



Weatherford®

PetroAtlas™ Petroleum Engineering Knowledge Base



Drilling



Evaluation



Completion



Production



Intervention

Production optimization

- Artificial lift
- Control systems
- Flow measurement
- Reservoir monitoring
- Software
 - Analysis Workbench artificial lift analysis
 - DataMart™ analytical data
 - DTSPPlus™ temperature profiling
 - DynaLift™ dynamic gas lift optimization
 - i-DO® real-time optimization solution
 - LOWIS™ life of well information software
 - MatBa® reservoir analysis and production forecasting
 - PanMesh™ numerical well test analysis
 - PanSystem® well test analysis
 - PetroAtlas™ petroleum engineering knowledge base
 - PVTflex™ fluid property analysis
 - ReO® network management optimization
 - ReO Forecast™ production forecasting and field planning
 - RigPlan™ resource scheduling
 - RMS reservoir monitoring system
 - Verge™ production surveillance
 - WellFlo® well analysis
 - WellScribe™ mobile data collection
 - WSM well service manager
- Subsea production

**Guidance and mentoring
for petroleum engineers**

Capture **best practices** and **effectively share experiences** from the engineer to the enterprise.

“Management is doing things right;
leadership is doing the right things.”

Peter Drucker

Companies have skilled production engineers at various levels of experience, and managers strive to find ways to make them more efficient. By adding technology such as analysis software and visualization tools, engineers can increase their analytical accuracy and become more efficient. The result is individual engineers with advanced ways of accomplishing different tasks, however, these new methodologies are generally not shared with other individuals within the organization. Organizations need ways to capture best practices and effectively share those experiences from the engineer to the enterprise.

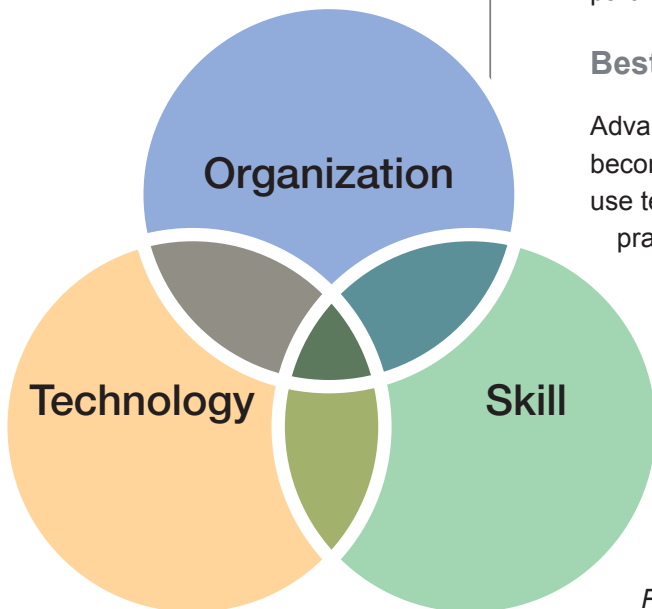
PetroAtlas™ service helps spread best practices throughout the organization by providing the organizational framework, and using the skills of engineers coupled with state-of-the-art technology.

The overall system consists of modules that include workflows, minimum standards, guidelines, technical documents, best-practice examples and technical tools. *PetroAtlas* technology is preloaded with hundreds of man-years of expertise from production-engineering consultants at Eclipse Petroleum Technology, who is partnered with Weatherford.

Best practices

Advances in technology provide individual engineers with tools to become more efficient on an individual basis. However, individual-use technology by itself is not enough to build an effective best-practice system. To bring technological advantages and practices from individual engineers to other engineers throughout your organization, methodologies coupled with the technology must be available, organized and accessible across the enterprise.

The combination of the skills of the engineers, the technology used, and the engineers' methodologies assures that best practices are spread efficiently throughout the organization. With the organization provided by instituting *PetroAtlas* technology, an effective company-wide best practice system helps mentor less experienced engineers and assures top ideas are performed across the enterprise.





Implementing *PetroAtlas* service begins a journey toward efficiency and cost savings for your production engineering efforts. Merely installing the system is not an end in itself. The journey involves working together with our consultants to create a training, orientation and implementation plan that assures organizational acceptance and ultimately creates an efficient way of sharing knowledge from experts to all petroleum engineers across the enterprise. To get to that end, Weatherford personnel work with you to assure the technology fits into your organization so you can achieve optimization of engineer's time, production optimization across the enterprise and significantly greater profits.

Why *PetroAtlas* service?

The 20-year gap in engineering skills is being felt across our industry. As our most experienced engineers retire and take with them their knowledge and best practices, fewer engineers with fewer skills and experience enter the gap.

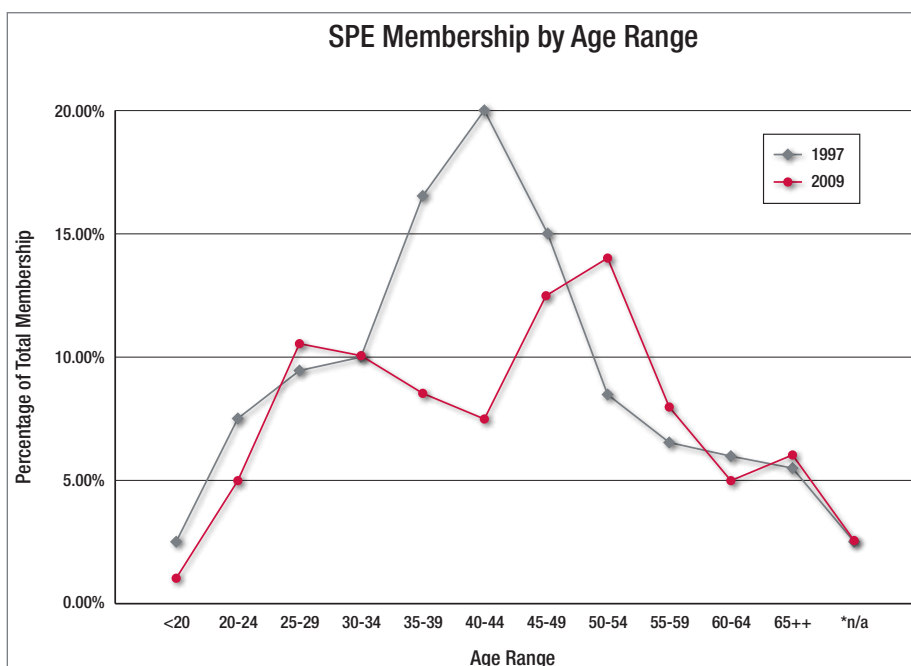
There is not time to transfer all the skills required to assure tomorrow's production engineers will be able to take advantage of the knowledge, wisdom and procedures developed during the evolution of the production engineering profession. This is the chasm *PetroAtlas* service has been designed to bridge before critical expertise is lost forever.

Production engineering is a complex multifaceted discipline that impacts across the project lifecycle, ranging from early conceptual work to optimization and integrity management.

The *PetroAtlas* system contains standard procedures for completing complex tasks, but more importantly, it provides a simple interface for engineers to access this guidance as well as to enter their specific procedures which then can be shared across the enterprise.

*Optimize your production for today's brown fields and future green fields.
Minimize your well integrity risks during drilling, completion and production.*

Just two directives that seem simple, but they involve thousands of variables which can take a career to master. Twenty years ago there were a legion of masters whose leadership and mentoring produced successful projects while elevating the competency of their teammates. Today, the *PetroAtlas* solution serves as your bridge to their expertise.



What is PetroAtlas™ service?

PetroAtlas service is your expert guide to help production engineers deliver better results. By encouraging a culture based on technical challenge and continuous improvement, *PetroAtlas* service lays the foundations for individual and team improvements in performance and effectiveness. The system:

- Defines activities that production engineers undertake at each stage of a project lifecycle, including definition of role, tasks and deliverables.
- Provides practicing engineers with specific activity definition, guidelines and tools to complete those activities.
- Provides assurance for project, asset and group management so that the necessary production engineering elements of a project are identified and addressed adequately at the right time.
- Lays out the roles and accountabilities of production engineers throughout the lifecycle of a typical upstream exploration and production project—from early field appraisal through abandonment.
- Provides a living knowledge capture, sharing and learning mechanism for organizations and individual engineers.



The service begins with high-level workflows for the life of the resources.



The *PetroAtlas* difference

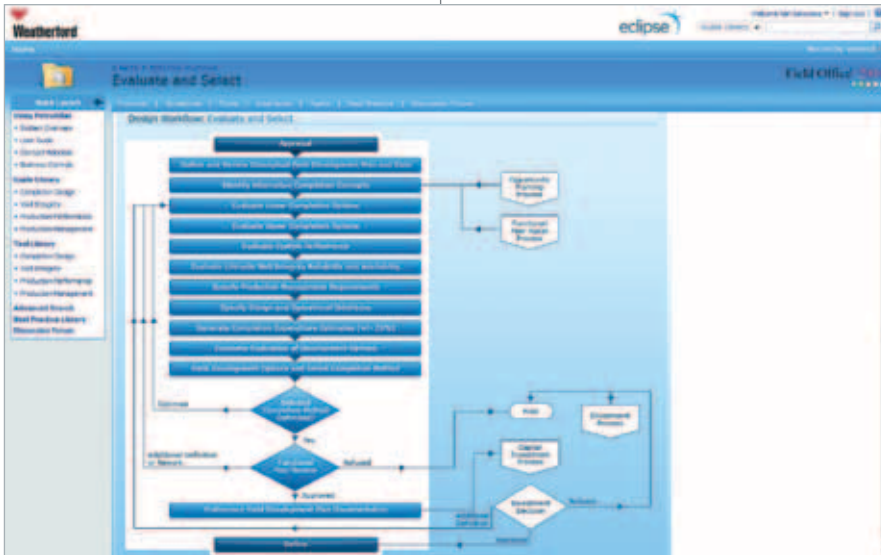
PetroAtlas service encourages production engineers to take an objective yet challenging stance in their activities which will assure that decisions are made with the full knowledge and understanding of the business values, technical risks and uncertainties involved. It provides assistance not only to individual production engineers, but also to team leaders, other petroleum engineering disciplines and to other functional groups with whom production engineers may interface. There is no other tool or system that can do what *PetroAtlas* service does.

Features

- Framework to improve operational effectiveness
- Foundation of common culture
- Understanding of how activities and deliverables are linked to business goals and project phases
- Minimum work standard requirements
- Expert guide for experienced engineers
- Mentor for less experienced engineers
- Electronic technical guideline and tool library
- Repository of best practices
- Vehicle for communication and knowledge transfer



How does PetroAtlas™ service work?



Engineers are guided through comprehensive mid-level workflows that lead to the best methods for extracting value from your assets while assuring well integrity.

PetroAtlas service is written from the production engineers perspective. As such, it focuses on the primary work processes and activities of the production engineer. It describes how a hydrocarbon resource development project progresses, from appraisal to production, highlighting the typical controls, objectives and deliverables of each phase of activity. *PetroAtlas* service provides a road map to production engineering activities. By using *PetroAtlas* service, users can identify and work through critical tasks, highlight and avoid common pitfalls, identify and evaluate risks and take actions to reduce uncertainties in performance predictions.

The system is divided into three areas that guide the user through specific processes depending on the current needs. The sections include resource life cycle, production engineering and activity guidelines and tools.

Resource life cycle

Hydrocarbon resource development is an integrated multifunctional activity with the objective of developing and depleting identified hydrocarbon resources. This development includes specific requirements and tools for business controls, opportunity identification, project development and production operations.



Production engineering

Production engineering is the discipline within petroleum engineering that is responsible for the creation, protection and delivery of value from field appraisal and well design, completions, well production management and surveillance activities and management and integration of subsurface life cycle requirements and risks. Consequently, the roles, responsibilities and deliverables of the production engineer range across the entire resource life cycle. This includes exploration well testing, appraisal, project development, production operations and ultimately, suspension and abandonment. This section includes resources and tools for design, production, appraisal, evaluation, selection, definition, execution and operation topics.

Activity guidelines and tools

Production engineering activities are governed by overarching corporate policies and standards, and discipline specific controls such as activity controls; completion design (selection and performance); production management (operations planning); well integrity (reliability and assurance); and production performance (monitoring and optimization).



Your engineers are lead to detailed task sheets where they are directed by inputs, processes and results to ensure that they have maximized the value of the project or asset through the best practices and tools available throughout the service.



PetroAtlas™ Petroleum Engineering Knowledge Base

Guidance and mentoring for petroleum engineers

Weatherford provides worldwide service and support from more than 900 locations in approximately 100 countries. To find out more about our production optimization software tools, contact an authorized Weatherford representative or visit weatherford.com.



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