Dynamic Positioning Committee

Marine Technology Society

Operations and Requirements

DPO Assessment and Improvement

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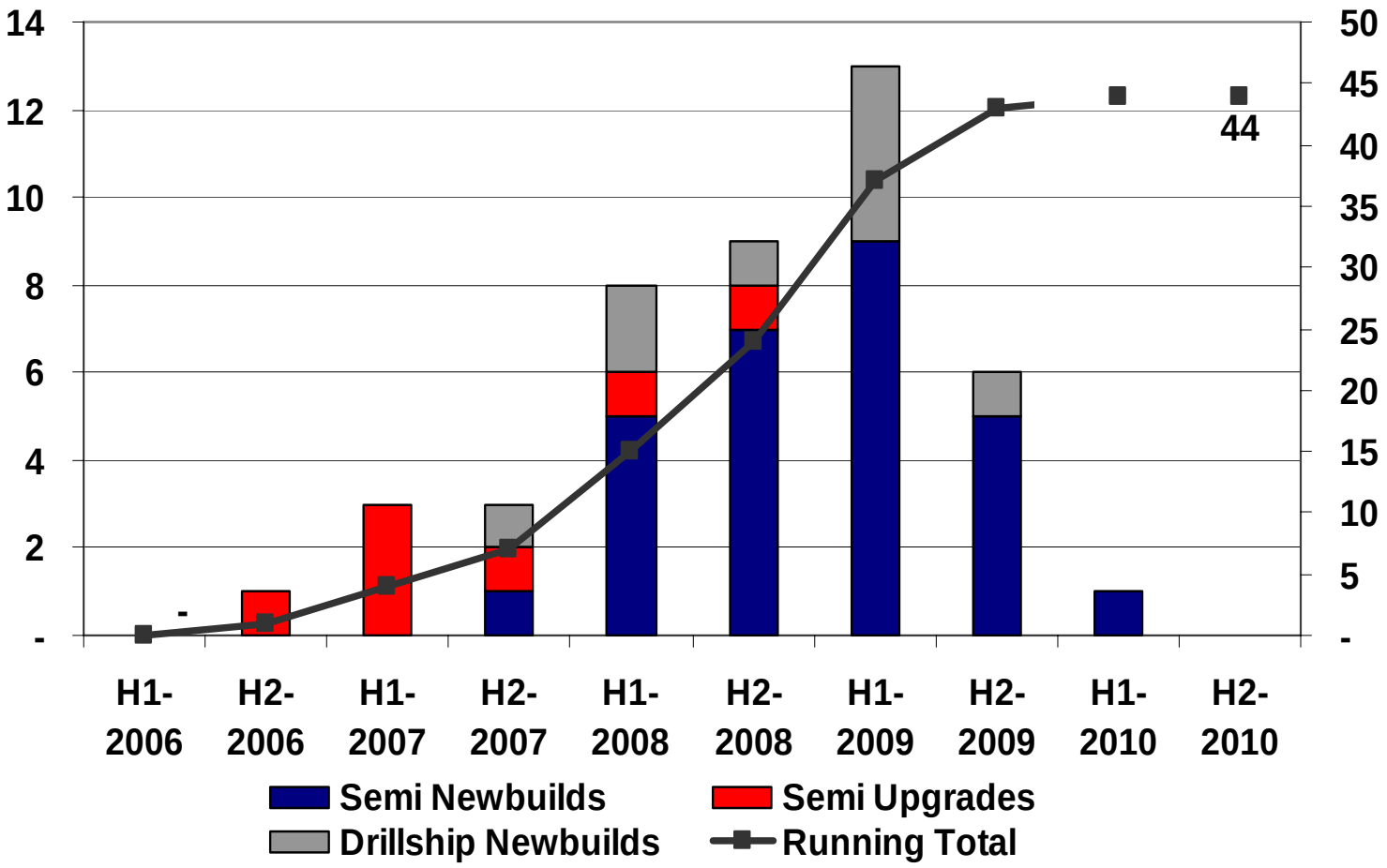
Return to Session Directory

DPO Assessment and Improvement

Meeting the Challenges

Transocean

DP Drilling Vessels Deployment



DP Drilling Vessels Deployment

The demand for qualified drilling rig DPOs will increase by over 100% by 2010

What we plan to do to meet the DPO shortage

- Work force forecasting and planning
- Targeted recruiting efforts
- Properly diagnosed training needs
- Succession planning
- Individual development plans
- Mentoring and on-board training
- Combined DP/VMS simulator and training program

Each of the initiatives must be successful

Current State: Drilling Industry DPOs

- Few “plug and play” DPOs external to industry
- Lack of training at maritime academies to prepare personnel for direct entry into drilling operations
- Focus on maintenance of certificates and professional development – mentoring
- Unmanned engine rooms
- Checklists verse good judgment
- “Hawse pipers” road to licensing
- New builds and personnel shortage that short circuit development

These situations require a paradigm shift in how we develop our people

Work Force Planning

- Developing strategy to anticipate workforce needs
- Collecting and analyzing employee consensus data
- Analyzing current staffing levels
- Analyzing turnover
- Determining development needs
- Developing a business plan
- Developing performance standards, measurements, and evaluation methods
- Developing strategy to recruit candidates internally and externally

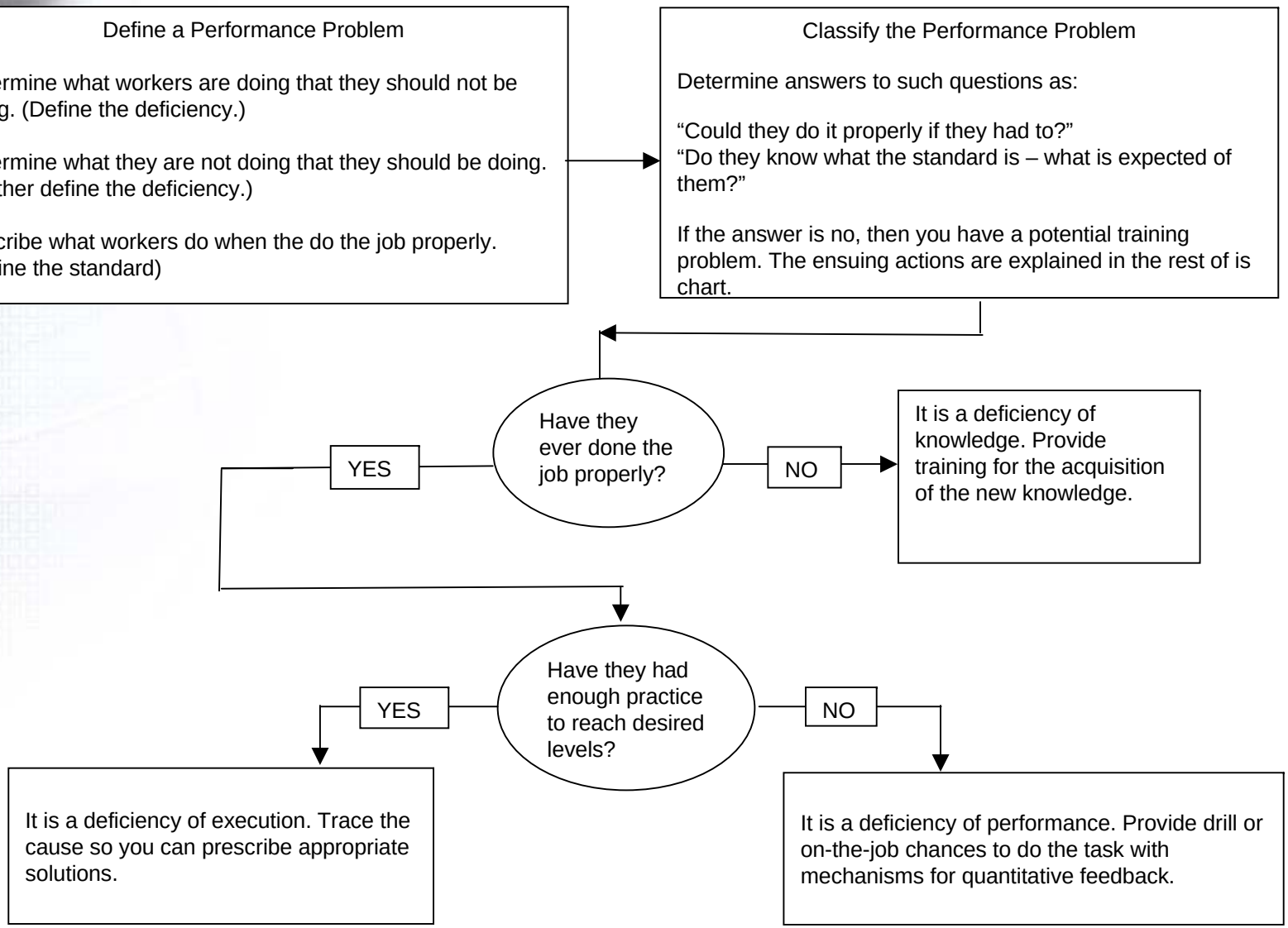
Recruitment and its implementation

- There are no “Plug and Play” DPOs for drilling industry
- Assessment starts at recruitment stage
- Bed space issues for trainee positions of recruits
- New graduates verse experienced personnel
- Mates verse control systems personnel

What now exists for DP Training?

- Nautical Institute Basic Course
- Nautical Institute Advanced Course
- Transocean DPO OJT
- Rig specific DPO OJT
- Transocean DP Lessons Learned Course

Training requirement diagnosis



99% routine + 1 % adrenaline

- DPO performance data indicate deficiencies in:
  - Execution
  - Practice
  - Knowledge
  - MOTIVATION
- Onboard DP simulators help DP skill but not power management skills
- A simulator without an instructor has limited value

One Approach to Marine/DP Training

A blended training solution:

- **On-the-Job Training**
  - defined job competencies
  - task based training
  - computer based training (CBT) reference library
- **Behavioral Training**
  - taught live via the web
  - instructors are industry subject matter experts
- **Shore base Training**
  - traditional instructor led training format
  - lessons-learned format

DP Lessons Learned – *Phase 1*

- Topics Covered
  - Feedback Control Theory
  - DP Process Control
  - Thrusters
  - DP Position References
  - Environment
  - DP System Performance
  - Basic Power Management
  - Data Loggers
  - Well Specific Operational Guidelines

Meeting the Skills Challenge

The missing links to professional development in our current development approach is a simulator to use to train in

- Power plant theory
- Failure modes of power management systems
- Quick recognition of system problems
- Understanding the root cause of the problems - not just the symptoms
- Ability to take immediate action to address situations

Example of performance problem

Scenario 1 – Upper fuel limit on single diesel

Scenario 2 – Fuel rack jams on single diesel

Symptoms

• Imbalance in load on generators Variations in frequency Notification by VMS alarms

Possible reasons for the situation

•Improperly adjusted fuel linkage (mechanical device)
•Actuator or electronic governor fault
•Fuel supply restrictions / limits increasing load
•Engine Problem

Possible reasons for the situation

•Mechanically locked fuel linkage
•Actuator or electronic governor fault

What to do?

• **Unload and stop** the faulty generator via the VMS system.
• Emergency breaker trip (if available on rig)
• Use manual joystick to stabilize power consumption and allow new generators to be synchronized.
• Split the bus. May cause partial blackout The consequences will depend on weather conditions.
• Get Engine room to E-Stop the diesel

What to do?

• **Cannot unload** and stop the faulty generator via the VMS system
• Emergency breaker trip (if available on rig)
• Use manual joystick to stabilize power consumption and allow new generators to be synchronized.
• Split the bus. May cause partial blackout The consequences will depend on weather conditions.
•. Get engine room to E-Stop diesel.

What will not work or make matters worse?

• No action will result in a blackout because of overload on the “healthy” engines and/or under frequency on the bad engine.
• Because of frequency variations it will take more time than normal to start new generators (if possible at all)

What will not work or make matters worse?

• VMS unload and stop will not work
• No action will result in a blackout because of the overload of the healthy engines and/or under frequency on the “bad” engine.
• Because of frequency variations it will take more time than normal to start new generators (if possible at all).

The Simulator

- Simulation of both main power plant and DP automation system.
- DP and PMS Instructor stations
- Situations programmable from instructor stations.

Evaluation and development

- Evaluation of skills before training
- Evaluation of skills after training
- Recording of simulation sessions
- Playback of sessions
- Debriefing of simulation exercises

Simulation exercises are intended to:

- Measure the level of advanced knowledge among dynamic position operators
- Teach advanced skills and techniques for Power Management
- Measure how well the skills were learned
- Identify opportunities for further improvement by using lessons learned from offshore

- **At completion of the simulation course the DPO will be:**
  - certified as having mastered all the concepts
  - provided with a recommendation of areas for further improvement
  - or both.

Examples of failure modes to be tested

- Simulation
  - Environmental case studies
  - Advanced power management
    - Failure modes
      - Diesel speed control instability
      - Voltage regulator failure
      - Diesel speed control runaway
      - Fuel rack actuator malfunction
      - Fire in an engine room
    - Problem recognition and solution

Recap of DPO assessment solutions

- Lead in development of industry training programs
- Development of courses at maritime academies for drilling operations and dynamic positioning.
- Help change mindset of maritime academies in regard to our industry
- Improve recruitment techniques & hire mid career
- Succession planning and personnel development plan
- Combined simulator for power management and DP operations

These solutions should

- Reduce the training burden (time) on our people our greatest assets
- Improve training effectiveness
- Reduce cost, both of managing and training
- Improved performance for our client
- Decrease down time
- Safer working environment for our personnel

Thank You