



Operations and Requirements

DPO Assessment and Improvement

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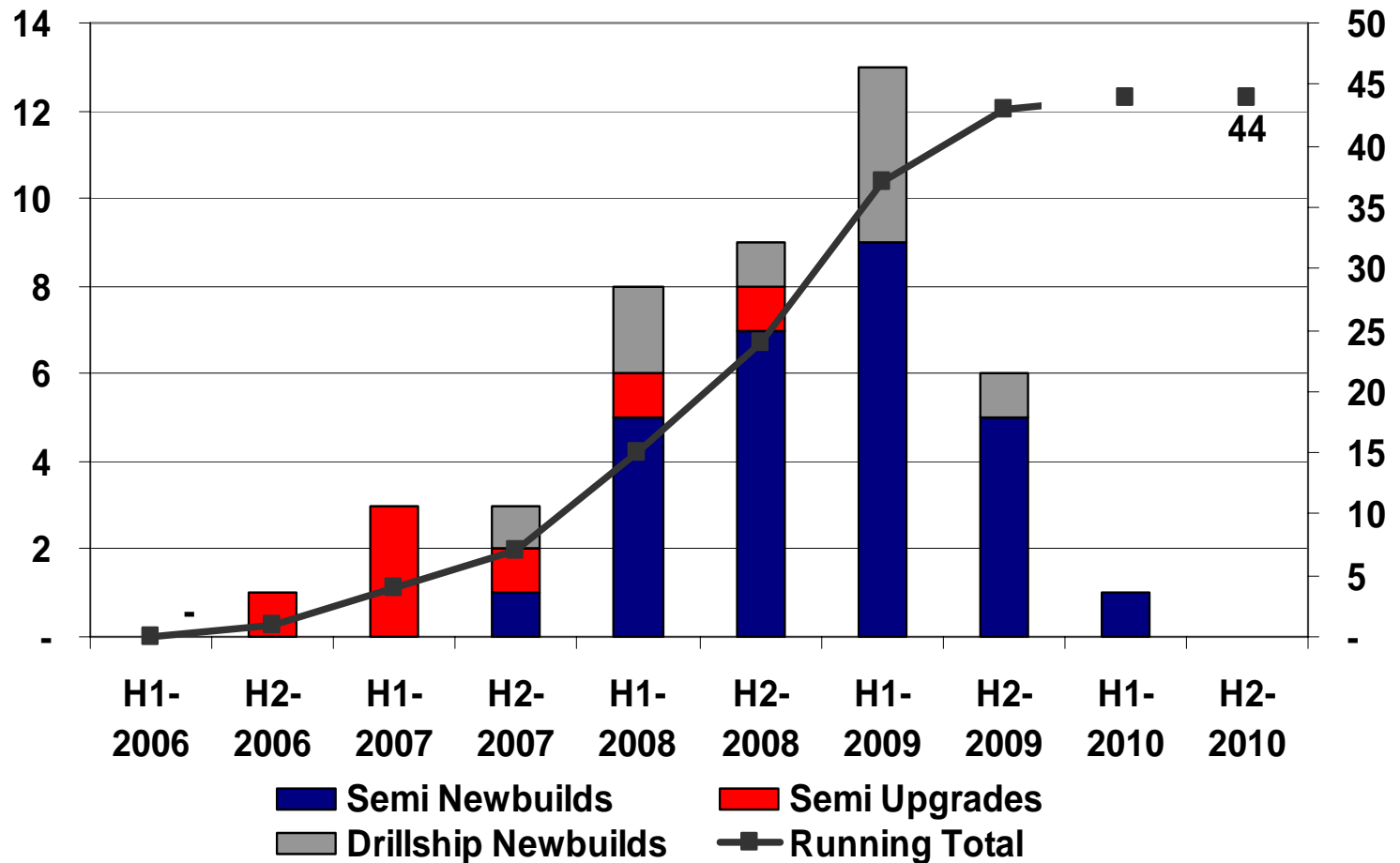
DPO Assessment and Improvement

Meeting the Challenges





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

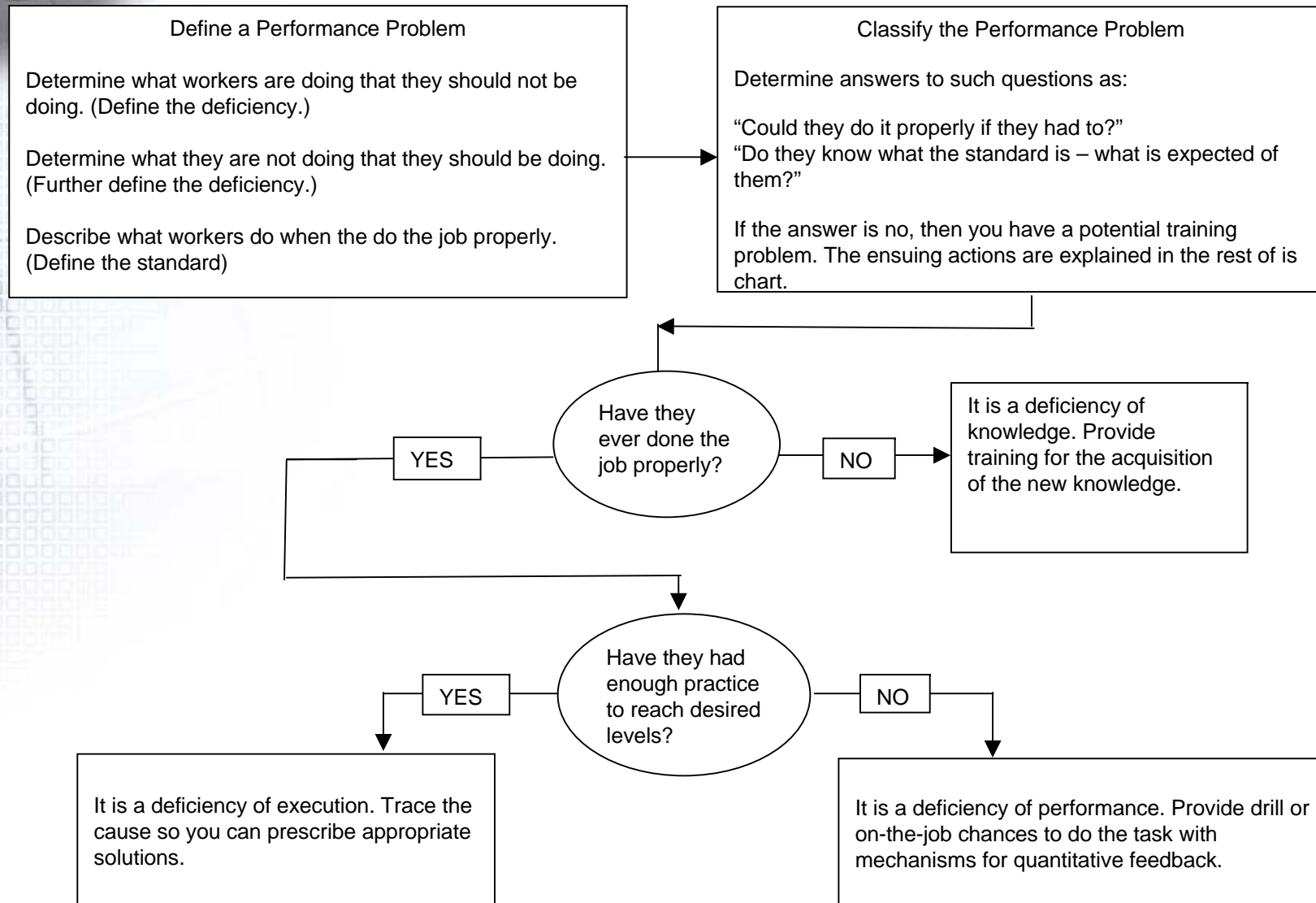


What now exists for DP Training?

- 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



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Thank You