DAMAGE MECHANISMS

MCE060

COURSE DESCRIPTION

This Damage Mechanisms training course covers an overview of basic metallurgy and a description of the most common refining processes. Its major focus includes detailed discussions of the key refining damage mechanisms addressed in API RP 571 and examples of equipment damage and failures. It also includes discussion of typical Non-Destructive Evaluation (NDE) methods applicable for detection of damage related to the specific damage mechanisms. Many problems can be prevented or eliminated if the precursors to damage are observed and monitored so that any potential damage is mitigated. This training course will teach attendees to identify Damage Mechanisms and potential risk areas.

COURSE GOAL

To enhance the participants' knowledge, skills and abilities necessary to improve safety and reliability, and minimize liability of equipment by learning about common damage mechanisms.

COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Understand the purpose of the DM.
- Understand the process for conducting a DM.
- Schedule a DM review.
- Personnel required for successful DM review.
- Focus of DM review.
- Review, complete, and correct RBI data.
- Understand degradation mechanism.
- Document degradation mechanisms.
- Revise RBI components.
- Define corrosion loops.
- Understand integrity operating windows.

WHO SHOULD ATTEND

Engineers, inspectors, designers, and experienced maintenance personnel who are involved in designing, operating, maintaining, repairing, inspecting and analyzing pressure vessels, piping, tanks and pipelines for safe operations in the refining, petrochemical and other related industries.

COURSE DURATION

5 Working Days

COURSE OUTLINES

1. **Introduction**

   - Purpose of the DM review.
   - Process for conducting a DM review.

2. **Scheduling a DM review**

   - Personnel required for successful DM review.
   - Focus of DM review.

3. **Review, Complete, and Correct RBI Data**

   - RBI equipment data.
   - Process data.
   - Inspection history data.
   - Repair history data.
   - Identifying common data issues.
   - Resolving data issues.

4. **Annotate PFD's**

   - Data collection spreadsheet.
   - History collection spreadsheet.
   - Material specification/grade.
   - Operating parameters.
   - Corrosion rates.
   - Damage/Repairs/Replacement.

5. **Degradation Mechanism Review**

   - Team leader role.
   - Inspection specialist role.
   - Process specialist role.
   - Corrosion specialist role.
   - Assign degradation mechanisms, rates, and locations.
   - Facilitate a mock DM review.

6. **Document Degradation Mechanisms Review**

   - Adding assigned values to annotated PFD's.
   - Creating a spreadsheet for assigned values.

7. Revise RBI Components

    • Removing RBI components.

    • Adding RBI components.

8. Define Corrosion Loops

    • Corrosion loop definition

    • Identifying corrosion loops

    • Developing corrosion loop descriptions

    • Recording corrosion loop data

9. Integrity Operating Windows

    • Defining IOW's.

    • IOW ranges.