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SSIT-402 Timer Relays & Devices

Purpose

These instructions describe the tests to ensure timer relays & devices are operating as intended and continue to maintain between 90% and 110% of the time specified as per design.

Test Intervals

Timing equipment inspections and tests shall be performed when installed, as required, and at least once every twelve (12) months to verify the time setting has not been altered or changed. Tests shall be performed at same time as relay tests *SSIT-401(c) Vital Relays – Electrical Tests* to maximize efficiency. 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. **When testing requires equipment seals to be broken, seals must be replaced immediately after adjustments are made.**

Equipment Manuals

A copy of all timing equipment manufacturer's manual shall be on hand for reference when performing tests.

Electronic Relay or Timing Device Procedure

The following tests are to be performed at each location equipped with electronic relays or timing devices:

Step	Procedure
1. Visually Inspect Relay	• Perform visual inspection of relays as per SSIT-*401(a) Relays – Visual Inspection*
2. Activate Timer	• Refer to manufacture manual for testing procedures. • Using the circuit plans, determine how to energize the timer. → Energize the timer . → Verify the time using an independent stopwatch. → Observe LEDs indicate ON or OFF as per design (if applicable). • De-energize coil. → Observe LEDs indicate ON or OFF as per design (if applicable). → Verify check contact is fully made at the end of the timing cycle (if applicable). → Check the timer is adjusted to within 90% to 110% of the time specified in the design*. **If time or contacts not correct:** Report to the ONR S&C Supervisor and make adjustments as per manufacturer's manual and retest timer relay. **If errors persist:** Report to the ONR S&C Supervisor and arrange replacement.
3. Replace Seals (if applicable)	• If seals removed, replace seals prior to completing tests.

** The time shown on the circuit plans includes the cooling time if the check contact is used.*

Motor Timer Relay Procedure

The following verifications are to be performed at each location equipped with motor timer relays:

Step	Procedure
1. Visually Inspect Relay	• Perform visual inspection of relays as per *SSIT-401(a) Relays – Visual Inspection*
2. Activate Timer	• Using the circuit plans, determine how to energize the timer relay. • Energize the timer relay. → Verify the time to fully energize using a stopwatch. → Check the energized contacts fully make at the end of the timing cycle. → → Check motor timer mechanics operate smoothly. • De-energize the timer. → Check the contacts return to the fully de-energized position. → Verify check contact is fully made at the end of the timing cycle (if applicable). → Check the timer is adjusted to within 90% to 110% of the time specified in the design*. **If time or contacts not correct:** Report to the ONR S&C Supervisor and make adjustments as per manufacturer's manual and retest timer relay. **If errors persist:** Report to the ONR S&C Supervisor and arrange replacement.
3. Test Relays in Series (if applicable)	If motor relays are connected in series, perform following checks: → Check consecutive timer starts running time immediately following initial timer. → Check the energized contacts fully make at the end of the timing cycle. → Check motor timer mechanics operate smoothly. → Check the contacts return to the fully de-energized position. → Verify check contact is fully made at the end of the timing cycle (if applicable). → Check the timer is adjusted to within 90% to 110% of the time specified in the design*. **If time or contacts not correct:** Report to the ONR S&C Supervisor and make adjustments as per manufacturer's manual and retest timer relay. **If errors persist:** Report to the ONR S&C Supervisor and arrange replacement.
4. Replace Seals (if applicable)	• If seals removed, replace seals prior to completing tests.

** The time shown on the circuit plans includes the cooling time if the check contact is used.*

Thermal Timer Relay Procedure

The following verifications are to be performed at each location equipped with thermal timer relays:

Step	Procedure
1. Visually Inspect Relay	• Perform visual inspection of relays as per *SSIT-401(a) Relays – Visual Inspection*
2. Check Voltage (if applicable)	If a variable resistor is in series with the coil, check voltage at thermal relay coil: → Check voltage is relay's rated voltage. **If voltage out of range:** Adjust variable resistor until voltage is in range.
3. Activate Timer	• Using the circuit plans, determine how to energize the timer coil circuit. • Energize the timer relay. → Verify the time to fully energize using a stopwatch. → Check the energized contacts fully make at the end of the timing cycle. • De-energize the timer. → Check the contacts return to the fully de-energized position. → Verify check contact is fully made at the end of the timing cycle (if applicable). → Check the timer is adjusted to within 90% to 110% of the time specified in the design*. **If time or contacts not correct:** Report to the ONR S&C Supervisor and make adjustments as per manufacturer's manual and retest timer relay. **If errors persist:** Report to the ONR S&C Supervisor and arrange replacement.
4. Replace Seals (if applicable)	• If seals removed, replace seals prior to completing tests.

** The time shown on the circuit plans includes the cooling time if the check contact is used.*

Record Test Results

Record the test results for each timer tested:

Step	Procedures
1. Update Log Book	• Add any notes of issues observed, or adjustments made.
2. Complete Test Form	• Record the test as completed on SSIT test form.