



INTER-OFFICE CORRESPONDENCE

DATE:

TO: _____
FROM: _____
SUBJECT: XXX Substation _____

This testing document is for illustration purposes only. This is being issued as an example only. This functional test will be intended to test the relay/panel wiring (i.e. circuits) that are shown within the provided schematics. It is not JEA's intention for the relay settings to be tested by the panel manufacturer.

General Station Alarms

SEL-2523 ANN Station Annunciator

Verify the following SEL-2523 alarm input wiring:

- ☐ Battery Charger #1 Alarm
- ☐ Battery Charger #2 Alarm
- ☐ DFR Critical Alarm
- ☐ DFR Non-Critical Alarm
- ☐ GPS Clock Failure
- ☐ SEL-3555 Failure Alarm
- ☐ Door Alarm
- ☐ Fire/Smoke Alarm

☐ SEL-2730M ES1 Failure Alarm

☐ SEL-2730M ES2 Failure Alarm

230kV XXX Bus

SEL-487B 87B1/XX 230kV Primary XXX Bus Differential Relay

☐ Verify "AC" wiring for SEL-487B 87B1/XX relay

Verify the following trip output contact wiring:

☐ Verify SEL-487B 87B1/XX Trip output to White Indication Light

☐ Verify SEL-487B 87B1/XX Trip output to DFR

☐ Verify SEL-487B 87B1/XX Trip output to 86B1-XX

☐ Verify SEL-487B 87B1/XX Trip output to Breaker XXX TC-1

☐ Verify SEL-487B 87B1/XX Trip output to Breaker XXX TC-1

☐ Verify SEL-487B 87B1/XX Trips (OUT401)* Not Implemented, Future

☐ Verify SEL-487B 87B1/XX Trips (OUT402)* Not Implemented, Future

☐ Verify SEL-487B 87B1/XX Trips (OUT501)* Not Implemented, Future

☐ Verify SEL-487B 87B1/XX Trips (OUT502)* Not Implemented, Future

Verify SEL-487B 87B1/XX outputs that initiates BF for the following:

☐ Verify SEL-451/XXX BF is initiated

☐ Verify SEL-451/XXX BF is initiated

86B1-XX Lockout Relay

Verify 86B1-XX Trips and Block Close output wiring to the following:

☐ Verify trip outputs to breaker XXX TC-1, TC-2, and block closes

☐ Verify trip outputs to breaker XXX TC-1, TC-2, and block closes

☐ Verify trips DFR

SEL-487B 87B2/XX 230kV Secondary XXX Bus Differential Relay

- ☐ Verify "AC" wiring for SEL-487B 87B2/XX relay

Verify the following trip output wiring to the following:

- ☐ Verify SEL-487B 87B2/XX Trip output to White Indication Light
- ☐ Verify SEL-487B 87B2/XX Trip output to DFR
- ☐ Verify SEL-487B 87B2/XX Trip output to 86B2-XX
- ☐ Verify SEL-487B 87B2/XX Trip output to Breaker XXX TC-2
- ☐ Verify SEL-487B 87B2/XX Trip output to Breaker XXX TC-2
- ☐ Verify SEL-487B 87B2/XX Trips (OUT401)* Not Implemented, Future
- ☐ Verify SEL-487B 87B2/XX Trips (OUT402)* Not Implemented, Future
- ☐ Verify SEL-487B 87B2/XX Trips (OUT501)* Not Implemented, Future
- ☐ Verify SEL-487B 87B2/XX Trips (OUT502)* Not Implemented, Future

Verify SEL-487B 87B2/XX outputs initiates BF for the following:

- ☐ Verify SEL-451/XXX BF is initiated
- ☐ Verify SEL-451/XXX BF is initiated

86B2-XX Lockout Relay

Verify 86B2-XX Trips and Block Close wiring for the following:

- ☐ Verify trip outputs to breaker XXX TC-1, TC-2, and block closes
- ☐ Verify trip outputs to breaker XXX TC-1, TC-2, and block closes
- ☐ Verify trip output to DFR

SEL-451 XXX BKR FAIL RELAY

- ☐ Verify all AC circuits associated to this relay

Verify the following trip outputs wiring for the following:

- ☐ Verify SEL-451/XXX Trip output to White Indication Light

- ☐ Verify SEL-451/XXX Re-trip Trip outputs to Breaker XXX TC-1 and TC-2
- ☐ Verify SEL-451/XXX Supervisory-trip Trip output to Breaker XXX TC-2
- ☐ Verify SEL-451/XXX Trips 86BF-XXX

Verify the following close outputs wiring to the following:

- ☐ Verify SEL-451/XXX Sync Check output to Breaker XXX
- ☐ Verify SEL-451/XXX Supervisory-close output to Breaker XXX
- ☐ Verify SEL-451/XXX (OUT303)* Not Implemented, Future

Verify SEL-451 XXX BF is initiated by the following:

- ☐ Primary XXX Bus Differential relay 87B1/XX output initiates SEL-451/XXX
- ☐ Backup XXX Bus Differential relay 87B2/XX output initiates SEL-451/XXX
- ☐ Primary Line XXX Relay 87L-XXX output initiates SEL-451/XXX
- ☐ Secondary Line XXX Relay 21L-XXX output initiates SEL-451/XXX

86BF/XXX Lockout Relay

Verify 86BF/XXX output contacts Trips and Block Closes wiring to the following:

- ☐ BKR XXX TC-1, TC-2, and block closes
- ☐ BKR XXX block closes
- ☐ BKR XXX TC-1, TC-2 and block closes
- ☐ Trip DFR-XXX (IN106)
- ☐ Trip DTT 87L-XXX (IN303) & DFR-XXX
- ☐ Trip DTT 21L-XXX (IN203) & DFR-XXX

SEL-411L 87L-XXX Primary Line Differential with Step Distance Backup

- ☐ Verify all AC circuits associated to this relay

Verify the following trip outputs contacts wiring:

- ☐ Verify SEL-411L 87L-XXX Trip output to White Indication Light

- ☐ Verify SEL-411L 87L-XXX Trip 87L CH FAIL output to DFR-XXX
- ☐ Verify SEL-411L 87L-XXX Trip RLY TRIP output to DFR-XXX
- ☐ Verify SEL-411L 87L-XXX Trip DTT TRIP output to DFR-XXX
- ☐ Verify SEL-411L 87L-XXX Trip output to Breaker XXX TC-1
- ☐ Verify SEL-411L 87L-XXX Trip output to Breaker XXX TC-1
- ☐ Verify SEL-411L 87L-XXX Trips (OUT303)* Not Implemented, Future
- ☐ Verify SEL-411L 87L-XXX Trips (OUT406)* Not Implemented, Future
- ☐ Verify SEL-411L 87L-XXX Trips (OUT407)* Not Implemented, Future
- ☐ Verify SEL-411L 87L-XXX Trips (OUT408)* Not Implemented, Future

Verify the following close outputs contacts wiring:

- ☐ Verify SEL-411L 87L-XXX Blocks Close Breaker XXX
- ☐ Verify SEL-411L 87L-XXX Blocks Close Breaker XXX

Verify SEL-411L/XXX Initiates BF outputs contacts wiring to the following:

- ☐ Verify SEL-451/XXX BF is initiated
- ☐ Verify SEL-451/XXX BF is initiated

Verify SEL-411L/XXX Initiates Reclose to the following:

- ☐ Verify SEL-411L 87L-XXX RI (OUT401)* Not Implemented, Future
- ☐ Verify SEL-411L 87L-XXX RI (OUT403)* Not Implemented, Future

SEL-421 21L-XXX Secondary Line POTT Relay

- ☐ Verify all AC circuits associated to this relay

Verify the following trip output contacts wiring to the following:

- ☐ Verify SEL-421 21L-XXX Trip output to White Indication Light
- ☐ Verify SEL-421 21L-XXX Trip POTT CH FAIL output to DFR-XXX
- ☐ Verify SEL-421 21L-XXX Trip RLY TRIP output to DFR-XXX
- ☐ Verify SEL-421 21L-XXX Trip DTT TRIP output to DFR-XXX

- ☐ Verify SEL-421/XXX Trip output to Breaker XXX TC-2
- ☐ Verify SEL-421/XXX Trip output to Breaker XXX TC-2
- ☐ Verify SEL-421 21L-XXX Trips (OUT203)* Not Implemented, Future
- ☐ Verify SEL-421 21L-XXX Trips (OUT306)* Not Implemented, Future
- ☐ Verify SEL-421 21L-XXX Trips (OUT307)* Not Implemented, Future
- ☐ Verify SEL-421 21L-XXX Trips (OUT308)* Not Implemented, Future

Verify the following close outputs wiring:

- ☐ Verify SEL-421 21L-XXX Blocks Close Breaker XXX
- ☐ Verify SEL-421 21L-XXX Blocks Close Breaker XXX

Verify SEL-421/XXX output wiring Initiates BF to the following:

- ☐ Verify SEL-451/XXX BF is initiated
- ☐ Verify SEL-451/XXX BF is initiated

Verify SEL-421/XXX Initiates Reclose to the following:

- ☐ Verify SEL-421 21L-XXX RI (OUT301)* Not Implemented, Future
- ☐ Verify SEL-421 21L-XXX RI (OUT303)* Not Implemented, Future

SEL-487E 87TX-XX Transformer XX Primary Differential Relay

- ☐ Verify all AC circuits associated to this relay
- Verify the following trip output contacts wiring:
- ☐ Verify SEL-487E 87XX-XX Trips White Indication Light
 - ☐ Verify SEL-487E 87XX-XX Trips 86X-XX
 - ☐ Verify SEL-487E 87XX-XX Trips DFR-XX
 - ☐ Verify SEL-487E 87XX-XX (OUT203)* Not Implemented, Future
 - ☐ Verify SEL-487E 87XX-XX Trip output to Breaker XXX TC-1
 - ☐ Verify SEL-487E 87XX-XX Trip output to Breaker XXX TC-1
 - ☐ Verify SEL-487E 87XX-XX Trip output to Breaker XXX TC-1

☐ Verify SEL-487E 87XX-XX (OUT305)* Not Implemented, Future

☐ Verify SEL-487E 87XX-XX (OUT307)* Not Implemented, Future

Verify SEL-487E 87XX-XX output contact wiring initiates BF for the following:

☐ Verify SEL-451/XXX BF is initiated

☐ Verify SEL-451/XXX BF is initiated

86XX-XX Lockout Relay

Verify 86XX-XX Trips and Block Close contact wiring to the following:

☐ Verify trips breaker XXX TC-1, TC-2, and block closes

☐ Verify trips breaker XXX TC-1, TC-2, and block closes

☐ Verify trips breaker XXX TC-1 and block closes

☐ Verify 86XX-XX (Contact 34 //36)* Not Implemented, Future

☐ Verify trips DFR-XX

SEL-487E 87XX-XX Transformer XX Secondary Differential Relay

☐ Verify all AC circuits associated to this relay

Verify the following trip output contact wiring:

☐ Verify SEL-487E 87XX-XX Trips White Indication Light

☐ Verify SEL-487E 87XX-XX Trips 86XX-XX

☐ Verify SEL-487E 87XX-XX Trips DFR-XX (IN08)

☐ Verify SEL-487E 87XX-XX (OUT203)* Not Implemented, Future

☐ Verify SEL-487E 87XX-XX Trips Breaker XXX TC-2

☐ Verify SEL-487E 87XX-XX Trips Breaker XXX TC-2

☐ Verify SEL-487E 87XX-XX Trips Breaker XXX TC-1

☐ Verify SEL-487E 87XX-XX (OUT305)* Not Implemented, Future

☐ Verify SEL-487E 87XX-XX (OUT307)* Not Implemented, Future

Verify SEL-487E 87XX-XX output contact initiates BF for the following:

☐ Verify SEL-451/XXX BF is initiated

☐ Verify SEL-451/XXX BF is initiated

Verify the following SEL-487E 87XX-XX Inputs:

☐ Breaker XXX Status (Open/Close)

☐ XX Sudden Pressure Trip

☐ XX Pressure Relief Alarm

☐ XX Winding/Hot Oil Over Temp (Paralleled to SOCC)

☐ XX FAN ON

☐ XX HIGH TEMP

☐ XX High Temp Trip, TRO Trip, Overtemp Trip

☐ XX Low Oil Alarm

☐ XX Gas Detector Alarm (High Gas)

☐ XX LTC Back Up Relay Alarm

☐ XX LTC Maximum Raise/LTC Maximum Lower (Paralleled to SOCC)

☐ XX LTC HIGHEST

☐ XX LTC LOWEST

☐ XX Oil Filter Alarm (Breather Alarm)

☐ XX LTC Incomplete Step

☐ SEL-487E 87XX-XX Relay Failure

86T2-XX Lockout Relay

Verify 86T2-XX output contacts Trips and Block Closes the following:

☐ Verify trips breaker XXX TC-1, TC-2, and block closes

☐ Verify trips breaker XXX TC-1, TC-2, and block closes

☐ Verify trips breaker XXX TC-1 and block closes

☐ Verify 86XX-XX (Contact 34 //36)* Not Implemented, Future

- ☐ Verify trips DFR-XX

SEL-487B 87XX-XX 25kV Bus 1 Differential Relay

- ☒ Verify all AC circuits associated to this relay

Verify the following trip output contacts wiring:

- ☐ Verify SEL-487B 87XX-XX Trips White Indication Light
- ☐ Verify SEL-487B 87XX-XX Trips 86XX-XX
- ☐ Verify SEL-487B 87XX-XX Trips Breaker XXX
- ☐ Verify SEL-487B 87XX-XX Trips Breaker XXX
- ☐ Verify SEL-487B 87XX-XX Trips Breaker XXX
- ☐ Verify SEL-487B 87XX-XX Trips Breaker XXX
- ☐ Verify SEL-487B 87XX-XX Trips Breaker XXX

86XX-XX Lockout Relay

Verify 86XX-XX Trips and Block Close wiring to the following:

- ☐ Verify trips breaker XXX TC-1 and block closes
- ☐ Verify trips breaker XXX TC-1 and block closes
- ☐ Verify trips breaker XXX TC-1 and block closes
- ☐ Verify trips breaker XXX TC-1 and block closes
- ☐ Verify trips breaker XXX TC-1 and block closes
- ☐ Verify trips breaker XXX TC-1 and block closes

25kV Breakers XXX, XXX, XXX, XXX & XXX

SEL-351S/XX Feeder Breaker Relay

- ☒ Verify all AC circuits associated to this relay

Verify the following trip output contacts wiring:

- ☐ Verify SEL-351S/XXX Trip White Indication Light

- ☐ Verify SEL-351S/XXX Trip breaker XXX
- ☐ Verify SEL-351S/XXX Supervisory Trip breaker XXX
- ☐ Verify SEL-351S/XXX Supervisory Trip Motor Switch XXX
- ☐ Verify SEL-351S/XXX Supervisory Trip breaker XXX
- ☐ Verify SEL-351S/XXX Trip LTC IN AUTO POSITION

Verify the following close output wiring:

- ☐ Verify SEL-351S/XXX Supervisory close Motor Switch XXX
- ☐ Verify SEL-351S/XXX Supervisory close breaker XXX
- ☐ Verify SEL-351S/XXX Supervisory close breaker XXX
- ☐ Verify SEL-351S/XXX Time Delay close breaker XXX
- ☐ Verify SEL-351S/XXX (OUT212)* Not Implemented, Future

SEL-351S/XXX Feeder Breaker Relay

- ☐ Verify all AC circuits associated to this relay

Verify the following trip output contact wiring:

- ☐ Verify SEL-351S/XXX Trip White Indication Light
- ☐ Verify SEL-351S/XXX Trip breaker XXX
- ☐ Verify SEL-351S/XXX Supervisory Trip breaker XXX
- ☐ Verify SEL-351S/XXX Under Frequency Trip Breaker XXX

Verify the following close output contact wiring:

- ☐ Verify SEL-351S/XXX Supervisory close breaker XXX
- ☐ Verify SEL-351S/XXX Reclose breaker XXX