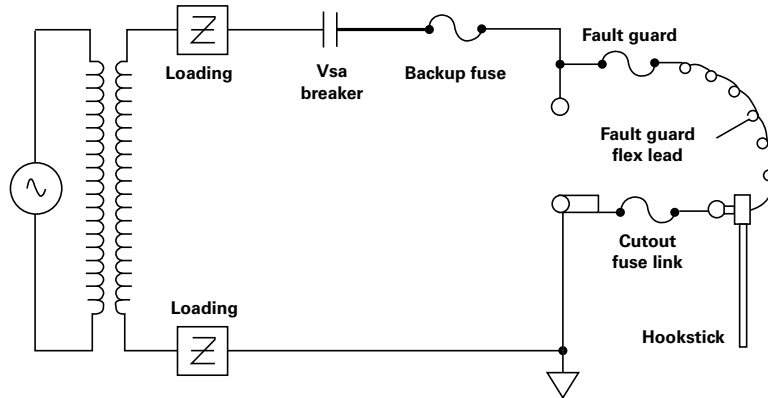


Nx fault guard™ tool test data certification



The NX Fault Guard Tool is designed to provide a convenient method of connecting an NX current-limiting fuse in series with an expulsion fuse cutout and its load. By selecting the proper current-limiting fuse, the expulsion reaction of the fuse cutout can be substantially reduced or eliminated, and the most serious causes of catastrophic transformer failure can be eliminated or limited.

Test summary

A NX Fault Guard Tool using an 8.3-kv fuse unit has been tested and shown to perform reliably under the conditions imposed on it by these interruption tests. The tests were performed at the McGraw-Edison Thomas A. Edison Laboratory in Franksville, Wisconsin. The tool was used in conjunction with a standard 78/13 .5-kv double-vented (use cutout). The cutout hanger was left ungrounded and the fuse holder was in the down or open position at the beginning of each test. Recommended operation procedures for the NX Fault Guard Tool, as described in Service Instruction Sheet S240-62-I, were followed during all tests. The tests included shots at high, intermediate, and low fault currents. Current levels for each test were selected such that the current let through by the NX fuse would cause the cutout fuse link to operate. Figure 1 shows the circuit used for all testing.

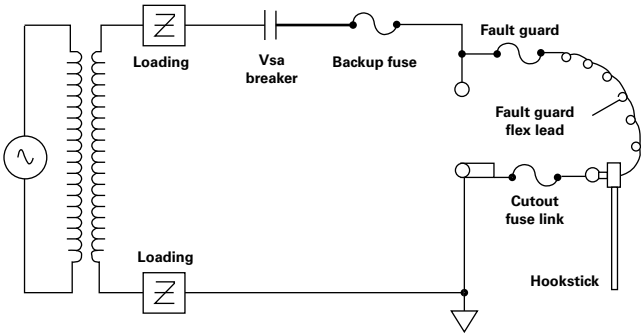


Figure 1. Test circuit.

Full-fault tests

Using a 40-amp fuse unit in the NX Fault Guard Tool and a 30K link in the cutout on a 7.6-kv circuit with 8 ka available, the test results were as shown in Figure 2. The operation of the 40C NX fuse limited the current to the fuse link such that a minimal amount of noise and flash occurred. The circuit was cleared with no damage occurring to the cutout or to the NX Fault Guard Tool. The duty imposed on the cutout by the let-through energy was 1050 amps rms.

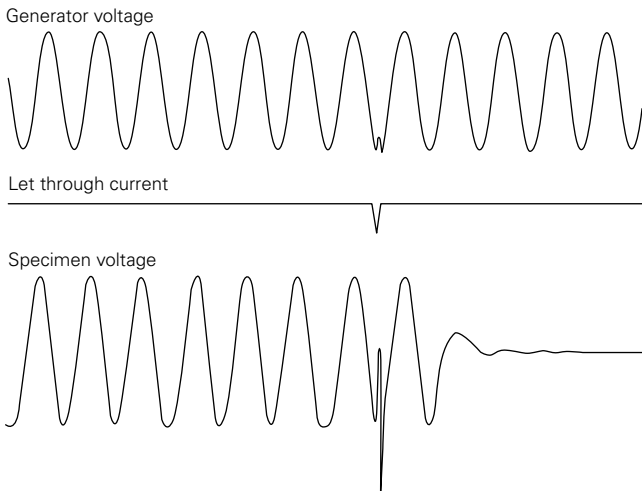


Figure 2. Full-fault test results.

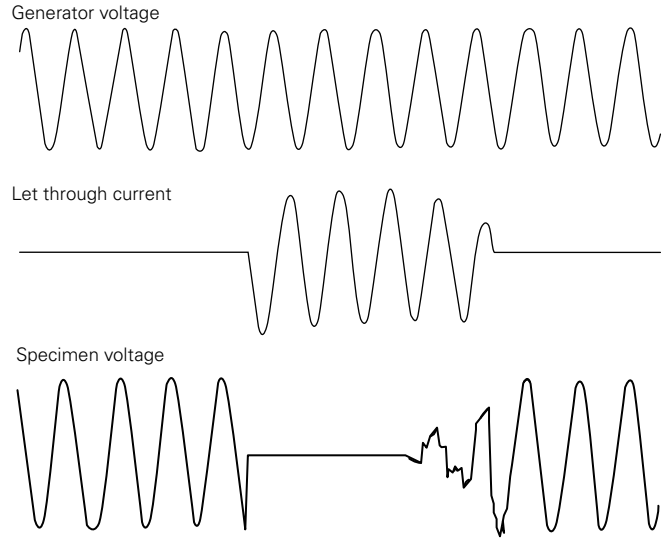


Figure 3. Intermediate-fault test results.

Intermediate-fault tests

Using a 40-amp fuse unit in the tool and a 30K link in the cutout on a 7.6-kv circuit with 650 amps available, the results were as shown in Figure 3. The current let through by the 40C fuse unit was enough to permit operation of the cutout fuse link at a low level of noise and flash. The circuit was cleared without any damage occurring to the cutout or NX Fault Guard Tool. The duty imposed on the cutout by the let-through energy was 440 amps rms.

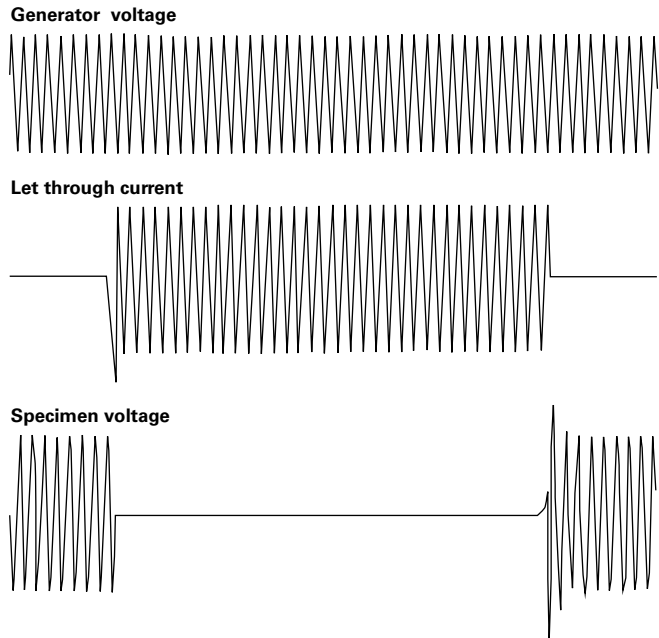


Figure 4. Low-fault test results.

Low-fault tests

Using a 40-amp fuse unit in the tool and a 30K link in the cutout on a 7.6-kv circuit with 100 amps available, the results were as shown in Figure 4. The 40C fuse did not operate and the 30K link did all of the clearing. The circuit cleared without damage or flashover occurring on the cutout or the NX Fault Guard Tool. The duty imposed on the cutout by the Jet-through energy was 58 amps rms.

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