

## *Technical Description*

Crane Nuclear offers to provide the services as described in this Technical Description subject to the pricing, terms and conditions delineated in the Commercial Description.

### **VOTES<sup>®</sup> Infinity Motor-Operated Valve Advanced Signature Analysis**

<b>Standard Class Size:</b>	8 Students per Instructor
<b>Course Duration:</b>	4 Days
<b>Prerequisite:</b>	Crane Nuclear MOV Data Acquisition and Basic Analysis training course
<b>Supplied Materials:</b>	A training manual for each student.
<b>Suggested Training Aides:</b>	Three computers with Crane Nuclear Signature Software installed.
<b>Suggested Attendees:</b>	Personnel responsible for evaluating test data and verifying the MOV is operating within the established acceptance criteria.

#### **Course Description:**

This course will provide students with instruction in the signature analysis of the Crane Nuclear VOTES Infinity System data. The signature analysis techniques will include: review of basic analysis, advanced analysis tools and techniques, critical MOV parameters, actuator/valve degradations, and identifying the components of differential pressure tests. The students will also be led through report generating for MOVs and instructed in industry standard sizing equations.

#### **Course Terminal Objectives:**

Each student will be required to pass a written test with a minimum score of 80% in order to successfully complete this course. Upon successful course completion, the student will:

- Demonstrate manual analysis and VOTES Infinity Auto Marking capability.
- Demonstrate a working knowledge of all of the special analysis tools available in VOTES Infinity.
- Understand the traces that are automatically calculated by the software and the methods used in their calculation.
- Perform analysis of differential pressure traces.
- Identify various degradations in MOV traces and corresponding actions to correct.

**Enabling Objectives:**

After the completion of this course, the student will:

- Perform a basic signature analysis and automatic trace marking on a set of MOV data traces.
- Identify and understand the following special tools: measurement types, stem materials, actuator manufactures and models, editing and creating reports, math items, criteria, test descriptions, user settings, baseline and trending.
- Identify the special characteristics of traces acquired under differential pressure conditions.
- Identify various degradations that may be seen on data traces and means of correcting the problem.

**Course Benefits:**

- Increase the plant's self-sufficiency in MOV diagnostic testing.
- Increase the reliability of the plant's MOVs.
- Reduce the plant's cost of MOV diagnostic testing.