

Behind the scenes: Q&A with a decommissioner

No two days are the same when on the job as a decommissioning manager. Nuclear facilities come in all shapes and sizes, and with each facility having its own unique design, decommissioners have to develop highly detailed and tailored plans and often create new, innovative solutions for safely dismantling a facility piece by piece.

To get an idea of what is involved in a decommissioning manager's job, IAEA Contributing Editor Nicole Jawerth sat down with Steven Slater, Head of the Programme for Site Remediation and Decommissioning Projects at the Sellafield site in the United Kingdom, which is home to several active and shutdown nuclear power and reprocessing facilities, nuclear waste stores, and nuclear research and development laboratories. He is responsible for the safe management and decommissioning of over 150 nuclear facilities and for more than 500 staff across Sellafield.

How does the job of a decommissioner differ from that of an operator?

I am responsible for the safe maintenance of facilities until we commence decommissioning activities, at which point I am responsible for the safe management of the decommissioning project and removal of the radioactive materials. The main objective of my job is to safely remove any residual radioactive materials after the post-operational clean out phase and make the remaining materials safe for long term disposal.

Some of the decommissioning work I undertake is completely alien to an operator. In my role, I expose the inventory, recover the inventory, and put it into a safe, passive form. For an operator, that would appear to be very alien. The main job of an operator is keeping radioactive materials contained at all times throughout the entire process and lifetime of a nuclear operation.

The key difference between decommissioning and operations is that decommissioning is project-based with a defined start and end point. Operations are process-oriented where you move from one process to another process.

What is the biggest or most significant challenge in your job?

Because of the age of facilities, they are often not as expected in terms of drawings, and legacy issues associated with age-related defects are often a challenge. We would love a facility to be exactly as it is on the drawing, but some of these facilities are almost 50 years old. They have been modified many, many times during those 50 years of use. Our plants



“Some of the decommissioning work I undertake is completely alien to an operator.”

— Steven Slater, Head, Programme for Site Remediation and Decommissioning Projects, Sellafield Ltd, United Kingdom

are not what we would have expected based on drawings and records. So each time we go into some of these facilities, it's a voyage of discovery.

How has the decommissioning process changed over the years?

We have moved from fully remote decommissioning to more of a human-machine interface decommissioning. At one time, we got really excited about doing fully remote decommissioning, but fully remote adds a scale, complexity, and cost that can often make it prohibitive. In some instances, you've still got to go with fully remote decommissioning, but where there are opportunities, we now do what is called 'semi-remote decommissioning', where a person enters an area, sets up the tool and operates it from a remote station. This means the person isn't in the danger zone, but they are present and available to observe and make modifications as things happen. That has been a real change for us in the last ten years.

The other thing we have done is to move away from wide-area decommissioning to a more tactical decommissioning. Some of these cells and areas are as big as football pitches. In times gone by, we would effectively go into facilities and do a wide scale decommissioning, but in doing this we have faced a spread of contamination throughout the exposed area. Now we opt for more tactical decommissioning where we address one area at a time and put a local containment structure around it, and then move to the next section. This prevents contamination throughout the whole structure. It's really a more surgical decommissioning method.

What kinds of innovations have you made? How does that fit into the future of this field?

We do innovative things all the time. Recently, we have been developing something called a 'laser snake'. The laser snake is a flexible robotic arm driven by wire ropes, and can be easily navigated through confined spaces and cluttered environments. The real benefit of this kit is that its toolset enables the 'arm' to perform all kinds of activities, from inspection to cleaning to laser cutting. So once the snake is sent through an existing cell penetration, the laser cutting technique



allows for easier breakdown of hard-to-reach and often radioactive parts. This prevents any direct contact by the operator, which in turn minimizes a person's exposure.

We are also working with REACT Engineering, a partner company in our supply chain, together with which we have been developing remote characterization approaches. For example, we have taken a scanning device, attached it to a drone and flown it into a radioactive cell. In this way, we can then take 3-D pictures of the inside of the cell. We then overlay the radiological map on top, so we can get a clear visual picture of what's inside a cell before we commit to putting someone to work. It's part of how we reduce the radiation exposure of our workers.

Drones are used more and more for characterization purposes. In the future, as we start work on some of our more challenging plants and get to the areas where individuals simply cannot be exposed, remote decommissioning techniques and drones will play a much bigger part. I expect technologies like these and other new innovations will continue to evolve and help us find new ways to take on decommissioning and adapt to new challenges.

Where does the IAEA fit into your work and decommissioning?

Sellafield is one of the most hazardous sites in Western Europe in terms of its inventory. We work with many expert peers across the nuclear community, sharing experience and techniques to enhance our decommissioning. The IAEA continues to be a source of support and collaboration for us and others in the field.

In some cases, a decommissioner working manually can be more quick and effective than other options.

(Photo: Sellafield Ltd/UK)