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ISO 9001:2008 Certified

Marine Drilling Risers

Five-Day Course Outline
(WEST DEC Center, Brookshire, Texas)

Note: A Job Safety Analysis (JSA) will be presented before each lab exercise.

Section I - Introduction

A. Shop Safety
   1. Fire awareness
   2. Toolbox meetings (JSAs)
   3. Awareness of potentially hazardous activities of other groups
   4. Personal protective equipment
   5. Trapped pressure
   6. Compressed air
   7. Security of equipment being worked on or mounted on work benches
   8. Working under suspended loads
   9. Load rating of lifting equipment
   10. Rotating machinery
   11. Hand tools and electric power tools
   12. Chemical storage and identification
   13. Tool care and maintenance
   14. Housekeeping

B. Safety equipment required in the shop
   1. Safety glasses with side shields
   2. Work gloves
   3. Steel-toed work boots
   4. Coveralls

Section II - System Overview

Students will be presented an integrated functional system description by major subsystem. The purpose of each component while running, retrieving and drilling will be explained.

1. Riser joints and pup joints
2. Telescopic joint
3. Spider
4. Handling tools
5. Termination joints
6. What API documents address “marine drilling riser?”
7. Riser tension support rings

Section III - Riser Joints

A. Detailed review of types of joints and component details:
   1. Functional description running and retrieving as well as in operation, weight
   2. Dog type risers
      a) RD
      b) MR
      c) DT
   3. Flanged Riser
      i) HMF
      ii) RF
      iii) FT

B. Riser and pup joint **lab**
   1. Dog type inspection
   2. Dog type make up
   3. Flanged type inspection
   4. Flanged type make up
   5. Auxiliary line set up
   6. C/K and auxiliary line standoff “float”
   7. Riser wall thickness
   8. Torque and where the lubrication is applied
   9. Thread inspection, male and female
   10. Air wrenches, regulated air pressure and output
   11. Air wrench maintenance and repair
   12. Torque wrenches and lubricant
   13. Make up and break out torque
   14. C/K and auxiliary line pins and boxes
   15. C/K and auxiliary line pin surface finish, measure
   16. C/K and auxiliary line box, dimensions’ and surface finish under seals
   17. Proper seal replacement
   18. Understand the difference between mud seals and high pressure seals

Section IV – Telescopic Joints

A. Review of joints, components and operation
   1. Functional description, weight, split and solid packers
   2. Load capacities, extended vs. collapsed
   3. Locking arrangements
   4. Packer types and control
   5. Lubrication during operation

B. Telescopic joint **lab**
   1. Split packer removal, inspection and replacement
   2. Inner barrel removal, inspection and replacement
   3. Identification and inspection of critical load path, the “Shoe”
   4. Gooseneck application
   5. Umbilical hose or Multiplex cable clamps

Section V - Spiders

A. - Detailed review of function, types and components:
   1. Hydraulic
   2. Pneumatic

3. With gimbal
4. With centralizers

B. Spider **lab**
1. Operation of spider
2. Fault finding and correction

Section VI – Riser Handling Tools

A. Detailed review of types and components:
1. Dog type
   a) Manual
   b) Hydraulic
2. Flanged type
   iv) Manual
   v) Hydraulic
3. Auxiliary line test tool

B. Riser handling tools **lab**
1. Make up manual running tool
2. Make up hydraulic running tool
3. Identify the taper and match to the proper elevators
4. Review API documents addressing lifting tools
5. Discuss frequency of testing

Section VII - Termination Joints

1. Purpose
2. Inspection techniques are different
3. Mud and high pressure seal inspection
4. Kickouts and transition to the flexible pipes

Riser Tension Support Rings

A. Detailed review of types and components:
1. TJ Integrated
2. Manual
3. Hydraulic
4. Rotating
5. Integrated goose necks

B. Riser tensioner support ring **lab**
1. Identify the load transfer area from the ring to the telescopic joint
2. Understand attaching the riser tensioners to the support ring