

A White Paper from The Integrity Group

BABY BOOMER RETIREMENT AND ITS EFFECTS ON THE ENERGY INDUSTRY: MAKING THE CASE FOR CAPTURING AND PRESERVING ORGANIC INTELLECTUAL PROPERTY



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U.S. toll-free: 1-877-955-0707 | www.go-integrity.com
20333 State Highway 249, Suite 500, Houston, TX, 77070

10,000 Baby Boomers are turning 65 every day

Energy industry experts and government analysts project a growth in energy production over the next 15 years of somewhere between 20 and 40 percent. Baby Boomer scientists and engineers, many of whom have been responsible for significant advances in the energy industry, are reaching retirement age at a staggering rate. Energy companies are wishing long-time employees a happy retirement only to realize too late that those individuals hold business-critical knowledge, and worse, that they take with them some of tomorrow's most promising inventions. Companies that fail to capture and repatriate organic intellectual property from retiring Baby Boomers risk falling behind the competition and missing out on new advances and technological breakthroughs.

Sobering Boomer stats

The Pew Research Center reports that 10,000 Baby Boomers are turning 65 years old every day. From now until 2030, 3.65 million Boomers will reach retirement age every year. Growing numbers of retirees produce social and political ramifications, and the effects on the private sector, particularly in the energy industry, are taking many companies by complete surprise.

There is no such thing as a typical career in the energy industry. Engineers and scientists may gain employment initially because of their field of study but quickly migrate to specialties and areas according to need and interest. By the time an engineer has been in the industry for 10 years, he or she has firm ideas about how to solve a given set of problems with a given set of processes and tools and has identified the weaknesses, potential, and past mistakes associated with known solutions. As years pass, these professionals continue to learn and to develop new and improved methods and technologies associated with the problems they face. In some cases, an engineer may attempt hundreds of approaches, learning from the shortcomings of each, until he or she finally lands on the most efficient solution. If that engineer happens to retire before defining a final solution, all the effort, thought, work, and business potential associated with that solution disappears. The broad-reaching effects of losing the organic intellectual property locked in the minds of Boomers in the energy sector are dramatic and have the potential to change the course of a company, an industry, and even an economy.

The shale revolution has revived domestic onshore oil production

A fracking example

Advances in technology and oil and gas recovery capabilities have bloomed in cycles over the last hundred years, repeatedly changing the landscape of the energy industry in the process. While alternative and renewable energy sources are a part of the discussion, most projections call for the shale revolution to supply the main source of energy in the United States through at least 2050 in the form of crude oil and natural gas.

With a renewed focus on drilling and production in the United States, the energy industry has taken yet another leap forward in technology, tools, and creative methods for coaxing hydrocarbons from the massive shale formations found throughout North America. While fracturing was being tested as early as 1947, today nearly 9 out of 10 onshore wells in the United States, both natural gas and oil, require fracture stimulation to become or remain viable. What began as a crazy idea in the heads of Halliburton scientists in the 1940s has proven to be the inspiration behind the 21st Century shale revolution.

Beginning in the late 1970s, engineers and scientists began working on a method for extracting gas from shale formations. They combined directional drilling techniques, microseismic imaging and electromagnetic telemetry, and hydraulic fracturing in an attempt to unlock inaccessible hydrocarbon deposits. Mitchell Energy engineers—calling on a lifetime of experimentation, research, experience, and knowledge—achieved commercial shale gas extraction in the Barnett Shale in Texas in 1998 through a hydraulic fracturing method commonly referred to as slickwater fracking. Only a decade later, shale gas was clearly becoming the fastest growing contributor to America's energy portfolio, representing a dramatic shift in domestic energy production. The implications of this breakthrough will shape global economies and the energy industry for at least the next three decades.

As the Baby Boomer scientists and engineers responsible for developing and honing slickwater fracking retire, they take with them all the lessons they have learned and the ideas they have about how to make the process more efficient and more productive. Many of them have also thought through the challenges of what happens after fracking, developing visions for future techniques and technologies that may be able to yield even more hydrocarbons.

While fracking sharply illustrates the possibility that new developments can change an industry, the technology and process is now widespread, mitigating much of the risk associated with losing irreplaceable knowledge and experience. However, before 1998, no one had a firm understanding of just how dramatically slickwater fracking in shale formations would change the energy outlook in America. Incredibly, and seemingly unpredictably, the ensuing shale revolution has single-handedly revived domestic onshore oil production.

Organic Innovation

How many other slick water fracking, marine, construction, and engineering deepwater innovations necessary to realize full potential are out there lying just below the cerebral surface, still rolling around in the minds of one or two Baby Boomer engineers or scientists? If companies fail to adequately capture the organic intellectual property currently locked inside the heads of the 10,000 Boomers reaching retirement age every day, they will certainly suffer from knowledge seep, having lost the best ideas about the most viable advancements in the industry.

Knowledge seep is growing to a torrent

In discussions with energy executives, two issues related to core scientific and engineering knowledge come up repeatedly. The first is knowledge seep. Boomer scientists and engineers begin their careers in a given field of study, but repeatedly shift focus and specialty over time. The net result is an employee with a honed set of problem-solving skills in a discipline that may not even have a formal name or definition. Replacing a typical Boomer scientist or engineer is difficult because the employee has followed a career progression that developed organically and often blends disciplines and areas of expertise. To prevent knowledge seep from turning into an outflowing torrent of knowledge loss, companies need a strategy for identifying the necessary skills, preferred disciplines, optimal employment history, and relevant job knowledge that a junior engineer or scientist needs to step in and continue delivering and performing at the same level as the retiring Boomer. Extracting and capturing Boomer knowledge, then transferring it to the next generation, is now an essential, business-critical endeavor.

Future shock

Even more troubling to energy industry leaders is the concept of future shock, which includes inventions and advances that are in process, but remain unfulfilled, unperfected, and unannounced. Depending on the technology in question, future shock has the potential to set a company back years, if not decades. Not only do most technological advances soak up years of R&D, but they are often made feasible by combining seemingly disparate, or at least previously unlinked, specialty technologies. Slickwater fracking is a great example of a technological advance that was susceptible to future shock before Mitchell Energy engineers succeeded in putting all the pieces together in 1998. If key Mitchell Energy engineers had decided to retire in 1997, there is a strong possibility that successful slickwater fracking would have been delayed, if not derailed entirely. The risk of future shock to inventions and new breakthroughs is immense. Every company engaged in technological applications and evolving processes needs a strategy for identifying and capturing the valuable organic intellectual property stored in the minds of its scientists and engineers.

Proven knowledge-capture techniques

Capturing the right knowledge in the right way

Energy companies need strategies for combating knowledge seep and future shock—that much is clear. The question is not about need, but about execution. Enter the experts in knowledge capture and communication: The Integrity Group. Through programs like BoomerangSM and ShockproofSM (described below), The Integrity Group offers solutions built on decades of experience in capturing, classifying, organizing, and presenting information in intuitive formats for people who need it. From extraction to presentation, the communications experts at The Integrity Group harness proven knowledge-capture techniques to create and promote an experience feedback loop that helps energy companies hang on to the knowledge and innovation that drives their success.

Boomerang

Boomerang is a program designed to collect knowledge from relevant personnel, organize collected information into usable data, and deliver the data in an intuitive, searchable format.

Collect

The Integrity Group uses various communication techniques to engage different audiences. For example, most scientists and engineers love talking about what they do. As a group, they are excited about what they are engaged in, and are proud of the accomplishments and breakthroughs with which they have been associated. Getting them to open up and talk about their passion is typically the first step in pursuing conversations that drill down into the specific technical knowledge and requirements associated with any given position. Career mapping—logging each move over the course of a career—is key to understanding the core knowledge a junior engineer or scientist will need to produce at expected levels.

Organize

After The Integrity Group collects all raw information from relevant personnel, it organizes it into meaningful constructs that can then be used to generate data. For example, career mapping is used to show trends, common patterns, institutional weaknesses, and even anomalies. A core component of Boomerang, career mapping can predict probable staffing shortages, prompting recruiters to pursue candidates before the market feels shortage pressures and has a chance to react. In addition to career mapping, Boomerang identifies core interests, prerequisite education and knowledge, personality type, work habits, and even common obstacles associated with any given position.

Motivation Trends

Deliver

When the Boomerang program is complete, The Integrity Group delivers a summary of findings based on participant input that identifies trends, weaknesses, cultural identity, workforce motivation, and the specific skills and knowledge needed to maintain current workflow and production levels after participants retire or otherwise vacate their positions. The key differentiator between Boomerang and other programs originating with human resources initiatives is that Boomerang provides companies a rich understanding of each key role by activity, work history, personality type, and intellectual migration patterns, as opposed to categorizing roles simply by a list of skills and job requirements. In addition to a thorough report on all key roles, companies can access the Boomerang interface to search by various criteria: position, skillset, and so on. This data becomes the property of the client company and is available to company representatives on demand.

Shockproof

Much like Boomerang, Shockproof is a program designed to collect, organize, and deliver actionable data to companies. However, instead of focusing on the past, Shockproof looks to the future. After gathering all the information discussed in the Boomerang program description, Shockproof engages scientists and engineers to identify the next great opportunities for innovation.

The Shockproof program identifies key career paths, skillsets, areas of interest, past accomplishments, and other criteria to target employees who most likely possess the most valuable insights. Communications professionals then engage those individuals using various proven information-gathering techniques to define current risks, barriers to progress, and most promising and probable future breakthroughs and innovations. The information is captured, logged, and preserved in a searchable format for client company use. As with Boomerang, The Integrity Group delivers a report of findings that identifies trends, patterns, threats, and the most promising innovations.

Shockproof just might be the most revolutionary nontechnological advancement in the energy industry and will fuel R&D departments for decades to come.

Most revolutionary nontechnological advancement in the energy industry

Conclusion

By 2030, more than 60 million Baby Boomers will have retired. Among those will be the scientists and engineers responsible for breakthroughs like microseismic imaging, electromagnetic telemetry, directional drilling, slickwater fracking, ultradeepwater drilling, and countless other advances in casing, completions, refining, and so on. Companies that fail to capture their organic Boomer intellectual property will face severe competitive disadvantages. Effective knowledge-capture programs, like Boomerang and Shockproof from the knowledge-management experts at The Integrity Group, just might represent the most revolutionary nontechnological advancement in the energy industry. *Don't get left behind.*

For more information about Boomerang or Shockproof, or to discuss how you can more effectively protect organic intellectual property and business intelligence, contact The Integrity Group today. We can help, 1.877.955.0707 ext 147.

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