

NRC MOV Course

Introduction



College of Engineering

NRC MOV Course Objectives

At the end of the course, the student should be able to

- Describe the valve and motor actuator types with emphasis on the most common used in nuclear power plants.*
- Explain the theory of operation of the various valve and actuator designs used in typical motor-operated valve service, including operation at design basis.*
- Explain the application of various motor actuator types, including the principals and techniques used in selecting the appropriate actuator for a given use.*



NRC MOV Course Objectives - Continued

- *Explain the principals of various standard motorized actuator controls.*
- *Perform actuator disassembly, assembly, and switch setting, and observe techniques of trouble shooting motor-operated valves, both mechanical and electrical interfaces.*
- *Understand the methods for measuring the operational performance of MOVs and discuss the expected results.*
- *Understand the regulatory issues associated with MOV sizing and performance, and discuss the history of MOV problems and failures.*



NRC MOV Course Outline – Day 1

- *Introduction*
- *Theory of Operation of MOVs*
 - *Rising-Stem MOVs – Gate & Globe Valves*
 - *Quarter-Turn MOVs – Ball & Butterfly Valves*
 - *Limiterorque Actuators – SMB, SB, SBD, & HBC*
 - *Rotork Actuators*
- *Theory of MOV Design Basis Operation*
 - *MOV Functional Margin*
 - *Design Basis Valve Stem Thrust*



NRC MOV Course Outline – Day 2

- *Theory of MOV Design Basis Operation*
 - *Design Basis Valve Stem Torque*
 - *Motor Actuator Output Capabilities*
- *MOV Laboratory – Limit torque actuator disassembly, assembly, and switch setting*



NRC MOV Course Outline – Day 3

- *Regulatory Requirements*
 - *I.E. Bulletin 85-03*
 - *Generic Letter 89-10, 95-07, & 96-05*
- *MOV Laboratory – Diagnostic Testing and Troubleshooting*
- *Quiz*



NRC MOV Course Outline – Day 4

- *Theory of MOV Controls*
 - *Torque Controlled MOVs*
 - *Limit Controlled MOVs*
- *Periodic Verification*
 - *ASME Code Case OMN-1*
 - *Diagnostic Testing*
- *Lessons Learned*
- *Review*



NRC MOV Course Outline – Day 5

- *Review*
- *Final Exam*
- *Closeout*



MOV Course Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday	
8:00 AM	Welcome	Theory of Design	Theory of MOV	Regulatory Requirements	Review	
9:00 AM	Introduction	Basis Operation	Controls		Exam	
10:00 AM	Theory of MOVs		Periodic Verification			
11:00 AM					Closeout	
12:00 AM	Lunch	Lunch	Lunch	Lunch		
12:45 PM	Theory of MOVs	Laboratory	Laboratory	Lessons Learned		
1:45 PM	Lab					
2:45 PM	Theory of Design					
3:45 PM	Basis Operation					Review
4:45 PM	End	End	End	End		

