



AMS AUTOMATED ROD DROP TIME MEASUREMENTS

In PWRs with ARPI Systems



About

Rod drop time testing is performed in PWRs to measure the length of time required for control and shutdown rods to travel from fully withdrawn to fully inserted positions. The tests are performed at normal operating temperature, pressure, and flow conditions. The rods are fully withdrawn and then dropped by turning off the electrical power to one or more banks of rods while at the same time monitoring and recording their position indications.

Conventionally, rod drop time testing in most PWRs is performed manually on one rod or one group of rods at a time. This is time consuming and often the tests are performed on critical path at the end of an outage. To resolve these problems, AMS developed automatic testing of drop times for multiple control and shutdown rods. This testing reduces the test time, provides immediate analysis, and provides trending and other analysis capabilities not available with the conventional tests. The portable AMS system does not require any plant modifications, is easily set up and permits the rod drop testing with ARPI power left on or off (AMS Patent Number 6,404,835). The **Power-On** test can shorten the test time while allowing operations personnel to monitor rod position throughout the duration of the test.

Benefits

- Measure the drop times of multiple control and shutdown rods in a single test, even all rods at one time
- Perform the rod drop testing with the ARPI coil stacks energized or off
- Portable and lightweight system designed for ease of use by plant personnel
- No modification of plant equipment
- No need to pull fuses to initiate the rod drop
- User-friendly, computerized data acquisition and data analysis with on-screen and printed results
- Automatic fitting of the rod drop traces with appropriate timing marks
- Reports, plots, and trending data may also be obtained and printed out
- Reduces critical path test time to a minimum
- Equipment may also be permanently installed if desired
- Equipment and software have been designed, tested, and validated in accordance with the AMS 10 CFR 50 Appendix B QA Program

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✱ 10CFR50 Appendix B Program

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