Building Integrity into the Pipeline Ecosystem with Operator Qualification
Overview

On June 10, 1999, a fuel line ruptured in Bellingham, Washington, spilling 277,200 gallons of gasoline into two creeks. The resultant vapor from the leakage caused a massive explosion, killing three people – one 18-year old and two 10-year old boys. It was the Olympic pipeline company that was pumping gas through a 16-inch pipeline from Ferndale to Seattle and Portland when the incident happened.

Later, the investing authorities found that a pressure release valve malfunctioned and the resulting pressure surge created a massive rupture in the fuel line. Within a couple of hours, hundreds of gallons of gas entered the two creeks that flow through Bellingham into the Bellingham Bay.

This is not a one-off incident. Two decades have passed since the Bellingham incident and sadly, not much has changed. As massive new pipeline projects continue to make headlines, the existing midstream pipeline infrastructure right below our feet is still largely vulnerable. Research reveals that from 2010 to 2018, a total of 5512 pipeline incidents have occurred in midstream oil & gas and other related sectors. The total losses incurred from all these incidents are worth more than 4 billion USD.

And, this doesn’t completely capture what’s beneath the rug, considering that the U.S natural gas pipeline network is highly dispersed. The pipeline network has almost 3 million miles of mainline and other pipeline networks that connect natural gas production areas with communities.

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Figure 1: Summary of Pipeline Incidents from 2010 to 2018; Source: FactTracker Alliance

A quick look at the major causes of midstream pipeline incidents in 2018 reveals an interesting picture. While material/weld/equipment failures accounted for more than 35% of incidents, the major cause for 11.7% of incidents was incorrect operation measures including damage done by an operator or operator’s contractor, incorrect installation, incorrect valve position and so on.

These figures rightly underline the importance of establishing and maintaining a strong operator qualification (OQ) and safety orientation program for workers. After all, safety resides with those involved in the construction and maintenance of the pipelines and ultimately with the natural gas operator.
Operators must remember that well-trained and qualified workers are their hidden assets, and in turn, play an intrinsic role in creating a well-performing business with an improved bottom line.
On the front line, operators need to ensure they are adhering to the right procedures, both internal and regulatory compliance, to reduce safety concerns. This should be a priority, given that the latest regulatory requirements in countries such as the United States make Operator Qualification (OQ) a mandate for operators and directs them to develop and maintain a qualification program for all workers performing specific tasks.

What is Operator Qualification?

OQ is a set of regulations adopted into the Code of Federal Regulations under Subpart N in 49 CFR Part 192 and Subpart G in 49 CFR Part 195. This rule mandates every pipeline operator must:

- Develop an OQ program
- Follow their written OQ plan
- Establish a covered task list applicable to their system
- Define the training and qualification requirements for personnel performing covered tasks in a pipeline infrastructure
How are Pipeline Operators and Contractors Affected by the OQ Rule?

Considering that a major chunk of work performed on a pipeline is done by the contractor, it comes as no surprise that both the operator and contractor are heavily affected by the regulation. Pipeline operators are solely responsible for ensuring that the covered tasks are rightly identified and the personnel working on the system are qualified to perform the tasks. Over and above, operators also need to make sure that both employees and contract personnel are qualified in accordance with the written plan drafted by the operator. Now, this setting creates two distinct issues:

- **Covered tasks often vary according to operators:** Some operators have covered tasks ranging up to almost 200, whereas some have identified as few as 20. This irregularity in covered task definitions between operators increases the compliance burden on contractors.

- **Evaluation methods vary among contractors:** The OQ rule mandates an operator to list appropriate evaluation methods for qualifying personnel. Every person needs to be assessed using evaluation measures approved under each operator’s written OQ program. Most operators end up underwriting different methods for evaluation. This means that a contractor may have to qualify an individual using more than one method to work for multiple operators.

Considering these constraints, maintaining a “Qualified Workforce” that can work for multiple operators is a big challenge for contractors. To comply with the regulations, contractors need to comply with multiple operator requirements, while evaluating personnel using multiple methods.

### The Costs of OQ Non-Compliance – Civil Penalties and Compliance Orders

As far as reducing incident rates and strengthening the overall security stance is concerned, adherence to federal regulations and standards is a no brainer. Even for the laggards in the space, the strict penalty system underlined by the PHMSA (Pipeline and Hazardous Materials Safety Administration) leaves very little room for non-compliance.
The latest enforcement actions undertaken by regulatory authorities such as the PMHSA:

Penalty for every pipeline violation  
$218,647

Penalty for liquefied natural gas pipeline safety violation  
$79,875

Penalty for a related series of pipeline safety violation  
$2,186,465

Penalty for discriminating against employees providing pipeline safety information  
$1270

It is important to note that if these violations occur on subsequent days, they are considered separate violations by the authority. Also in the case that there are deaths recorded due to an incident or substantial destruction to the property, the penalties increase manifold.

According to the latest data from PHMSA, so far in 2019, the regulatory authority has initiated 195 cases in response to an accident or inspection identifying one or more probable violations of the pipeline safety regulations or statutes. Also this year, PHMSA has initiated 35 civil penalty cases and the total amount of civil penalties proposed sums up to USD 3,721,100.*

In general, PHMSA adjustments have increased over the past few years. As per the latest revisions:

- Provide a real-world view into what regulators are categorically looking into during audits
- Offer written notifications of possible violations
- Underline specific areas where an organization needs to focus to ensure that all the documentation is in place
From a historical standpoint, PHMSA’s data reflects a significant downturn in the number of cases initiated and closed from the time when it peaked during 2005 and 2012. At a glance, these declining figures may spell good news for businesses. However, it’s important to understand that when your business comes into the lens of PHMSA’s enforcement action, the end results will seldom be good and the financial repercussions of a violation can be significant, as witnessed by the entire Midstream space over the past few years.

Notwithstanding enforcement trends, the responsible focus of organizations should still be on improving pipeline safety and safeguarding workspaces, communities, and the environment. These goals were the intent of the OQ rule and are only achieved by being vigilant to OQ compliance efforts.

**Orchestrating a Successful OQ Program with Technology**

For Operators, the mandate and responsibility of shouldering OQ qualification for both their own personnel, and what could be hundreds more contract personnel, present them with management risks. Overwhelming recordkeeping requirements that could lead to manual errors in documentation, and the daily oversight of contractor training and evaluation programs would be unsustainable by Operators were it not for qualified, independent, third-party solution providers.

These independent, third-party solution providers must be trusted, tested, and able to act as if they represent the Operator, since the Operator ultimately bears the brunt of the provider’s actions. Only when providers can show an unblemished track record to the Operator, can they be truly qualified.

eWebOQ originated as an Operator-born solution. Its origination and design were products of an Operator’s vision. That vision – to enable OQ-compliant knowledge training through an online, self-
paced, trackable system – was realized 20 years ago when many other providers were still wrestling with paper solutions. This realized vision continues through an online knowledge course delivery system and LMS platform known as eWebOQ/Avetta’s Worker Management System. In it, not only are courses tracked, but every supplier requirement, down to the individual worker, is recorded.

eWebOQ’s online solution has allowed hundreds of organizations to define and manage key elements of their OQ programs by mapping Operator Covered Tasks directly to the most widely incorporated standards - API RP 1161 and ASME B31Q – and by providing Operators the platform to track and administer their own covered tasks.

Further, it measures knowledge and assists in the reinforcement of knowledge through adaptive technology, another key online training element of eWebOQ’s. But software can only go so far when it comes to measuring the competency needed to perform mandated covered tasks.

It is the skills and abilities – those areas that must be PROVEN through performance – that are critical in OQ. Any deficiencies, frequently noted after an incident, often lead to PHMSA penalties or NOPVs (Notice of Probable Violations). It is understandable, since the hard ‘performance skills’, if not attained by the individual, risk not only financial loss to the responsible entity, but human and likely environmental impact as well.

To mitigate the high risk presented by those who perform pipeline tasks, eWebOQ and Avetta have instituted an Authorized Evaluator program. This program ensures that those who assess performance skills of pipeline personnel are cleared by thorough vetting of their background and experience before they are allowed to enter into eWebOQ Authorized Evaluator training. Those who clear the vetting hurdle are further assessed in Authorized Evaluator training where they must pass both knowledge and performance testing methods 100% in order to become Authorized with eWebOQ.
Mainstream Solution Loopholes

- Chokes stakeholders with too much control, stifling even the most critical information from reaching the person needing it.
- Solution screens and audits performance evaluators on the back-end as opposed to on the front-end, putting itself and stakeholders in a reactionary position as opposed to proactive position when it comes to dishonest evaluators.
- No specific OQ training curriculum for gas operators.
- OQ programs are largely paper-based with digital programs mainly including flat PDF page-turners for pipelines.
- No direct control on Performance Evaluator Program.

eWebOQ Advantage

- eWebOQ doesn’t cut off channels of direct communication. By partnering and facilitating supplier/client communication, the solution can mitigate risk before it escalates beyond all control.
- eWebOQ’s Authorized Evaluator program sifts through evaluator candidates at the front end via a thorough vetting process with candidate interviews, reference interviews, and contact with other 3rd parties BEFORE they’re accepted into the training program where they will be further assessed.
- eWebOQ training is rich with training for ASME B31Q tasks, which is where the industry, overall, is heading, as well as, training for API RP1161 tasks.
- eWebOQ is completely technology-driven. The courses are online, interactive, and self-paced. The instructional loop is completed through online training and online testing.
- eWebOQ directly controls the Authorized Performance Evaluator program. The platform doesn’t authorize other entities to vet/approve performance evaluators due to the key role performance evaluators play in the chain of OQ risk management.
Bolstering Training and Qualification

As discussed earlier, the major cause of several pipeline incidents is incorrect operating measures. Also, it comes as no surprise that in some cases contractors end up recruiting unqualified or untrained personnel for a specific job. This serves as a potential threat vector for future incidents. Untrained or poorly supervised workers can be directly responsible for incorrect installations, incorrect valve positioning and ultimately millions of dollars in sanctions for companies.

To ensure that all workers and contractors are properly trained and qualified, operators can leverage web-based learning management systems that can be accessed anytime, anywhere. For instance, the eWebOQ platform comes with a comprehensive training curriculum that ensures operators, contractors, and crews get access to the most relevant and updated training material available. All the content available on the platform is thoroughly vetted by industry SMEs. Over and above, eWebOQ can manage, deliver, assign and evaluate any existing Operator’s training content including equipment or site-specific procedures.
Building an Authorized Evaluator Program

In 2018, more than USD 500,000 worth of NOPVs (Notice of Probable Violations) were filed, in part, due to individuals not being assessed thoroughly or at all on task-specific skills. There’s no doubt that the pipeline industry needs evaluators who are qualified, trustworthy and knowledgeable. After all, they serve as the last line of defense in determining that operators have the best employees tasked with the most important jobs.

eWebOQ comes with an Authorized Evaluator Program which ensures that all evaluators permitted to a worksite are qualified and rigorously vetted. eWebOQ vetted evaluators are only authorized to undertake evaluations on tasks in which they have demonstrated capabilities. The solution determines evaluator roles by combining rigorous vetting and stringent performance evaluations.

As a part of Avetta, eWebOQ now functions in a much wider risk and compliance ecosystem. Combining Avetta’s high-end configurable technology with highly experienced human insight, eWebOQ serves as more than just an Operator Qualification solution. Rather, it serves as a partner for your worker training and compliance needs.

Towards a Safer Operator Ecosystem

If companies commit to a “zero-incident, zero accident” safety culture, a robust pipeline integrity and risk management strategy is a must. Pipeline regulatory authorities such as PHMSA are doing their bit to drive pipeline operators across the nation towards ensuring the integrity of their systems. In response, operators will have to proactively implement more stringent procedures and measures for their installation and maintenance contractors to keep up.

Ultimately, successful pipeline risk management depends on all stakeholders working towards a safer ecosystem. This goal is achieved by instilling integrity and strict compliance measures into supply chain networks. Partnering with trusted risk management and OQ solution third-party providers adds another layer of risk management to protect the most precious assets: workplaces, communities, people, and the environment.
References

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About Avetta

Avetta connects leading global organizations with more than 85,000 qualified suppliers, contractors, and vendors across 100+ countries. We support the sustainable growth of supply chains through our trusted contractor prequalification, supplier audits, insurance monitoring, robust analytics and more. With real results in helping companies reduce TRIR, our highly configurable solutions elevate safety and sustainability in workplaces around the world—helping workers get home to their families each night.

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