

Horizon Nuclear Power interview with West Midlands Urban Search And Rescue (USAR) founding member, Watch Commander Mr. Paul Staples

Horizon Nuclear Power is developing a new power station based on Anglesey supported by Hitachi-GE.

Hitachi has pioneered the development of Advanced Boiling Water Reactors (ABWRs). Key features ensure that ABWRs are highly functional and offer enhanced safety during operation. The modular design developed by Hitachi makes ABWRs simpler to construct and easier to operate, while the efficient turbine technology offers reliable electricity generation.

Horizon are developing a number of units and expect the first at Wylfa to be operating in the first half of the 2020's with the second unit at Oldbury following soon after. This will provide at least 5.4GW of new capacity to roughly 10 million homes. The projects will create up to 850 permanent jobs at each of sites (Anglesey and Oldbury) with a construction workforce of around 4,000 for the majority of the time and between 8,000 and 10,000 during peak periods. This investment will boost the country's low carbon power commitment and help develop local skills and new prospects for British suppliers.

Horizon is committed to seeking out current and best practices for all aspects of fire safety and emergency preparedness. Horizon's Emergency Preparedness Lead Mr. Jamie Stevens said, "This information will aid the development of robust policies and procedures at an operational level. This USAR interview is one of many planned with specialists to gain an understanding for the possible measures required, as well gaining an understanding for procurement of specialist equipment and obtaining the skill sets necessary"



Interview undertaken by Horizon Nuclear Power with USAR founding member, Watch Commander Mr. Paul Staples.

When did you get into this line of work?

It was August 2006 so, this happens to be my 10-year anniversary. I was a firefighter with several years' service, wondering about my career path whether I wanted to go for promotion or perhaps move to a different department. I had seen an internal advertisement for urban search and rescue unit. The Urban Search and Rescue (USAR) capability for England and Wales was introduced via the New Dimension programme in 2004 in response to the terrorist attacks on 11 September 2001. The programme has now transitioned into Chief Fire Officers Association National Resilience.

The job description at that time covered four main disciplines, which are breaking and breaching, shoring, technical search and lifting and moving. Since then we have developed the team to cover a wider skill set including rope rescue, water rescue and technical rescue.

How are the teams structured?

There are seventeen Fire and Rescue Services (FRS) in England

that have been provided with USAR assets and funding. There are 30 USAR personnel, including a canine and handler. Sixteen of the FRSs host one Team each and the seventeenth in London, hosts 4 teams, giving a total of 20 teams overall. The teams are strategically located to ensure a good geographical spread across the Country. A further USAR team is hosted in Wales, with Scotland and Northern Ireland having a similar capability.

What can you tell us about the module?

There are 5 modules; each contains a range of equipment to aid the successful undertaking of search and rescue operations.

Module 1, heavy transport, confined space and hot cutting

Module 2, heavy breaching and breaking equipment

Module 3, a multi-purpose 'bobcat' vehicle

Module 4 provides a safe system of work when unloading equipment from the other modules as well as providing a rubble clearance and forklift capability and,

Module 5 contains approximately 5 tonnes of timber and nails used for shoring operations.



Used to pick up the modules

Why did you decide on this career path?

USAR skills provide many fields of interest, which do offer a specialist skill once developed. All of which are accredited and are recognized outside of the national fire service. For example, working in confined spaces, rope rescue and rigging, building understanding such as transfer of live and dead loads, mechanical engineering, shoring and medical training. Aside from the tangible qualifications the occupation has develop me in ways I couldn't have even thought of at the time of application. After 10 years exposed to extremely challenging environments and situations the experience has indeed taught me a lot.



Specialist container



Emergency essentials

How does someone get into this line of work?

Firstly you have to be a qualified firefighter, the process starts with a formal written application, then following an interview there are some assessments which include working at height, swimming and confined spaces after which a medical examination is taken. Once a candidate is successful we then spend a weekend at outreach that are specialist technical rescue training providers. Assessments there are designed to develop physical limits, mental capacity and teamwork.



*Athersone-on-Stour
November 2, 2007*

What was your first USAR job?

It was November 2007. It was a warehouse fire at Athersone-on-Stour. Unfortunately four firefighters were lost in this blaze; it therefore became a crime scene. The construction was portal steel framed building, which couldn't sustain the extreme heat conditions produced by the fuel load made up of packaging materials and pallets. Our role was a recovery one and one to preserve the scene, because evidence is vital. We worked along side Disaster Victim Identification (DVI)



Fast response unit



*Pictured with Simba,
search & rescue dog*

teams, the Health and Safety Executive (HSE) and the Police. The challenge was to develop a means of recovery without disturbing any fire scene evidence. The solution used shoring techniques to manufacture an elevated platform. This method used the smallest amount of footprint within the building to achieve the required access without disturbing any evidence.

How many USAR members are there and what are the working hours?

There are 54 members throughout West Midlands. We operate 13 per watch including a training officer and station commander, also have the ability to call a further 10 personnel if it is a protracted incident. We operate a four-day shift system, which are two days and two nights over a 96 hours period, 48 core hours and 48 hours on call followed by four days off.

How is the effectiveness of the team measured?

The teams are measured with key performance indicators, which are set nationally. However, the teams are also measured on a risk based response model. For example, in an urban environment set next to factories, airports, stadia, places of large assembly, these areas are required to have a fully functional team at all times plus support fire-fighting operations. We have a team of like-minded people, which is extremity important when, for some protracted events we can be working away from our families for up to a month at a time.

Please talk me through a typical search and rescue

There is no typical search and rescue. Each situation will present its own unique set of challenges. For a building or structure collapse USAR are usually called because an individual is entombed. The local fire and rescue services would have rescued anyone that is on the rubble pile. They would then evacuate the area having secured about 90 to 95% of casualties. So the immediate on scene crews would have done all they can but cannot physically

Typical search and rescue continued...

rescue others without the use of our technical expertise and equipment. Therefore we are looking for a small amount of casualties compared to the on scene crews.

Our teams are equipped with a host of gadgets including cameras, listen equipment, drones, and are highly trained on how to use them, to view the rubble pile and to search out survivors. Following a briefing that includes viewing building plans and then some detective interviewing work we first consider sending out the search and rescue dogs. They work in pairs because they tire quickly or may lose the scent. This provides a compare and contrast result across the whole area, helping to focus our efforts to a general area. A scent emitting from the rubble pile can be some 15 to 20 meters distance away from where the casualty lay so once a general search area is established, and if it safe to do so a line of people will slowly walk the rubble pie. The purpose is for them to use their eyes and ears to narrow the search further. This sounds basic but you have to do the basics first to get the best outcome, before using the expensive equipment such as Delsar seismic acoustic listen devices.

This device is used to search a one meter squared area at a time. This provides a degree of confidence before moving the rubble, steel, or concrete. The reason this is done is because with older buildings the concrete has had years to cure, over time making concrete extremely strong. If drilling was to take place it could take perhaps up to 8 hours to get through and if the location is wrong then potentially it would have been a waste of time, when time is critical in life rescue.

The unit is also equipped with gas detection monitors; these are capable of detecting different gases, detecting

upper and lower flammability limited and exposure times. Our devices are set for Carbon Monoxide, Hydrogen Sulfide, Methane, and Oxygen but can be set to detect most gas types. The reason for oxygen detection is because when working in a confide space there needs to be sufficient oxygen to breath but also consider if there is too much oxygen it can become an explosive atmosphere. Something to keep in mind when administering oxygen to casualty, for example, when administering oxygen to a casualty on the rubble surface this is say 15 liters per minute but if this was administered in a confined space there is the potential to supply 100% oxygen into a small space rendering the atmosphere explosive.

Due to the nature of the work what risk assessments are carried out?

A formal risk assessment can be undertaken every 15 minutes depending on the level of risk. However, we are constantly dynamically risk assessing the situation which might be a continually changing one. These assessments are usually undertaken on paper and later following the event are digitally scanned to record decisions made and to provide lessons learnt.

How do you share the lessons learnt?

Following each incident a national workbook is required to be completed. There is also a debrief every time an asset is sent out, so any learning outcomes or heath and safety implications are recorded and uploaded online for other members to review. In addition, we are audited to ensure robust processes are adhered to and capture learning outcomes for improvements.

Delsar equipment is used by FEMA, USAR, SUSAR and rescue teams from all around the world

The kit is a seismic / acoustic listening device used to detect and locate live victims trapped in:

- Collapsed structures
- Explosions
- Landslides
- Mine disasters



What other tools or Special tools do you use?

Some of the tools are perhaps special and designed for a specific purpose or job. Such as, confined space working or where an atmosphere is flammable. We are equipped with electronically intrinsically safe tools and hydraulic powered tools and gas detection monitoring, purpose made cutting or lifting tools. Our latest addition is the use of two drones used to assess a scene before we decide how best to address it or assisting the police to search for high risk



What are the challenges for anyone in this role?

The challenge for any USAR team is managing the time; we hold many skill sets and are continually training to be abreast of methodologies and technology. This means having to keep our certifications current, not only for skills but certification for equipment as well.

(Watch Commander, Phil Webb Training Office for technical rescue, another founding member) Phil plans the training schedule and certification programmes. Phil explains that for every piece of equipment there is a management programme and a third party insurance check. The training programme ensures that at least 50% of the time is available and dedicated to either situational training or equipment functionality testing and maintenance. For example, today the teams are out powerboat training, so both the team and equipment is being tested. This is important because the equipment used during operations is tested frequently and the teams also become familiar with the equipment. The training calendar for the remaining part of the year includes conflict resolution, general management, leadership skills, and commander and control training so we give them the tools but then they have to put them to use and practice them.

Aside from certification for both skills and equipment, there is a constant challenge to keep up to date with technology. For example, vehicles are becoming more electronic with large battery systems; in an RTC (road traffic collision) we need to know how to isolate the supply or even what type of steel is used allowing us to select the correct cutting equipment. If the wrong tool is used apart from the cost of damaging

the tool, we would have used valuable time and in most situations we don't have that luxury of time for trial and error.

Other challenges arise from not knowing what call might come in each day so being as prepared is of key importance. Of course, we are called out for fires, floods, RTCs or collapsed structures however; we are also called out to assist other services such as medical persons dealing with bariatrics. In one such call the IP (injured party) could not leave through a door into the hall way and down using the elevator so we used a rope rescue system from the roof of the 16-storey building. This allowed us to perform the rescue on the outside of the 10th floor balcony. We removed a window to gain access then hoist a 60 stone (840 pound or 381 kg) person to the ground where medics were waiting.

Please tell me about a recent call your team has attended?

Morning of May 6, 2016 we received a request to attend a factory in Shropshire. A large warehouse containing racks of 20kg blocks of cheese, which are distributed out to local suppliers or supermarkets. The request wasn't to attend due to a collapse building structure but to attend due to the large 18-meter high bay racking that had collapsed trapping a forklift worker under tons of cheese. Fortunately for the worker he did exactly what he was trained to do and he remained inside the forklift cab and awaited rescue, the protection system around the cab protected him.

Upon attending the scene we had to work out a suitable way to enter the warehouse, set about locating the trapped individual and then how we would move the product and steelwork.

Although, we are educated to understand structures there are still

some situations and a variety of buildings that require the support of structural engineers to assist us in making our decisions. For example, we need to be able to predict what can happen to a structure before we remove steel sections or move concrete, especially where people are trapped inside or where we need to enter a space to perform firefighting operations. Therefore, we combine the understanding for what a building should do when built correctly and use our working knowledge knowing for what to lookout for, how loads change following a structural collapse.

The rescue took several hours by which time the individual was thirsty and dare I say it, a little cheesed off, but happy to be alive.



How do you manage the wellbeing of staff?

The incident with the cheese warehouse had a positive outcome. However, USAR units are exposed to critical incidents, so we have to ensure that state of mind and wellbeing is not affected. Straight after an incident we have an immediate incident diffusing. This is where we try to capture any salient points so we can discuss and explore. If over time a change is noticed in any individual then this can be escalate to provide a more structured debrief and support. If further support is required this can be provided by counseling via a recognised organisations such as MIND who offer help and training specifically designed for emergency service workers.

More information and support regarding mental health can be obtained from:



Where else has this occupation taken you?

The opportunity to work internationally has presented itself on several occasions. This occupation does allow one to be widely travelled, either from a collaboration viewpoint to support overseas operations or as a training exchange of skills exercise, to learn from each other and prepare in other challenging environments. We bring this knowledge back to support our processes and procedures and to prepare us for seasonal climate changes and

adverse conditions. We have incorporated some of these techniques into our training and Command development facilities for all our officers.

What are the promotional prospects?

We are a small team so the career path or prospects for promotion is limited but then, not everyone wants to be the person at the top. Our members do this work for the reward of helping others plus the skills that they obtain. Most of our specialist skills are recognised qualification outside of the fire service, a skill for life, which is transferrable to another occupations, say following retirement.

What motivates you and your team?

Its very simple the motivation is the need to achieve the most positive outcome form a situation and to ensure our team members return home safely at the end of the day, two very basic things but extremely important.

Jamie how has this information helped Horizon in pursuit of their endeavors?

The information will no doubt assist in providing the right equipment and skills necessary for Horizon to carry out this form of work. I am delighted and privileged to have had the opportunity to talk with West Midland Fire and Rescue USAR teams. Thank you.

Horizon Nuclear Power Limited (Horizon), a wholly owned subsidiary of Hitachi, Ltd. Mr. Duncan Hawthorne Chief Executive Officer is an internationally known and widely respected nuclear industry leader. Previous positions held were President and Chief Executive Officer of Bruce Power L.P. in Canada which operates one of the world's largest operating nuclear facilities. He served as Chair of the World Association of Nuclear

Operators (WANO) Atlanta Centre and until recently was President of WANO's Governing Board. His contribution to the Canadian energy sector was also recognised when he was awarded Energy Person of the Year by the Energy Council of Canada.

For more information regarding Horizon Nuclear Power please visit www.horizonnuclearpower.com