Addressing the Drilling Industry Competence Challenge

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International Association of Drilling Contractors
EVP Operational Integrity

IADC™ 75 YEARS

IADC History

75 Years: 1940-2015

ODC Logo, 1940-1959
American Association of
Oilwell Drilling Contractors

AAODC Logo, 1959-1972
American Association of
Oilwell Drilling Contractors

IADC Logo, 1972-2014
International Association
of Drilling Contractors

IADC Logo, 2014-Present
International Association
of Drilling Contractors

IADC 75th Anniversary Logo, 2015
International Association of Drilling Contractors

Times were good!

- Ultra-deepwater exploration
- Global new build ramp up
- Land drilling renaissance & fracking
- Big crew change: 10,000s of new workers
- New technology and complexity
- Post-Macondo drive towards process safety

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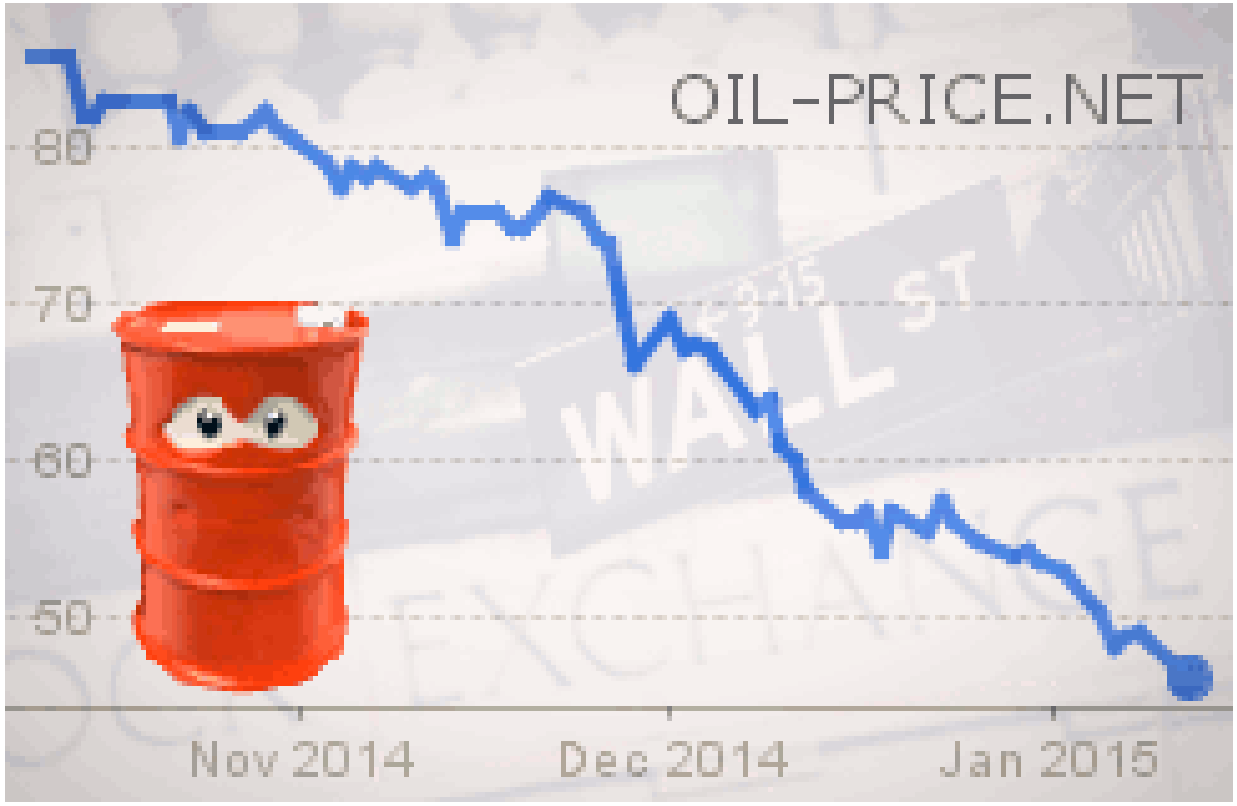
2015 Commodity Crash



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Current State of the Industry

- Companies have stacked rigs and reduced head count
- Retained employees have been increasingly being asked to assume lower positions
- Reduced training budgets**

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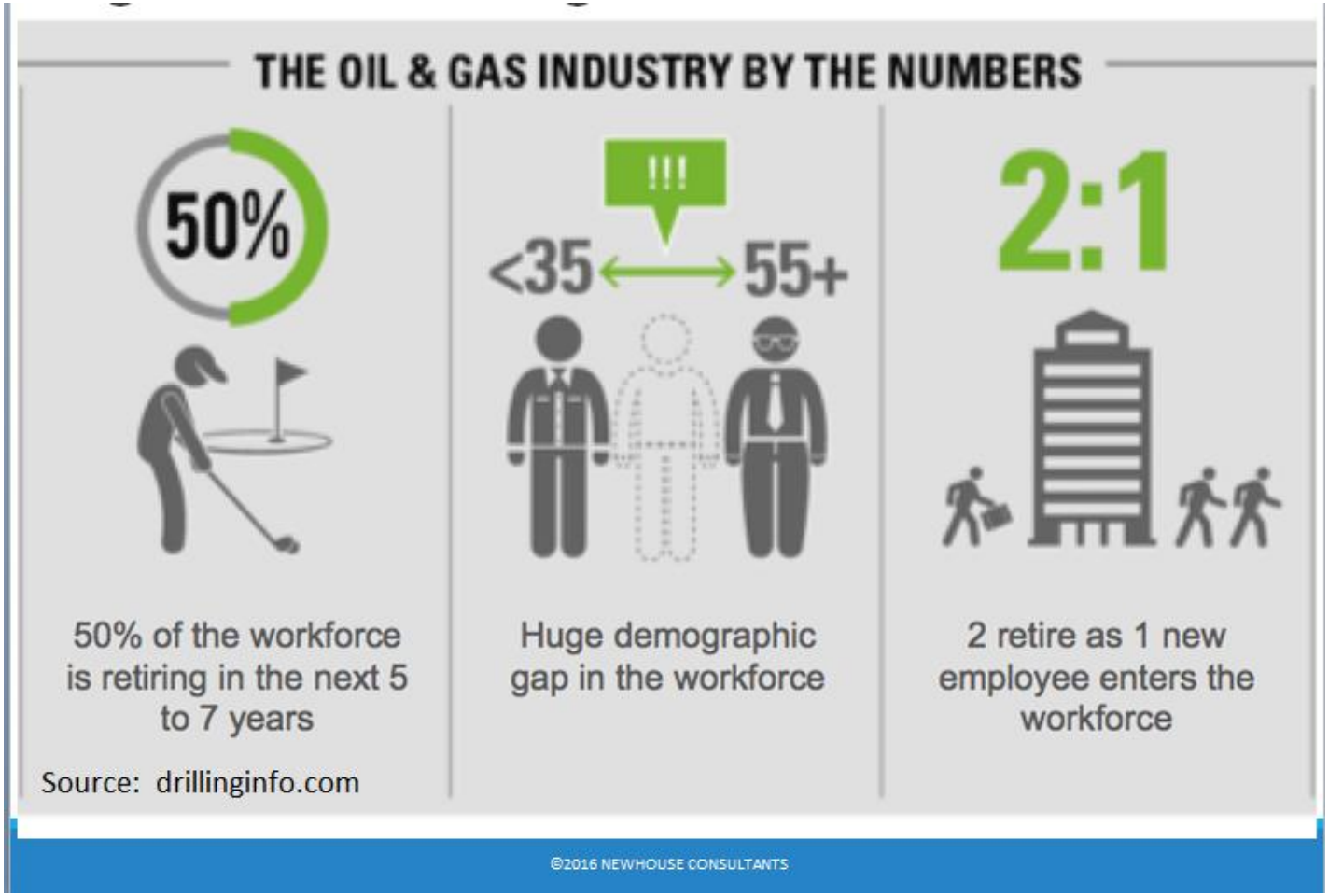
The Great Crew Change



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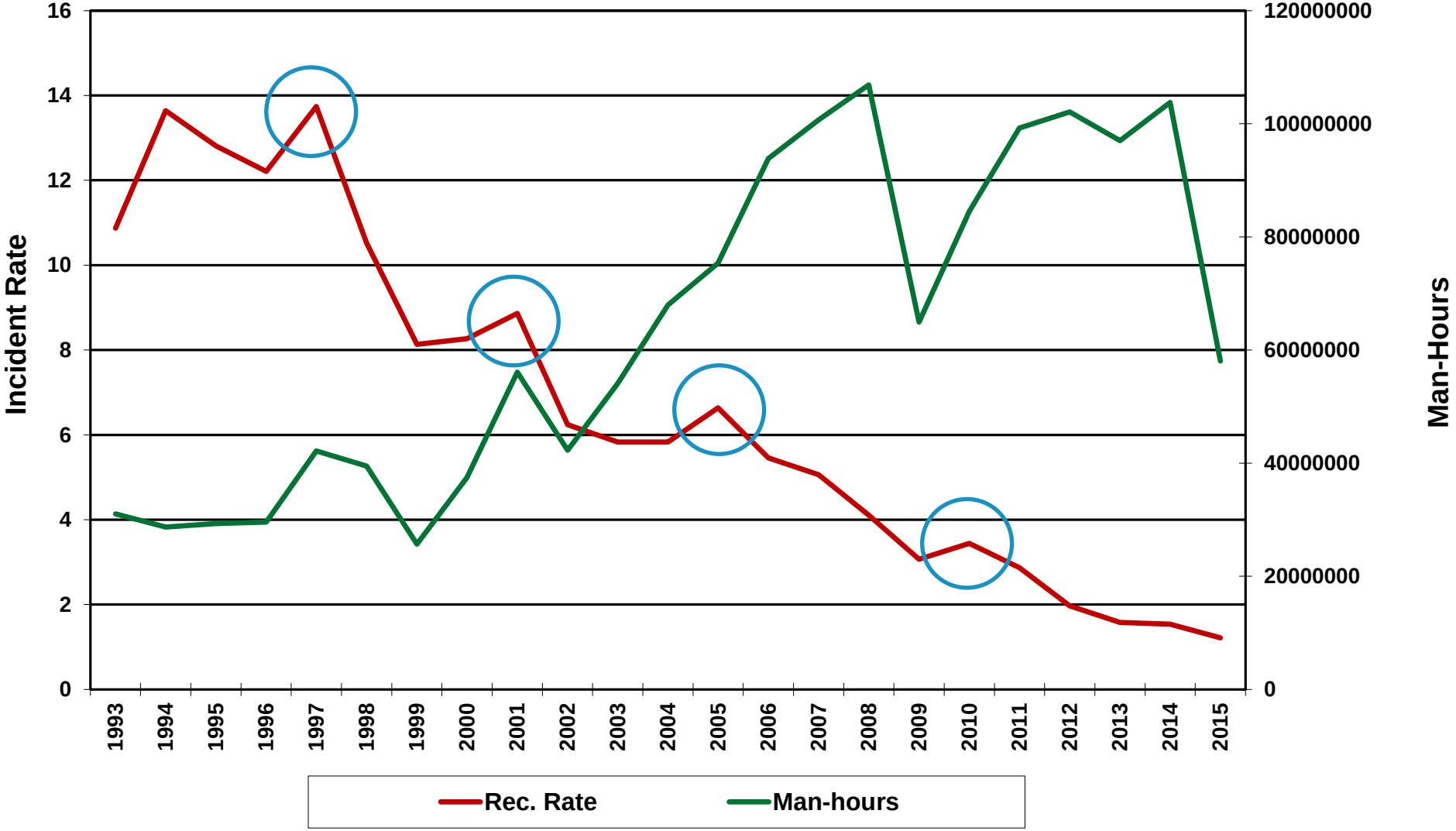
US Onshore Recordable Incident Rate vs Man-Hours



How Should the Industry Cope

- Prepare for new people entering the industry
- Close the knowledge gap
- Maintain clear roles and responsibilities
- Develop a strategy for experienced people returning to the industry

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COMPETENCE

BACK TO BASICS

Competence is…

An individual's knowledge, skills, abilities, and behavioral attributes that enable him or her to perform his or her work consistently, precisely, and reliably.

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Competence is …

"Doing the right thing in the right way, at the right time."

EVERYTIME!

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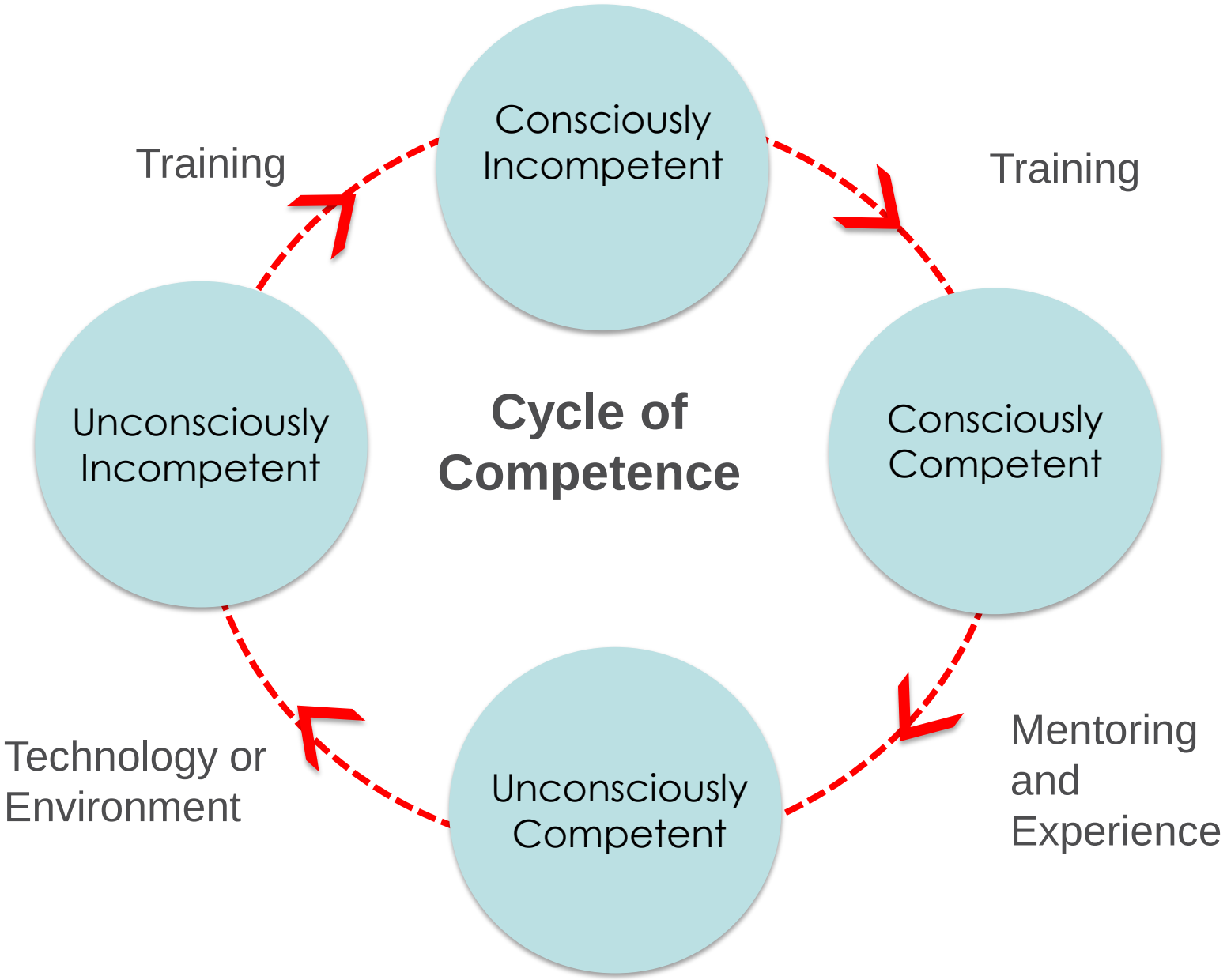
Competence is…



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Pathway to Competence

Knowledge, Skills and Abilities (KSA)
Raising the Bar on Competency

Enhanced competency guidelines for virtually all rig-based positions

- Globally accepted recommended common competence standard
- Industry developed and accepted guidelines
- Addresses looming talent crisis
- Crucial step in developing workforce capabilities

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Onshore Driller KSA

IADC KSAs
Knowledge, Skill, and Ability Competencies
For rig crews and rig supervisory personnel
19 September 2016

Purpose of the KSAs

The IADC Workforce Development Committee created the Knowledge, Skills, and Abilities (KSA) competencies to assist the drilling industry in setting a globally recognized and accepted baseline level of knowledge, skills, and abilities for rig-based positions. The competencies represent the baseline KSAs recommended by the Workforce Development Committee based on job position and incorporated Quality, Health, Safety, and Environmental (QHSE) components.

Interested parties are encouraged to utilize the KSAs as the framework for designing training, developing employee career progression pathways, creating competence assurance programs, and implementing any method deemed appropriate for enhancing operational integrity. The KSAs are recommendations and KSA accreditation by IADC is not expressed or implied.

Disclaimer

The KSAs are of a general nature and do not encompass all position responsibilities, operating procedures, circumstances, laws, or regulations that may apply. Individual companies may have KSAs that differ from the KSAs provided in this database. IADC makes no representation, warranty, or guarantee in connection with the KSAs or their instructions, and hereby expressly disclaims any liability or responsibility for loss or damage of any kind or nature resulting from the use of this product or its instructions, or for any violation of any law or regulation with which these products may conflict, address, or impact.

The following is the IADC competency listing based on the following selections:
Onshore | Driller | Electrical | AC | Brakes | Pipe Handling | Top Drive | Tubular Makeup/Tong
Prepared for Mark

Competency Unit	Knowledge / Skill / Ability
1. CO 01-Crane Basics 2 competencies	Core •Describe the lifting equipment available on current location.[1278] •Describe the type(s) of crane(s) by name and type, found on current location.[1286]
2. CO 02-Rigger Basics 21 competencies	Core •Demonstrate ability to use all rigging hitches (e.g., basket, choker, vertical, bridle) needed for the current job.[1181] •Demonstrate adhering to the permit-to-work for routine and non-routine rigging tasks, if applicable.[1186] •Demonstrate correct and safe use of taglines attached to loads, including proper positioning and quantity.[1192] •Demonstrate following the lift plan required for critical lift rigging tasks.[1196] •Demonstrate how to correctly rig a load according to its specific center of gravity.[1198] •Demonstrate the ability to control an area where lifting operations are being carried out.[1251] •Demonstrate the ability to correctly and safely connect/disconnect loads.[1253]

Gateway Accreditation Program

- Part of IADC's Workforce Attraction and Development Initiative 'WADI'
  - Project that was developed by the IADC Workforce Development Committee
  - Learning objectives based on KSAs
- Preparing individuals for a successful career in the oil and gas industry
- The first course within the Gateway Accreditation is the 'Introduction to Oil and Gas Program'

Gateway: Introduction to Oil and Gas Program

Purpose:

To define the body of knowledge and set of job skills needed to train and prepare personnel for entry-level positions in the oil and gas industry.

The course is designed to better prepare new employees for working on a rig, thereby helping companies to improve safety culture in the field while reducing turnover rate.

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Gateway: Introduction to Oil and Gas Program

The program offers a baseline curriculum comprising

- IADC's HSE RigPass 'Safe Land', 'SafeGulf'
- IADC's WellSharp Awareness level well control
- A general introduction to the industry
- Behavioral training (Human Factors)
- Training modules on rig life, rig math, rigging basics, electrical and fluid safety, and industrial practices

Major focus on hands-on training throughout the program.

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David McCelland – Harvard Psychologist

- traditional achievement and intelligence scores may not be able to predict job success”
- “what is required is to profile the exact competencies required to perform a given job effectively and measure them using a variety of tests.”

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Training isn’t enough

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How do you measure Competence?

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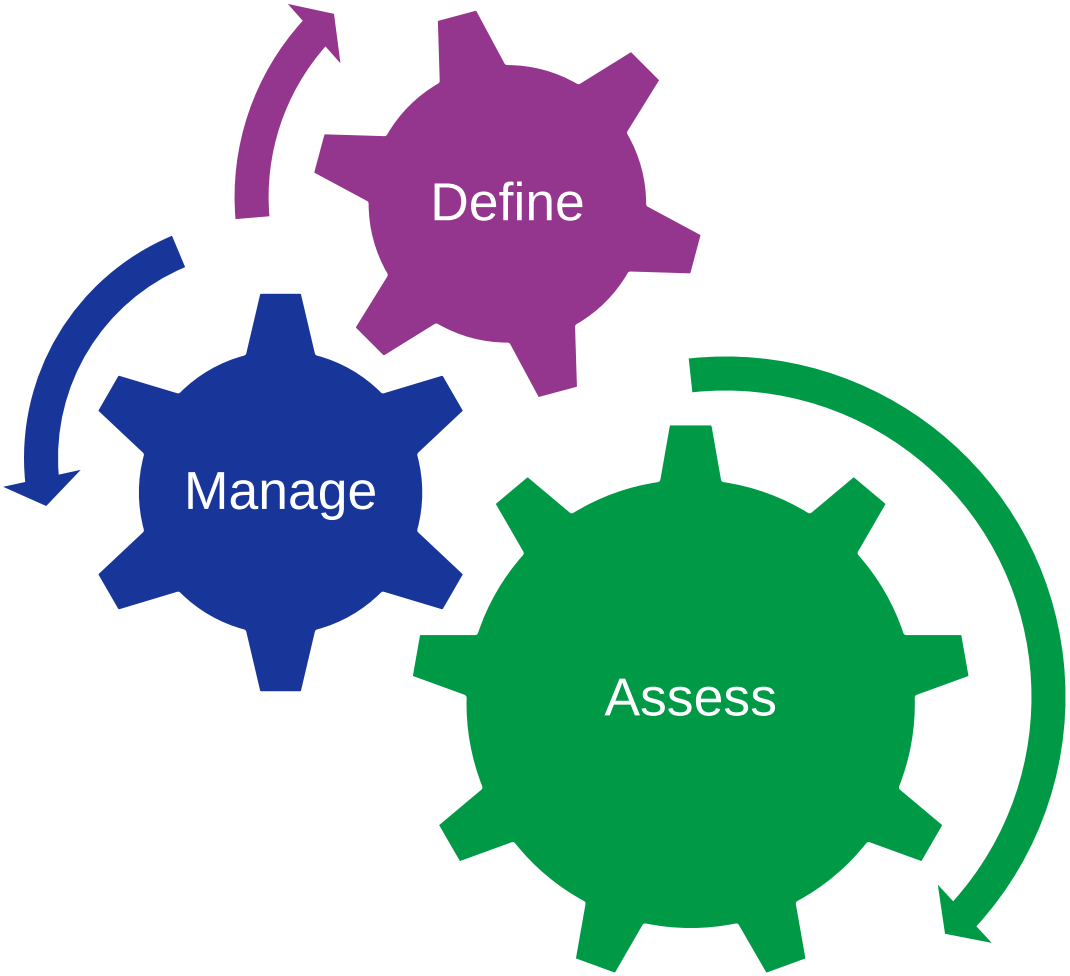
The IADC Competence Model



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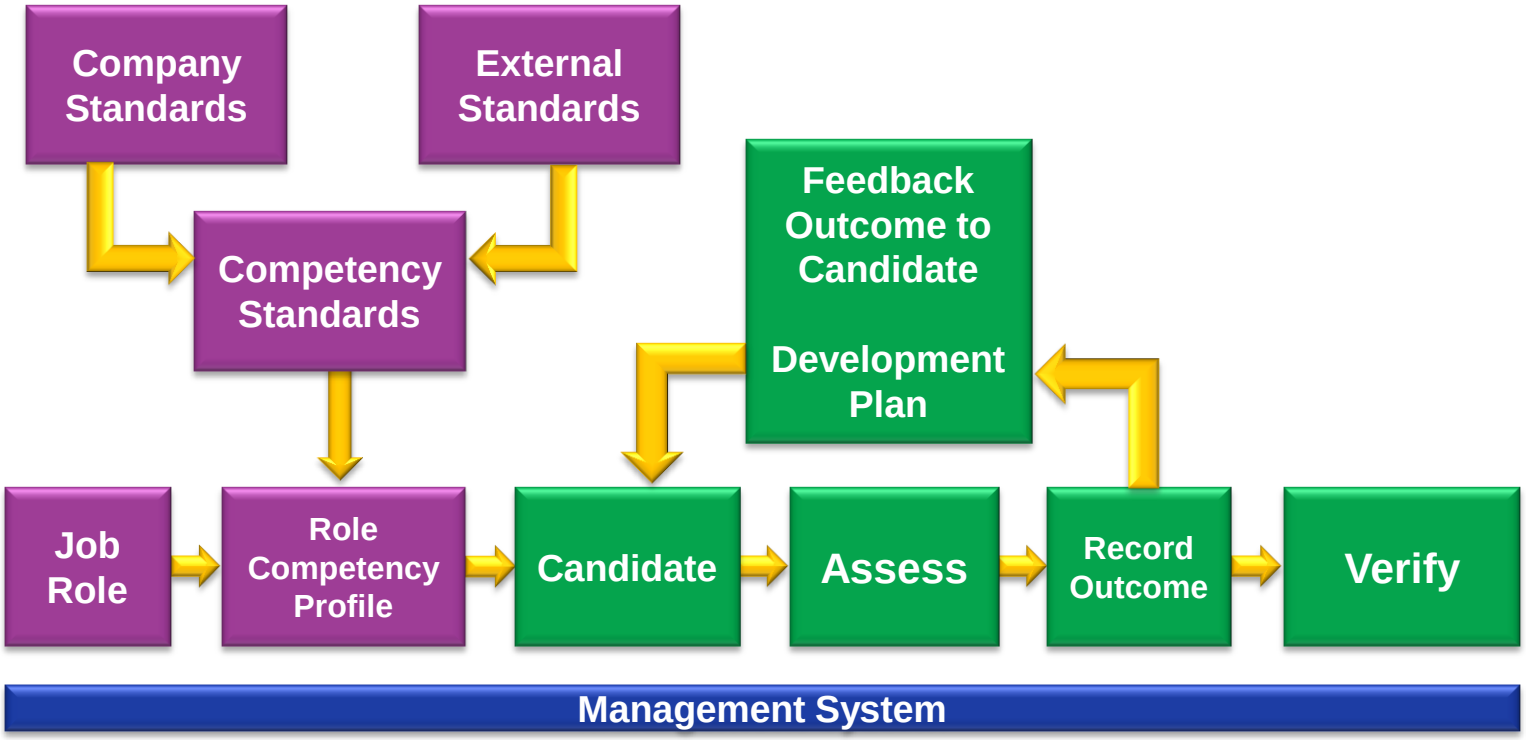
Components of a Competence AssuranceProgram



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David McCelland – Harvard Psychologist

- traditional achievement and intelligence scores may not be able to predict job success”
- what is required is to profile the exact competencies required to perform a given job effectively and measure them using a variety of tests.
- **the definition of a job competency required that the person’s intent be understood, not merely that the person’s behavior be observed.**

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Human Factors

Human Factor Elements

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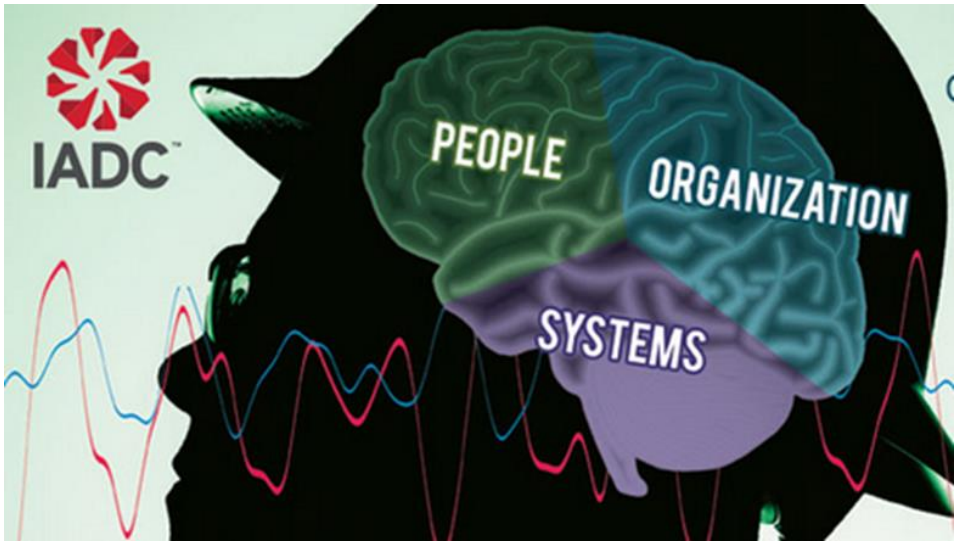
- Situation Awareness
- Peer pressure
- Decision Making
- Communication
- Teamwork
- Leadership
- Stress and fatigue
- Health
- Distractions



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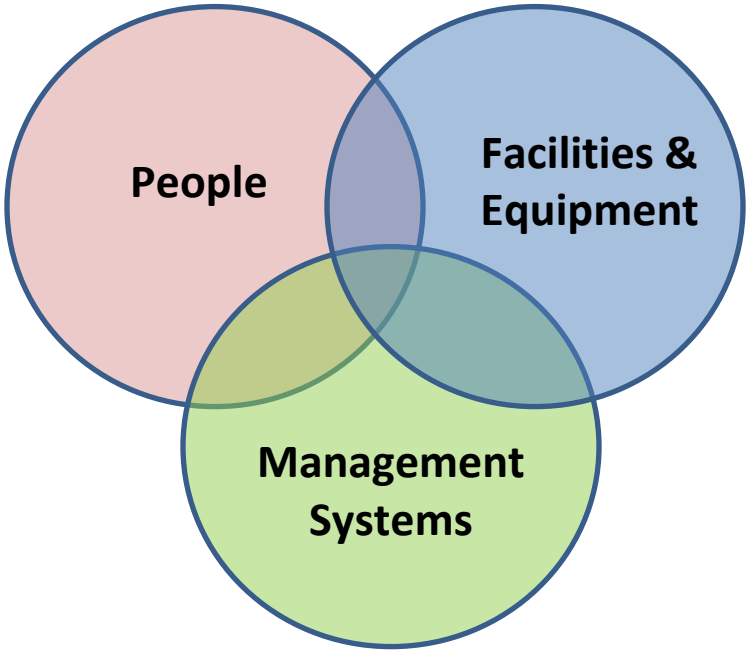
Human Factor Interactions

Human Factors

Interaction of individuals with each other, with facilities and equipment, and with management systems.



Non-technical Skills

Cognitive, social and personal resource skills that compliment technical skills, and contribute to safe and efficient task performance.

WellSharp Well Control Training

WellSharp Well Control Training

- Industry demanded more effective training:
  - Courses focused on what employees need to know
  - Develop training for all employees with well control responsibilities
  - Improve the integrity of the knowledge assessment
    - Implement independent proctoring
  - Increase focus on auditing
    - Eliminate certificate mills

WellSharp Well Control Training

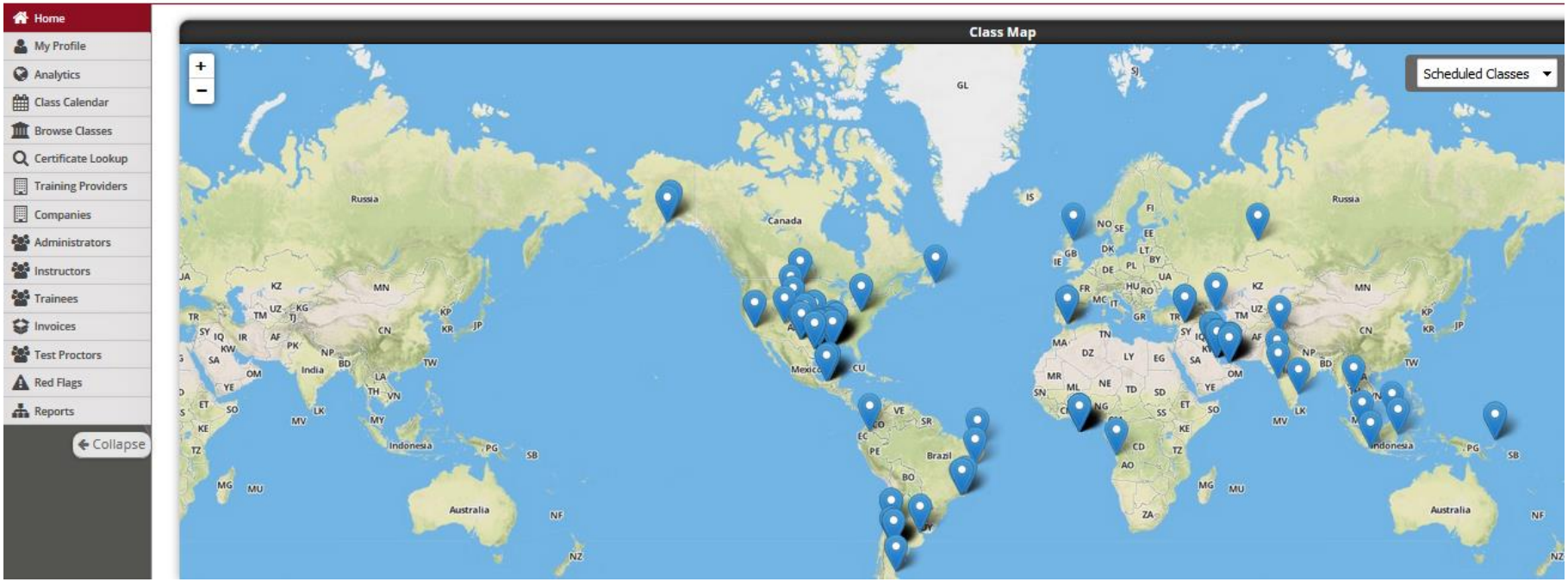
- Electronic knowledge testing system
  - Online testing
  - Offline e-testing
  - Centralized and controlled question database
  - Questions randomized and answers shuffled
  - Pass/fail safety-critical questions
  - Surveys
  - Metrics

WellSharp Well Control Training

- **Independently** proctored assessments
  - Lloyds Register

- Strengthened Instructor qualification requirements
  - Knowledge test

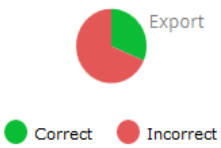
WellSharp Well Control Training



WellSharp Metrics–Test Question Monitoring

What is the term used to describe the highest pressure that could be seen at the surface if the well was full of formation fluid (usually assumed to be gas)?

Question ID:	RcCsO
Times Asked:	70
Times Correct:	22(31.4%)
AIM Level:	Awareness
Blooms Level:	Knowledge
Module:	**D1-1** Overview & Terminology



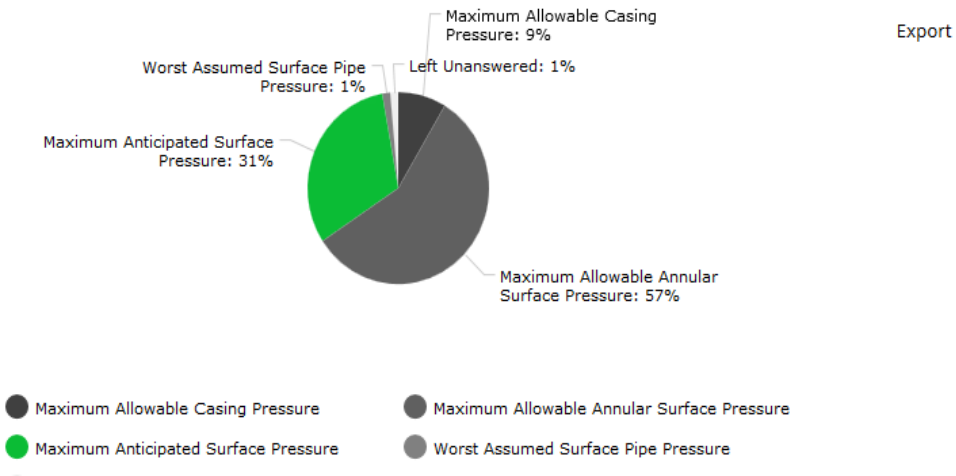
8.6% Maximum Allowable Casing Pressure

57.1% Maximum Allowable Annular Surface Pressure

31.4% Maximum Anticipated Surface Pressure

1.4% Worst Assumed Surface Pipe Pressure

1.4% Left Unanswered



What's Next

Test Translations

- Portuguese, Spanish, Arabic, Mandarin in 2016 with additional language translations to follow

Course Development

- Engineering course
- Human Factors module
- Supplements for MPD and Supervisory responsibilities of Onshore Drillers

Competence leads to …

…SUCCESS!

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Competence leads to …

…SAFE and EFFICIENT OPERATIONS!

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IADC Resources Support Building a Competence Program

IADC Resources

- KSA Database

  http://www/iadc.org/KSAdatabase

- Competence Guidance—Building a Successful Competence Program

  http://www/iadc.org/workforce-development-committee/

- IADC Competence Assurance Accreditation Program

  http://www.iadc.org/competence-assurance-accreditation-program/

- WellSharp Well Control Training Accreditation

  http://www.iadc.org/wellsharp/

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Questions

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