



# Eye on asset integrity

Headlines about spills and equipment failures at oil and gas production facilities have thrown the spotlight on asset integrity, with public scrutiny more intense than ever before. However, maintaining production assets and setting high industry standards have always been a top priority, **David Miller** of the American Petroleum Institute explains to Jim Banks.

**T**he oil spill at BP's Deepwater Horizon operation last year, was the largest accidental spill in the industry's history, and it understandably increased public scrutiny of the measures taken by oil and gas producers to ensure that their production assets are safe and reliable. The pressure on the industry to prove that it was overhauling the procedures and technologies it uses to ensure asset integrity instantly intensified.

With all eyes on the industry, it was imperative that steps were seen to be taken to improve safety, inspection and maintenance procedures. The truth, however, is that the industry has

maintained a constant focus on asset integrity – and for reasons more varied than simply preserving a healthy public image. Asset integrity is fundamental to sustaining production rates, controlling costs and ensuring a safe working environment. In short, it is just good business sense.

Testament to the industry's ongoing efforts is the number of standards for asset integrity that have been developed by industry bodies, and which have often been adopted by regulators.

"Asset integrity is something that the American Petroleum Institute has been working on for a number of years" says David Miller, the institute's director of

standards. "It is an important part of managing petrochemical assets. We already have four documents published to assist the industry in this regard and we are developing additional standards at the moment."

#### **Standard setting**

The American Petroleum Institute is the only national trade association that represents all aspects of the oil and gas industry in the US. Its membership comprises 400 corporate companies, ranging from the largest oil majors to the smallest independent producers, while its standards for asset integrity cover damage mechanisms affecting

fixed equipment in the refining industry, fitness for service and risk-based inspection processes and technology. Miller notes that, as the institute's standards committees are industry-led and open to non-members as well as member companies, their scope is both "broad and deep".

Issues of asset integrity will vary between different facilities, depending on their type, age, size and complexity. As the industry puts more emphasis on extending the lifespan of existing assets, older infrastructure is more common. For assets that are reaching the end of their service life, as a number of installations in the North Sea are, managing asset integrity means addressing a slightly different set of risks than those of a new facility; the crucial question is whether industry standards can reflect these different risk profiles.

Miller certainly believes that they can, largely because the industry participants involved in defining the standards have in-depth knowledge of the risks to asset integrity across many types of installation, and can use this expertise to draw up standards that take a holistic stance on risk assessment, inspection and monitoring.

"Because of the breadth of global expertise present on our committees, we can look very broadly at the concepts of safety, inspection and maintenance without getting bogged down in the detail of the size, age or type of facility that a company is operating," he explains.

"We are able to take a step back and look at things on a more general level. We provide resources to the standards committees, either in the form of funding or technical expertise, to help them focus on issues that apply to all kinds of facility, and we have a thorough vetting process for all of the standards."

### Risk-based resource management

The widespread participation of the industry in setting standards means that their general principles can apply no matter how old or new an asset is, and no matter what technology it uses.

#### David Miller

David Miller is director of the standards programme at the American Petroleum Institute, where he is responsible for overall standards policy and implementation. He is also the chairman and a board member of the American National Standards Institute International Policy Committee.



This is because the standards focus largely on risk-based monitoring and inspection, which not only takes an intelligent and informed approach to assessing risk, but also defines the most efficient use of resources in reviewing potential threats to asset integrity and taking remedial measures.

Risk-based monitoring and inspection is a risk mitigation process that works via inspection programmes that use sophisticated risk-analysis methodologies based on extensive data from monitoring systems. It can be used in production facilities, pipelines, refineries and many other large industrial applications. Its



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fundamental premise is that the likelihood of a failure in a piece of equipment can be assessed using a qualitative, risk-based ranking matrix. Areas of high risk will be pushed up the list of priorities for inspection and maintenance; low-risk equipment is, therefore, not over-inspected and high risk equipment is never overlooked.

“For large, industrial installations we look at issues of inspection and fitness for service,” explains Miller. “Typically, a company might look at different pieces of equipment on the basis of time, so inspection might take place every six or nine months. Our approach is to use resources more effectively by taking a strategic perspective on managing equipment and improving safety and reliability in petrochemical and refinery facilities. That way, operators can focus their resources where they are most important.”

The value of the standards is evidenced not only by the fact that a broad cross-section of the industry

participates in defining them, but also by the widespread recognition they receive within the oil and gas space and beyond. Miller notes that the broad application of the standards is partly because of the involvement of many companies in defining them, and partly because they are the most widely accredited by third-party organisations and the most widely cited by the industry’s regulatory bodies.

#### New technology, new focus

The nature of the industry dictates that standards must be revisited regularly to keep up with the technological advances that are constantly made through the sector’s huge R&D spend. For instance, anti-corrosion alloys are rapidly improving and the standards must respond to encompass these new technologies and reflect what the industry is now capable of doing to preserve asset integrity.

Furthermore, bodies such as the American Petroleum Institute are

constantly working on new standards. Existing documents from the organisation have concentrated largely on the processes used to maintain the integrity of large pieces of oil and petrochemical infrastructure, but two new documents are currently being finalised that will turn the focus to smaller pieces of mechanical equipment, such as pumps and valves. A similar risk-based approach will be adopted in defining these new standards.

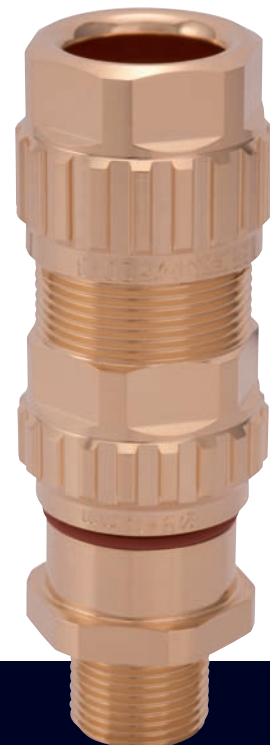
“There is now a push to get those standards out there and to go beyond our previous focus on fixed equipment,” says Miller. “This is part of a move towards a more holistic approach by broadening the scope of the standards to include different kinds of machinery.”

These new standards may be seen by some as a response to events such as the Deepwater Horizon spill, but they are in fact part of the industry’s ongoing work to improve asset integrity. The issue has never been neglected and is sure to remain a priority in the years ahead. ■



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