Zhone Tech Tip TT#34

February 15, 2011

600/800 Power Cable Maintenance

This procedure is provided to our customers experiencing intermittent and unexplained PSU alarms that raise and clear on their own. Please refer to Zhone Field Advisory bulletin 20071206-2 ***FAB – IMACS Power Supply OOS Alarm*** in order to clear these alarms.

This Tech Tip is written to describe the process used to clean the power cable on the IMACS shelf. Please refer to Zhone Tech Tip #33 for the proper procedure if maintenance to clean the power cable is required on an IMACS-900 shelf. The IMACS-600 and IMACS-800 shelves use a 12-pin wiring harness to connect the power PCB to the shelf PCB. The cable is shown in Figure 1.

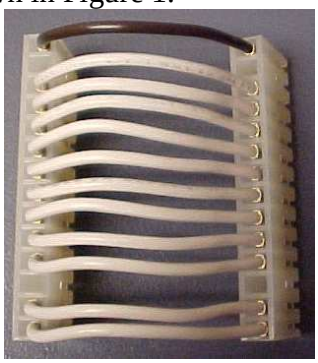

Figure 1: Power Cable IMACS-600 and IMACS-800

This procedure is provided to augment the Field Advisory bulletin 20071206-2 ***FAB – IMACS Power Supply OOS Alarm***. This Tech Tip provides greater detail on the item under the section for Valid Alarm of that bulletin, and specifically the note that indicates:

- **Bad physical connection on the wiring harness cable due to oxidation or poor environmental conditions. Remove wiring harness, clean with degreaser and alcohol solvent; apply NO-OX-ID lubricant and reconnect wiring harness.**

NOTE: This procedure requires the IMACS in question to be powered-down to perform this service. Be sure to remove all power sources from the IMACS before beginning this procedure. It is also recommended that all jewelry (rings, watches etc.) be removed prior to working on the IMACS shelf. Failure to use caution before beginning this procedure could result in shock and / or injury. A properly grounded work area is required to prevent any damage to the equipment.

Tools Required:

The following tools will be required:

Slotted screwdriver
Degreaser such as ElectrO-Wash by Chemtronics.
Non-conductive oxidation reducer such as NO-OX-ID

Procedure Overview:

The procedure to clean the power supply cable is the same for the IMACS-600 and IMACS-800. It is suggested that this procedure be performed on any IMACS shelf over ten years old at the same time as the Interface card battery replacement. To find out more about the Interface card battery replacement, call your Zhone representative and ask about GSS service product codes 3021AR and 3021FG. This power cable maintenance procedure can be done any time a PSU OOS intermittent alarm condition exists and should also be performed as routine maintenance once a shelf reaches ten years old. This procedure details the location of the cable, the removal and cleaning of the cable and posts, the re-installation of the cable and confirmation of the IMACS service level at the end of the procedure.

Power Supply Cable Location:

Following are illustrations for the location of the Power Supply Cable.

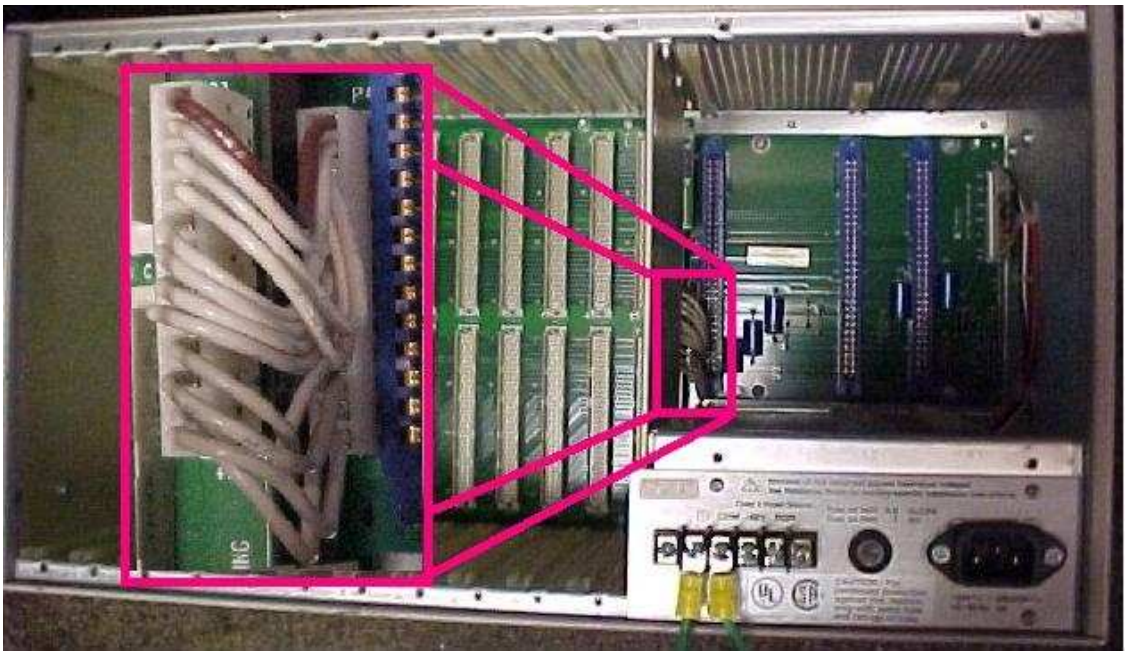

Figure 2: IMACS-600 Shelf Cable Location

The Power Supply cable is located on the front of the IMACS-600, and straddles the partition between the power supply location S1 and the shelf backplane where the Interface card (IF) resides (slot IF).

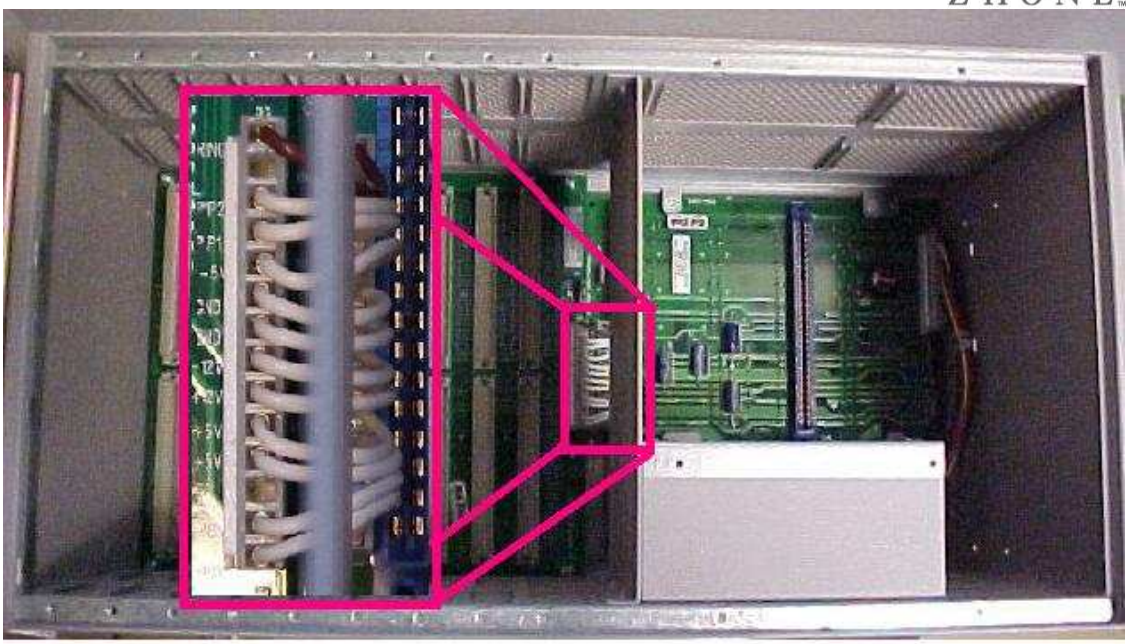

Figure 3: IMACS-800 Power Cable Location

The power supply cable is located on the front of the IMACS-800, and straddles the partition between the power supply location F1 and the shelf backplane in the empty card slot adjacent to WAN 4 (W4).

For both the IMACS 600 and IMACS 800 it should be noted that the brown wire of the cable is always oriented to the top of the cable.

Cable Removal:

In order to remove the cable, it will be necessary to remove power from the shelf. Prior to starting, it should be recorded what cards occupy which slots. It is highly recommended to perform a database backup prior to beginning the procedure (save to flash, save off-shelf). In order to have room to maneuver, it is recommended that the cards around the cable connector be removed to allow for plenty of room to work on the shelf.

Procedurally:

1. Back up system image to flash. On the main login screen, enter 'Y' for system. Select 'B' for backup, and change 'PROTOCOL' from ASCII to 'FLASH' and then enter 'G' for GO. If prompted, choose 'y' to overwrite the existing saved copy of nvram.
2. Back up system image off shelf (ASCII, TFTP). If unclear how to perform this action, please refer to section **4.12.1 Test, Debug, Backup & Restore** of the ***System Reference Guide*** for more information.
3. Disconnect all power from the shelf.
4. Remove all jewelry on fingers and wrists, up to the elbow.
5. Remove power supply cover from the front of the shelf.

6. Record circuit pack locations – refer to Table 1.
7. Remove circuit packs around the work area to allow for maneuvering.
8. Remove the power cable.
9. Clean the power cable.
10. Clean the posts.
11. Replace the IF card battery on shelves if nine years old or older.
12. Replace the power cable.
13. Replace the circuit packs.
14. Reconnect power to the shelf
15. Validate service.

The cable is held in place by locking edges on the connector and the mating connector housing. This mechanism is used to securely hold the cable to the motherboard – see Figure 4 below.

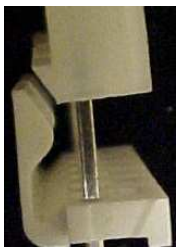

Figure 4: Mate and Lock Connector

This cable will take some force to overcome this connection. Room to maneuver inside of the IMACS housing will allow for maneuverability. Care should be taken to not break the lip on the backplane side of the connector, as a ten-year old connection might become brittle. Upward force on the cable, or a small wedge (such as a screwdriver tip) inserted between the two flat surfaces can result in a successful de-coupling of the connector.

Cable Cleaning

Both ends of the cable can be cleaned in turn by using a spray degreaser into the receptor holes of the cable. The degreaser should note that it is suitable for use on PC boards. Once both ends of the cable have been cleaned, then a non-conductive oxidation preventative can be applied directly into the receptor holes of the cable connector.

Post Cleaning

Similar to the cable ends, the posts on the IMACS backplanes should also be cleaned with the degreaser used above. A non-conductive oxidation preventative should then be rubbed onto the metal posts to ensure complete coverage and coating.

Cable Replacement

Once the cable and posts have been thoroughly cleaned and coated, the cable can then be replaced. The action of installing the cable onto the posts also provides some abrasive cleansing, so placing the cable onto the posts and then removing it a few times helps to ensure a more thorough contact area.

When re-installing the cable, ensure that the brown wire is oriented towards the top of the connector, matching the original orientation.

Take care to line up the cable with the posts to ensure all pins are mating with the cable connector. The cable ends have a lip on them that will mate and lock with the connector on the board side. Use some force when installing the cable connector to make sure that it locks into place on the board. If the cable does not lock, make sure it is oriented properly.

Reassembling the Unit

With the power properly routed, the individual cards should be replaced as documented in Table 1. Care should be taken to properly secure each card into its respective slot in accordance with the recorded data.

Validation

With all the cards now firmly in place, the unit is ready for power to be applied. Reconnect the power source to the IMACS shelf, and validate the proper status displayed on the individual cards, when such status indicators exist. Log into the IMACS shelf, and validate that the status of each card is correct, and validate services. Once the unit has been verified, it is once again advised to save a database to an off-site location.

Designator	Card		Designator	Card
C1			IF	
C2			W1	
P1			W2	
P2			W3	
P3			W4	
U1			F1 or S1	
U2			F2 or S2	
U3			R1	
U4			R2	
U5			R3	
U6			R4	
U7			R5	
U8				

Table 1: Card Locations