



Ohje

Laatija:

Lehtinen Anna

Tunnus:

Turvallisuus

Organisaatio:

Työ- ja  
ympäristöturvallisuus

Versio:

0 (43)

Laadittu:

10.04.2023

Kohde:

Yleinen

Sisäinen

Julkaistu:

Tarkenne:

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## Document information

**Title:** Safety requirements for Suppliers

**Allocation:** Yleinen

**Allocation extension:**

**Author/date:** Lehtinen Anna / 10.04.2023

**Inspected by/date:**

**Approved by/date:**

**Valid until:**

**Publishing location:**

**Partner:**

**Expired identifier:**

**Archive:**

**Appendices:**

**Distribution:**

## Title: Safety requirements for Suppliers

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## 1 Definitions

The **Employer with primary authority** is the TVO Group in the areas it has control over, unless otherwise agreed contractually.

**Developer** is a person or organisation undertaking a construction project or another party controlling or supervising a construction project whenever this differs from the Client.

**Client** is a representative of the TVO Group who has contractual relationship with the Supplier. The Client may also be the Developer.

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**Safety Culture** is that assembly of characteristics and attitudes in Suppliers organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance

TVO Group's Supplier **Code of Conduct** include general principles and guidelines for all our partners and suppliers to adhere in their dealings with TVO Group, their own employees and suppliers, as well as third parties such as authorities. The Code of Conduct is available <https://www.tvo.fi/yhteistyokumppanit.html> –sivulta.

**Supplier** is an actor in a project that is in a contractual relationship with the TVO Group. Suppliers include designers, builders and machinery and equipment suppliers, for example.

The **TVO Group** consists of Teollisuuden Voima Oyj (TVO), TVO Nuclear Services, Posiva Oy and Posiva Services Oy.

## 2 Purpose

The TVO Group (the Client) has an occupational safety and health management system and an environmental management system certified according to standards ISO 45001 and ISO 14001. The Supplier commits contractually to meeting the level of requirements in the ISO 45001 occupational safety and health management system and the ISO 14001 environmental management system. Furthermore, suppliers to the TVO Group shall, in all their activities, adhere to all valid laws, regulations and authority guidelines as well as the TVO Group's Code of Conduct. In construction projects, the TVO Group (the Client) will draw up a safety document and the main contractor will draw up a safety plan to complement these guidelines. All activities shall contribute to a high level of safety culture and adhere to the TVO Group's key principles of industrial safety (Life Saving Safety Rules).

The Supplier and its employees are provided with material containing the Client's industrial safety instructions in conjunction with the induction training, as well as other necessary industrial safety instructions depending on the nature of the work.

The Supplier shall provide the Client with all the requested information related to the management of industrial safety, environmental management and the activities themselves, and perform audits/inspections in order to verify compliance. The Client has the right to perform similar audits

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at the worksites. Any actions by the Supplier and their subcontractors that are done in order to ensure compliance are included in the purchase price. It is the duty of the Supplier to ensure that the subcontractors have been made aware of and inducted in these requirements. The Supplier is responsible for both their own employees and any possible subcontractors adhering to the agreement as well as laws and regulations, and for supervising their adherence, intervening if necessary and rectifying any possible shortcomings without delay.

### 3 Application

This procedure is applied to managing the safety-related aspects and risks of the Olkiluoto plant site. The TVO Group's target is that employees have no accidents, injuries or environmental accidents. Suppliers and its suppliers as well as subcontractors shall commit to adhering to these principles and consider them in the planning of their activities.

### 4 Safety principles of the TVO Group

The safety principles of the TVO Group form the expectations for all activities and act as the basis for ensuring safety. They create the guidelines for safe activities and the continuous improvement of safety. Other, more detailed safety targets may also be set for specific projects and work scope activities.

The safety principles cover all activities and employees in the TVO Group, internally and externally. Together, we ensure the safety and functional prerequisites of our activities and electricity production as well as final disposal of the spent fuel.

The TVO Group is committed to offering a safe and healthy working environment to everyone working at Olkiluoto. The goal of the TVO Group's occupational health and safety activities is to be proactive in promoting health and industrial safety.

The Group maintains a good atmosphere and working conditions and ensures equal treatment. No form of harassment or bullying in the workplace is allowed in our operations.

The goal of every employee in terms of safety is to look after the safety of themselves and others. Safety considerations are integrated in a proactive manner into all activities.

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## 5 Access permit and information to be submitted to the Client

Only employees approved by the Client are entitled access to the Client's facilities and area. The Client will grant access permits to approved persons. Prerequisites for the granting of an access permit are as follows:

- Valid photo ID (passport or ID card)
- Passing of a security clearance carried out by the Finnish Security and Intelligence Service, performed as a concise clearance unless specific reasons exist
- Successful completion of the trainings separately specified by the Client.

Specific access areas and tasks also require the successful completion of training, induction or work instruction separately defined by the Client.

The Client will provide the Supplier with an access permit application form complete with appendices. The Supplier must fill in the form and the appendices and submit them back to the Client no later than six (6) weeks prior to the commencement of the work included in the scope of the assignment/ contract. The access permit application, its appendices and more detailed instructions can be found on the website <https://www.tvo.fi/en/index/partners.html>. Access permits are only valid for the duration of the agreed working period. Access permits must be kept visible and presented upon request. They must not be handed over to other persons. Access permits must be returned to the access permit office at the end of the working period. The Client is entitled to charge the Supplier a fee for any unreturned access permit according to their charging basis as revised from time to time.

### 5.1 Induction training

The induction training organized by the Client provides an overview of the operations carried out at the Olkiluoto nuclear site as well as of the performance of work in the Client's facilities and area. The induction training is divided in two parts. The general part is mandatory for everyone, while the radiation protection part is mandatory for persons working in the radiation controlled area of a nuclear facility. The training schedules for the general as well as radiation protection part of the induction training can be found on the website <https://www.tvo.fi/en/index/partners.html>. Refresher induction training is required once every three years. The training may also be retaken online; the links to the training are available on the website <https://www.tvo.fi/en/index/partners.html>. A printout of the course diploma must be presented when collecting the access permit from the access permit office.

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## 5.2 Security clearance

The Client will have a security clearance carried out on the employees specified by the Supplier in accordance with the Security Clearance Act, performed as a concise clearance unless specific reasons exist. The updated forms are available at <https://www.tvo.fi/en/index/partners.html>. The instructions for the completion and submittal of the forms are available at the address above. The Supplier shall submit the completed forms with appendices no later than six (6) weeks prior to the commencement of the work included in the scope of the assignment. The security clearance form must be personally signed by the employee. The security clearance is periodically renewed in accordance with the practice observed by the Client.

The Client is entitled to test the employee for drugs or alcohol during the working period in Olkiluoto.

The Client is entitled to immediately remove any person under the influence of alcohol or drugs or persons refusing to take the test from the Client's facilities and area.

## 6 Safety instructions

### 6.1 Consideration of human factors

Human performance play a key role in ensuring safety throughout the process, from work planning to implementation. Nuclear professionalism defines expectations for human performance and behaviour when working at a nuclear facility or in other tasks related to it. When put in place, there are many specific barriers, which can reduce the chances of an error occurring. It is important to assess the risks related to human performance and the organisation and to define the necessary actions (HU tools) as part of the planning and implementation of the work.

The basic HU tools used in the TVO Group are as follows:

- Pre-job briefing
- Peer verification
- Independent verification
- Verified communication (incl. phonetic alphabet)
- Post-job debrief

Self-checking (STAR) is an HU tool that helps individual employees focus on the task at hand. The employee examines the future activity and the

anticipated response in a conscious and purposeful manner before performing the task. This includes specific ways of thinking and working that have been developed in order to assist the employee in focusing on details immediately before starting work performance.



Risk management plays a key role in ensuring that the employees of both TVO Group and the Suppliers can work safely and receive the necessary information regarding any possible risks involved in the working conditions. This is ensured by means of training and the industrial safety document and plan included in the agreement. A separate, written risk assessment and method description shall be prepared for work involving a high risk. It is used to agree on the actions and qualification requirements necessary for performing the work safely. In addition to this, TVO utilises a work permit process and hazard identification on site, the goal of which is to plan and schedule work such that simultaneously occurring work does not cause danger and that the necessary process technical activities have been performed and secured before work is started.

The TVO Group's 5 key industrial safety guidelines provide the prerequisites for a successful work performance:

- **You are responsible for safety!**
  - A safe workday consists of an individual's responsible approach to work, where they understand and bear their responsibility for the safety of themselves and others.
  - It is important to continuously monitor your work environment and, if necessary, to intervene in the work and even interrupt it if it cannot be performed safely.
- **Identify the risks involved in your work.**
  - Risk-aware planning and decision-making are emphasised in everything we do, throughout all activities. Risk man-



agement allows us to ensure that matters have been considered from a sufficient number of perspectives and that all areas of safety are covered and the necessary measures have been defined.

- In high-risk work, follow the plans and work permits and ensure that you are qualified and trained for your duties.
- **Take care of your well-being.**
  - It is important to ensure the well-being of yourself and your colleagues. Well-being covers both mental and physical health.
  - The TVO Group maintains a good atmosphere and working conditions and ensures equal treatment.
- **Move safely:**
  - It is important to continuously monitor your work environment and surroundings in order to identify hazards. Conditions and situations may change when working on a shared worksite.
  - Hold the handrail when using the stairs.
  - Use only dedicated and safe walkways.
  - Walkways might be slippery during winter months, so special care should be taken and any unsafe conditions to be reported to the Client.
- **Use personal protection:**
  - Use the basic protective equipment and, if necessary, any work-specific protective equipment according to the provided instructions (see chapter 6.2).

The safety rules and procedures are presented in written form and they are binding to the project/contract; they are drawn up by the Developer for the construction and maintenance stages (Government Decree 205/2009, Section 8). The information in the safety rules and procedures is kept up to date throughout the project, and any changed information is shared to the various parties involved in the project as contractually agreed.

## 6.2 Use of personal protective equipment at the TVO Group's site

The Supplier shall provide its employees with personal protective equipment and clothing, such as a helmet (with chin strap), safety footwear (S3), high-visibility safety vest, eye protection, hearing protectors and safety gloves. Furthermore, the Supplier shall provide task-specific safety equipment as required.

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The Supplier and its subcontractors are responsible for preparing the instructions for the use of the protective equipment and the employer foremen shall ensure that the instructions are followed. The employee is responsible for using the equipment in accordance with the instructions and submitting it to maintenance. It is the employee's responsibility to visually inspect the operability of the protective equipment.

In the use of personal protective equipment, safety must be observed comprehensively, taking into account fire safety, radiation safety, electrical and environmental safety, foreign material exclusion and industrial safety. An employee's protective equipment must be suitable and necessary for the work.

A risk assessment is carried out for work, specifying the key hazards and risks resulting from them and defining the additional or replacement protective equipment required for the work.

The protective clothing and equipment specifically required for working in the radiation controlled area are provided by the Client (excluding hearing protectors and eye protection). Suppliersubcontractors are required to wear their own eye protection also in the radiation controlled area. In case of any questions regarding protective clothing and equipment, the Supplier can contact the email address [tyoturvallisuus@tvo.fi](mailto:tyoturvallisuus@tvo.fi).

The use of personal protective equipment also applies to drivers and other people temporarily visiting the worksite. The operators of working machinery shall wear the equipment listed above when outside of their machines. Working machinery refers to tanker trucks, tractors and cranes, for example.

Telephones may only be used inside a vehicle or machine while driving when using a hands free device. Using the telephone for purposes other than making phone calls is not allowed while driving. Supplier shall always adhere to the Client's minimum requirements for protective equipment. If a need arises to deviate from the requirements, a documented risk assessment shall be drawn up and submitted to the Client for approval.

It is necessary to use the specified personal protective equipment (PPE). Failure to wear the PPE must be intervened in, determining the reasons for non-compliance and attempting to rectify the situation. Continuous or repeated failure to wear the PPE is a safety violation that will be investigated case-specifically (see chapter 6.3).

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Icy conditions require special care when moving. In winter, during icy conditions, shoe spikes must always be worn on shoes, except when moving on designated access routes which are under winter maintenance. The spikes must be removed from the shoes when entering buildings.

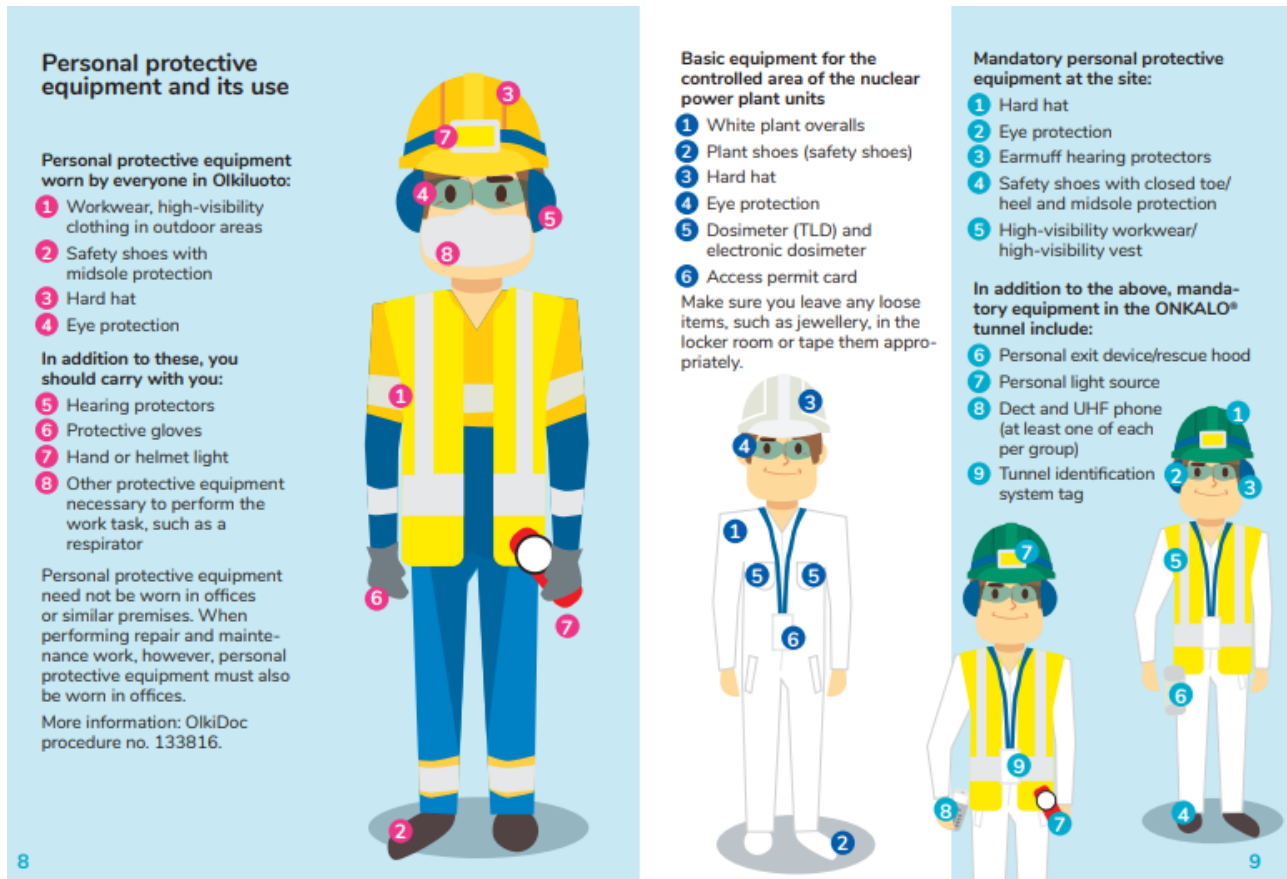
#### 6.2.1 Personal protective equipment in final disposal area

The personal protective equipment to be used outside the marked access routes of the final disposal area include a helmet, eye protection, reflective high-visibility jacket and enclosed safety shoes with anti-puncture mid-sole protection. The personnel must also carry hearing protection with them. In addition, protective equipment in accordance with the main contractor's instructions shall be used at the worksites.

When going underground, an exit device, a headlamp or handheld light and a tunnel detection system tag are also required in addition to the basic personal equipment. Underground, each working group must also carry at least one DECT and one UHF phone at all times. Vehicles used underground must also have their own tunnel detection system tag. Visitors and occasional workers at the disposal facility receive the necessary equipment from the security officer at the Posiva gate.

#### 6.2.2 Quality requirements for the personal protective equipment

All protective equipment must bear, in addition to the CE marking, the name or identifier of the manufacturer or authorised representative, identification of the product, size designation, markings and numbers of standards that the protective equipment conforms to, washing instructions and pictogram, as well as any protection classes and care markings.



## 1. HELMET EN 397

- Helmet with chin strap. The chin strap must be worn at the construction site, in the plant area and when performing work that involves a falling hazard. An EN 12492 compliant helmet must be worn in work involving a falling hazard.
- An EN 50365 compliant helmet must be worn in electrical work.

## 2. EYE PROTECTION EN 166

## 3. HEARING PROTECTION EN 352

## 4. SAFETY SHOES EN 20345:S3

- Safety shoes with anti-puncture midsole protection and a hard toe cap. Safety shoes must provide additional ESD protection if they are used in ATEX atmospheres.

## 5. SAFETY CLOTHING EN 13688

- Work outfit with long sleeves and legs. EN 20471 Class 2 compliant clothing must be worn at construction sites and when working outdoors. High-visibility clothing is mandatory at the project site and construction sites, for other work involving heavy traffic, or when working in the dark.

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- The safety clothing worn in electrical work must comply with EN 11612 Class A1 B1 C1 at a minimum. Furthermore, the protective clothing may comply with IEC 61482-2.
- The safety clothing worn in hot work must comply with EN 11612 Class A1 B1 C1 at a minimum.
- EN 1149-5 compliant safety clothing must be worn in ATEX atmospheres.

#### 6. SAFETY GLOVES EN 21420

- Safety gloves must provide additional ESD protection if they are used in ATEX atmospheres.
- EN 388 compliant if the work involves a risk of cuts.

**Higher level protection** or other types of protection, such as respirators, personal fall protection (harnesses), protective equipment for electrical work (EN ISO 50110-1) etc. must be worn according to the requirements of the work and the risks it entails.

### 6.3 Safety violations

The Supplier's and its subcontractors activities are monitored both during and after the work. Work performance and quality of the work is assessed, and the assessment will affect future agreements. If the activities do not conform to the requirements, corrective actions must be agreed on before the next order is placed.

Everyone has the duty to interrupt hazardous and unsafe work at the location/worksites when working in Olkiluoto.

If an employee fails to comply with the instructions or regulations provided by the Client, or endangers the safety of themselves or others, the Supplier is obliged to interrupt the work and as final option to remove the person from the Client's facilities and area in case other actions (as described below) are not sufficient to correct the situation. In such cases, the Client is always entitled to immediately remove the person in question from the Client's facilities and area. Further actions are determined according to the safety violation process that is described below.

Sanctions have been defined for actions in violation of the safety requirements. The practices are described in the TVO Group's procedure concerning safety violations. The safety violation process starts with an interview of the work management, the employee(s) committing the violation and the person observing the event, where the event is reviewed. Possible consequences may include, for example,

- coaching, guidance
- notice

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- warning
- termination of employment in accordance with the Employment Contracts Act (TVO Group employees)
- temporary or permanent removal of access rights (contractor employees)

### 6.3.1 Monetary consequences and fines

Financial consequences: If a Supplier employee repeatedly violates the safety regulations, the Supplier may be obligated to pay a fee of €1,000 to the Client. Similarly, if a Supplier neglects their duties and does not perform the requested corrections within a reasonable time (14 days) after having been notified of the deviation, the Client is entitled to take the necessary actions and collect the costs from the Supplier (e.g. machinery broken as a result of wilful or negligent operation, cleaning not performed).

After the processing by the Client Safety and Security organisations together with the responsible department supervisor, the analysis is submitted to the appropriate parties for information/action.

If there are repeatedly shortcoming/ safety violations in the operation of the Supplier or its subcontractors that degrade safety of the employees or the plant, the Client is entitled to audit the Suppliers or its subcontractor safety activities or the management of the Supplier or its subcontractor may be invited to a discussion on safety. The decision on these actions is made by the Client management in cooperation with the Safety and Security organisation, depending on the nature of the violation.

### 6.4 Reporting of occupational accidents and employee information

The Supplier shall report the following information to the Client regarding their own employees and any subcontractors:

- Employees and their qualifications
- Amount of workforce
- Monthly working hours
- Risks and hazards during the work
- Occupational accidents
- Accidents and hazards
- Safety observations
- Any other abnormal events (fires, leaks etc.)

The Supplier must report, without delay, to their own supervisor and to the contact person in charge of the work for TVO Group, any occupational

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accidents that have occurred in areas under the administration of TVO Group. The contact person shall further report the accident to the occupational safety and health organisation of the TVO Group and record it in the TVO Group's appropriate system.

Furthermore, the Supplier must report without delay any other abnormal incidents and injury or hazard situations that have occurred in areas under the administration of TVO Group: fires, leaks, near misses and safety observations shall be reported as quickly as possible or, at the latest, within 24 hours. The information and reporting shall be updated, if necessary, when more information is received on the events. The investigation of an occupational accident must be started immediately, and the first draft of the accident investigation shall be submitted within 7 days of the event. The final occupational accident investigation report shall be completed within 14 days of the event. The Supplier shall commit to implementing the agreed corrective actions and report the completion of the actions to the Client.

The Client will arrange a Safety Stand Down all occupational accidents leading to lost time mainly targeted towards the TVO Groups employees. This is an average of 15-minute Teams call or safety discussion at the worksite. The contractor's responsible manager is obligated to attend the event and to ensure that corresponding lessons from the occupational accident are communicated within their organisation.

#### 6.4.1 Pictorial identification, tax number and employee reporting in construction projects

The developer, the principal contractor and each individual employer are responsible for ensuring that everyone who works at the construction site wears a photo ID that also shows the tax number entered for that employee in the tax administration's tax number register. There must also be a list at the construction site of all workers and independent contractors working on the site. In addition to the above, the provisions of the Act on the Contractor's Obligations and Liability when Work is Contracted Out apply to the principal contractor and his sub-contractors. If an employer uses foreign labour, the relevant legislation must be complied with, and the terms and conditions of employment for the foreign employees (including pay) must be the same as for everyone employed in Finland.



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#### 6.4.2 Practices for substitutive work

The contractor shall have in place practices for offering the employee substitutive work or lighter work following an occupational accident, whenever possible. The employer, employee and medical personnel should discuss and agree on the applicability of substitutive/restricted work.

#### 6.5 Preparedness and action in relation to accidents and emergency situations

In case of accident or emergency, persons appointed by the TVO Group will be responsible for communication to the media.

Preparations must be made for accidents and hazardous situations in work performed in the plant area, a construction site and in off-site areas, and sufficient preparedness for first aid and rescue activities shall be maintained.

##### **Reporting an emergency:**

Call the emergency number **112**, remain calm and explain the following:

1. Who is calling (name, place where you are calling from and telephone number)
2. What has happened?
  - fire
  - traffic accident
  - occupational accident
  - attack of illness
  - oil/chemical spill
  - other rescue assignment
3. Where has the accident occurred?
4. Are there people in danger?
5. How has guidance been arranged?
6. Do not hang up until you are given permission to do so.

TVO Groups plant fire brigade may also be alerted by using the push button on a fire detector. However, please also call 112 on your DECT in this case.

When calling from a DECT, the call is routed to TVO Groups alarm centre.

When calling from a mobile phone, the call is routed to the emergency response centre in Pori. In this case, you must always state that you are calling from Olkiluoto.

The disposal facility has no GSM reception.

##### **Address of the location (Teollisuuden Voima Oyj)**



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Olkiluoto  
27160 EURAJOKI

**Address of the location (Posiva Oy, disposal facility)**

Liiklantie  
Olkiluoto  
27160 EURAJOKI

The TVO Group's buildings have an automatic fire detector system that will signal the alarm with bells or a siren. The automatic fire detector system will automatically report any starting fires to the Olkiluoto alarm centre. In some rooms with high noise levels, blinking lights will signal the fire alarm. When the fire detector system gives an alarm, you must leave the building and proceed to the nearest marked exit point (see chapter 6.6.).

At the nuclear facilities, fire alarms are announced over the public address system. Persons working at the disposal facility will receive fire alarms on their DECT phones in addition to the sound signals.

The construction site's practices in case of accidents and hazardous situations are described in more detail in the safety plan. It presents the instructions for hazardous situations and accidents as well as any possible specific rescue arrangements and routes. If necessary, the TVO Group fire brigade can provide instructions regarding the worksite's fire and rescue arrangements.

## 6.6 Exit instructions in case of fire:

When you hear the fire alarm or receive information of a fire alarm, act in a calm and collected manner.

Take the following actions immediately:

- Shut down/lock your computer or take your laptop with you.
- If possible, put on warm clothes, as you cannot know in advance how long you will be spending outside.
- When exiting, make sure that everyone else in the building is aware of the alarm and that they are also leaving.
- Close any doors and windows in order to prevent the fire from spreading.
- Exit the building via the **nearest marked safe exit route** and proceed outside to the exit point; using lifts is prohibited in an evacuation situation.
- The access card readers are not used in an evacuation situation.

- Report to the person in charge of your organisation or the exit point, or to their deputy. They are responsible for informing the fire brigade regarding whether all persons have left the building.
- Provide guidance to the fire brigade if necessary.
- Only go back indoors once the fire brigade or the responsible appointed person of the exit point has given permission to return safely.

NOTE! When the fire alarm bell rings, you do not go to the muster points listed in the emergency preparedness plan; instead, you go OUT of the building, to the marked exit point.

As a rule, you EXIT the radiation-controlled area via monitoring.



Picture: Exit point

Mustering in case of an emergency preparedness event:

PROCEED TO THE NEAREST MARKED MUSTER POINT  
AND USE YOUR ACCESS CARD ON THE TERMINAL AT  
THE MUSTER POINT

1. WAIT FOR INSTRUCTIONS FROM THE MUSTER POINT FOREPERSON



Picture: Muster point

The TVO Groups plant fire brigade acts as the first response unit in the Olkiluoto area. The plant fire brigade has the necessary equipment and training approved by the hospital district for performing first response operations. First response refers to first aid administered to patients who

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have been seriously injured or fallen ill, assessment of the patient's status, reporting on observations and starting treatment.

The Olkiluoto nuclear power plant and disposal facility for spent nuclear fuel are part of the Rauma territory of Satakunta rescue services.

## 7 Project planning and preparation stage

### 7.1 Consideration of industrial and environmental safety during the planning stage

The Supplier is responsible for considering the safety aspects as part of the planning work within the framework of the assignment and agreement. The Supplier is responsible for implementing the planning stage documentation according to the TVO Group's guidelines for the planning stage in question. TVO's industrial safety and health organisation (SH) reviews all the documents related to safety and the environment.

### 7.2 Personnel competence and qualifications

The Supplier shall only use employees and subcontractors with the competence, skills and experience required by law, the current tasks and the Client. Upon request, the Supplier shall present to the Client the organisation performing the work, the key persons within the organisation and their qualifications and permits concerning the work, including work-specific induction and its documentation. If the employee is missing the necessary qualifications, they cannot start the work before the Supplier has arranged the missing training at its own cost. If this causes a delay in the performance of the work, the Supplier is responsible for any delays as regards work performance.

The most common jobs requiring acquiring/demonstrating specific qualifications and, typically, a certificate of qualification are listed below. Some of the tasks also require training arranged by the Client for performing the work in question. In these jobs, the work supervisors shall also have sufficient experience in supervising similar work, and any possible qualifications required for it.

- Work inside confined spaces
- Work on high-voltage equipment, other electrical work
- Lifting and personnel hoisting, including work as a slinger
- Work involving a radiation risk
- Hot work
- Working at heights and work involving a falling hazard

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- Work involving scaffolding
- Work in explosive atmospheres
- Handling of hazardous chemicals
- Diving work
- Use of drones
- Disassembly work and work involving a risk of collapse
- Blasting work
- Asbestos work
- Forklift work
- Other tasks with qualification requirements

The Supplier shall have enough personnel appointed to the work scope who are fluent in Finnish or English in order to allow for communication between the organisations of the Supplier and its subcontractor and Client in the common workplace. In particular, the Supplier shall have personnel in work management positions who can communicate between the Client's and Supplier's employees, as necessary. If this requirement is not met, the Supplier shall provide an interpreter for the duration of the work who shall be present at the site during the work performance.

The Supplier shall have a sufficient amount of personnel with first-aid skills, however, at least one per work shift (a minimum of 5% of people with first-aid skills per work shift).

The Supplier shall ensure that the employees have no physical or psychological limitations or illnesses that jeopardise their ability to work or industrial safety. If necessary, the Supplier shall arrange the necessary health inspections for their employees and require this from their subcontractors. Health inspections shall be completed on the personnel according to the national requirements. Examples of work requiring special health inspections include working at locations with radiation hazards and work in hot and humid environments.

### 7.3 Work planning and risk management

Risk management shall be integral part of the planning and implementation of works, projects and contracts. It allows for systematically identifying risks and possibilities and assessing the possible impacts of the different alternatives on the implementation of the project. Furthermore, it is important to define the necessary actions for managing risks, and to follow their implementation.

The plans and risk assessments are to be kept up to date throughout the course of the project and reviewed when transitioning from one stage to

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another as well as whenever significant changes are made. The tasks for risk management are distributed between the Client and Supplier in accordance with the signed agreement.

The Supplier must notify the Client as well as other suppliers and employees of any hazards and required safety measures relating to work included in the scope of the assignment well in advance of the commencement/contract of the work in question.

#### 7.4 Preparing the worksite safety plans

The Supplier is responsible to plan the works so that those can be done safely. This is done by planning the work with method statement and risk assessment. The method statement and risk assessment is required to be submitted for the Client for review and comment.

The Supplier may use its own documentation in managing the works as long as it meets the Client minimum requirements and there are no conflicts with Client instructions. When defining which set of documentation is to be used, it should be selected the instructions ensuring the higher level of safety.

The Supplier and its subcontractors may use their own template for assessing the risk, if it is with good quality and there are no conflicts with the TVO Groups requirements for the risk assessments. The Supplier may also use the Granite risk assessment program to assess their risks if necessary with the support of TVO Groups contract person or health and safety organisation.

The method statement of the work must include a description of all tasks related to the work and the necessary measures to ensure that the task can be carried out safely. The method statement of the work (and the associated risk assessment) must include at least the following:

- Description of work coordination for the task, including the responsibilities and obligations of site supervisors.
- Work schedule.
- Descriptions of the different work phases **in sufficient detail** so that the reader understands how the work will be carried out. In addition to the method statement of the work, separate occupational safety plans (TTS) can be drawn up for high-risk work.
- If the work involves working at height, a fall protection plan must be included in the method statement, including descriptions of safe passage and safe work platforms (e.g. special platforms, walkways).

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- Protective measures against falling materials, such as preventing tools and debris from falling at the site where it affects the work of others.
- Other high-risk work, such as excavation work, work in closed and cramped spaces, electrical work, personnel lifting, other lifting and hauling.
- Information on the required equipment or special tools and, if necessary, their inspection records.
- Instructions on how to act in the event of a disturbance and in emergency situations.
- Transport and storage plan starting from the delivery of the load to the work site and its unloading and storage.
- Measures and protections to prevent other operators from being affected by the work.

**A risk assessment of the work is also carried out in connection with the method statement of the work.** Risk-reducing measures identified in the risk assessment are considered in the method statement.

The method statement of the work must be submitted to the Client for evaluation in good time, at least two weeks before starting the work. If the planned work affects other operators in the work site area, the client has the right to forward the necessary information in the method statement of the work.

If the method statement of the work changes during the performance of the work, the plan must be updated and the updated plan must be submitted to the client for approval.

The TVO Group also utilises a work permit system where safety instructions and permits that are binding to the Supplier may be issued.

## 8 Implementation stage

### 8.1 Work management and appointment of persons in charge

Unless otherwise agreed with the Client, the Supplier is responsible for the management of work included in the scope of the agreement. In case the Supplier is assigned responsibility for the management of work, the Supplier is responsible for the supervision of employees and other persons placed under the Supplier's management at the workplace. The Supplier must provide its supervisory staff with sufficient resources and time to enable the safe performance of the work and high-quality results. In the

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case that the equipment, parts, or supplies delivered to the Supplier for installation do not comply with the applicable quality requirements or other requirements, the Supplier must immediately notify the Client of the matter. The Supplier must undertake to equip the work site with the required warning signs and symbols as well as implement any required protective and preventive measures.

The coordination of different work and meetings concerning safety shall be considered as one area of operations. If necessary, the Supplier shall participate in these meeting and provide the necessary information for the purpose of coordinating work. When planning their own activities, the Supplier shall consider that Olkiluoto is a shared workplace where work must be coordinated and cooperation with the various actors in the area is required.

The Supplier is responsible for implementing the safety measures, following up on them and reporting them to the Client in accordance with the requirements set forth in the agreement documents and guidelines.

During inspection of the Developer or the Client or their representative may define project or contract-specific requirements for improving safety that the Supplier and its subcontractors shall take into account in their activities. Furthermore, the Supplier and its subcontractors have to adhere to any possible authority guidelines.

## 8.2 Initial review and pre-job briefing

The Supplier should familiarise themselves with the work site as required by the nature and scope of the assignment prior to the commencement of work. Prior to the commencement of work, a pre-job briefing must be held to ensure that all the prerequisites for starting the implementation of the assignment are met. Representatives of the Client and the Supplier will participate in the pre-job briefing.

The Suppliers work manager is responsible for holding the pre-job briefing concerning the work of different workgroups, and the Suppliers coordinating work manager or their representative (such as the modification owner or person responsible for plant introduction) is responsible for holding the pre-job briefing concerning work coordination. For work done in the main control room, the shift supervisor is responsible for holding the pre-job briefing.

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The pre-job briefing is used to verify the readiness of plans, machinery, equipment, materials and work areas, the prerequisites for safe work performance (incl. work method description risk and hazard assessment and list of persons familiarised with the work) and the completeness of all work-related documents, such as: - work permit - work order - performance instructions - instructions for safety measures and protection.

### 8.3 Handling of matters related to safety during the implementation stage

During the implementation stage and construction, the work assignments/project's risk management and safety matters are reviewed in meetings. In smaller work assignments/projects, risk management and safety matters can be discussed as a separate item in connection with worksite meetings and weekly meetings. In larger projects, separate meetings concerning safety and risk management are arranged in addition to the worksite meetings and weekly meetings. However, communication regarding safety matters shall be constant. The Supplier shall clearly bring up any risks caused by the work to other actors at Olkiluoto to enable the coordination of work tasks. The Supplier shall also consider similar information related to risks caused by other actors or the environment in the implementation of the work.

If the project is long in duration, annual safety and risk management follow-up meetings may be arranged before any work or commissioning stages that are significant in terms of safety. Furthermore, the Developer/Client may arrange other events related to safety for the Contractor and its subcontractor if necessary. These may be, for example, mornings/afternoons devoted to safety that discuss safety matters related to a specific theme, topical matters related to the safety of the project or changes in requirements. The mornings/afternoons may also include presentations from expert visitors.

### 8.4 Safety follow-up and supervision

The Supplier is responsible for planning their work, performing risk management, making the arrangements related to the work and supervising the safe implementation of the work. The Client reserves the right to verify that the plans made meet the requirements in the agreements and the legislation, and to require corrections if the plans or implementation do not correspond to the requirements. The Client also monitors the cooperation between the contractors as well as the implementation of occupational health and safety at the work site.



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Unless otherwise agreed with the Client, the Supplier is responsible for the management of work included in the scope of the agreement. In case the Supplier is assigned responsibility for the management of work, the Supplier is responsible for the supervision of employees and other persons placed under the Supplier's management at the workplace. The Supplier must provide its supervisory staff with sufficient resources and time to enable the safe performance of the work and high-quality results.

The Supplier is responsible for:

- Appointing responsible person for safety for the worksite/ work scope and to submit the information to Client.
- Ensuring, while the work is being executed, that the work is done in accordance with the agreement/order and in adherence with the agreed ways of working, work instructions and legislative requirements.
- Ensuring that the necessary inspections and walkdowns are performed at the site, both by them and in cooperation with the Client. Copies of the reports from the walkdowns, such as the results of the TR/MVR measurements, shall be submitted to the Client upon request. Any observed needs for repair and improvement must be attended to without unnecessary delays.
- Seeing to the induction of the employees in the work, the work location and the work methods.
- Ensuring that the employees receive sufficient information on the unsafe and hazardous factors of the work, that a hazard identification on site has been performed, and that the employees are adhering to the STAR principle in their work.
- Equipping the work site with the required warning signs and symbols as well as implementing any required protective and preventive measures.
- Ensuring that the tools used for the work are pursuant to requirements and suitable for the work in question, and that the necessary periodic inspections and commissioning inspections have been performed for them. The tools shall be equipped with required and valid inspection markings. Tools manual have to follow. For example as a general rule, the use of normal knives as tools is prohibited; other than safety knives it may only be accepted by means of a risk assessment and for a specific reason.

Before starting the work at the work area, the working group must go through the hazard identification on site and verify that there are no hazards or that the hazards are under control such that they do not pose any risk of accident. If a risk that will cause danger during work performance is identified at the work area, corrective measures in order to eliminate or

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reduce the risk must be taken before starting the work. In case the work stage, working group or conditions at the work area change, the form “Hazard identification on site” must be filled in again.

#### 8.4.1 Hazard identification on site

##### What this is about

Hazard identification on site is an assessment that aims to form an exact understanding of the key indicators, the condition of the system/equipment, the working environment, hazards and even the team members.

##### Why this is important

As employees spend a sufficient amount of time familiarising themselves with the immediate work area, they will more easily establish a healthy sense of uncertainty that promotes a questioning attitude and elevates situational awareness.

Work environments can change, which means that a systematic assessment of hazards on site in order to observe changes or abnormal situations is a key part of successful human activity. Specific information and an understanding of the information that is relevant in terms of the work environment guide the decisions and actions of the individual. Systematic hazard identification supports interrupting work in case of uncertainty regarding ways of working, which is desirable.

##### When it is used

A review of the worksite is performed for all tasks, from the most simple to the most complicated, as follows:

- Before starting work at any worksite and before starting any new task
- When returning from breaks/lunch
- At the start of a new workday
- Whenever conditions change at the worksite
- During plant walkdowns.

All employees shall be aware of the risk assessment performed for the worksite. If you are unsure as to whether a risk assessment has been performed, contact your supervisor or the person in charge of the worksite.

##### How to act

Perform the **hazard identification on site**.

- Effective worksite reviews use a 360-degree approach. Look up, down, behind, inside and below to make sure that all possible risks are assessed.

- Study the worksite for a few minutes by walking around the work area and viewing it and its surroundings before starting the work. Make sure that all employees at the site are aware of the observations made during the review.
- Discuss unexpected hazards or conditions and the necessary precautions with the other employees and your supervisor.
- Eliminate hazards, install the necessary defences or draw-up contingency plans before starting the task.

### General observations

A careful worksite review lasts for as long as it takes for the employee to form an exact understanding of the critical indicators, the condition of the system/equipment, the work environment, hazards and roles and responsibilities. When sufficient time is used for the familiarisation with the immediate work area, people will more easily form a picture of the hazards present at the workplace, which allows for better preparation in order to prevent human errors and occupational accidents. You are expected to be aware of any significant matters discovered in the worksite review.

The supervisor shall supervise the performance of the hazard identification on site.

The completed hazard identification forms shall be submitted to the supervisor, who will then record any areas for improvement in Kelpo, each as a separate observation. The supervisor may store the forms used for hazard identification in order to refer to them if needed. During annual outages, the forms are submitted to industrial safety.

## 8.5 Cleanliness and tidiness

The Supplier must maintain a level of cleanliness and tidiness in its working area as required by the Client. The Supplier must pay particular attention to ensuring that no impurities or foreign material can enter the Client's systems or processes that are in operation. The Client is responsible for taking care of the general cleaning of the facilities. The Supplier shall take care of any waste and materials generated in conjunction with the assignment. The Supplier shall sort the waste generated in conjunction with the work as specified in the Client's waste handling instructions and take the waste to the sorting stations specified by the Client. The Supplier shall draw up a waste management plan.

A transit document shall be drawn up for the following waste types:

- hazardous waste
- septage and cesspool sludge

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- sludge from sand and grease traps
- construction waste and rubble
- contaminated soil

In case the Supplier fails to maintain cleanliness and tidiness, the Client is entitled to have another company perform the work in question, or perform the work themselves, at the expense of the Supplier.

A procedure has been created in collaboration with the waste management provider that describes the practices for waste management and waste reporting in the Olkiluoto nuclear power plant area.

## 8.6 Machinery and equipment

The Supplier may only use machinery and equipment that meets the requirements of the valid legislation and has been inspected and approved by the Client in the Client's facilities or area. No separate approval by the Client is required for using hand tools equipped with CE markings at the worksite.

The Supplier must label Supplier's machinery, equipment and materials with such signs and markings that their owner can be easily identified. The Supplier must obtain the Client's approval for any electrical hand tools and extension cords prior to using them at the nuclear facility. Only the Client is allowed to make the separate installation connections required by electrical equipment. Unless otherwise agreed, the Supplier acquires all tools required for the fulfilment of an assignment.

Utilisation of the Client's tool warehouse services is to be agreed upon on a case-by-case basis. The Client's machinery, equipment or materials may not be removed from the Client's facilities or area. In case the machinery or equipment placed at the Supplier's disposal by the Client indicates any failures or defects, the Supplier must immediately notify the Client of the matter. The Supplier will be charged for any unreturned equipment, tools, or accessories lent or leased out to the Supplier by the Client. The amount charged will be the purchase price paid by the Client plus handling costs at the rate of 20%. Alternatively, the Supplier may provide the Client with corresponding new equipment.

Correspondingly, the Supplier may, on a similar basis, charge the Client for any equipment or tools that must be left with the Client due to radioactive contamination. The requirements placed on the vehicles and machinery used for the Client's operations include passing weekly condition checks. The vehicles used in the underground parts of the disposal facility

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must be equipped with first response fire-fighting and first aid capabilities as well as instructions for accident situations.

## 8.7 Materials, supplies and chemicals to be used in the Client's facilities and area

The materials and supplies used by the Supplier while carrying out the assignment must comply with the relevant plans and agreements. The Supplier shall have all installation materials and supplies approved in accordance with the Client's goods acceptance procedure. No unapproved installation materials and supplies may be brought to the installation site. The acceptance inspection is performed in the Client's goods reception facilities at Olkiluoto. Any exceptions to this procedure must be agreed upon in advance with the Client's quality inspection representative. The Supplier must have any chemicals to be used approved by the Client in accordance with the Client's instructions on safety-classified materials. No unapproved substances or chemicals may be brought to the plant area. All materials to be used in the construction of underground facilities and in underground research and development work must be approved by the Client before they are taken into use. No unapproved materials may be brought to the underground parts of the disposal facility. The Client's acceptance inspection staff performs the acceptance inspection and provides the approval labels for the construction materials to be used in the construction of underground facilities. All fuels and lubricants used in the machinery and equipment to be operated in the underground facilities, as well as other substances required for their operation, must be of an approved type. The Supplier shall obtain the Client's approval for any substances to be used in the implementation of the work that are not mentioned in the plans in accordance with the Client's instructions on safety-classified materials. For any chemicals required for the operation of machinery, vehicles and equipment, the permit for the use of a safety-classified material shall be applied for by the organisation or Supplier responsible for the use of the machinery in question.

### Handling of combustible liquids and gases:

- A maximum of 5 litres of combustible liquids may be stored at the workstation; no unnecessary chemicals are allowed.
- Any combustible liquids and chemicals must be returned to the cabinet for chemicals or combustible liquids at the end of the workday.
- At nuclear facilities, the chemical cabinets are yellow and the cabinets for combustible liquids are red fire protection cabinets.
- The 120 cm wide combustible liquid cabinet (red) may be used to store a maximum of 100 litres, the 60 cm wide cabinet may be used to store a maximum of 50 litres.

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- Sheet metal cabinets equipped with drip trays are used in the other buildings.

#### Welding gas cylinders:

- Welding gas cylinders shall be placed in the appropriate cylinder trolleys and their fastening shall be ensured.
- The welding gas trolleys shall be equipped with a 6-kg powder fire extinguisher and a safety glove made from non-combustible material.
- The gas hoses and equipment shall be fitted with safety devices as required by the applicable regulations.
- Gas equipment used in the Olkiluoto area shall bear valid approval from TVO.
- The cylinders shall be stored upright and in a manner where they cannot tip over (chain locks).
- The valves on gas cylinders shall be closed whenever the cylinders are not used.
- Gas cylinders must not be stored indoors (outside of the gas storage)

## 8.8 Work permit practice and work causing a specific hazard

The TVO Group uses a work permit practice that is managed with the work management system (TTJ).

There are also several work tasks and locations involving specific hazards in the Olkiluoto area. These hazards shall be identified and considered as part of the Supplier's risk assessments, the necessary safety measures shall be defined and it shall be ensured that those participating in the work have the necessary qualifications. Key high-risk work tasks are described below. Additional information on hazards and risks is also provided during the induction training and other trainings, and in the safety document and safety plan drawn up for construction projects.

## 8.9 Working at heights and scaffolding

Working at heights and in other locations involving a falling hazard requires careful work planning. According to the industrial safety legislation (Government Decree 403/2008), working at locations involving a falling hazard constitutes high-risk work, and it shall be performed only if the risk assessment verifies that no other method of work performance, constituting a lesser hazard, is possible.

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If this is not possible, efforts are made to prevent the falling hazard by technical means, that is, by utilising fall protection structures and equipment, such as scaffolding and guard rails. If the decision is made to block access to the area with a falling hazard, the area shall be marked off 1.5 metres from the edge of the opening or pit. The final option for preventing the hazard is the use of personal fall protection. The use of personal fall protection in TVO Groups area requires completing TVO's training "Fall arresters and their use" (520/032), or the person shall otherwise demonstrate their proficiency in the use of personal fall protection.

Erecting scaffolding that requires specific competences necessitates construction planning and appropriate qualifications from the planner (Ministry of Social Affairs and Health decision 156/1998).

All scaffolding and any modifications implemented thereon in the course of the work must comply with the Client's requirements and the valid regulations pertaining to scaffolding. The Supplier is responsible for the condition and acceptability of all scaffolding it erects. All scaffolding shall be inspected before their commissioning and otherwise whenever necessary. Weekly inspections shall also be performed on them. The inspection may be performed by a qualified person. Scaffolding shall be marked with scaffolding labels.

Any work platforms shall be suited for their purpose, safe and sufficiently wide; the minimum width of a work platform shall be 0.6 m. Narrower work platforms may only be used in exceptional situations where space constraints do not allow other solutions.

- The work platform shall be of adequately sturdy construction, and it must not bend detrimentally due to the effects of loads caused by use.
- The strength, rigidity and stability of the work platform shall be supported by the frame of the scaffolding or another structure.
- The work platform may not have gaps wider than 30 mm.
- The work platform may not have unprotected openings.
- The surface of the work platform may not be slippery (e.g. film-coated plywood).
- The structure of the work platform must not cause a tripping hazard. If the scaffolding has protrusions or low points that cause a hazard, they must be equipped with high-visibility markings.
- The parts of the work platform shall be fastened in a manner where they will not rise or move due to the effects of the load.
- The recommended clearance between two stacked work platforms is 1.9 metres.



- **The free edges of work platforms shall be equipped with guard rails whenever falling causes special danger, and always when the fall height exceeds 0.5 metres.**
- If the distance between the scaffolding's work platform and wall exceeds 250 mm, a guard rail must also be constructed on the side of the wall.
- Work platforms must always be equipped with toe boards if the height is more than 2 metres or if work is performed below the work platform.
- No persons are allowed on the work platforms of movable scaffolding while it is being moved. Materials that may drop or cause other hazards must be removed from the work platform while the scaffolding is being moved.
- **No unauthorised changes to the scaffolding are allowed.**

**A scaffold utilisation plan** is drawn up if the scaffolding, due to its substantial height or size, its potentially hazardous location, specific purpose or other similar factor has an essential impact on the use of the worksite. The utilisation plan includes the required drawings and instructions concerning the safe placement of the scaffolding at the worksite and its suitability for the rest of the work environment.

The Supplier is responsible for ensuring that no work is performed on unapproved, unfinished or defective scaffolding.

## 8.10 Working in confined spaces

Working in confined spaces constitutes a special hazard, and it always requires a work permit and separate training. In work involving ordinary risks, work management is responsible for ensuring that safety measures are completed before work is started. At locations involving specific risks, the fire brigade and industrial safety experts will help to implement the safety measures before work is started.

Confined space work permit is a means of ensuring safe work performance and information transfer between the control room, management at the worksite and the people working inside the confined space. Work in a confined space always requires a separate work permit that explains in detail the work for which the work permit has been drawn up and defines the necessary actions for securing, draining, safety and protection.

A confined space is defined as any space where both entrance and exit are restricted, where changes in air quality or physical changes may occur that



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are hazardous to life, where continuous ventilation does not exist and which is not designed for continued stay .

In the Olkiluoto area, the following types of locations have been identified as confined spaces: tank, valve or pump casing, pipe, well, heat exchanger, pool, canal, pipe rail, deposition hole or any other location that matches the definition. Work in the vent stack is performed on a per-case basis according to the occupational health and safety instructions attached to the work.

Excavations deeper than 1.2 m are also classified as confined spaces unless otherwise determined on the basis of risk assessment.

The watchperson shall take TVO's training concerning work in confined spaces (duration approx. 1 h). Participation in the training is recorded in the TAITO system.

## 8.11 Lifting

Everyone participating in the lifting shall have valid completion of the training "General lifting training, module 1a". There are also training requirements specific to roles, equipment and locations.

When planning the lifting and choosing the lifting equipment, work must be planned carefully in order to perform the lifting without jeopardising the safety of workers. Particular care must be taken to avoid unnecessary access to the area under the load or to the danger zone during the lifting. The lifting areas shall be limited and, whenever they cannot be reliably limited, it must be ensured that no persons can enter the lifting area. Everyone shall adhere to the limitations, and no passage through the lifting area is allowed without permission. The limitations of the lifting area shall be removed when the lifting has been completed and there is no danger to any outside persons.

The Supplier's lifting accessories and practices shall meet the valid requirements, including the Client's safety requirements. The Supplier shall prepare a written lifting plan for each lifting and transport operation with significance to safety (heavy lifting, lifting of large objects, turning of objects using a crane, diagonal lifting, combined lifting operations using two cranes, simultaneous use of two cranes, etc.).

For demanding lifting operations, the Supplier shall draw up a separate lifting plan that shall be submitted to the Client for approval. Everyone

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participating in the lifting work shall be qualified. The necessary qualification certificates and the employer's written permissions/list of qualified employees shall be presented upon request in the contractor's pre-job briefing, during induction or at the latest before work is started.

The key tasks related to an individual lifting operation are the crane operator, slinger, signaller and lifting work supervisor. In a lifting operation, the crane operator's, slinger's and signaller's tasks may be assigned to one or more persons, depending on the lifting operation, provided that the requirements for qualifications and safety can nevertheless be met. During the pre-job briefing, the responsibilities can also be distributed in another manner according to the lifting task and the personnel participating in it. In this case, the responsibilities are recorded in the pre-job briefing memorandum, work order or lifting plan.

## 8.12 Personnel lifting

Personnel lifting is only allowed using lifting equipment specifically manufactured for the purpose. Only personnel lifting equipment inspected and approved by the Client may be used at the worksite. The valid legislation and safety instructions provided by the Client are to be followed in all personnel lifting operations. The Supplier must ensure that personnel lifting equipment is only operated by employees with a written permit to operate personnel lifting equipment granted by their employer, and that the employees have the required skills and capabilities to operate their work equipment. All employees participating in personnel lifting operations must be of age (18 years or older).

## 8.13 Hot work, fire safety and work generating dust

All employees performing hot work must have a valid hot work card, and they must be familiar with TVO's hot work plan and appendices 1 to 6 in its instructions. The work supervisor or representative from TVO or Posiva is responsible for familiarising the subcontractor with TVO's fire safety practices. Unambiguous instructions shall be provided for hot work and other work involving a fire risk, and the work shall be supervised. The procedure is also followed when opening structures related to fire compartmentation, performing work that generates dust, introducing combustible material to the plant and working inside EX spaces.

Olkiluoto adheres to hot work fire safety standard SFS 5900 and roofing and waterproofing work fire safety standard SFS 5991.

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The Supplier shall notify the Client of any work involving a fire hazard prior to the commencement of the work. The performance of such work requires written hot work instructions and a hot work permit. In case the performance of the work involves the use of chemicals, liquids or gases classified as combustible, the Supplier shall agree with the Client on their storage locations and the volumes to be used. The Supplier is responsible for supervising any hot work and guarding the hot work site after the work in accordance with the granted hot work permit. Work that may generate dust, steam or other similar conditions must be performed in adherence to the dust work permit granted by TVO's plant fire brigade.

The dust or similar material caused by the work may cause an erroneous fire alarm, or the fire detectors may become soiled. In permit matters, please contact the plant fire brigade in the SP competence centre, telephone: 6899.

#### 8.14 Electrical work

Electrical work must adhere to electrical safety legislation and the Client's instructions for electrical work. Electrical work refers to repair and service work on electrical devices and the construction, repair and service of electrical equipment.

Persons performing electrical work or operations tasks shall be familiar with the task and its requirements pertaining to electrical safety, or they shall have received the necessary instruction.

Persons participating in the work shall be qualified for electrical and/or I&C work according to the Ministry of Trade and Industry's decision 516/96 regarding work in the electrical field.

Persons performing the work shall have received familiarisation or instruction related to the task and its requirements pertaining to electrical safety; in case of unclear matters, TVO's work management shall be contacted.

In addition to professional qualifications, which includes the qualification to act as the overseer for industrial safety measures related to electricity, they shall have completed the electrical work safety course pursuant to the SFS 6002 standard and emergency first-aid training.

Persons may be appointed as qualified electrical and/or I&C work supervisors or technicians once both parties have established that the person has sufficient theoretical knowledge and practical working skill.

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Each supervisor or overseer acts as the person in charge of the use of electrical equipment and the work at the worksite, according to the organisation.

The work order defines the following for each job:

- coordinating supervisor
- supervisor.

It is the duty of the supervisor to ensure that an overseer of electrical safety has been appointed for each worksite.

For contract work, an agreement on electrical safety is drawn up that defines the responsible individuals.

Non-fixed electrical devices used in the plant area shall be approved and labelled by TVO Groups electrical workshop.

The following shall be considered when working in electrical rooms:

- No waste collection bins are stored in electrical rooms. Any waste generated during the work and any collection bins are removed from the electrical rooms once the work is complete.
- Efforts are made to avoid loose furniture, such as tables and chairs. If necessary, a work platform with a pipe frame and metal surface and a chair with a pipe frame and plywood surfaces are allowed for the duration of the work.
- No items may be stored on top of the cable trays.
- The use of movable halogen lights is prohibited.
- No combustible material may be placed on top of electric radiators to dry and the radiators must not be covered; minimum safe distance of 100 mm.
- The area in front of electrical switchboards must be kept clear (minimum distance of 1.0 m).

## 8.15 Radiation protection

“Working in conditions where radiation is present” refers to work performed in the radiation-controlled area. Category A radiation workers shall be subjected to annual health checks and follow-up checks prior to the commencement of work in the Client’s facilities or area. The Client will provide the Supplier with a list of the persons whose work is classified as category A radiation work. The Supplier must submit documents indicating the suitability of these persons for category A radiation work to the Client prior to the commencement of the work. Information regarding the

suitability of the persons for category A radiation work (copy of statement by the physician responsible for the health inspections of employees performing radiation work) and radiation dose information from the previous five (5) years for foreign nationals shall be submitted to the Client's radiation monitoring organisation prior to the commencement of work. If required during the performance of the assignment, the Client will refer persons to additional health checks and assume liability for the associated costs. The Client is not liable for any costs arising from further treatment, medication or rehabilitation.

## 8.16 Opening structures related to fire compartmentation

When opening structures related to fire compartmentation, such as cable or pipe penetrations or compartment hatches, or whenever a fire door needs to be left open for a work task, the performance of the work requires a permit for opening fire compartmentation from TVO Groups plant fire brigade. Any opened structures must be temporarily sealed using fire-proof bags, for example. In permit matters, please call **6899**.

The penetration hatches are intended for use as the primary cable and hose route when routing them through fire compartment walls. The use of the penetration hatches does not require a written permit process, as the penetration hatches have built-in fire protection and fire-proof bags are not required.

## 8.17 Spaces with explosive atmospheres

Maintenance work performed in spaces with explosive atmospheres (ATEX) requires a specific work permit for spaces with explosive atmospheres. In permit matters, please call **6899**.



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Figure 4: Spaces with explosive atmospheres bear this marking.

## 8.18 Bringing and storage of combustible material inside nuclear facility

A permit is required for bringing and for storage of combustible material at a nuclear facility. Taking additional combustible material to the plant units without a permission is prohibited. A permit drawn up and approved by persons from TVO's plant fire brigade is required for taking additional combustible material to the plant.

The purpose of the procedure is to guide the safe storage of materials and supplies at the nuclear power plant and to reduce fire loads at nuclear facilities.

Combustible material causes additional fire load in the rooms. Reducing combustible material is one way to reduce the risk of fires igniting and spreading. Additional fire load at nuclear facilities is caused by various packaging materials, scaffolding parts made of combustible material, wooden toolboxes, chemicals, etc. The introduction of packaging material to nuclear facilities shall be avoided in order to improve fire safety and to reduce the amount of waste in the radiation controlled area. Any extraneous and unnecessary fire load shall be removed immediately.

The permanent storage of items is only allowed at approved and marked storage facilities or storage locations. These include rooms dedicated for storage and other marked storage locations along corridors, for example.

Each storage facility or storage location has a defined purpose, an appointed responsible organisation and individual, and the storage areas are marked with signs. The sign also has any possible usage limitations concerning the storage (e.g. "Only allowed for non-combustible supplies"). The sign is posted on the door of the room or the wall of the storage area.

In the disposal facility, a maximum of one week's worth of construction supplies may be stored. In this case, the storage locations are agreed with the Client's worksite supervision. Storage locations are marked with signs. Waste generated during construction must be removed from the underground facilities each day.

Combustible material shall be replaced with non-combustible equivalents whenever possible. Only containers made from non-combustible material are used as waste collection bins.

## 9 Quality control

### 9.1 Quality

The Client applies a quality management system based on the ISO 9001 standard in all its operations. The Supplier shall commit to meeting the criteria level of the ISO 9001 quality management system. While carrying out the assignment, the Supplier shall comply with the general quality requirements presented in the order and contract documents as well as the quality management procedures separately designed for the assignment by the Supplier and approved by the Client.

Furthermore, a project-specific project and quality plan is prepared for each project, which describes the project's special characteristics, practices and implementation methods, instructions and matters to consider. The project and quality plan shall follow Guides published by the Finnish Radiation Protection Center (STUK) YVL A.3 and B.1 as well as TVO Groups ISO 9001:2015-compliant quality management system, and it shall be prepared according to the principles of ISO-SFS 10005.

The aim of the project's quality management is that the project's end product meets the requirements and targets specified for it in advance by the authorities and the Client. The requirements and targets include the following, among others:

- Technical requirements
- Qualification and licencing requirements

The Client follows the adherence to the quality requirements, standards, environmental conditions, functional requirements, and requirements resulting from the location of use with the review process described below: The project's key work stages and their results are reviewed according to the information in the project-specific section at the end of each stage before transitioning to the following stage. The reviews ensure a sufficient level of information and detail in planning as the project progresses into a new stage. The review's content, performers and acceptance criteria as well as the applicable decision-making processes and responsibilities shall follow the investment process.

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## 9.2 Deviations

In case the Supplier detects a deviation in its own operations or products or the operations or products of another party, the Supplier shall notify the Client of the matter without delay. The Supplier shall report the deviation to the Client's contact person supervising the work.

TVO's procedure for processing of deviations and other observations will be followed in the processing of deviations during the project. Deviations can be classified as significant or minor deviations. Significant deviations are processed according to the procedure, whereas minor deviations are processed by the project group. Significance is determined based on the deviation's consequences, and the assessment must consider the technical requirements as well as requirements for quality and safety. A record is prepared for the assessment and the corrective actions, and the record must be processed by the project group, at a minimum.

Deviations that occur at Suppliers must be reported to Client, and STUK's approval shall be sought for some of the deviations according to the authority requirements, as needed.

## 9.3 Definitions:

*Event:* In this procedure, "Event" refers to a deviation or another observation.

*Deviation:* Failure to meet a set requirement. The requirement may be an internal one, such as one presented in a procedure, or it can be a requirement provided for by legislation or authority regulations, or a requirement presented in a standard which the operations are subject to. Examples of deviations included in the scope of this procedure are presented in Appendix 1.

*Matter requiring attention:* A matter that requires actions and follow-up but that does not comprise a deviation. Matters requiring attention can include suggested improvements, observations made in internal audits, recommendations from inspections by authorities, actions decided on as a result of various assessments (e.g. assessment of the effectiveness and scope of the management system or a safety culture self-assessment) and other matters whose implementation requires a longer period (including WANO AFIs).

*Safety observation:* Any hazard, issue or defect. An observation may be related to the process, the organisation's activities, industrial safety, fire safety, environmental aspects or foreign material exclusion.



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*Occupational accident:* A sudden and unexpected event that results in a bodily injury or illness. It can occur during work or due to conditions caused by work at the workplace, in an area included in the workplace, when the employee is on the employer's business (e.g. travelling between two locations) or when rescuing the employer's property or saving human lives in connection with work activities.

*Environmental damage:* Damage due to a sudden event that results in the release of an environmentally harmful substance into the environment.

*Supplier deviation:* A deviation reported by TVO's Supplier (e.g. a deviation that occurs during manufacturing) or a deviation detected during the acceptance of goods.

*Supplier audit deviation:* An observation made during an audit that Client has conducted or ordered and that requires action on behalf of the supplier.

*Positive safety observation or good practice:* A good practice or approach that leads to positive results. Good practices are distributed to organisations as recommended by the CAP group.

*Observation on information security and physical security arrangements:* An observation related to information security or physical security arrangements.

*Interactive observation:* A work performance and event reporting tool for managers.

*Internal auditing:* An observation made during an internal audit.

*External expression of concern:* A concern expressed by parties outside TVO, such as residents of nearby areas, concerning the activities at the Olkiluoto nuclear power plant.

## 9.4 Examples of deviations

Below are examples of deviations included in the scope of this procedure. After each example, there is the system in which the type of deviation is processed and reported. The list does not specify any separate documents to be prepared for the type of deviation.

- Deviations observed in connection with repairs and modifications during operation (Work Management System, TTJ)

- Deviations observed during the acceptance inspections of equipment and spare parts (Kelpo)
- Procurement complaints (158183)
- Deviations observed during the manufacture and installation of structures (Kelpo)
- Deviations observed during the use of chemicals or other supplies or materials (Kelpo)
- Deviations observed during the manufacture and acceptance inspections of fuel (Kelpo)
- Deviations from approved implementation, inspection or testing programmes (Kelpo)
- Deviations from the practices presented in approved procedures (Kelpo)
- Going below or under TechSpecs limits; exceeding action limits (Kelpo)
- Deviations from TechSpecs conditions (Kelpo)
- Abnormal radiation protection events (Kelpo)
- Environmental deviations and damage (Kelpo)
- Fuel handling deviations (Kelpo)
- Calibration deviations (CMX, Työkalu)
- Temporary repairs and cross couplings (Work Management System, TTJ)
- Temporary changes of measurement point limit values (Kelpo)
- Operational disturbances (Kelpo)
- Events subject to special reporting (Kelpo)
- Authorities' comments in letters, inspections or records (Teha)
- Deviations observed during internal or external audits (Kelpo)
- TVO's processing of deviation reports prepared by manufacturers and Suppliers (Kelpo)
- Reporting of defects observed at the plants (Work Management System, TTJ)
- Deviations observed during periodic tests (MAK / Enkku)
- Deviations observed during testing and inspection activities (Kelpo)
- Significant defects and observations reported during annual out-ages (Kelpo)
- Reporting of safety observations (Kelpo)
- Reporting of matters requiring attention (Kelpo)
- Recommendations for changing practices or the plant structures approved for implementation by the Operating Experience Group (Kelpo)
- Recommendations by the Safety Group (Kelpo)
- Conditional delivery of supplies to the plant (Kelpo)
- Product or document forgeries detected during the acceptance of goods (Kelpo)

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## 10 Management of environmental aspects

The Client applies an environmental management system based on the ISO 14001 standard in all its operations. The Supplier commits to meeting the criteria level of the ISO 14001 environmental management system. Furthermore, the Supplier shall notify the Client's environmental specialist, without delay, of any abnormal incidents that have occurred in the Supplier's working area, such as environmental damage or hazard situations.

## 11 Photography and other recording of images in the TVO Group's facilities and area

Photography and all other recording of images, including dashboard cameras in vehicles, are forbidden in the areas administered by the TVO Group without a permit. Additional information regarding permits can be requested from the TVO Group's contact person if needed.

## 12 Processing of information in the TVO Group's facilities and area

The frameworks used for the implementation and further development of the information security management system comprise the practices of the ISO/IEC 27000 series of standards, the instructions by the Finnish Government Information Security Management Board (VAHTI) and the IAEA Technical Guidance NSS17 (Computer Security at Nuclear Facilities). Information security of the electrical and I&C systems of the TVO Group's nuclear power plants also considers the following standards, among others: IEC 61513, IEC 60880, IEC 62138, IEC 62443 and IEC 62645. The Finnish Information security auditing tool for authorities (Katakri) is used for assessing the information security of data protection. The Supplier shall exercise special caution when processing the Client's files which can include restrictions for their use. Furthermore, the Supplier has to take into account that their own computers cannot be brought to the plant area without the Client's written consent. The Client has also restricted the use of other smart devices such as e.g., mobile phones and smartwatches by area.

The selected Supplier shall, if necessary, prepare a Supplier **information security plan** concerning information security during any manufacture and maintenance that takes place at the Supplier's premises and/or the premises of any subcontractor it employs. This plan needs to be according to TVO Group requirements for such plan and it needs to be submitted for the Client.

The processes for auditing the information security arrangements (including the related authorisations and confidentiality agreements) are included in supply contracts in order to ensure that the level of information security is appropriate.

Regardless of any protected areas and limitations, all employees and partners are recommended to implement a clean desk and screen policy in order to minimise the risk of unauthorised access to and use and damaging of data systems and materials.

Further information on the industrial safety requirements can be obtained from [tyoturvallisuus@tvo.fi](mailto:tyoturvallisuus@tvo.fi)