

Fiona Barclay

*In this series we're shining a light on those engineers who play a key role in keeping people safe, whether it's their colleagues on distant oil platforms or at an onshore facility where they also work to safeguard the local community who live nearby. I spoke to **Fiona Barclay** who works as a graduate site engineer/process safety engineer on bp's Clair Ridge production and drilling platform west of Shetland. This is the largest oilfield in the UK Continental Shelf and was commissioned in 2018. Our conversation covered what her work involves and why she's passionate about safety.*



Fiona, can you describe an average week on Claire Ridge?

I work offshore for three weeks at a time and every day is different. We start the day with a team safety brief, where we discuss different safety topics and what has changed on the plant in the last 12 hours. There is a great safety culture offshore, everyone is empowered to speak up and can stop the job for any reason. As the graduate site engineer I provide engineering support offshore, whether that be plant modifications, optimising our operations or how we complete jobs safely and efficiently.

How important is Process Safety in your work?

Process safety is at the forefront of all engineering work offshore. Any plant changes must be risk assessed using a suitable method, as part of the Management of Change process. For example, what is the risk associated with decreasing the set point of a nuisance alarm in the control room? The HAZOP and LOPA documents are used frequently to understand the consequence of this sort of change.

Part of my job is also to review any process excursions – this could be to investigate why the discharge pressure of a pump spiked too high or the level in a tank fell below the low alarm. This doesn't happen often but if it does, it's important to fully understand the root cause, and make sure any lessons learned are communicated and acted on.

I'm regularly involved in other aspects of process safety management, such as completing audits, emergency response exercises and attending toolbox talks.

What do you find the most interesting part of your job?

Just having the ability to walk out the office and onto the plant – this role has given me a real appreciation for the scale of our process plant, something you can't get from piping & instrumentation drawings. I also get to work with a diverse range of people offshore from different backgrounds and cultures which is very interesting.

What achievements in process safety have given you the most satisfaction?

Recently I completed a project to improve the safety and efficiency of leak testing offshore in bp's North Sea region.

Leak testing is completed after intrusive maintenance on the plant to ensure that once the system is put back together there are no potential leak paths, before reintroducing process fluids. This would involve pressurising the system with water or nitrogen to 90% of the system design pressure and monitoring for pressure loss. Often nitrogen from 300bar gas cylinders is used - although not all equipment is rated to this pressure. To protect against overpressure, there are multiple prevention and mitigation barriers. I recently sized a new range of pressure safety valves (PSVs) for leak testing, to ensure in the event of overpressure we would always be able to relieve the gas pressure. I also designed a "PSV selection table" which the offshore technicians can use to easily select which PSV is suitable for their leak test, creating a safer and more efficient process. This ultimately ensures that we keep hydrocarbons inside the pipe, and our people safe.

The procedure has been adopted and I was a global winner at the bp's graduate Technofest event for this work.

Can you outline the skills and experience that are important in your job?

Having an analytical mind and the ability to problem solve is key – always ask the difficult questions – what could go wrong here? How could this system fail? How can we make this operation inherently safer and remove human factors? Learning good risk assessment techniques, MAR, LOPA, HAZOP, and how to apply lessons learned from past industry incidents is also key. Working offshore has helped me better understand how jobs actually get done. – the practical side is something that can often be overlooked in the office.

Being able to communicate with people from a diverse range of backgrounds and experience is vital – whether that's a technician who's worked offshore for 30 years or someone offshore for the first time with a fresh set of eyes. Having courage to speak up when something isn't right or to question the norm is also valuable in keeping our people and plant safe.

How does your work with bp contribute to solving society's grand challenges?

I am proud to work in the oil and gas industry, delivering energy worldwide to those who need it I believe we need a diverse mix to enable the transition to cleaner, low carbon energy and I am fortunate to be able to contribute to bp's ambition to be net zero by 2050 or sooner. This won't happen overnight, and the key to success is being able to perform while we transform. I am a leader of the "Clair Ridge Green Team" which actions ideas that are submitted by the offshore workforce around emission and waste reduction. This year alone we have had 50+ ideas.

I also participate in multi-discipline focus sessions to create a carbon reduction plan for the asset. This involved brainstorming opportunities to reduce emissions – for example: no routine flaring, efficient use of gas turbines, commissioning energy recovery turbines on water injection pumps.

As a young engineer I care about the environment and I strongly believe working in the energy industry gives me the best opportunity to drive change and contribute towards a cleaner future for the planet.

What led you to choose a career in Chemical Engineering?

If you'd told 12 year old me I'd be working offshore I'd never have believed you. I loved science and maths at school and decided to study Chemical Engineering and Chemistry. Before my Masters year I completed an internship in the energy industry and loved it – there were so many problems waiting to be solved through engineering.

As an Associate member of IChemE I am working towards gaining my chartership. Being part of the IChemE has led to great networking opportunities with members both within and outside the energy

industry. This is great for people in their early career to see what career paths other engineers have followed and share knowledge

Do you have any advice for an engineer who wants to work in process safety?

Process safety is part of every engineer's job – we are all responsible for the safety of people, the environment and our plant. In your early career learn as much as possible - I'd encourage you to speak to a process safety engineer and try to get involved, even as an observer with any ongoing process safety projects, to see how process safety aspects are applied in "real life".