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SSIT-401 Inspecting and Testing Relays

Purpose

Proper functionality of relays is vital to the safety of train operations and grade crossing warning systems. Relays shall be routinely inspected and tested to ensure they are in suitable working condition .

Rail Safety

Employee shall ensure the site is safe for employees, the public, vehicular traffic and train operations as defined in *SSIT-8 Protecting Train Operations* prior to performing tests and inspections.

Relay Handling

Relays and other electromagnetic equipment often contain fragile parts which, if shifted, damaged, or misaligned, may not allow the equipment to operate properly. The following table defines methods for safe handling, storage, and transportation:

Step	Notes
1. Handling	→ Shipping accessories are to be removed but kept accessible for future shipping. → Relays should not be shaken, struck, or dropped. → Relays suspected of being mishandled must be carefully inspected and electrically tested prior to being placed in service.
2. Storage	→ Relays shall be stored in a dry environment. → Relays that are unfit for use shall be tagged accordingly.
3. Transportation	→ Relays shall be shipped in a dry container. → Relays shall be wrapped in shock absorbing material. → If possible, relay shall be shipped in original packaging.

Relay Test Procedures

Relays shall be tested at time of installation, as required, and periodically depending on type of relay, as described in the following SSITs:

SSIT Number	Description	Test Interval
SSIT-401(a)	Relays - Visual Inspection	6 Months
SSIT-401(b)	Relays - DC Polar	2 Years
SSIT-401(c)	Relays - Electrical Tests	4 Years

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SSIT-401(a) Relays - Visual Inspection

Purpose

Proper functionality of relays is vital to the safety of train operations and grade crossing warning systems. Relays shall be routinely inspected to ensure they are in suitable working condition .

Test Intervals

Visual inspection of relays inspections shall be performed when installed, as required, and at least once every six (6) months. Refer to *SSIT-7 Signal System Inspection and Test Intervals* for all test intervals.

Rail Safety

Employee shall ensure the site is safe for employees, the public, vehicular traffic and train operations as defined in *SSIT-8 Protecting Train Operations* prior to performing tests and inspections.

Equipment Manuals

A copy of relevant relay equipment manufacturer's manual should be on hand for reference when performing tests.

Visual Inspections – Six (6) Month

The following visual inspections shall be performed on each relay:

Step	Procedures
1. Check for Proper Mounting & Sealing	→ Check all screws, nuts and binding posts are secured properly. → Check relays are properly seated. → Verify proper seals are in place.
2. Check Shelf Type Mounting (if applicable)	→ Check shelf relays securely mounted to ensure they do not come off spring mountings and tip over if suddenly jolted.
3. Check Vents (if applicable)	→ Check shipping vent covers are removed. → Ensure vents are clear of obstructions for proper venting.
4. Check Stickers & Plating	→ Check plating is not chipped or peeling, which may interfere with proper relay armature operation. → Check labels are free of dirt, rust, moisture, which may interfere with proper relay armature operation. → Check specification sticker is in place.
5. Check GRS Type K Flasher Relay Washers (if applicable)	→ Check GRS Type K flasher relay does not have less than 10 flash rate adjustment washers on the coil. **If less than 10 washers:** relay contacts may hang open. Add additional washers as required.
6. Check US&S FN16/FN16A Flasher Relay Washers (if applicable)	→ Check US&S FN16/FN16A flasher relay does not have less than 6 flash rate adjustment washers on the coil. **If less than 6 washers:** relay contacts may hang open. Add additional washers as required.

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Step	Procedures
7. Check Contacts for Potential Circuit Failure	→ Check front, rear, and heel contact terminals for pitting, burns and corrosion, which may cause circuit failure. → Check contact alignment in energized and de-energized state. **If contacts burnt, pitted, corroding or misaligned:** Relay must be tested for proper operation. Faulty relays must be replaced.
8. Check Magnet for Wear	→ Check magnet for foreign material or debris, which may interfere with proper relay operation. → Check magnet allows contact to be picked when energized.
9. Check Armature Mechanics	→ Check armature for signs of wear. Check there is no mechanical interference with the operation of the armature. **If armature shows wear or limitations in movement:** Relay must be tested for proper operation. Faulty relays must be replaced.
10. Check Clearance of Moving Parts	→ Check adequate space exists between moving parts and covers. → Check no buildup of debris constrains movements. **If movements appear restricted:** Relay must be tested for proper operation. Faulty relays must be replaced.
11. Update Log Book	• Add any notes of issues observed, or adjustments made.
12. Complete Test Form	• Record the test as completed on SSIT test form.