Printed Wiring Card Test Procedures - Spare and Returned From Repair

Contents

1 . General

1.1 Purpose

This practice establishes the criteria for testing:

- Spare Printed Wiring Cards (PWC).
- PWCs returning from repair.

It pertains to all Stored Program Control (SPC) switching systems that GTE Telephone Operations owns and/or maintains.

Technicians are to follow thls practice at:

- Pm-cutover switch locations.
- In-service switch locations.

1.2 Filing Instructions

File this practice In numerical order in your practices set.

1.3 Supersedures

This practice supersedes:

- All local practices, policies, procedures, general instructions, letters, and memoranda which address this subject.
- Any document which provides information contrary to the information contained in this practice.

1.4 Copyright and Responsibility

1.5 Disclaimer

2. Overview

2.1 Introduction

Each switching system is ordered with a quantity of spare PWCs (Printed Wiring Cards). These PWCs must be system tested to ensure all spares are in working order. Testing must be conducted prior to cutover of off-line sites.

The responsibilities for testing spare PWCs follows:

Activity	Responsible Department
New site **Installation**	COE Construction
Line additions	COE Construction
PIP work orders	Department Installing the equipment

System testing must also be conducted on all PWCs returning from repair. This testing, in most cases, must be done in an on-line environment.

This practice covers processes for:

- Scheduling.
- Time reporting.
- Logging.
- labeling.
- Test location selection.
- General testing.

Follow the durations, labeling and logging procedures for pre-cutover as well as in-service testing.

2.2 Acronyms

The following chart defines terms used in this practice:

Acronym	Definition
COMPS	Central Office Maintenance Planning System
ERO	Equipment Repair Order
ESC	Equipment Service Center
MRCC	Multiple Ringing Circuit Control
PWC	Printed Wiring Card
SPC	Stored Program Control
SSOC	Switching Services Operation Center
SSWAP	Switching Services Work Allocation Procedure

2.3 Associated Practices

Refer to the following practices for additional information:

For Information About...	See GTE Telephone Operations Practice...
Handling Static Sensitive Materials	007-005-015
Technical Escalation Procedures for Ail Stored Program Controlled Switching Systems	008-010-000
Printed Wiring Card Repair and Return and inventory Control	220-220-002

3. Preparing for Testing

3.1 Scheduling

Test all spare or return from repair **PWCs during the test** location maintenance window. it is **not** recommended that Areas test Muitipie Ringing Circuit Control **(MRCC) PWCs and** Line Cards outside of this maintenance window.

The site maintenance window is defined in GTE Telephone Operations Practice 008-010-000, Technical Escalation Procedures for Ail Stored Program Controlled Switching Systems. It is defined as a light traffic period when site personnel perform scheduled and unscheduled maintenance on common control equipment.

A site maintenance window:

- May vary from one operating area to another and from site to site because of:
  - Traffic volumes.

    AND/OR

  - Operating environment.
- Must be established by local operating unit personnel.
- Must not begin before 10:00 p.m. or extend beyond 6:00 a.m. local time.

NOTE: Pre-cutover locations are exempt from these scheduling limitations.

3.2 Test Location

When choosing the test location, select **a** location that:

- Affects the least number of customers.
- Is the least populated subsystem available that is applicable for the card type.

  OR

- Is at other test locations (i.e., training switch).

Test processor cards that belong in multi-processor systems in a processor complex that will load-share the customer traffic if there is a failure. An example of a multi-processor system is the Telephony Processing Complex (TPC). In the network or facilities portion of a switch, either digital or analog, the location selected will serve the least number of lines or trunks.

WARNING: **Ensure that the PWC Card Issue is compatible with the** site **configuration. Check the TSS Issue IncompatIbIlIty** list to **ensure that the PWC Issue is acceptable.**

The National Bulletin Board System (NBBS) maIntaIns this Information. Access the NBBS by contacting the following:

- **North Area: (219) 461-3500**
- **South Area: (919) 471-5875**
- **Southwest Area: (214) 615-3088**
- **West Area: (805) 372-7933**

Test one card in a processor or network element at a time. Do this so problems can be associated with only one provable card during the test period.

4. Documenting the Test Procedure

4.1 Log Entries

Note the location of every card being tested in the site log or Daily Journal. When using the Daily Journal system to document the location, make entries in the:

- SPC Daily Activity Log.

AND

- Sub-System History section.

4.2 SSOC Notification

Notify the Switching Services Operating Center (SSOC):

- Before beginning the testing.
- when the testing is complete.
- If any 'Returned From Repair" or formerly spare PWCs are left in the system.

me SSOC tracks the testing activity with its current site tracking system (i.e., Site Activity Log, SACS).

4.3 PWC's Returned from Repair

To determine the status of spare cards, do the following when Repair returns a PWC:

Step	Determining Status of Spare Cards
1	Log the returned PWC in the PWC log. **NOTE: Leave the ERO tag on the PWC untill testing is complete.**
2	Test the spare PWC, following procedures listed in 6.1. (This testing can be done in the **training switch** if available.) Test all returns from repair within 14 days of receipt.
3	Log ail testing activity in the Site Journal. **NOTE: If the PWC does not pass diagnostics, complete an** ERO **and return the PWC to the Equipment Service Center.**
4	Remove the PWC from the system using standard procedures.
5	Remove the ERO tag from the PWC.
6	Place a green dot on the handle of the PWC.
7	Place the PWC in the spare card cabinet.

4.4 Using Spare PWCs

Leave the **green** dot on if **a spare PWC is placed in the** system for trouble shooting. In the Site Log, record the location where the PWC is placed in the frame **and time it was put in the frame. When testing is completed, return** the PWC **to the spare card cabinet and record the** activity in the Site **Log.**

Remove the green dot if the spare PWC replaced a **bad PWC.**

NOTE: Dlagnostlcs must be run on any spare card placed In the system, even If it has a green dot.

4.5 Moving PWCs

When trouble shooting problems and suspect PWCs are moved from one process **module or network component to another, the PWCs being moved must** have a **red** dot **placed on its handle. Record all such action In the Site Log.**

Remove the red dot from the other PWCs Involved in the trouble shooting process when the **suspected bad PWC(s)** are Identified.

4.6 Label Ordering Information

Order the **red** and **green dot labels** through normal business stationary supply **channels. The following is Information for Avery@ labels:**

- Red
  AVYTD5730
- Green
  AVYTD5732

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5. Testing Time Frames

5.1 Time Reporting

Each Central Office has a monthly COMPS routine or a SSWAP Work Activity Code (WAC) established for card testing. These routines or codes are used when reporting time spent on this task.

5.2 Testing Process

Conduct ail testing in accordance with:

- Manufacturer's user guides.
- Maintenance manuals.
- Practices.

5.3 Pretest Conditions

Before testing begins, conduct a review of the system printouts to identify suspected fauit locations existing within the switch.

5.4 Automated Routines

Schedule the testing of spare PWCs so as to not require suspending automated routines, when possible. Check the site's automatic routine schedule and planning spare PWC testing accordingly.

5.5 Card Handling

Whenever handling PWCs, use the following to ensure that electrostatic damage does not occur:

- Wrist straps.
- Static control containers.

5.6 System Monitoring

During card testing, system printouts must be monitored to determine if new faults have been introduced into the system. If printouts indicate that adverse conditions have occurred:

- Terminate the test.

  AND

- Remove the card under test using the manufacturer's procedures.

6. PWC Testing Procedures

6.1 PWC System Testing

Test the spare PWC:

- Once the spare PWC under test has been placed in the system.

  AND

- Power **has been** restored.

NOTE: Use standard Equlpment Repair Order (ERO) procedures to return a spare PWC for repair if it falls during the testlng process.

Step	Testing the Spare PWC
1	Diagnose the module or network component with the spare PWC a minimum of five times. **NOTE: For GTD-5s, do not use the "RUN" option of five on the following components:** • Network Clocks. • Facility Test Units (FTUs). Test phase by phase.
2	Place the module or network component with the spare PWC in service. If diagnostics are initiated, ensure all tests pass before proceeding.
3	Monitor system output for 15 minutes for any syndromes which might indicate that the card under test is faulty.
4	Place the module or network component with the spare PWC in the active state. if diagnostics are run again, ensure all tests pass. **NOTE: This does not apply to cards that do not have an In-service Active/Standby state, I.e., BAUD, BAUC).**
5	Monitor the system output for 15 minutes for any syndromes which might indicate that the card under test is faulty.
6	Remove the spare PWC using standard procedures.
7	Place a green dot label on the card handle.
8	Place the card handle in the spare PWC cabinet.
9	Return the original card to its slot.