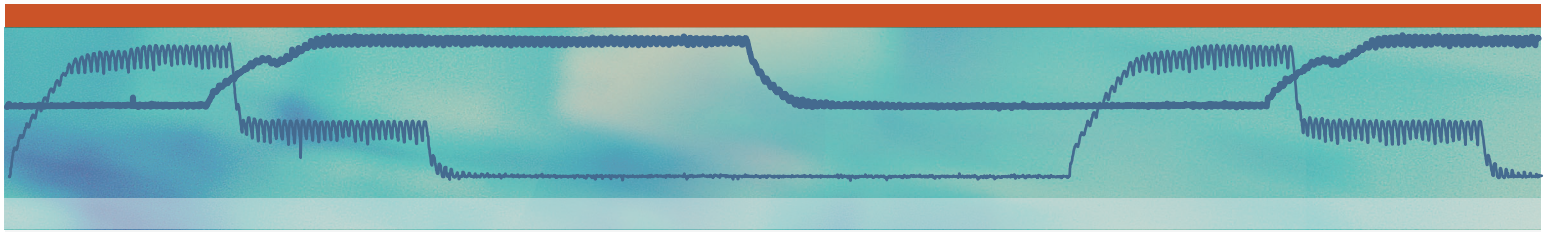




AUTOMATED ROD MOVEMENT TIMING & SEQUENCING TESTING

For Control Rod Drive Mechanism (CRDM) Systems

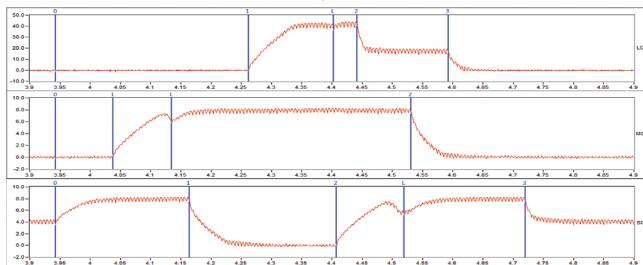


About

Timing and sequencing testing of Control Rod Drive Mechanisms (CRDMs) in Pressurized Water Reactors (PWRs) is performed by monitoring the stationary gripper, moveable gripper, and lift coil currents of a group of control or shutdown rods as they are moved in or out of the reactor. This test is normally performed in Westinghouse PWRs near the end of a refueling outage. The outputs of these coils are sampled for each rod and analyzed to ensure proper communication, regulation, and timing of the CRDMs. In most plants, the CRDM test is performed in conjunction with the rod drop time measurements and slave cycler timing tests.

AMS can perform CRDM tests on a services basis, or provide equipment and training to enable the customer to perform the tests in-house.

Coil Current Trace for Withdraw Sequence



Stationary Coil Timing Report

		Stationary Coils							
Item	Rod ID	T1-T0:	T2-T0:	T3-T0:	T4-T0:	TL-T2:		Tsgd:	
1	H06	271	575	771	1264	95		-12	
2	H10	272	574	772	1262	109		6	
3	F08	270	575	770	1267	118		11	
4	K08	276	576	776	1265	116		10	
5	F02	271	575	771	1270	119		12	
6	**B10	277	577	777	1272	**149		44	
7	K14	271	575	771	1267	125		18	
8	P06	270	574	770	1270	125		17	
9	**B06	272	573	772	1285	**127		22	
10	**F14	271	575	771	1262	**130		23	
11	**P10	271	575	771	1262	**140		33	
12	K02	272	573	772	1284	110		6	

Benefits

Plant Benefits

- Recover Critical Path Time
- Detect Rod Binding
- Identify Stuck Rods and Other Movement Problems
- Decrease Troubleshooting Time
- Identify Performance Degradation
- Monitor System Reliability

Equipment Benefits

- Connect to All Rods at One Time
- Collect Data in as Little as 15 Minutes
- Portable, Lightweight, Quick Hookup

Software Benefits

- Timing, Sequencing, and Latching Identified Automatically
- Monitor Coil Current Regulation
- Full Pull Data Collection Provides Analysis of All CRDM Steps (Up & Down)
- Quick Reporting Flags Any Anomalies
- Data Trended from Cycle to Cycle



EIB CRDM Test System

For more information please contact:

Dan Beverly (Chief Technical Officer)
Extension: 112 Email: dan@ams-corp.com

Darrell W. Mitchell (Technical Services Manager)
Extension: 108 Email: darrell@ams-corp.com

Analysis and Measurement Services Corporation

AMS Technology Center
9119 Cross Park Drive
Knoxville, TN 37923, USA

TEL 865 691 1756
FAX 865 691 9344

EMAIL info@ams-corp.com
WEB www.ams-corp.com

*** 10CFR50 Appendix B Program**

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