

Overview of the role

Responsible for the operation of plant systems and equipment on nuclear facilities

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Standard in development L2: Nuclear operative

Title of occupation

Nuclear operative

UOS reference number

ST0291

Core and options

No

Level of occupation

Level 2

Occupational maps data

Route: Engineering and manufacturing

Pathway: Engineering, Manufacturing, Process and Control

Cluster: Plant Operative/Technician

Typical duration of apprenticeship

24 months

Target date for approval

27/02/2024

Resubmission

No

Would your proposed apprenticeship standard replace an existing framework?

No

Does professional recognition exist for the occupation?

Yes

Occupation summary

Nuclear operatives are found in the nuclear sector, which includes power generation, fuel manufacture and storage, reprocessing of nuclear fuel, decommissioning of facilities and equipment, nuclear waste processing and storage. Nuclear operatives carry out safe operations of nuclear plants or facilities. They are also involved in the removal and disposal of nuclear waste materials for decommissioning of nuclear plants or facilities. Nuclear operatives work with cutting-edge technology and make a positive impact on the environment supporting the production of clean energy.

The broad purpose of nuclear operatives is to conduct surveillance and decommissioning of plant, including operations, monitoring and adjusting of controls, recording data and performance, taking operational samples. Some facilities are in decommissioning phases where nuclear operatives dismantle, remove and dispose of plant and equipment, using state-of-the-art techniques and equipment. Nuclear operatives will perform size reduction, segregation, and packaging of different categorisations of waste in challenging environments, often in full personal and respiratory protective equipment. They will undertake appropriate disposal procedures, ensuring their safe containment, and minimising any potential harm to the environment. Nuclear operatives necessitate the use of innovative methods and equipment where required, with associated practical skills. The working conditions are varied, working on sites running 365-day operations. Nuclear operatives will be required to work individually and as part of a team. Nuclear facilities are highly regulated providing high levels of security for entry of facilities.

In their daily work, nuclear operatives interact with colleagues and managers, and a premium is placed on demonstrating an understanding of nuclear, radiological and conventional safety, together with the appropriate attitudes and behaviours to ensure apprentices comply with organisational safety and regulatory requirements at all times. They work to national and industry standards conducting best practice modelling the highest standards of professional conduct, ethics and integrity. They have a strong commitment to personal safety, set out in nuclear industry requirements, and collaborative team working.

Nuclear operatives are responsible for contributing to the safety of the facility, personnel, public and the environment in energy production and decommissioning. This is achieved

through disciplined operations, efficient team working, and contributions to problem solving in the deployment of bespoke equipment.

Typical job titles

Nuclear decommissioning operative **Nuclear operative** **Nuclear process operative** **Waste technician**

Are there any statutory/regulatory or other typical entry requirements?

No

Occupation duties

DUTY	KSBS
<p>Duty 1 Work to nuclear legislative and regulatory procedures in the nuclear environment.</p>	<p>K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K12 K13 K14 K15 K16 K17 K19 K21 K28 K30 K31 K32 K33 K34 K35 S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S22 S23 S24 S25 S26 S27 S28 S29 S30 B1 B2 B3 B4 B5 B6 B7</p>
<p>Duty 2 Apply radiological and contamination control measures prior to, during and after commencing work.</p>	<p>K1 K2 K4 K5 K6 K7 K8 K9 K10 K12 K13 K14 K15 K16 K28 K29 K30 K32 K33 K34 K35 S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S22 S23 S25 S26 S27 S28 S30 B1 B2 B3 B4 B5 B6 B7</p>
<p>Duty 3 Support facility and site</p>	<p>K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K12 K13 K14 K15 K30 K31 K32 K33 K34 K35 S1 S2 S3 S5 S7 S8 S9 S11 S24 S25 S26 S28 S29 S30 B1 B2 B3 B4 B5 B6 B7</p>

contingency plans in the case of incidents or events.

Duty

4 Complete safe systems of working on plant and equipment in a nuclear environment.

K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K12 K13 K14 K15 K16 K21 K28 K29 K30 K31 K32 K33 K34 K35
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S22 S23 S24 S25 S26 S27 S28 S29 S30
B1 B2 B3 B4 B5 B6 B7

Duty

5 Undertake radiological protection monitoring duties, monitoring plant and equipment.

K1 K4 K5 K6 K7 K9 K10 K12 K13 K15 K16 K28 K29 K30 K31 K32 K33 K35
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S22 S23 S24 S25 S26 S27 S28 S29 S30
B1 B2 B3 B4 B5 B6 B7

Duty

6 Review technical data and documentation. For example plant operations drawings, decommissioning phases.

K5 K6 K7 K9 K14 K15 K16 K17 K28 K31 K33 K35
S1 S2 S3 S5 S6 S10 S11 S12 S22 S24 S25 S26 S27 S29
B2 B3 B4 B5 B6 B7

Duty

7 Carry out the safe operations of identified minor maintenance

K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K12 K13 K14 K15 K16 K21 K28 K29 K30 K31 K32 K33 K34 K35
S1 S2 S3 S4 S5 S6 S7 S8 S10 S11 S12 S22 S23 S24 S25 S26 S27 S28 S29 S30
B1 B2 B3 B4 B5 B6 B7

ce
activities.

Duty

8 Conduct surveillance plant and equipment. For example, take and record samples of processes or equipment.

K11 K17 K18 K19 K20 K21
S7 S15 S26
B7

Duty

9 Respond in the event of abnormalities of plant operations.

K11 K18 K19 K20
S7 S13 S14 S15 S16 S17 S26
B7

Duty

10 Operate equipment to move and lift loads.

K1 K2 K3 K6 K7 K9 K12 K15 K16 K24 K28 K29 K30 K32 K33 K34
S1 S2 S4 S5 S7 S11 S12 S22 S23 S25 S26 S27 S28 S29 S30
B1 B2 B3 B4 B5 B6 B7

Duty

11 Undertake isolation and reinstatement of plant and equipment.

K2 K3 K4 K5 K6 K7 K8 K9 K10 K12 K13 K14 K15 K16 K17 K21 K24 K26 K28 K29 K30 K31 K32 K33 K34 K35
S1 S2 S4 S5 S6 S7 S8 S9 S10 S11 S12 S22 S23 S24 S25 S27 S28 S29 S30
B1 B2 B3 B4 B5 B6 B7

Duty

12 Deploy bespoke equipment for nuclear operations. For example, decommiss

K21 K22 K24 K25 K26 K27
S7 S18 S19 S20 S21
B7

DUTY**KSBS**

ioning
project.

Duty

13 Prepare
nuclear
waste for
disposal.

K21 K22 K23 K24 K25 K26 K27
S7 S18 S20 S21
B7

Duty

14 Handle,
dispose
and store
radiologica
l and
hazardous
materials
following
legislative
and
regulatory
guidance.

K21 K22 K23 K24 K25 K27
S7 S18 S19 S20 S21
B7

Duty

15 Conduct
waste
categorisat
ion in a
nuclear
environme
nt.

K22 K23 K24 K27
S7 S18 S20 S21
B7

Duty

16 Resolve
and report
nuclear
facilities
and
equipment
issues in
line with
operational
parameters
.

K2 K3 K4 K5 K6 K7 K8 K9 K10 K12 K13 K14 K15 K16 K19 K21 K24 K25 K
26 K28 K30 K31 K32 K33 K34 K35
S1 S2 S3 S4 S5 S6 S7 S9 S11 S12 S22 S24 S25 S26 S27 S28 S29
B1 B2 B3 B4 B5 B6 B7

Duty

17 Report
and
support the
progress of
work.

K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K12 K13 K14 K15 K16 K19 K21 K25 K2
6 K28 K29 K30 K31 K32 K33 K34 K35
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S22 S23 S24 S25 S26 S27 S28 S29
S30
B2 B3 B4 B5 B6 B7

DUTY

KSBS

Duty

18 Participate in continuous improvement activities.

K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K12 K13 K14 K15 K16 K19 K28 K29 K30 K31 K32 K33 K34 K35
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S22 S23 S24 S25 S26 S27 S28 S29 S30
B1 B2 B3 B4 B5 B6 B7

KSBS

Knowledge

K1: The nuclear industry function and role of nuclear operatives. Limits of autonomy and reporting channels.

K2: Awareness of nuclear safety: prevention of accidents, protection of people and the environment from radiation hazards.

K3: Security clearances and levels of personnel on nuclear licensed sites: basic clearance (BC), security clearance (SC) and developed vetting (DV) enhanced clearance.

K4: Awareness of radiological safety: protection of people and the environment from the harmful effects of ionising radiation and contamination.

K5: Regulatory and legislative guidance: Nuclear Installations Act (NIA); Ionising Radiation Regulations (IRR); Radiation (Emergency Preparedness and Public Information) Regulations (REPPPIR); International Commission of Radiological Protection (ICRP); Approved Code of Practice (ACOP).

K6: Safety expectations of those working on nuclear licensed sites: Confined spaces, Health and safety at work act. Control of Substances Hazardous to Health (COSHH). Manual handling. Personal Protective Equipment (PPE). Pressurised suits. Respiratory Protection Equipment (RPE). Situational awareness. Slips, trips and falls. Safety equipment: guards, signage, fire extinguishers. Safe systems of working. Working at height.

K7: Awareness of safety management systems: standard operating procedures (SOPs) and risk assessments. Principles of As Low As Reasonably Practicable (ALARP). Best Available Technique (BAT).

K8: Environment and sustainability regulations and guidance. Types of pollution and control measures in the nuclear sector, including spills and waste. Waste reduction and waste streams. Recycling and reuse. Sustainable use of equipment and materials.

K9: Awareness of how human performance and human factors affect nuclear safety culture.

K10: Radiation types: non-ionising and ionising radiation, alpha, beta, gamma, x-ray, and neutron. Atomic structure, criticality, fusion, and fission.

K11: Nuclear plant operations: nuclear fuel manufacture and storage, reprocessing of nuclear fuel, waste processing and storage.

K12: Radiological measurement and protection monitoring instruments, for plant and equipment.

K13: Emergency response radiological incident contingency plans: emergency environmental radiological releases; critical incident monitoring; forward control points (FCP) and access control points (ACP).

K14: Methods of interpreting and extracting information from technical drawings, data, and documentation.

K15: Minor maintenance activities for plant and equipment: radioactive discharges, waste management, environmental control.

K16: Plant and equipment configuration, isolation, and reinstatement techniques.

K17: Start up and shutdown procedures of plant and equipment. Sequencing of operations.

K18: Common abnormalities in plant and equipment operations and corrective action techniques.

K19: Capturing and recording of data techniques, indicating plant and equipment performance.

K20: Sampling processes, analysis and technical logs for nuclear systems and plant.

K21: Phases of plant and equipment lifecycles: commissioning, maintenance and operations, and decommissioning.

K22: Methods of minimisation, packaging, removal, and transfer of hazardous materials.

K23: Nuclear waste classification and categorisation techniques.

K24: Operating methods for standard or purpose-built equipment relevant to the nuclear operative's role and responsibilities.

K25: Methods of decontaminating plant or equipment.

K26: Methods of dismantling plant or equipment.

K27: Nuclear waste management solutions and safe disposal in line with types of radioactive waste.

K28: Problem solving techniques for common role related problems.

K29: Lifting and movement of loads: mechanical lifting equipment.

K30: Procedural documentation and reporting requirements of work in progress.

K31: Information technology and digital systems: cyber security, email, management information systems, word processing, work sharing platforms. General data protection regulation (GDPR).

K32: Principles of team working.

K33: Principles of equity, diversity, and inclusion in the workplace and the impact on their work.

K34: Verbal communication techniques.

K35: Written communication techniques.

Skills

S1: Comply with health and safety regulations and procedures.

S2: Select and use personal protective equipment (PPE) for nuclear operations. For example, use of respiratory protection equipment (RPE) and pressurised suits.

S3: Respond to changes in radiological conditions.

S4: Sets up and maintains work areas including alpha, beta, or gamma.

S5: Follow safety management systems. For example, standard operating procedures (SOPs), safe systems of working, risk assessments, best available technique (BAT) and, As Low As Reasonably Practicable (ALARP).

S6: Comply with environmental and sustainability regulations and procedures. For example, identify and segregate resources for reuse, recycling, and disposal.

S7: Apply human performance and human factors nuclear culture.

S8: Select and use radiological measurement and protection monitoring instruments: for example, smear paper, handheld radiation, and contamination rate meters, installed and portable air samplers.

S9: Comply with emergency response plans; carry out critical incident monitoring; use forward control points (FCP) and access control points (ACP) to respond and recover from nuclear incidents.

S10: Interpret and use technical documentation. For example, drawings and data.

S11: Conduct minor maintenance activities on plant and equipment. For example, safe removal of radioactive discharge, waste management, and spillages.

- S12:** Configure, isolate, and reinstate plant and equipment.
- S13:** Conduct sequential start up and shutdown of plant and equipment.
- S14:** Monitor and record data for plant indications or conditions of plant or equipment.
- S15:** Carry out surveillance of plant, or equipment and processes, to ensure safety critical operations.
- S16:** Identify abnormalities in plant or equipment operations and conduct corrective actions.
- S17:** Carry out sampling operations.
- S18:** Decontaminate radioactive plant or materials in readiness for storage and disposal.
- S19:** Dismantle plant or equipment.
- S20:** Remove and transfer hazardous materials to designated waste classification and storage locations.
- S21:** Operate standard, or purpose-built equipment relevant to the nuclear operative's role and responsibilities.
- S22:** Apply problem-solving techniques to common role related problems.
- S23:** Operate mechanical lifting equipment for moving loads.
- S24:** Use information technology and digital systems prioritising cyber security. Comply with GDPR, for example, digital communication.
- S25:** Apply team working principles.
- S26:** Follow equity, diversity, and inclusion rules.
- S27:** Record and document daily operations and work progress. For example, radiological protection monitoring data, isolation and reinstating of plant and equipment.
- S28:** Communicate verbally with colleagues and managers using industry terminology.
- S29:** Communicate in writing with colleagues and managers.
- S30:** Carry out and record learning and development activities.

Behaviours

- B1:** Put health and safety first.
- B2:** Take ownership of own work and responsibilities.
- B3:** Respond and adapt to changing work requests.
- B4:** Demonstrate team focus to meet team goals.
- B5:** Consider human performance and human factors principles in the workplace.
- B6:** Support an inclusive workplace, being respectful of different views.
- B7:** Seek learning and development opportunities, continual professional development (CPD).

Qualifications

English and Maths

English and maths qualifications form a mandatory part of all apprenticeships and must be completed before an apprentice can pass through gateway. The requirements are detailed in the current version of the [apprenticeship funding rules](#).

Does the apprenticeship need to include any mandated qualifications in addition to the above-mentioned English and maths qualifications?

No

Professional recognition

This standard aligns with the following professional recognition:

- Nuclear Institute for Associate

Consultation

Progression Routes

ST0154 Maintenance and operations engineering technician v1.2 L3
ST0380 Nuclear technician L5

Supporting uploads

Mandatory qualification uploads

Mandated degree evidence uploads

Professional body confirmation uploads

Involved employers

AWE, Cavendish Nuclear, Jacobs, Nuclear Restoration Services, Nuclear Waste Services, Nuvia, Sellafield Ltd

Subject sector area

4.1 Engineering