



**Pacific Gas and  
Electric Company**

## **Electric T&D Bulletin**

### **Title: Trayer Subsurface Interrupter Installations**

Check all appropriate boxes

- |   |  |  |   |
|---|--|--|---|
| <input type="checkbox"/> SAFETY ALERT                           | <input type="checkbox"/> GAS                 | <input checked="" type="checkbox"/> DISTRIBUTION | <input type="checkbox"/> SUBSTATION ENGR.                     |
| <input checked="" type="checkbox"/> MANDATORY COMPLIANCE        | <input checked="" type="checkbox"/> ELECTRIC | <input type="checkbox"/> TRANSMISSION            | <input type="checkbox"/> TRANS./SUB. M&C                      |
| <input type="checkbox"/> RECOMMENDED ACTIONS                    | <input type="checkbox"/> ESTIMATING          | <input checked="" type="checkbox"/> OPERATIONS   | <input type="checkbox"/> APPLICANT DESIGNER /<br>CONSTRUCTION |
| <input checked="" type="checkbox"/> INFORMATIONAL/CLARIFICATION | <input type="checkbox"/> MAPPING             | <input type="checkbox"/> SERVICE                 |   |

### **Purpose:**

The purpose of this bulletin is to communicate to M&C an identified installation error discovered in the field. Included in this bulletin are procedures that are necessary to ascertain, manage, and correct potential incorrect installations of Trayer Subsurface Interrupters. In addition, it communicates to Operations procedures that must be followed when a Trayer subsurface interrupter is used to test a portion of a circuit, or after an interrupter trips as a result of a fault. These procedures also apply when the interrupters are back-fed for any reason.

This bulletin supersedes the interim procedures that were issued via email on Thursday, June 5, 2008.

**Target Audience:** Maintenance and Construction (M&C) Superintendents, Compliance Supervisors, Restoration Managers, Electric Operations Managers and Supervisors, and System Operators.

### **Background:**

Per the single line diagram on page 6 of Drawing 066208, **source cables** must be connected to the **L bushings** and **load cables** must be connected to the **R bushings** on a subsurface interrupter. Recently, it was discovered that several Trayer subsurface interrupters were installed incorrectly, with source cables connected to the load terminals (R bushings) and load cables connected to the source terminals (L bushings). This installation error has a significant effect, particularly when a fault occurs on the load side of the device.

Normally, if a fault occurs on the load side of the interrupter, the unit will trip and clear the fault. When the installation is reversed, the unit will still trip on a load-side fault. However, because the unit requires a source side potential transformer to charge the internal relay and opening mechanism, the interrupter will not trip if it is closed for a test on a sustained faulted section. Instead, the fault current will relay the next upstream protective device. The failure to trip condition will also exist if a subsurface interrupter is installed correctly but is being back-fed.

This issue applies only to Trayer subsurface interrupters. Pad-mounted or vault type, solid di-electric vacuum interrupters are not affected by this bulletin.

**NOTE:** All Trayer subsurface interrupters are shipped with white labels located by the source side bushings that read "Source Bushings L1-L2-L3".

**Procedures for M&C:**

1. Each Division M&C Superintendent will assign a division contact and provide his/her name to Mary Nurisio, Line Equipment Program Manager by 7/9. Also, each Division M&C Superintendent or contact will assign at least one Qualified Company Representative (QCR) to inspect each Trayer interrupter installation in the division. (See attached spreadsheet listing all Trayer interrupters for each division.).
2. The QCR will document and track all incorrect interrupter installations through the attached spreadsheet. An EC notification is required for each interrupter that is incorrectly installed.
3. As the inspections are completed, the results will be communicated to the appropriate Electric Operations Control Center. All units that are found to be installed incorrectly will be added to the Equipment Requiring Repair (ERR) list and will have a default 3 month repair requirement noted in ERR.
4. The Compliance Supervisor will review with the Division Supervising Engineer all EC notifications to determine priority and assign a duration for the repairs. Durations should not exceed 3 months.
5. Compliance will enter the EC notification number on the spreadsheet, record the ERR PIN in the spreadsheet (if applicable) and provide the EC notification number to the DO for documenting in ILIS.
6. All Trayer Interrupter inspections must be completed by **8/15/2008**.

After 8/15/2008, the inspection of Trayer interrupters will be emphasized in the Compliance Inspector training and will be included in the normal 3-year inspection cycle for underground equipment.

**NOTE:** Prior to correction work for improperly installed Trayer interrupters, crews will ring out cables to verify that cables are tagged correctly.

### **Procedures for Using Trayer Interrupters During Outages:**

When trouble-shooting an outage involving a Trayer interrupter:

1. The Switchman must verify whether or not the subsurface interrupter is correctly installed and report findings to the system operator. To verify the installation:
  - a. The System Operator will provide circuit information indicating next load or source side device.
  - b. The Switchman will confirm cable markings and interrupter labels; that the "L" goes to the source or the "R" goes toward the load.
2. The System Operator must verify whether or not the interrupter is being back-fed.
3. If the interrupter is installed incorrectly or is being back-fed, cut out the reclosing relay on the upstream source side protective device prior to closing the interrupter to test. Be sure to exercise proper underground sectionalizing, isolating and testing procedures (i.e. check & reset fault indicators, etc.).
4. If during managing an unplanned outage a subsurface interrupter is determined to be installed incorrectly, the device is to be placed on the ERR list, pinned, and numbered in accordance with Electric T&D Bulletin 2007-10, Guide to Prioritize Equipment Requiring Repair (ERR).
5. The System Operator will document in ILIS the EC notification number provided by Compliance.

### **Control Center Tracking of Equipment Status:**

1. Interrupters that are known to be improperly installed will be placed on the ILIS Equipment Requiring Repair Report, and will be pinned and numbered in accordance to Electric T&D Bulletin, 2007-10, Guide to Prioritize Equipment Requiring Repair (ERR).
2. When proper installation is not known, the System Operator will place the interrupter on the ILIS System Information Report in accordance to Electric T&D Bulletin, 2007-10, Guide to Prioritize Equipment Requiring Repair (ERR).

### **Documentation Requirements:**

- Spreadsheet
- UG EC Notification

All improper installation conditions identified must be reported on an EC notification, one per location. Please report the condition as follows:

- Object Part: Interrupter
- Damage: Improper Connection
- Activity Code: Adjust
- Work Type Code: 545

After creating the notification, the Compliance Supervisor must review the notification(s) with the Division Supervising Engineer to determine the priority and assign a duration (not to exceed 3 months). The Compliance Supervisor will report the EC notification and PIN number on the spreadsheet.

**Accounting Information:**

- Inspections – Labor for completing the inspections should be charged to order 8089106. This order is linked to a new MWC BF planning order, 5225808.
- Equipment Repairs – Create an EC notification and generate an order for each location using work type code 545.

**References:**

- Drawing 066208, Installation of Automatic Subsurface Interrupters for Underground Distribution Lines
- Electric T&D Bulletin 2007-10, Guide to Prioritize Equipment Requiring Repair (ERR).

**Attachment:**

- Attachment 1 - Trayer and Unspecified Interrupters Spreadsheet

The spreadsheet can also be found on the Electric Asset Strategy, Life Cycle Planning Sharepoint. Please see link below.

[Electric Asset Strategy, Life Cycle Planning Sharepoint](#)

**Approved by:**

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**Date:** 7/1/08

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