RISK BASED INSPECTION SIM

MRE109
Maintenance & Reliability Engineering

TRAINIT ACADEMY

COURSE TITLE

RISK BASED INSPECTION SIM

COURSE DATE/ VENUE

08 – 12 November 2020

Doha, Qatar

COURSE REFERENCE

MRE109

COURSE DURATION

05 Days

DISCIPLINE

Maintenance & Reliability Engineering

COURSE INTRODUCTION

Offshore structures do degrade while in-service due to deficiencies from original fabrication, corrosion or due to other different causes of degradation. The complex, extensive corrosion and fatigue risks to offshore structures in sea environment have considerable impact in inspection planning. The practical interpretation of risk-based management principles and the use of the most appropriate techniques are of great practical significance to the operators of Offshore Platforms. API RP 580 and API Publication 581, 2000 Edition- Risk Based Inspection Base Resource Document are discussed during the course. RBI utility is based on the premise that a few vital area of offshore platform contributes a majority of the risk. To alleviate the risk level, more and more companies, since the last decade, have adopted risk based inspection (RBI) methodology to reduce risk and to improve cost benefits

SIM and Fitness-for-Service (FFS) assessments are quantitative engineering evaluation performed to determine the structural integrity of in-service systems such as offshore

platform, containing a flaw or damage. The SIM & FFS help engineers to make run-repair-replace decisions. Technically sound fitness-for-service assessment procedure ensure life prediction, and to help optimize maintenance and operation of existing facilities. FFS is an integration of three disciplines; these are materials, inspection, and mechanical analysis.

This course delves on applied RBI methodology & SIM (Structural Integrity Management) in order to optimize the inspection & maintenance strategy of Offshore Platforms. All of the above will be presented in connection with the related codes and standards.

COURSE OBJECTIVE

Upon successful completion of this course, the delegates will be able to:

- ✓ The participant will learn the importance of RBI for offshore platforms
- ✓ The participant will learn the principles of SIM and FFS, and how to apply it on offshore platforms.
- ✓ The participant will learn where to find and how to calculate data necessary for FFS application
- ✓ To Understand the critical steps in the SIM (Structural Integrity Management) process
- ✓ The participant will learn how to use RBI, SIM and FFS to take right decision concerning the operation, shutdown, interval of inspection, repair of the existing in-service offshore platforms
- ✓ The participant will learn how to evaluate the integrity and remaining life of offshore platforms.

COURSE AUDIENCE

- Structural Engineers,
- Mechanical engineers,
- Structural integrity engineers,
- Asset integrity Engineers of offshore platforms
- O&M engineers and

- Inspectors responsible for design, installation, operation, integrity and maintenance of offshore platforms are encouraged to attend this course.

COURSE CONTENT

DAY 1

- Introduction to RBI process
- Introduction to offshore structures
- Different types of offshore structures
- Introduction of Risk Based Inspection (RBI)
- Basic Concepts of RBI
- Deterioration mechanisms and Failure modes

DAY 2

- Structural Degradation
- Inspection Techniques
- Age-related structural degradation
- Corrosion wastage and coating degradation
- Codes, Standards and Regulations
- Introduction to Structural integrity management (SIM)
- Structural reliability

DAY 3

- Risk Management
- Failure probability and reliability
- Planning for the RBI Assessment
- Data and Information collection for RBI
- Risk Determination
- Risk Management through Inspection

DAY 4

- Risk Assessment
- Other Risk Mitigation Activities

- Assessing Probability of Failure (POF)
- Assessing Consequence of Failure (COF)
- Assessment of structural integrity for existing offshore load-bearing structures
- Assessment of Structural Integrity –ISO 19902

DAY 5

- Stress Analysis for FFS Assessment
- Assessment –Acceptance Criteria (SLS, ULS & FLS)
- Stress Analysis for FFS Assessment
- Stress Analysis Methods for a FFS
- Linear Elastic Stress Analysis Methods and Acceptance Criteria
- Nonlinear Elastic Plastic Stress Analysis Methods and Acceptance Criteria
- Methods of Structural Stability
- Methods of Fatigue Evaluation
- FFS Assessment Using Finite Element Analysis
- Determine repair and mitigation measures
- Planning and undertaking remedial actions
- Life extension Studies
- Managing the life extension approval process (fixed installations)

COURSE CERTIFICATE

TRAINIT ACADEMY will award an internationally recognized certificate(s) for each delegate on completion of training.

COURSE FEES

$4,400 per Delegate. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

COURSE METHODOLOGY

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions