

PetroSkills®

Enhancing Your Skills During Booms and Busts

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SPE GCS MiT Seminar #16
May 12, 2017



Agenda

- **Introductions**
- **The PetroSkills Alliance**
- **Our Industry's Roller Coaster**
- **Continually Enhance Your Skills**
- **What To Look For in A Company or Project**
- **SPE Resources**

The PetroSkills Alliance

- The Petroleum Industry's Training Alliance
 - Exploration and Production through Refinery and Petrochemicals
 - Formed in 2001 by Shell, BP, and Saudi Aramco
 - Currently 30+ Members Who Direct and Quality Assure the Program
 - 40% of Global Oil Production
 - *"Important, But Not Unique"* Training & Development



Advisory Board Members



HALLIBURTON



What PetroSkills Offers.....

Competency Solutions



Industry-standard competency frameworks customized for job roles

Consulting

- Customized knowledge development
- OJT Training
- Coaching & Mentoring
- Procedure Analysis & Optimization



Membership



Software Solutions



Easy to use software, e-learning modules, LMS, and reference library accessible anytime, anywhere

Training

Industry approved course material including topics in gas processing, facilities, HSE, O&M, and pipeline.



Alliance Volunteers Develop “Competency Maps”



200+ Global SME's in
24+ Technical Networks

Competency Map	#Skills	Version
Geology	74	7a
Geophysics	57	7f
Well Construction/Drilling	75	9c
Petrophysics	63	15h
Production Engineering	62	16b
Reservoir Engineering	134	11i
Petroleum Business Management	90	15a
E&P Asset Management Process - DRAFT	93	Draft
Facilities Maintenance Mgmt	47	3b
Facilities Operation Management	106	3
Procurement /Supply Chain Mgmt	54	3b
Mech. Non-Rotating Equipment	105	3d
Mechanical Corrosion Control	30	3b
Mechanical Rotating Equipment	84	3c
Mechanical Material Selection	66	3a
Civil Strtrl. -Offshore Systems	62	3c
Civil Strtrl. -Floating Systems	69	3e
Civil Strtrl. - Onshore Infrastructure	46	3a
E&I Electrical	46	3b
E&I Instrumentation	102	3b
Transportation - Pipelines	107	3b
Transportation - Subsea & Flow Assurance	26	3b
Transportation - Terminals	34	On Hold
HSSE Professional (HSE Management)	7	3c
HSSE Environmental	14	1d
HSSE Health	11	3d
HSSE Safety	19	3b
E & P Process	26	3e
General Process	19	3e
Utilities Process	17	3a
Project Management		Draft
Refining Process	20	Drafting
Soft Skills - Managing Others	32	Draft
Soft Skills - Managing Yourself	20	Draft

Alliance "Competency Map"

Optional PetroSkills Courses Linked to Competencies

Subsurface - Geology

Legend of Courses/Work Experiences	
BASIC	
EG	Basic Petroleum Geology
FOUNDATION	
MGT	Petroleum Geomechanics
HSS	Logging Subsurface Structures
PCR	Carbonate Reservoirs
PGO	Production Geology for Other Disciplines
SGS	Sequence Stratigraphy: An Applied Workshop
ST	Reservoir Styles in Petroleum Exploration
SRE	Estimating and Developing Shale Resources
INTERMEDIATE	
BA	Basin Analysis Workshop: An Integrated Approach
CPST	Congressional and Transgenerational Structural Styles
DG	Development Geology
DWT	Turbidite Sandstones
ESS	Extensional Structural Styles
GTS	Geomechanical Techniques for Solving Reservoir Management
ISS	Introduction to Seismic Stratigraphy
OG	Operations Geology
PPA	Prospect and Play Assessment
RC	Reservoir Characterization: A Multi-Disciplinary Team Approach
SPECIALIZED	
ADS	Advanced Seismic Stratigraphy
GRM	Geological Risk Management

Cmap Terminology and Competency Levels	
Skill Group	
Identify and discuss as necessary the fundamental elements and objectives of multiple well programs describing the needs and use of the data acquired as well as being able to describe the many different factors affecting drilling performance.	This is the summary description of all the Level 2 Skill descriptions at the same competency level in this Skill Group.
Skill	
Identify the fundamentals of an evaluation program, customer(s), suppliers, and equipment used, also, describe the needs and use of data acquired.	This is the summary description of all the Task Descriptions at the same competency level in this Skill.
Task	
Identify the basic objectives and elements of an evaluation program, the key customer(s), types of supplier(s), and equipment used.	This is the individual Task statement at the same competency level.
Describe the needs and applications of multi-discipline team members for information captured.	
Customized Task / Work Experience	
-	This is the task-specific level where customization takes place to include such items as: Tag # or equipment specifier, frequency, data, evidence, etc.

Skill Group

Proficiency Levels

Skill Group	Skill	Awareness	Fundamental	Skilled	Mastery
1.00 Basin Modeling		Explain principles of dynamic subsurface pore-field flow systems, list effects of subsurface overpressure, identify types of seal lithology, describe the constraints of basinal structure on migration models, migration mechanisms, the principles of maturity modeling, trap effects, and identify seal types.	Construct hydrodynamic gradient and potentiometric surface maps, detect and predict abnormal basin pressure through monitoring/testing, map types of seal failures, determine effects of growth structure, define migration conduits, and construct a burial history diagram.	Qualitatively predict the impact of overpressure on aquifer characteristics, predict overpressure impact on well planning, pressure and leak points, basin and play productivity, estimate migration path, distance, comparison, and charge risk and uncertainty.	Build predictive models for fluid flow and productive capability, construct field development, model phase and property changes by migration, and estimate risks of hydrocarbon charge and volumetric.
	1.01 Fluid Flow	Explain principles of dynamic subsurface pore-field flow systems.	Construct hydrodynamic gradient and potentiometric surface maps and sections from water salinity and pressure data.	Qualitatively predict the impact of overpressure on aquifer characteristics, define the relationship between hydrodynamic and hydrocarbon migration and delineate migration mechanisms.	Build predictive models for fluid flow and productive capability and prepare inputs for simulation studies and prepare inputs for simulation studies.
	1.02 Overpressure Origin And Interpretation	List effects of subsurface overpressure on horizontal and vertical stress regimes and describe reservoir / trap implications of pressure regimes.		Detect and predict abnormal basin pressure by using acoustic logging, resistivity logging, drilling speed, vertical seismic profile, seismic character and combine pressure data with modeling techniques.	Predict overpressure impact on well planning and field development options, make accurate impact interpretation on hydrocarbon migration / trap integrity and use pressure distribution on basin model.

Skill

Competency Maps Cover Varied E&P Disciplines

Geosciences & Subsurface Engineering

- Geology
- Geophysics
- Petrophysics
- Production & Completions Engineering
- Reservoir Engineering
- Well Construction / Drilling
- Data Management
- [Petro-Tech](#)

HSE

- Management
- Health
- Safety
- Environmental

Operations & Maintenance

- Op's, Maintenance & Turnaround Mgmt
- Facilities Operations and Maintenance Mgmt

Business, Project Management & Supply Chain

- Petroleum Business
- Land Management
- Project Management
- Supply Chain Management: Strategic Supply Chain,
- Supply Logistics, Distribution Logistics
- People Skills for Technical Professionals

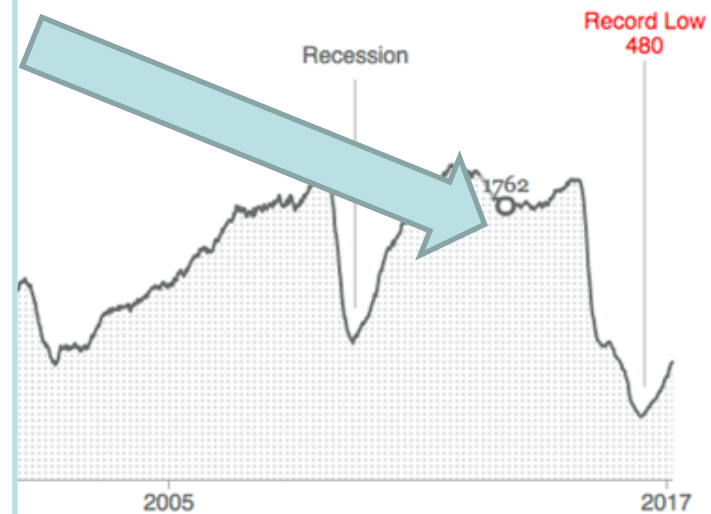
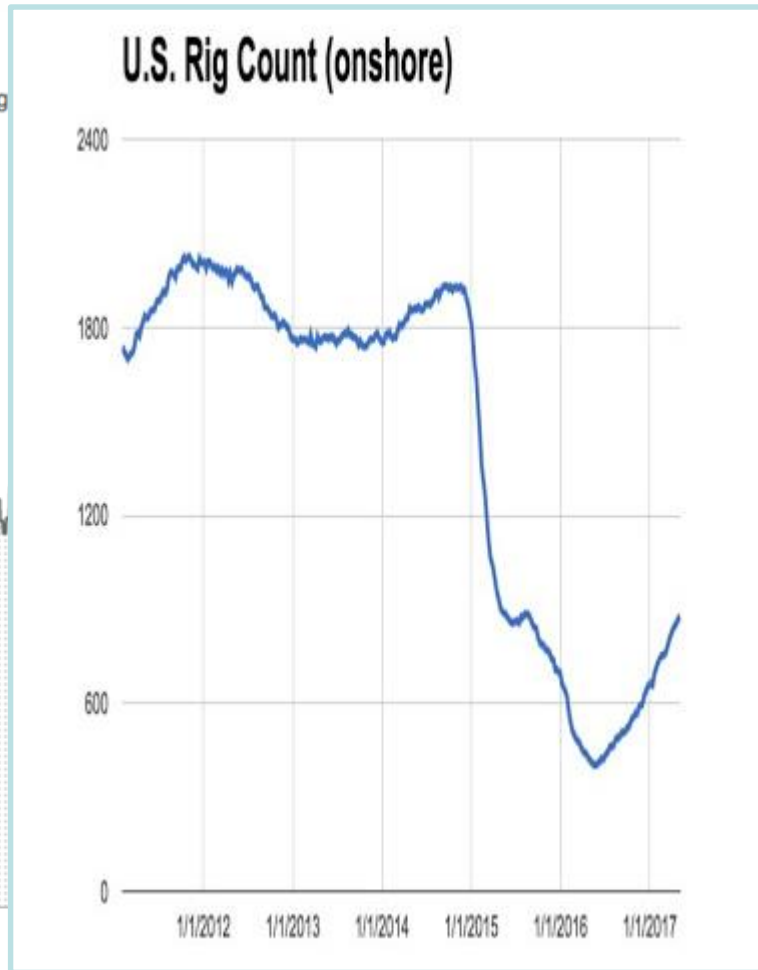
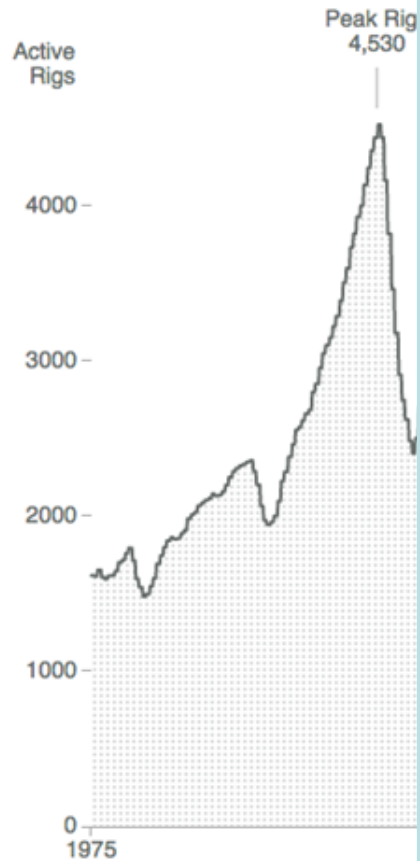
Facilities Engineering

- Facilities Engineering – General (upstream)
- Instrumentation, Controls & Electrical Engineering
- Mechanical Eng: Rotating & Non-Rotating Equipment
- Corrosion & Materials Engineering
- Transportation Pipelines
- Reliability Engineering
- Offshore & Subsea Engineering: Floating System,
- Offshore Structural, Subsea Systems
- Civil/Structural Engineering
- General Process Technology
- E&P Process Technology
- Utilities

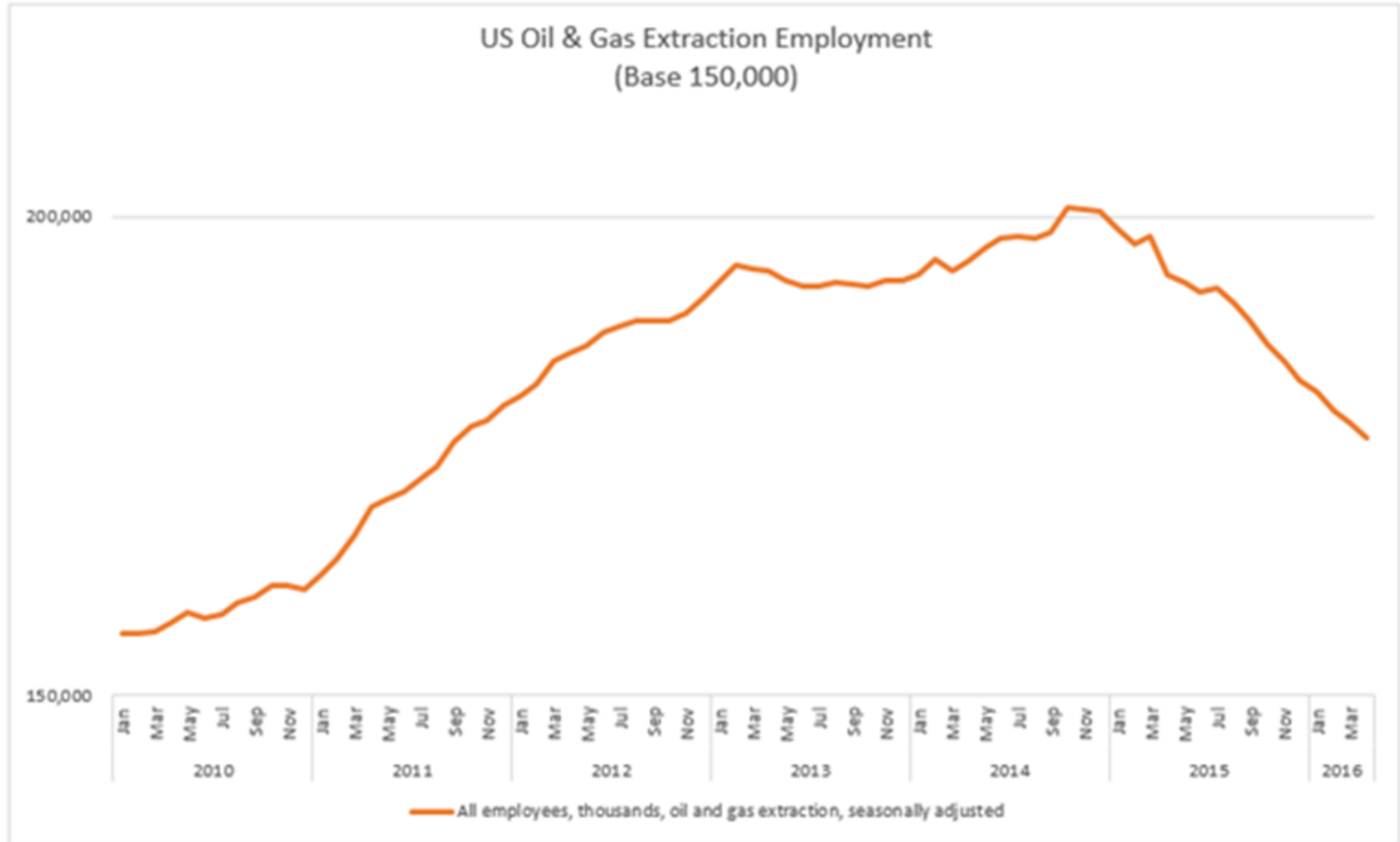
Our Industry's Roller Coaster



Key Measure of Industry Health – Rig Count



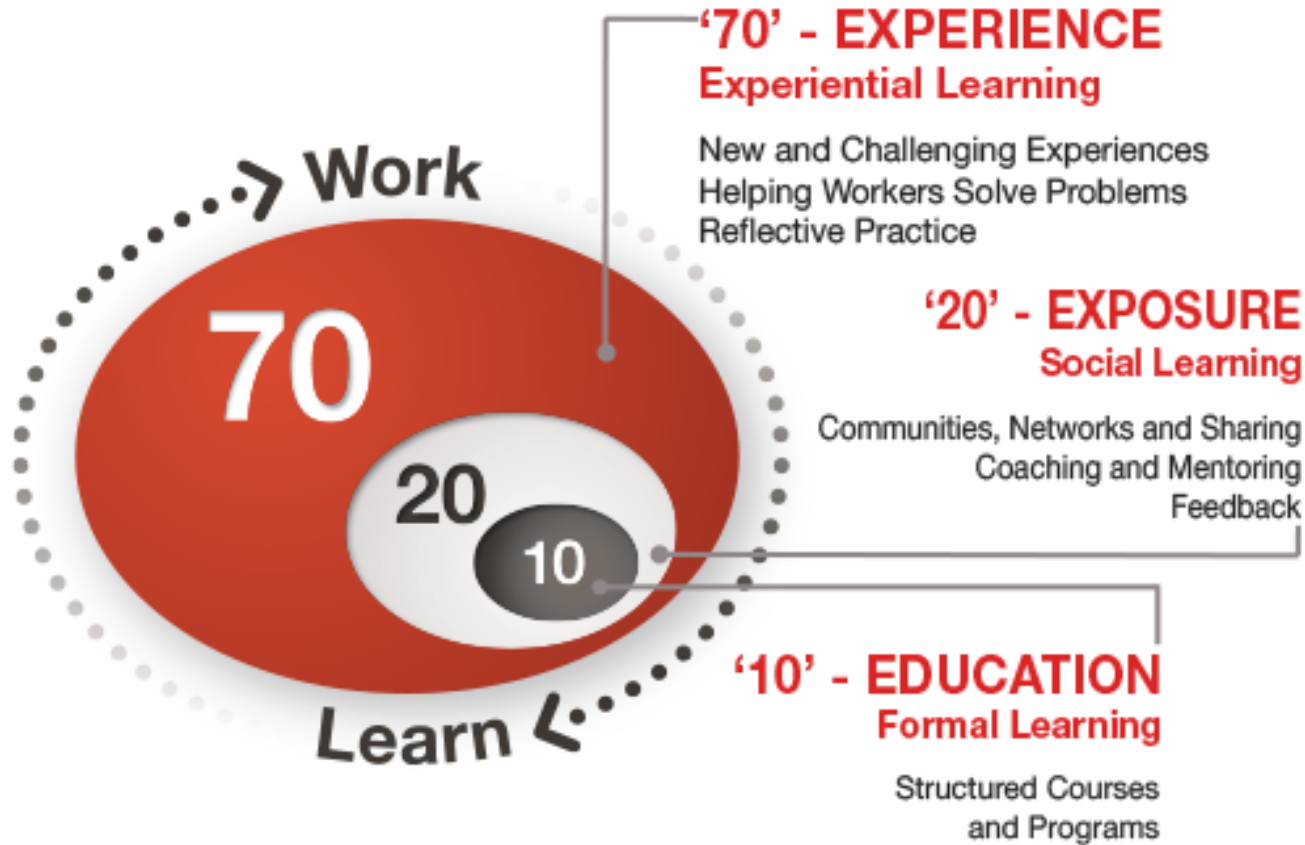
The Up's and Down's of Oil & Gas



Correlation Between Growth and Workforce Competency?

	Company	Ticker	2015E	2016E	2017E	4Q16E vs 4Q15E	4Q17E vs 4Q16E
Mid-Cap	Antero Resources	AR	48%	22%	15%	35%	10%
	Cabot Oil & Gas Corp.	COG	13%	2%	14%	6%	21%
	Concho Resources Inc.	CXO	28%	0%	8%	0%	13%
	Eclipse Resources	ECR	n/a	(2%)	29%	(15%)	38%
	EP Energy Corp.	EPE	10%	(2%)	(5%)	(5%)	(3%)
	EQT Corporation	EQT	27%	19%	6%	18%	8%
	Diamondback Energy, Inc.	FANG	69%	12%	12%	(1%)	19%
	Gulfport Energy Corporation	GPOR	128%	33%	33%	28%	27%
	Laredo Petroleum	LPI	20%	(5%)	4%	2%	3%
	Memorial Resource Development	MRD	52%	26%	10%	1%	15%
	Newfield Exploration Company	NFX	13%	(5%)	5%	(10%)	14%
	QEP Resources, Inc.	QEP	1%	(6%)	11%	(10%)	14%
	Range Resources Corp.	RRC	20%	(3%)	11%	(2%)	11%
	SM Energy Company	SM	16%	(9%)	(0%)	(7%)	7%
	Southwestern Energy	SWN	12%	11%	7%	13%	6%
	Ultra Petroleum Corp.	UPL	16%	(2%)	8%	(1%)	10%
Whiting Petroleum Corp.	WLL	42%	(13%)	6%	(12%)	12%	
	Average		32%	5%	10%	2%	13%

70-20-10 Model for Enhancing Competency



© **70-20-10** Forum

Look for Structured Employee Development

FOR EMPLOYEE

- Improved Development Planning
 - Structured approach to understanding your skills
 - Clarity to understanding you professionally
 - Coordinated approach assures your needs are considered



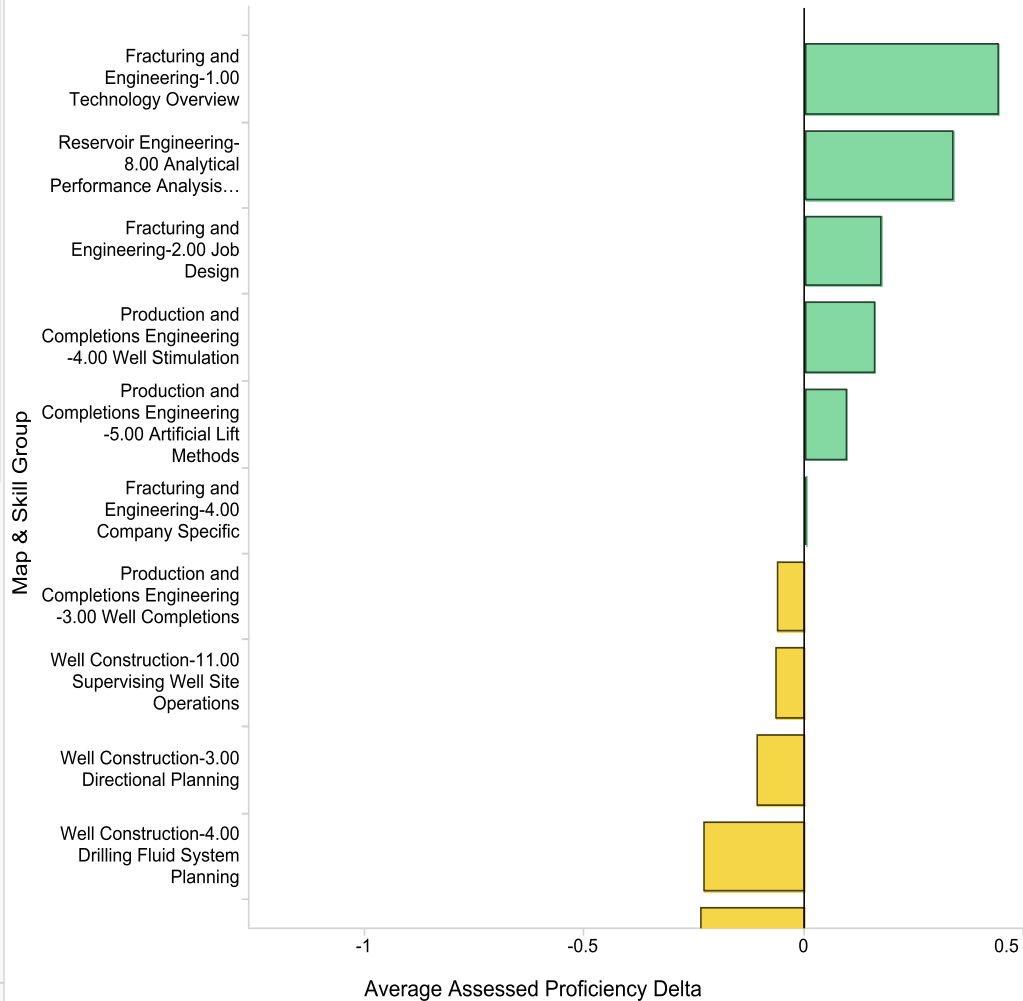
FOR COMPANY

- Improved Workforce Planning
 - Ascertain skill / experience strengths & deficiencies
 - Feeds workforce planning process
 - Better clarity regarding specific recruitment needs
 - Input to staff redeployment decisions
 - More efficient use of development \$



Technical Competency Analytics Provide Improved Planning for Employee and Company

Average Assessed vs Expected Proficiency By CMAP & Skill Group



Average Assessed vs Expected Proficiency By Skill - Click Tornado Chart To Activate

Map Name Calc	Skill Group	Skill	
Facilities - All-Rounder	1.00 Gas Processing	1.04 Vapor - Liquid Separation	
		1.01 Characterization of Natural Gas	
	Fracturing and Engineering	1.00 Technology Overview	1.05 Equipment
			1.07 Underperforming / Non-Performing Wells
			1.04 Proppants
			1.06 Quality Control
			1.02 Hydraulics
		2.00 Job Design	1.03 Fluids
			2.04 Pumping Rate Schedule /
			2.05 Economics & Other Design
2.03 Proppant			
2.02 Fluids Selection			
3.00 Job Execution	3.02 Real Time Monitoring	3.07 Job Reports & Field Ticketing	
		3.06 QC - Pre Job / Execution /	
	3.04 Logistical & Resource Coordination	3.03 OTJ Changes to Job Design	
		3.05 HSE Site Compliance	
		4.06 Proposal Generation	
	4.00 Company Specific	4.03 HSE Policies	
		3.00 Well Completions	3.06 Well Completion Configuration
			4.00 Well Stimulation
	4.04 Unconventional Resource		
	Production and Completions Engineering	5.00 Artificial Lift Methods	5.01 Artificial Lift Selection
5.02 Reciprocating Rod Pump			
5.03 Gas Lift - Options, Selection			
6.00 Workover Operations		6.04 Coiled Tubing Operations	
		12.00 Reservoir Management	12.01 Reservoir Surveillance
Reservoir Engineering		12.00 Reservoir Management	12.02 Analogy Well, Reservoir
			2.00 Reservoir Rock Properties
	5.00 Fluid Flow And Well Productivity Analysis	5.04 Well Productivity	

SPE Training & Development Resources

SPE Training | Society of Petroleum Engineers

www.spe.org/training/

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Society of Petroleum Engineers

Welcome, Bill Kemp
My profile

Training

From instructor-led courses and seminars to online learning, our training programs help professionals improve their expertise and stay up-to-date on best practices in a dynamic industry.

- Course and Seminar Schedule**
Upcoming global training courses and seminars.
- Course and Seminar Catalog**
Our entire catalog of courses and seminars.
- Webinars**
Live webinars, and recorded courses and seminars.
- Certification**
Get recognized for your petroleum engineering knowledge.



The Takeaways

- **Oil & Gas Is a Commodity**
- **Industry Volatility Will Always Be With Us**
- **Employers and Customers Will Always Need Competent, Flexible Personnel**
- **Continually Enhance Your Skills**
- **Remember 70-20-10**
- **Help Others Develop!**

Questions / Comments?

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