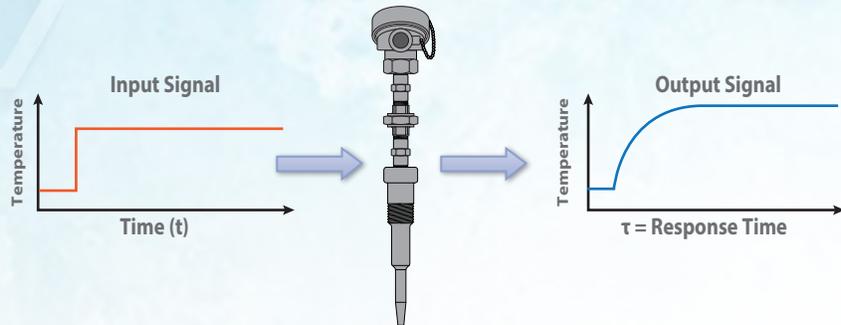




RTD Response Time Measurements in NPPs



The response time of a Resistance Temperature Detector (RTD) installed in a nuclear power plant is measured using the Loop Current Step Response (LCSR) test. This test is performed from the control room and is based on heating the RTD's sensing element with a small step change in electric current applied to the RTD's extension leads. The current causes a temperature transient in the RTD that can be analyzed to provide its response time. The LCSR method permits remote testing of an RTD as installed in an operating process, and thereby provides the actual "in-service" response time of the RTD. These tests are often performed on one or more RTD channels once every operating cycle for one or more of the following reasons:

- To measure the RTDs "in-service" response time and verify compliance with technical specification requirements, regulatory regulations, or both
- To verify that plant sensors are properly installed in their thermowells prior to power ascension
- To support predictive maintenance activities, incipient failure detection, aging management, and to establish objective schedules for replacing RTDs
- To distinguish between RTD problems and cable or connector problems

Featured Benefits

- Test time is significantly reduced with the use of AMS' test equipment and software, capable of testing up to 5 RTDs simultaneously.
- AMS test equipment and procedures account for process effects such as loop temperature streaming that can affect the test data quality.
- Testing can be performed during normal power operations, plant coast down at the end of a fuel cycle, or hot standby.
- RTD response time test data can be analyzed on-site with results provided within minutes of test completion.
- AMS trends all test data and results, and notifies clients of changes in RTD dynamic performance.
- AMS provides all the necessary equipment, procedures, and test experts to perform the tests, and is responsible for the quality, accuracy, reliability, and validity of the test results.
- Test results are certified to comply with 10CFR50 Appendix B and related standards, as applicable.
- All plant data, QA documentation, calibration records, results, and the test details are archived at AMS, and are available for the client's use at any time.

10CFR50 Appendix B Program

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