR (which mode of operation is often required for other applications).

However, if the system is operating in full duplex mode and using simplex radios, system instability can occur if exact simultaneous access attempts are made from both sides of the system or if at that same time both systems are busy transmitting.

What will occur is both radios, after attempting to be keyed up by the Cross-Zone Interface as a result of receive activity at its COR radio inputs, will sound the Call Deny tone, which in turn causes the system to respond as though both COR outputs are activated. This leads to a key up attempt of "the other" radio that causes a closed loop which can only be broken by powering down one of the composing elements (i.e. either Cross-Zone Interface, or either radio).

This potential lock up condition can be eliminated by a small modification to the cable connecting the Cross-Zone DB25 Port A / AUX port. Essentially, this modification ensures that the radios COR cannot be active when the radio's PTT input has been activated, thus opening the loop and eliminating the lock up condition.

As a result of the new situation, some Cross-Zone programming changes are required.

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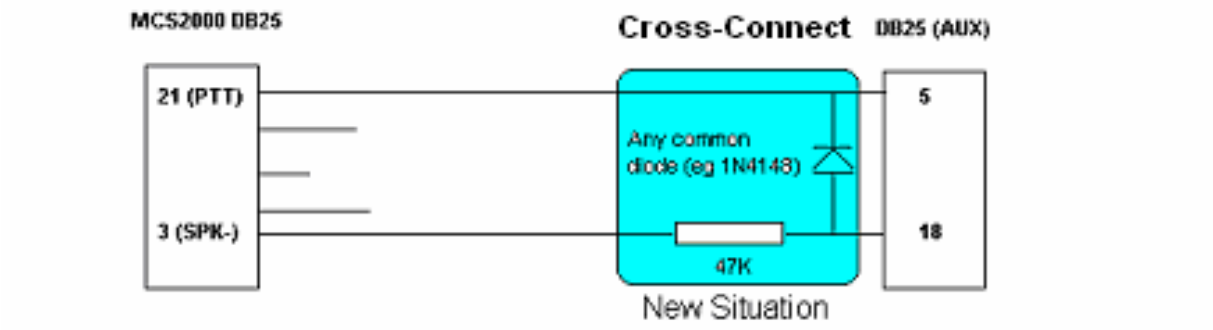
2. Change Details



Cross-Connect SmartZone to SmartZone Version - Set Up for VOX'es Disabled

3. Programming Changes

The programming changes the new situation requires include the following:

a) In the Configuration>>Radio Interface window program set the COR Debounce value to 250 msecs on both Port A and Port B.

b) In the Configuration>>VOX Control window, disable VOX, and set the Voice Delay time to 0 for both Ports A and Port B

4. Adjust the Voice Announcement Recordings

It is recommended to change the Voice Announcement message that is heard when access attempts are made under System Busy conditions, as it will be overwritten by the radio's Call Deny tone when it is played back.

The best choice is to blank this recording segment, so a clear Call Deny tone is heard by the remote radios (rather than a mix of the two).

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As the Call Deny voice recording segment is recorded at Storage Selection # 1, all subsequent recordings (Storage Selections # 2 and # 3, the messages played back after a DTMF On or Off command).

To carry out these changes proceed as follows: It is assumed that a hand portable that can communicate with the MCS2000 radios on Port A (AUX) is available to record voice messages # 2 and # 3 (the easiest is to temporarily switch this radio, and the portable used to record, to a conventional channel).

4.1 To erase the voice message at Storage Location # 1

Select from the menu “Record”. Retain the default settings (MODE: Record, DIRECTION: To/from Port A, STORAGE SELECTION: 1).

When recording this segment do not transmit on the portable. Click on the BEGIN button. A progress bar will appear, the duration of which determines the time that the system, once operating normally in the field, will transmit the Call Deny tone back to the caller. The maximum duration is about 6 seconds; we recommend clicking the STOP button after about 2 seconds. The “Storage Selection” will automatically switch to Location 2.

4.2 To Re-Record the voice message at Storage Locations # 2 and # 3

Since a new “message” has been written to Storage Location 1, all subsequent locations will have been erased as well, so segments 2 and 3 will have to be re-recorded.
.
Key up the portable and check that the radio connected to Port A is receiving its signal. Check that the current Storage Location number is 2 (see end of section 4.1 above). Click on the BEGIN button and speak in the message. Click on the STOP button when the message is complete. This will record the “System is Connected” announcement. The Storage Selection will automatically jump to number 3. Repeat the process to record the “System is Disconnected” announcement.

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4.3 To check the recording process

Select the MODE>>PLAY button, leave DIRECTION on Port A, and click on the BEGIN button. The Port A radio will key up, but no audio modulation will be heard. When the radio has keyed down again, the Storage Selection will have automatically jumped to number 2. Click on the BEGIN button, the Port A radio will key up and play the “System is Connected” message. Repeat the playback check on storage location number 3.

5. New Voice Announcement Operation

As a result of the above changes the system will now operate as follows:

a) When accessing the system from Port A, and if the Port B system is found Busy, the Call Deny tone will be transmitted to the calling radio on cessation (subsequent key down) of their transmission. The duration will be equal to the duration of voice recording Segment 1.

b) The System Connected/Disconnected messages will be heard when transmitting a DTMF on/off command to the system. Note that, if/when the opposite system is Busy at the time of sending the command, the acknowledgement may include the call deny tone. Repeat the DTMF command and, when necessary, to confirm the new system status.

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