This document explains how to test the Fuse failure supervision function, 60. A complete description is available in Section 6.2 of the RER620 technical manual.

The fuse failure supervision function is used to block the voltage measuring functions at a failure in the secondary circuits between the voltage transformer and IED to avoid unintended operations of the voltage protection functions.

A fault in the voltage measuring circuit is referred to as a fuse failure. This term is misleading since a blown fuse is just one of the many possible reasons for a broken circuit. A fuse failure may occur due to blown fuses, broken wires or intended substation operations.

An incorrectly measured voltage can result in an undesired operation of some protection functions; fast failure detection is one of the means to block voltage-based functions before they operate.

The following parameter settings were used to test the SEQRUF1 (60) function block:
Secondary Voltage Injection

1. Inject balanced secondary voltages as shown:

2. Verify that the relay is able to see these voltages through WebHMI. The signals through WebHMI using the Phasor Diagrams view:
3. Monitor the outputs of the SEQRFUF1(60) function block through WEBHMI. With the balanced three phase voltages the outputs of the function block should be the following:

4. The FUSEF_U should be False identifying that a blown fuse has not been detected
5. Decrease A phase voltage from a magnitude of 100V to 60V as shown:
6. Verify that the relay is receiving the reduced A phase voltage through the Phasor Diagrams view of WebHMI. The values should be similar to the following:

[Phasor Diagrams Image]

7. Reducing the magnitude of A phase voltage should simulate a blown fuse condition which can be verified by monitoring the outputs of the SEQRFU1(60) function block through WebHMI:

[Parameter Setting Image]
8 Return A phase voltage magnitude to 100V. This should be similar to the voltage signals represented in at the start of the test. The relay should now be receiving balanced three phase voltages. Verify the outputs of the `SEQRFUF1(60)` function block through WebHMI. The FUSEF_U output should now reset back to False representing a normal without a blown fuse condition.

If there are any further questions on this topic, please contact the Customer Service Group at:

**Phone:** +1 800 929 7947 ext. 5  
+1 407 732 2000 ext. 5

**E-mail:** customer.service.group@us.abb.com

For further information on the GridShield® recloser and other feeder automation products, please visit the ABB web-site at [www.abb.com/mediumvoltage](http://www.abb.com/mediumvoltage) and the Feeder Automation User's web-site [www.abb.com/fa-users](http://www.abb.com/fa-users).