

AUTHORISED INSPECTION BODY AND THE LICENSEE'S IN-HOUSE INSPECTION ORGANISATION

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With regard to new nuclear facilities, this Guide shall apply as of 1 December 2013 until further notice. With regard to operating nuclear facilities and those under construction, this Guide shall be enforced through a separate decision to be taken by STUK. This Guide replaces Guide YVL 1.3.

First edition	ISBN 978-952-309-043-9 (print) Kopijyvä Oy 2014
Helsinki 2014	ISBN 978-952-309-044-6 (pdf)
	ISBN 978-952-309-045-3 (html)

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Authorisation

According to Section 7 r of the Nuclear Energy Act (990/1987), *the Radiation and Nuclear Safety Authority shall specify detailed safety requirements for the implementation of the safety level in accordance with the Nuclear Energy Act.*

Rules for application

The publication of a YVL Guide shall not, as such, alter any previous decisions made by STUK. After having heard the parties concerned STUK will issue a separate decision as to how a new or revised YVL Guide is to be applied to operating nuclear facilities or those under construction, and to licensees' operational activities. The Guide shall apply as it stands to new nuclear facilities.

When considering how the new safety requirements presented in the YVL Guides shall be applied to the operating nuclear facilities, or to those under construction, STUK will take due account of the principles laid down in Section 7 a of the Nuclear Energy Act (990/1987): *The safety of nuclear energy use shall be maintained at as high a level as practically possible. For the further development of safety, measures shall be implemented that can be considered justified considering operating experience, safety research and advances in science and technology.*

According to Section 7(r)(3) of the Nuclear Energy Act, *the safety requirements of the Radiation and Nuclear Safety Authority (STUK) are binding on the licensee, while preserving the licensee's right to propose an alternative procedure or solution to that provided for in the regulations. If the licensee can convincingly demonstrate that the proposed procedure or solution will implement safety standards in accordance with this Act, the Radiation and Nuclear Safety Authority (STUK) may approve a procedure or solution by which the safety level set forth is achieved.*

1 Introduction

101. According to Section 63(1)(3) of the Nuclear Energy Act (990/1987) [1], *the Radiation and Nuclear Safety Authority (STUK) is authorised to require that structures and components intended as parts of the nuclear facility be manufactured in a manner approved of by the Radiation and Nuclear Safety Authority. STUK is authorised to oblige the licensee or licence applicant to arrange for STUK an opportunity sufficiently to control manufacture of such structures and components.*

102. According to Section 4(2) of Government Decree (717/2013) [2], *the systems, structures and components that implement or are related with safety functions shall be designed, manufactured, installed and used so that their quality level, and the assessments, inspections and tests, including environmental qualification, required to verify their quality level, are sufficient considering the safety significance of the item in question. Safety classification shall be applied in determining the quality requirements for systems, structures and components.*

103. Section 26 of Government Decree (717/2013) states that *systems, structures and components important to the safety of a nuclear power plant shall be available as detailed in the design basis requirements. Their availability and the impact of the operating environment shall be supervised by means of inspections, tests, measurements and analyses. Availability shall be confirmed in advance by means of regular maintenance, and preparations shall be made for maintenance and repair to avoid reduced availability. Condition monitoring and maintenance shall be designed, instructed and implemented in a manner that can reliably ensure the integrity and operability of the systems, structures and components throughout their service life.*

104. Under Section 7 of Government Decree (736/2008), *the systems, structures and components of a nuclear waste facility shall be classified on the basis of their significance in terms of the operational safety of the facility, or the long-term safety of disposal. The required quality level of each classified object, and the inspections and*

testing necessary for verifying the quality, shall be adequate as regards the significance of the object in terms of safety.

105. According to Section 5 of Government Decree (734/2008), *appropriate security clearances shall be carried out in order to ensure the personnel vetting of persons working at the nuclear facility and participating in the treatment and transportation of nuclear material and nuclear waste. Access rights and rights of use pertaining to information related to each task shall be defined. Measures for preventing threats related to persons shall be implemented systematically and extended to the subcontractors utilised by the licensee, and persons in the employ thereof.*

106. Section 60 a “Control and inspection of pressure equipment, structures and mechanical components” of the Nuclear Energy Act (990/1987), requires the following:

The Radiation and Nuclear Safety Authority (STUK) approves manufacturers of nuclear pressure equipment for their duties and inspection organisations, testing organisations and qualification body for duties pertaining to the control of pressure equipment, steel and concrete structures, and mechanical components at nuclear facilities within the scope determined by the Radiation and Nuclear Safety Authority. The Radiation and Nuclear Safety Authority supervises the operation of such an inspection organisation, testing organisation, and qualification body.

A prerequisite for the approval of an inspection organisation and testing organisation and qualification body is that they are operationally and economically independent and that they carry liability insurance. In addition, the manufacturer, the inspection organisation, testing organisation and qualification body shall have an advanced quality system, a competent and experienced personnel as well as appropriately qualified methods, facilities and equipment required for manufacturing and operation. The approval procedure is prescribed in more detail in a Government Decree.

If a manufacturer of pressure equipment, inspection organisation, testing organisation, or qualification body no longer meets the requirements for approval or has materially neglected or breached its obligation or restriction issued in or by virtue of this Act or a regulation issued in a decision and fails to correct the shortcomings in its operations even after receiving notices and warnings, the Radiation and Nuclear Safety Authority (STUK) may withdraw its approval. If justified by reasons pertaining to the assurance of safety, the Radiation and Nuclear Safety Authority (STUK) may, after having granted the corporation or establishment concerned a hearing, change the requirements and conditions established in its decision of approval.

STUK specifies the nuclear pressure equipment which has a minor significance to safety whose manufacturer and testing organisation are not required to be approved for their duties in the manner prescribed in Subsection 1 as well as, on similar grounds, the steel and concrete structures and mechanical equipment whose testing organisation is not required to be approved for its duties in the manner prescribed in Subsection 1. In these respects, STUK shall stipulate the necessary requirements concerning the competence of the manufacturer and testing organisation, the fulfilment of which the licensee shall be able to demonstrate.

The inspection organisation shall observe, in taking care of the public administration tasks laid down in this Act, the provisions of the Act on the Openness of Government Activities (621/1999), Act on Electronic Services and Communication in the Public Sector (13/2003), Administrative Procedure Act (434/2003), Language Act (423/2003) and Sámi Language Act (1086/2003). Any employee working in the service of an inspection organisation shall be subject to the liability regulations under criminal law in carrying out the tasks referred to in this Act. Liability is regulated in the Tort Liability Act (412/1974).

107. Under Section 75 “Appeal and enforcement of decision” of the Nuclear Energy Act (990/1987), a decision made by an inspection organisation may be appealed by appealing to the organisation that

has issued the decision. The provisions for the appeal procedure are set forth in the Administrative Procedure Act. A decision issued by an inspection organisation as a result of a claim for adjustment may be appealed at the Administrative Court in the manner prescribed in the Administrative Procedure Act.

108. According to Section 113 a of the Nuclear Energy Decree (161/1988), the Radiation and Nuclear Safety Authority (STUK) specifies the inspections which have a minor significance to nuclear safety of equipment and structures of a nuclear facility, which the licensee may designate to be performed by the nuclear facility's in-house inspection organisation.

With regard to inspections other than the inspections of the nuclear facility's components and structures referred to in Subsection 1, the licensee shall request these from STUK or an authorised inspection body.

STUK shall, in its decision of approval, decide the field and scope of inspections of the authorised inspection body.

109. Pursuant to Section 117 b of the Nuclear Energy Decree (161/1988), when the Radiation and Nuclear Safety Authority (STUK) approves an authorised inspection body for its duties, it shall define the body's inspection rights and establish the requirements and conditions pertaining to its operations. In the decisions of approval, the period of validity of the decision, the body's obligation to report to the Radiation and Nuclear Safety Authority (STUK) as well as its obligation to observe secrecy under the law shall be stated.

What is established in Subsection 1 above shall also be applied to the testing organisation and qualification body referred to in Section 60 a of the Nuclear Energy Act.

110. STUK approves, on the basis of an application, an inspection organisation to perform inspections of conformity to requirements on the construction plans, manufacture, installation and commissioning of a nuclear facility's safety class 2 and 3 pressure equipment, mechanical

components and steel and concrete structures, as well as in-service inspections thereof, in accordance with Section 60 a of the Nuclear Energy Act (990/1987) and as stipulated in the YVL Guides on authorised inspection bodies. An authorised inspection body that conducts inspections of safety class 2 or 3 components may also conduct inspections in Class EYT within its scope of accreditation without a separate approval.

111. STUK assesses and approves the system level plans of systems important to safety as well as the design bases of components and structures. An inspection organisation, in its inspection operations, shall not have the right to deviate from STUK's decisions and the STUK-approved design bases of components and structures, the standards specified therein, or the YVL Guides applied to the component or structure.

112. An inspection organisation assesses the conformity to requirements of a nuclear facility's pressure equipment as well as its steel and concrete structures and mechanical components against the design bases approved in STUK's decisions, YVL Guides and any other decisions issued by STUK with regard to components or structures being inspected by the inspection organisation.

113. Upon the licensee's application, STUK approves the licensee's in-house inspection organisation to perform inspection tasks entailing the installation, commissioning, repair work and modifications, as well as periodic inspections, of pressure equipment belonging to Class EYT.

114. According to Section 78 of the Nuclear Energy Act (990/1987), *“Those who, in connection with the activities referred to in this Act, have obtained information contained in the documentation referred to in Paragraph 5 of Section 2 Subsection 1 shall not disclose said information to an outsider. This obligation also applies to plans concerning security referred to in Section 7 or to material compiled in said plans' preparation, or documents drawn up on the basis of the plans, if the disclosure of such information to an outsider might jeopardise the achievement of the objectives of said security.”* (342/2008)

Those who have in their possession information referred to in Subsection 1 shall protect this information so that outsiders are unable to obtain it unlawfully. The Radiation and Nuclear Safety Authority (STUK) provides the regulations concerning the methods for protecting information. (269/2011)

Otherwise the provisions of the Act on the Openness of Government Activities (621/1999) on the publicity of documents shall apply.

Unless punishable under Section 40(5) of the Criminal Code, or unless a more severe punishment is laid down elsewhere in the law, violation of the obligation to observe secrecy as provided in this Section is punishable under Section 38(1) or 38(2) of the Criminal Code.

2 Scope of application

201. The authorised inspection bodies defined in Section 60 a of the Nuclear Energy Act (990/1987) perform assessment tasks, specified in the YVL Guides for specific technical areas, regarding the conformity to requirements of safety class 2 and 3 mechanical components as well as steel and concrete structures.

202. This Guide presents the approval procedure whereby an inspection organisation becomes an authorised inspection body (SFS EN ISO/IEC 17020, type A) or a licensee's in-house inspection organisation (SFS EN ISO/IEC 17020, type B), as well as the requirements regarding inspection organisations.

203. This Guide specifies the requirements concerning the jurisdiction, tasks and requirements reporting of an inspection organisation.

204. The principle behind the division of inspection responsibilities concerning STUK's and the inspection organisations' inspection activities is presented in Appendix A of this Guide and, in more detail, in the YVL Guides of specific technical areas.

205. Requirements for the operations and tasks of inspection organisations are presented in the following YVL Guides:

- YVL D.3 Handling and storage of nuclear fuel
- YVL D.5 Disposal of nuclear waste
- YVL E.3 Pressure vessels and piping of a nuclear facility
- YVL E.4 Strength analyses of nuclear power plant pressure equipment
- YVL E.6 Buildings and structures of a nuclear facility
- YVL E.7 Electrical and I&C equipment of a nuclear facility
- YVL E.8 Valves of a nuclear facility
- YVL E.9 Pumps of a nuclear facility
- YVL E.10 Emergency power supplies of a nuclear facility.

206. Guide YVL E.12 “Testing organisations for mechanical components and structures of a nuclear facility” presents requirements for NDT and DT testing organisations. The inspection organisation inspects the validity of the approvals of these testing organisations when conducting inspections of the manufacture of components or structures.

207. Guides YVL A.3 “Management system for a nuclear facility” and YVL A.4 “Organisation and personnel of a nuclear facility” present the general requirements for the management systems of nuclear facilities as well as the assurance of the sufficiency and competence of human resources. They shall be applied to the operations of inspection organisations.

208. With regard to personal security and the protection of information, Guide YVL A.11 “Security of a nuclear facility” shall be applied to authorised inspection bodies.

209. This Guide shall be applied to the licensee’s in-house inspection organisation in accordance with Section 9.

210. The Guide also presents the requirements concerning inspection organisation accreditation when the inspection organisation applies for accreditation in order to operate as an authorised inspection body or as the licensee’s in-house inspection organisation.

3 Approval of an organisation as an authorised inspection body of nuclear facilities

3.1 Approval process and validity of approval

Operating as an authorised inspection body

301. The inspection organisation shall have a valid permit (authorisation) from STUK to perform inspections of the safety-classified pressure equipment, steel and concrete structures, and mechanical components of nuclear facilities, which are public administration tasks. The procedure to obtain a permit is presented later in this Guide.

302. Only authorised inspection bodies approved by STUK may perform the conformity inspections laid down in the YVL Guides of construction plans, manufacture, installation, commissioning and operation of safety class 2 and 3 pressure equipment, steel and concrete structures as well as mechanical components. An authorised inspection body authorised for safety class 2 and 3 inspection tasks may also conduct inspections in the EYT class within its scope of accreditation without a separate approval. The general division of inspection responsibilities between the inspections carried out by STUK and the authorised inspection body is presented in Appendix A.

303. The applicant shall have been accredited for the tasks in question before it can apply for a permit to become an authorised inspection body performing the inspection tasks described in requirement 302.

304. An authorised inspection body shall fulfil the requirements of a type A inspection organisation as specified in the SFS EN ISO/IEC EN 17020 standard.

305. An inspection organisation, when applying for accreditation in accordance with the requirements of this Guide, shall agree in writing that

the accreditation body may, if it detects significant deficiencies in the activities of the authorised inspection body, submit a report on the matter to STUK.

306. The structural and operational requirements concerning the tasks of an authorised inspection body are presented in more detail in Sections 4–8 and 10 of this Guide.

Application

307. The applicant shall apply for approval from STUK in writing in order to function as an authorised inspection body for Finnish nuclear facilities within the context of the conformity inspections detailed in requirement 302.

308. The applications and other documents shall be delivered to STUK following the procedure laid down in Guide YVL A.1.

309. The applicant shall fulfil the requirements set for an authorised inspection body in Section 60 a of the Nuclear Energy Act (990/1987) as well as those presented in sections 4–8 of this Guide.

310. The following shall be reported in the application:

- name of applicant
- business ID and company registration number
- domicile and contact information
- personal information of the technical person in charge as well as his/her deputy
- what safety class detailed in this Guide and in the applicable YVL Guides the application concerns
- the types of inspection for which the approval is being applied
- the component groups for which the approval is being applied.

311. The following documents shall be attached to the application:

- the accreditation decision pertaining to the task being applied for
- an organisation description
- a description of the person(s) in charge of technical matters

- essential instructions relating to the operations
- the standards and guidelines to be applied in conformity assessment
- a list of the inspectors
- a description of the inspectors' training
- a description of the procedures that the applicant follows when using external services, and a description of the manner in which the applicant ensures that the performers of external services fulfil the requirements set for the inspectors of an accredited inspection organisation
- a description of liability insurance.

312. Inspection of the construction plan, control of manufacturing, construction inspection, installation plan inspection, installation inspection, commissioning inspection, periodic inspection at multi-annual intervals as well as repair work and modification inspections are individually independent areas for which an approval shall be applied. For subtasks smaller than these, an approval may not be applied for without a special reason.

313. The application shall identify the groups of components and structures subjected to inspection as well as the types of inspection covered in the scope of accreditation of the authorised inspection body.

314. The application shall contain an inspector-specific description of the training, work experience and the inspections for which each inspector is qualified.

315. The application referred to above in requirement 307 shall include an accreditation decision from the Finnish Accreditation Service (FINAS) or an accreditation decision, including appendices, from an equivalent foreign organisation pursuant to standard SFS-EN ISO/IEC 17020, the YVL Guides and the applicable technical standards. The scope of accreditation shall cover the inspection methods used for inspection operations performed under this Guide. An accreditation decision by an organisation equivalent to FINAS may be approved if the accreditation in question

is covered by the Multilateral Agreements or Mutual Recognition Arrangements entered into by FINAS.

316. The scope of accreditation specified in requirements 312 and 313 for which the inspection organisation has been deemed qualified shall be clear and evident from the accreditation decision.

317. The application shall be appended with a description of the agreement the applicant has made with the applicant's insurer. The coverage and extent of the liability insurance shall be clear and evident from the description.

Approval decision

318. STUK approves the application if the applicant fulfils the requirements set forth in this Guide and the application is compliant with what is prescribed in requirements 307–317.

319. STUK reports, in its decision of approval and in accordance with Section 117 b of the Nuclear Energy Decree (161/1988), the inspection rights of the inspection organisation in addition to setting the requirements and terms concerning its operations. In the decision of approval, the following are also noted: the technical person in charge of operations, the period of validity of the decision, the terms and restrictions concerning the approval, the reporting obligation of the inspection organisation to STUK, and the obligation to observe the independence and professional secrecy prescribed in the law. An inspection body authorised for safety class 2 and 3 inspection tasks may also conduct inspections in the EYT class within its scope of accreditation without a separate approval.

320. STUK approves the authorised inspection body for a fixed period, which is five years at maximum. Valid accreditation is a prerequisite for the approval.

321. If necessary, the authorised inspection body shall deliver an application for renewal to STUK no later than three months prior to the end of the period of validity of the approval.

322. STUK maintains a public list of the authorised inspection bodies it has approved.

Maintaining or cancelling the approval

323. An authorised inspection body shall, without unnecessary delay, deliver to STUK a report on any changes to its operations that may affect the acceptability of the inspection body.

324. STUK may, if needed, demand that a party seeking authorisation or an authorised inspection body deliver a new accreditation decision regarding its competence, in accordance with requirement 315.

325. An authorised inspection body is obligated to ensure that the information presented in application documents laid down in requirement 311 is kept up-to-date.

326. Section 60(a)(3) of the Nuclear Energy Act (990/1987) stipulates when STUK may cancel the approval issued to an authorised inspection body or revise any demands and terms set in the decision of approval.

327. On the basis of an appeal by an authorised inspection body or a new accreditation decision by an accreditation body compliant with requirement 315, STUK may revise a previous decision it has issued.

328. If required, STUK shall issue a written decision on the cancellation of a decision of approval provided to an authorised inspection body, and remove the organisation from the public register in the event that the prerequisites for its approval cease to be valid.

3.2 Accreditation requirements, and the accreditation decision

329. An authorised inspection body's accreditation shall concern the inspections of components and structures of nuclear facilities, which are specified in the YVL Guides and which the authorised inspection body is applying to inspect. The YVL Guides and inspection tasks related to the field shall be specified in an unambiguous manner.

330. The competence of the applicant shall be demonstrated based on this Guide, the applicable YVL Guides as well as the standards connected with the components and structures to be inspected.

331. In order to understand the essential safety requirements and to assess the safety significance of non-conformances, the accreditation assessment shall ensure that the applicant and its personnel are familiar with the nuclear requirements fundamental from the perspective of the task in question as well as, for applicable parts, the requirements and procedures relating to the nuclear facilities whose pressure equipment, structures and mechanical components they inspect.

332. In its accreditation decision and related appendices, the accreditation body shall itemise the essential information on the conformity to requirements against the YVL Guides and applicable standards in addition to a well-defended conclusion on the conformity to requirements.

333. In its accreditation decision and related appendices, the accreditation body shall specify the inspection organisation's scope of accreditation to an extent that specifies at least the following:

- independence
- inspection area
- inspection and assessment methods used
- calculation and inspection software
- the YVL Guides and standards applied in the inspections
- the qualifications connected with the inspection operations that are required of the inspection organisation and its personnel.

334. The accreditation body shall conduct an annual assessment visit to the authorised inspection body and confirm the validity of the prerequisites of the approval as presented in Section 60 a of the Nuclear Energy Act (990/1987). All inspection objects of the inspection organisation shall be assessed at regular intervals. Any changes to the area of operations shall be taken into consideration in the planning of these assessments.

4 General requirements concerning the operations of an authorised inspection body

401. The laws and acts connected with the operations of an authorised inspection body are presented in Section 60(a)(5) of the Nuclear Energy Act (990/1987).

402. The inspection organisation shall be a third party independent of the organisation or product it inspects.

403. An authorised inspection body shall be capable of performing independently all essential inspection tasks needed for the approval it issues on components or structures to inspect their conformity to requirements.

404. An authorised inspection body shall have, within its own organisation, the essential competence regarding the YVL Guides, standards and plant-specific specifications applied, as well as the required knowledge of nuclear facilities, components, structures and technologies which the inspection operations it conducts concern.

405. An authorised inspection body shall have procedures in place to ensure that the personnel is appropriately trained to apply the standards in question and that the inspection organisation has the tools and methods at its disposal to implement the inspections and verify conformity to requirements.

406. An authorised inspection body and its personnel shall, in the performance of the inspection tasks, observe professional reliability, at as high a level as possible, and the technical competence required by the special field concerned.

407. An authorised inspection body and its personnel shall ensure that the inspection and its outcome are based only on the conformity assessment and that other factors such as financial factors, pressure or enticement have no influence.

In particular, this concerns the threat related to those persons or groups of persons for whom the outcome of the inspections has significance.

408. An authorised inspection body shall be on a stable foundation financially and shall have the resources required to engage in its operations.

409. An authorised inspection body shall actively monitor the developments in its field and apply the potential created by research and new technology to improve the reliability of its inspections.

410. An authorised inspection body shall be required to engage in applicable co-operation within the field's national and international co-operation bodies. The purpose of the co-operation shall be to help enhance technical interpretations and procedures connected with the operations. The objective shall be to continuously improve the operations and competence.

411. An authorised inspection body shall participate in the operations arranged by STUK, where the interpretation of the YVL Guides is discussed and the experiences obtained from the inspection organisations' operations are compared. The inspection organisation shall ensure that its inspectors receive information about the activities arranged by STUK and that the information distributed therein is utilised in the inspection operations and their development.

The limits of an authorised inspection body's area of operations

412. STUK approves the design bases of components and structures as part of the system's design documentation, and an authorised inspection body cannot grant permission to deviate from them.

413. An authorised inspection body shall not be allowed to deviate from the YVL Guides or from the decisions issued by STUK or the design bases approved in these decisions defining, among other matters, the applicable standards and project-specific requirements.

414. If an approved decision issued by STUK has not been observed and it is not possible to observe the demands of an approved plan retroactively, the authorised inspection body shall contact STUK.

415. In a situation where an authorised inspection body finds that it cannot issue a decision of approval, it shall issue a rejection decision and deliver it to the licensee. An explanatory memorandum shall be attached to the rejection decision in which the faults in the product's conformity to requirements and the grounds for the conclusion shall appear.

416. An authorised inspection body shall request STUK's interpretation in the event that it is uncertain whether or not the requirements presented in the YVL Guides or STUK's decisions are fulfilled.

417. Appendix A to this Guide presents the general division of inspection responsibilities between the areas of operation of STUK and the authorised inspection body. This division of labour is further specified in YVL Guides D.3, D.5, E.3, E.6, E.7, E.8, E.9 and E.10 concerning various fields of technology, and in STUK's separate decisions. The division of inspection responsibilities for Class EYT pressure equipment is presented in Guide YVL E.3.

418. If required, STUK may, by its own decision and by application of the licensee, assume the inspection tasks that are specified in the E series YVL Guides for an authorised inspection body.

419. An authorised inspection body shall affirm the conformity to requirements of the assessed object against the requirements of the construction plan, manufacture, construction inspection, installation, commissioning and in-service inspection within its area of inspection. The following is a list of the YVL Guides in which requirements are laid down for the components and structures, as well as the organisations that take part in the manufacture, within the operational sphere of inspection organisations:

- YVL D.3 Handling and storage of nuclear fuel
- YVL D.5 Disposal of nuclear waste

- YVL E.3 Pressure vessels and piping of a nuclear facility
- YVL E.4 Strength analyses of nuclear power plant pressure equipment
- YVL E.6 Buildings and structures of a nuclear facility
- YVL E.7 Electrical and I&C equipment of a nuclear facility
- YVL E.8 Valves of a nuclear facility
- YVL E.9 Pumps of a nuclear facility
- YVL E.10 Emergency power supplies of a nuclear facility
- YVL E.12 Testing organisations for mechanical components and structures of a nuclear facility.

420. STUK's decisions concerning each nuclear facility, which are issued by application of the licensee, specify the structures and components, whose repair work and modification construction plans require, prior to starting any work, STUK's approval or, with regard to small works, the approval of a STUK inspector. Similarly, it shall be determined when the inspection is to be conducted by STUK and when by an authorised inspection body.

421. The prerequisite for inspecting modifications, repair work and preventive maintenance is that the STUK-approved design bases concerning the component are valid. In its operations, the inspection organisation shall observe the requirements concerning changes and modifications carried out on the components and structures within the authorised inspection body's area of inspection specified in Guides YVL E.3, E.4, E.6, E.8, E.9, E.10, the D series YVL Guides and STUK's decisions.

422. An authorised inspection body shall without delay report to STUK and the licensee about significant deficiencies, errors, ambiguities, erroneous interpretations and deviations from the YVL Guides found during the inspections with regard to components and structures, and shall urge the licensee to rectify the situation. An authorised inspection body shall also report directly to STUK and the licensee on any other matters it detects that endanger nuclear security and the safety of pressure equipment without unnecessary delay.

423. The personnel of an authorised inspection body shall exercise professional secrecy with regard to all information they receive in carrying out the tasks under STUK's approval. The obligation of confidentiality shall not apply to communications with STUK. Any ownership rights related to a product inspected and held by the licensee shall be protected.

5 Structural requirements of an authorised inspection body

5.1 Administrative requirements

501. An authorised inspection body shall be a registered legal person under the national legislation of its homeland.

502. An authorised inspection body shall take out liability insurance.

503. An authorised inspection body shall describe its organisation in writing, indicating the obligations and responsibility to the management, personnel and any other bodies it may have.

504. An authorised inspection body shall specify a management group, which must look after the prerequisites for inspection operations within the organisation.

5.2 Organisation and management

505. In its operations, an authorised inspection body shall maintain and develop an excellent safety and security culture in the nuclear field. The requirements concerning the safety and security culture are presented in Guide YVL A.3.

506. An authorised inspection body shall demonstrate its independence.

507. An authorised inspection body shall recognise any risks endangering independence and shall control these risks.

508. An authorised inspection body shall ensure that the operations of its subsidiaries or subcontractors do not negatively impact the reliability,

objectivity and neutrality of the conformity assessment operations they perform.

509. An authorised inspection body shall ensure that memberships in various types of committees or bodies do not endanger its independence.

510. The neutrality of an authorised inspection body, its highest management and inspection personnel shall be guaranteed. The management of an inspection organisation shall be committed to independence.

511. The earnings level of the highest management of an authorised inspection body and its inspection personnel shall not be dependent on the total number of assessments completed or on the results of the assessments.

512. An authorised inspection body shall appoint a person in charge of operations as well as at least one deputy to him/her. The task of a person in charge is to ensure that the approval permit conditions are observed in the operations of the inspection organisation.

513. The person in charge of technical matters related to the operations of the authorised inspection body, as well as his or her deputy, shall be employed by the authorised inspection body.

514. An authorised inspection body has responsibility over the decisions it takes as well as the inspection protocols it drafts, and this responsibility cannot be transferred to anyone else.

6 Resources and qualification of the authorised inspection body

6.1 Personnel

601. The general requirements with regard to the development of personnel and competence are presented in Guide YVL A.4.

602. An authorised inspection body shall ensure the reliability of the personnel employed in

conformity inspection tasks in accordance with Guide YVL A.11.

603. In order to ensure independence, an authorised inspection body shall, if necessary, specify the period during which a person may be disqualified from performing inspections upon entering the employment of the inspection organisation.

604. An authorised inspection body shall verify when a person is qualified to perform inspections and formally authorise a person to perform inspection duties.

605. An authorised inspection body shall have sufficient personnel with technical knowledge as well as adequate and applicable experience for the performance of inspection tasks to ensure conformity to requirements.

606. An authorised inspection body's technical personnel shall have solid technical and professional training that covers all the conformity inspection procedures for which the inspection organisation has been approved.

607. An authorised inspection body's technical personnel shall have sufficient information with regard to the requirements related to the tasks performed, as well as the adequate authorisations to conduct these inspections.

608. An authorised inspection body's technical personnel shall have the appropriate information and understanding of the key requirements, applicable standards and Finland's Nuclear Safety Regulations, as well as of the nuclear facilities, the components and structures of which it assesses for conformity to requirements.

609. The technical personnel of an authorised inspection body shall have the sufficient training and experience to assess the conformity of components and structures in the following areas applicable in terms of the tasks of an authorised inspection body: for example, components and structures of nuclear facilities, design methods and strength calculation, material technology, as well as welding, modification and heat treatment

techniques and their qualification procedures, other manufacturing methods, non-destructive testing including its qualification procedures, destructive testing, required personnel qualifications, quality assurance and monitoring.

610. An authorised inspection body's technical personnel responsible for the conformity inspections shall have sufficient competence to prepare documents required by the inspection that demonstrate that the inspection has been performed.

611. An authorised inspection body's technical personnel shall have the valid personal qualifications required for the task. The qualifications required are covered in Appendix B.

612. The inspectors of structures shall have the general qualifications required in Guide YVL E.6 of inspectors of construction plans.

613. In the commissioning inspection, the person verifying the conformity to requirements and signing the inspection protocol shall be an experienced inspector who has the type of experience, training and competence that enables him/her to verify the conformity to requirements throughout the product's life cycle up to that point.

614. Records on the qualifications of personnel shall also be included in the data files maintained on the personnel.

615. The personnel of an authorised inspection body shall have sufficient foreign language skills to familiarise themselves with documents dealing with the item inspected, discuss the inspection and conduct any personal interviews that may be required.

616. In the documentation of an authorised inspection body, the YVL Guides concerning the scope of accreditation and the standards used as references in the conformity assessment shall be available.

617. External personnel used by an authorised inspection body shall be subject to the same requirements as those governing its own personnel.

6.2 Infrastructure

618. An authorised inspection body shall have the infrastructure suitable for the task, such as the equipment, procedures, instruments and information systems.

619. An authorised inspection body shall have the means required to perform its technical and administrative tasks which the appropriate execution of the inspection procedures requires, and it shall have the possibility to use all required equipment, software or instruments.

6.3 Subcontracting

620. An authorised inspection body may use subcontracting only for subtasks that are minor in significance.

621. An authorised inspection body shall assess and be able to demonstrate that the subcontractor fulfils the requirements set for an authorised inspection body with regard to the task concerned.

7 The operational processes of an authorised inspection body

7.1 Inspection methods and operational processes

701. An authorised inspection body shall specify the inspection procedures and related authorisations and obligations.

702. The appropriate modes of operation and the procedures whereby the tasks performed by an inspection organisation performing public administrative tasks are differentiated from other activities shall be available to the authorised inspection body.

703. An authorised inspection body shall specify the person(s) signing the decisions and inspection protocols. The documents prepared by an authorised inspection body in the various phases of a component's or structure's life cycle are presented in Appendix C.

704. The procedures of an authorised inspection body shall cover all the component and structure groups as well as related inspections within the sphere of the approval concerned.

705. The procedures of an authorised inspection body shall be open and repeatable.

706. The principle is that the calculations and analyses performed by an authorised inspection body can be repeated based on the original sources of information, and that it shall be possible to re-implement the assessment by a different inspector. STUK or the accreditation body may also inspect the information on which the assessment is based at a later time.

707. An authorised inspection body shall review the request for inspection and ensure that it is compliant to requirements, and that the inspection organisation has the prerequisites to carry out the inspection.

708. An authorised inspection body shall be able to identify an inspection object, of which it has no prior experience, and ensure that it has the appropriate competence, procedures and tools to take care of the inspection task it undertakes.

709. An authorised inspection body shall refuse to carry out inspections where it does not have the related competence or tools. It shall also refuse public administrative tasks, in the context of which the independence requirement would not be fulfilled.

710. An authorised inspection body shall appoint the resources for each inspection.

711. An authorised inspection body shall have a written training system, which indicates the training required for the various tasks as well as the technical knowledge in the field of nuclear facilities.

712. An authorised inspection body inspecting pressure equipment, mechanical components and structures of Finnish nuclear facilities shall have a training system that covers plant knowledge, design bases, safety analysis reports, Operational

Limits and Conditions, official permits and regulations, the YVL Guides, and the applicable standards and plant-specific requirements.

713. An authorised inspection body shall determine the procedure whereby it manages the competences of its personnel and shows that the inspector is qualified to take part in the inspections.

714. An authorised inspection body shall indicate the information security procedures by which the secrecy of data has been arranged.

715. An authorised inspection body shall have a procedure in place whereby it reports to STUK and the licensee any significant non-conformances which require corrective actions from the licensee or a decision from STUK on the acceptability of the non-conformance in question.

716. The procedures of an authorised inspection body shall ensure that the safety class of the component or structure inspected, complexity of the technology used and the nature of the production are appropriately taken into account.

717. In order to conduct the inspections in an appropriate fashion, the authorised inspection body shall:

1. form a clear picture of STUK's decisions pertaining to the component or structure inspected, the component's design bases, functions, safety significance, operational environment and technology employed as well as, where required, the manufacturer's/supplier's or licensee's management systems essentially linked with the conformity assessment of the component inspected, and
2. identify items which might give rise to errors, faults or misunderstandings.

On the basis of these inspections, an authorised inspection body shall prepare an inspection plan for each type of component and structure inspected, which shall include the parts of the component in question that will be inspected, the comparison analyses and inspection methods, as well as a plan detailing which documents and information on the component will be examined.

718. The inspection organisation shall have at its disposal the conformity management tools and procedures whereby it is ensured that the inspections affecting each component and structure are carried out and documented in a traceable manner with regard to STUK's decisions, design bases and the YVL Guides. The requirements for components and structures in different safety classes shall be clearly evident in the requirement management system.

719. A group/person inspecting a component or structure shall have competence in all areas relating to the product inspection in question, such as the design, manufacture, installation, commissioning and use of the product, as well as quality management.

720. An authorised inspection body shall ensure that a manufacturer of pressure equipment under inspection has a valid manufacturer approval issued by STUK in accordance with Section 60 a of the Nuclear Energy Act (990/1987), as described in more detail in Guide YVL E.3.

721. An authorised inspection body shall ensure that the testing organisation testing the component or structure in question has been approved under Guide YVL E.12.

722. An authorised inspection body shall inspect the conformity of the product inspected, any related documents and the operations of the manufacturer. On the basis of the inspection, it shall issue a decision that can only be made on behalf of the inspection organisation by the persons appointed to the task.

723. An authorised inspection body shall perform a construction inspection of the component or structure. An inspection protocol shall be prepared of the inspection and its results, showing the items inspected with their results as well as a well-defended conclusion on the conformity to requirements of the component or structure. Only the persons designated for the task shall prepare and approve the inspection protocol.

724. The inspections of modifications shall be carried out in a similar manner to those of the original component or structure.

725. An authorised inspection body shall perform an installation inspection on the component or structure and draft an inspection protocol establishing conformity to requirements. Only the persons designated for the task shall prepare and approve the inspection protocol.

726. An authorised inspection body shall conduct a commissioning inspection of the component or structure and issue an inspection protocol, which can only be signed on behalf of the inspection organisation by the persons appointed to the task.

727. An inspection organisation shall, in the commissioning inspection, verify the conformity of the component or structure and issue a certificate of conformity. With this certificate, the inspection organisation assures that the component or structure fulfils the official and project-specific requirements concerning the item in question. The inspection shall verify that the design, manufacture/construction, installation and commissioning of the item have not left any deviations that affect safety. Furthermore, it shall be ensured that the component or structure has been manufactured and located in accordance with approved plans in a manner enabling the performance of maintenance and periodic inspections.

728. If pressure equipment, a structure or mechanical component does not fulfil the requirements set, the authorised inspection body shall inform the licensee in writing of the rejection decision.

7.2 Processing of inspection objects

729. An authorised inspection body shall ensure that the inspections, and for example the verification markings of the construction inspection of the component or structure, such as die-cuttings, do not cause any safety risks.

7.3 Inspection records

730. The application documents and the records generated by the inspections shall meet the archiving and storage requirements, as applicable, presented in Appendix B of Guide YVL A.1.

731. An authorised inspection body shall maintain a register of the implementation and results of the conformity inspections.

732. The inspection protocols, work reports, explanatory memorandum and inspection decisions of an authorised inspection body shall be either in one of the official languages of Finland or in English.

733. All relevant information with which it is possible to assess whether the designs, manufacture, installation, commissioning or operability of the component or structures are compliant with the approved design bases shall be included in the decision or inspection protocol.

734. In order to ensure the opportunity to supervise the inspection organisation, rights shall be granted to STUK to access the database of the authorised inspection body or the licensee's in-house inspection organisation for the inspections which the inspection organisation performs on the basis of the approval granted to it.

7.4 Inspection decisions and protocols

735. An authorised inspection body shall issue a decision or inspection protocol on the conformity inspection of a design and/or structure, presenting the following information with any appendices required:

- licensee
- plant unit and location code
- information on the component or structure
- manufacturer's name and address
- information required for the identification of the component or structure or a related design,
- conformity to requirements of the component or structure,
- observations made in the inspection
- any prerequisites concerning validity
- for pressure equipment, design pressure and design temperature
- safety class.

736. Inspection protocols shall be drafted of the inspections performed by an authorised inspection body on the inspection object at the various stages of the object's life cycle. The protocols shall list the object inspected, inspector(s), location of inspection, matters inspected and the related YVL Guides and STUK's decisions, the criteria used in the inspections and inspection observations, an assessment of the conformity to requirements, and other information required.

737. An authorised inspection body shall issue a decision on the conformity to requirements of the design as a result of the construction plan inspection it has conducted, including an appendix that shall be an justification memorandum on the inspection.

738. An authorised inspection body shall prepare an inspection memorandum of the inspection object in the event there is a justified need for this in light of more detailed documentation of the inspection data. It shall take into account all information collected in connection with inspection preparation, planning and implementation, and the essential information from the perspective of deriving conclusions, on the basis of which an explanatory memorandum can be prepared. An inspection memorandum shall be drawn up especially in demanding cases or if there is more than one inspector. Conformity assessments created into information systems may also be considered inspection memoranda. The key requirements concerning the product inspected as well as the implementation of the requirements and a substantiated conclusion shall be presented in the explanatory memorandum.

8 Requirements of the management system

8.1 General

801. An authorised inspection body shall have an implemented management system that fulfils the requirements of Guide YVL A.3.

802. In an authorised inspection body's management system, there shall be a description of the inspection organisation's operational area and

criteria within the context of which the inspection organisation can function.

803. It shall be ensured by means of the management system that the operations of the authorised inspection body are in line with the YVL Guides and the fundamental nuclear safety and quality requirements.

804. By means of the management system, the authorised inspection body shall demonstrate that the operations are planned and controlled.

8.2 Continuous improvement at an authorised inspection body

805. An authorised inspection body shall demonstrate that the internal and external assessments of its management system, as detailed in Guide YVL A.3, are performed at regular intervals. The period between visits by an external assessor or assessing body shall depend on the operations of the assessor and the results of the assessment. However, this period shall not be longer than one year.

806. An authorised inspection body shall demonstrate that the internal assessments have been conducted systematically, in such a way that the entire management system has been evaluated at regular intervals and that the changes that have taken place in the area of operations have been taken into consideration in planning the assessments.

807. An authorised inspection body shall maintain a register of the implementation and results of the management system assessments. The results shall be analysed comprehensively and presented in an annual report submitted to STUK.

808. The management system of an authorised inspection body shall be systematically developed as a result of, for instance, the above-mentioned assessment results, changes to the regulations and standards, technical advancement, operational experiences, and the development of science and technology.

9 Requirements of the licensee's in-house inspection organisation

901. In accordance with Section 113 a of the Nuclear Energy Decree (161/1988), the licensee may apply for approval for its own in-house inspection organisation. The approval procedure shall adhere to the specifications laid down in section 3.

902. The licensee's in-house inspection organisation shall be an accredited type-B inspection organisation compliant with the ISO/IEC/EN17020 standard.

903. The licensee may apply for permission for its in-house inspection organisation to perform such periodic inspections of safety class 3 pressure equipment subject to registration that are not public administration tasks by nature. The plans for and results of periodic inspections shall be approved by an STUK inspector at the plant site.

904. In safety class EYT, the licensee's in-house inspection organisation may carry out inspections related to the installation, commissioning, and repair work and modifications of components and structures, as well as in-service inspections. The plans for and results of periodic inspections of registered pressure equipment shall be approved by an STUK inspector at the plant site.

905. In addition to performing the tasks of the licensee's in-house inspection organisation, the inspection organisation may operate as a user inspectorate, as detailed in the Pressure Equipment Directive (97/23/EC), if the Ministry of Employment and the Economy has appointed it to the said task.

906. The licensee's in-house inspection organisation shall be an independent part of the licensee's organisation, and the requirements concerning the licensee's organisation and personnel are applied to it. These requirements are presented in YVL Guides A.3 and YVL A.4.

907. The applicable requirements of sections 4–11 are applied to the licensee’s in-house inspection organisation.

10 Reporting by the inspection organisation directly to STUK

1001. An authorised inspection body and the licensee’s in-house inspection organisation shall submit an annual report on their operations as well as a description of the implementation and the results of the accreditation body’s periodic assessments.

1002. The reports by the authorised inspection body and the licensee’s in-house inspection organisation shall list the licensee- and plant unit-specific inspection objects and results, as well as an analysis of the inspection observations.

1003. An authorised inspection body shall submit a report on any major non-conformances regarding radiation, nuclear and personal safety to STUK for information.

1004. An authorised inspection body and the licensee’s in-house inspection organisation shall inform STUK of any issues that endanger pressure equipment safety.

1005. An authorised inspection body and the licensee’s in-house inspection organisation shall draw up an inspection memorandum on inspections performed during annual maintenance, as well as the results thereof, to an STUK inspector at the plant site. The memorandum shall present the key observations and the inspection organisations’ assessment of the plant’s start-up readiness within the scope of the inspection.

1006. An authorised inspection body shall complete a report on its operations in Finnish nuclear facility inspection tasks on a quarterly basis or, if required considering the scope of operations, at intervals separately agreed with STUK. The reports shall present the inspections performed

and the observations significant from the perspective of safety.

11 Obligations of the licensee

1101. The licensee shall ensure that the inspection organisation can perform its inspections effectively. An inspection organisation shall have at its disposal the information required to carry out the work, and the operations of the inspection organisation shall not be impeded.

1102. The licensee shall ensure that the inspection environment is such that the work can be performed safely and with a high level of quality.

1103. The licensee shall ensure that the suppliers make the inspection organisation’s inspections possible and guarantee unimpeded entry to the documents and facilities necessary to complete the inspection.

1104. The licensee shall have in place the type of procedures for the organisation and control of inspection operations that only inspection organisations with a valid approval from STUK for the inspections concerned are used for the inspections.

1105. The licensee shall have in place methods whereby it can verify the independence of the inspection organisation.

1106. The licensee shall ensure in advance that the object inspected by the inspection organisation has been appropriately prepared for inspection and that it fulfils the safety requirements prescribed for it. The licensee shall document the results of the licensee’s in-house inspection in such a manner that this can also be independently assessed. As regards radiation protection, the requirements of Guide YVL C.2 shall be taken into account.

1107. The licensee shall request, in writing, an inspection of the construction plan, construction inspection, installation and commissioning inspection.

tion or in-service inspections from the inspection organisation. In the request for inspection, the inspection object shall be unambiguously specified as shall be the STUK-approved design bases, STUK's decisions, the results of the licensee's in-house inspection, the YVL Guides as well as any other information which may have an influence on conducting the inspection in an appropriate manner.

1108. The licensee shall initiate measures to correct a non-conformance without delay. If it is intended to take into use a component or structure with any fault or deficiency uncorrected, an approval for the non-conformance shall be obtained. A non-conformance report shall describe the non-conformance, explain its cause, give justification for its approval and, where necessary, present an action plan to prevent its recurrence. The licensee shall obtain approval for the non-conformance from STUK or an authorised inspection body following the same procedure which is used for construction plan approval. STUK's approval shall always be obtained for significant non-conformities or deviations from the YVL Guides.

1109. If several inspection organisations carry out inspections of a component or structure at the various stages of their life cycle, the licensee shall ensure that the information at the various stages of the life cycle of the component or structure is transferred comprehensively and unambiguously to the next stage and that there are no interruptions in the transfer of data.

1110. The licensee shall ensure that the inspector obtains in good time all the documents necessary to conduct the inspection.

1111. The licensee shall maintain a register of the inspection objects and inspections assigned to inspection organisations. The inspection results and information concerning any non-conformances with respect to each object inspected shall be indicated in this register.

1112. The licensee shall provide STUK with access to up-to-date information on the inspection objects and times of inspections, as well as on the authorised inspection body.

1113. Under Section 75 of the Nuclear Energy Act (990/1987), *a decision made by an inspection organisation may be appealed by appealing to the organisation that has issued the decision. The provisions for the appeal procedure are given in the Administrative Procedure Act.*

1114. The licensee shall deliver any requests for adjustment, as described in requirement 1113, to STUK for information.

1115. The licensee shall make use of the inspection organisation's inspection observations in the development of the licensee's own operations and in the facility's safety management analyses, so that the licensee's own operations can be continuously developed and significant flaws in plant safety identified in a timely fashion.

1116. The licensee shall assess and develop the management processes of the inspection organisations, by which it selects the inspection organisations for their tasks and co-ordinates the inspections they perform.

12 Documents required for oversight

1201. An application to operate as an authorised inspection body shall be delivered to STUK for approval.

1202. An authorised inspection body shall deliver, on a quarterly or some other basis agreed, to STUK for information a report compliant with requirement 1006 on the inspections it has performed, no later than by the end of the month following the agreed time period.

1203. The inspection memorandum by an authorised inspection body of inspections performed during annual maintenance shall be delivered to an STUK inspector at the plant site for information prior to STUK's inspector confirming the readiness for start-up.

1204. An authorised inspection body shall deliver the annual report described in requirement 1001

for information by the end of February of the year following the year of operation.

1205. Notification by an authorised inspection body regarding any changes to the task description of the inspection organisation shall be delivered to STUK for information without unnecessary delay.

1206. Notification by an authorised inspection body regarding any changes to accreditation shall be delivered to STUK for information without unnecessary delay.

1207. Notification by an authorised inspection body of any non-conformances detected endangering nuclear safety shall be delivered to STUK for information without unnecessary delay.

1208. The licensee shall deliver any requests for adjustment against a decision by an inspection organisation to STUK for information without unnecessary delay.

1209. The licensee shall deliver to STUK for approval any applications for establishing the licensee's in-house inspection organisation.

1210. The licensee shall ensure that it reports on its in-house inspection organisation in accordance with requirements 1001-1003 and 1006.

13 Oversight by STUK

1301. STUK approves an organisation to perform the tasks of an authorised inspection body on the basis of an application.

1302. STUK approves the licensee's in-house inspection organisation to perform its tasks on the basis of the licensee's application.

1303. STUK may, if needed, cancel the approval it has issued to an authorised inspection body or the licensee's in-house inspection organisation.

1304. STUK maintains an up-to-date list of the authorised inspection bodies it has approved on its website.

1305. STUK participates in the assessments of the accreditation body as a nuclear safety expert.

1306. STUK assesses the operational prerequisites and operations of the authorised inspection body it has approved as well as those of the licensee's in-house inspection organisation on the basis of the reports and inspection visits paid to the inspection organisation, and at the inspection sites.

1307. STUK supervises the operations of an authorised inspection body focusing on the inspection organisation's approval and related measures, and as part of the supervision of nuclear facilities. The supervision includes accreditation decision reporting, the inspection programme concerning the inspection organisations, random checks at the plant site and on the suppliers' premises, and the experiences and other observations linked with the use of the inspection organisation. The supervision covers the inspection of the operational principles, guidelines and the reports delivered to STUK, as well as the monitoring of measures performed on the basis of these or other regulatory actions.

1308. As part of its inspection operations, STUK monitors how the licensee uses the authorised inspection body, as well as the licensee's in-house inspection organisation and its operations, as part of its inspection activities. The supervision covers the inspection of the operational principles, guidelines and reports delivered to STUK, as well as the monitoring of measures performed on the basis of these supervisory actions. STUK inspects the procedures and efficiency connected with the use of the assessment bodies on the basis of reports and at the plant site.

1309. On the basis of reporting on deviations from the YVL Guides and reporting concerning improvement measures of authorised inspection bodies, STUK assesses the safety significance of the observations made and the need for changes to the operations of the licensee or the inspection organisation as well as for the communication of information outside STUK.

1310. STUK arranges information exchange events on the interpretation of the YVL Guides and their application in practice for authorised inspection bodies.

1311. STUK regularly exchanges information on the operations of accredited inspection organisations with the accreditation bodies.

1312. STUK exchanges information on the operations of the accreditation bodies with nuclear safety officials of other countries and with national authorities when the supervision of a component or structure involves tasks falling under the regulatory sphere of other authorities.

1313. STUK reports on events significant to nuclear and radiation safety in accordance with international agreements and principles.

1314. STUK reports on key events or experiences the benefits of which it deems as having useful value to the officials and accreditation bodies of other countries, via the international reporting system maintained by the IAEA and the OECD/NEA.

1315. As required, STUK communicates on events by means of publications, websites and various announcements.

Definitions

Accreditation

Accreditation shall refer to third-party attestation related to conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks. (SFS-EN ISO/IEC 17000, 2005).

Accreditation body

Accreditation body shall refer to a authoritative body that performs accreditation (SFS-EN ISO/IEC 17000, 2005).

Analysis method

Analysis method shall refer to a calculation formula, mathematical modelling method, computer software or other defined workflow that has been proportioned to the difficulty and uncertainties of the task in question for the purpose of identifying and describing information and dependencies that affect safety in order to assess the fulfilment of the approval criteria set.

Authorised inspection body

Authorised inspection body shall refer to an independent inspection organisation approved by the Radiation and Nuclear Safety Authority under Section 60 a of the Nuclear Energy Act to carry out inspections of the pressure equipment, steel and concrete structures and mechanical components of nuclear facilities in the capacity of an agency performing public administrative duties.

Concrete structure

Concrete structure shall refer to concrete, reinforced concrete and prestressed concrete structures.

Precast concrete product

Precast concrete product shall refer to a concrete element manufactured under an applicable European product standard.

Eurocodes

Eurocodes shall refer to the pan-European design standards for load-bearing structures published by the European Committee for Standardization.

Notified body

Notified body shall refer to a notified body as referred to in Article 12 of the Pressure Equipment Directive (97/23/EC).

Management system

Management system shall refer to a system that is used to establish policy and objectives and to achieve those objectives (SFS-EN ISO 9000:2005).

Stress analysis

Stress analysis shall refer to a strength analysis based on the modelling of the actual structure and loads of pressure equipment, which is used to eliminate the risk of failure caused by the loss of the load-bearing capacity, excessive deformation and fatigue, when the acceptance limits that have been set for the calculated stresses governing these mechanisms, as stipulated in the applicable standard, are met.

System

System shall refer to a combination of components and structures that performs a specific function.

Corrective action

Corrective action shall refer to an action intended to eliminate a nonconformity or other undesirable situation.

Repair work

Repair work shall refer to the restoration of a faulty component or structure to a state which conforms to the original designs.

Quality management system

Quality management system shall refer to a management system to direct and control an organisation with regard to quality. (SFS-EN ISO 9000:2005).

Component life cycle

Component life cycle shall refer to the various stages of a component from design to production, operation, maintenance and decommissioning.

Strength analysis

Strength analysis shall refer to determination of stresses and deformations in the structure using the load provided (or other stress), or to determination the maximum loads using the allowable stresses and deformations when the geometry, dimensions and material of the structure are known; strength analyses also include the loading analyses stress analyses, fatigue analyses, brittle fracture analyses and leak before break (LBB) analyses.

Licensee's in-house inspection organisation

Licensee's in-house inspection organisation shall refer to the licensee's separate inspection unit, the position of which is arranged in compliance with the type B requirements of ISO/IEC EN 17020, the operations of which meet the specific requirements laid down by STUK, and which STUK has approved to carry out inspection tasks pertaining to the pressure equipment, steel and concrete structures and mechanical components of a nuclear facility in the form of in-house control by the licensee.

Mechanical load

Mechanical load shall refer to the pressure, external forces and moments which satisfy the laws of equilibrium between external and internal forces and moments.

Modification

Modification shall refer to introducing changes to a system, structure or component so that it no longer corresponds to previous specifications.

Construction plan

Construction plan shall refer to the design documentation compiled for the purpose of pre-inspection conducted by STUK or an authorised inspection body.

Construction inspection

Construction inspection shall refer to the verification of the requirements prescribed in the product's construction plan.

Manufacturer approved by STUK

Manufacturer approved by STUK shall refer to a manufacturer approved under Guide YVL E.3.

Finnish Building Code

Finnish Building Code (RakMK) shall refer to the construction-related regulations supplementing the Land Use and Building Act and Decree.

Design basis

Design bases shall refer to all requirements, definitions and bases for normal operational conditions and accidents that pertain to the design and operation of a plant, system and component.

Electrical equipment

Electrical equipment shall refer to equipment used in the production, transmission and transformation of electrical power and the protection of the grid. Electrical equipment includes accumulators, transformers, distribution centres, power distribution network protective relays, motors, frequency converters and electromechanical components. If a nuclear facility uses distributed instrumentation and control systems, with I&C functions distributed between various pieces of electrical equipment, such as protective relays and frequency converters, the requirements of I&C equipment shall also be taken into account in handling these electrical equipment.

Inspection

Inspection shall refer to the examination of components or structures and related designs and processes as well as the verification of their conformity to requirements in terms of the requirements presented in STUK's decisions, the YVL Guides and the design bases.

Inspection organisation

Inspection organisation shall refer to an organisation that performs inspections to examine a product, process, service or installation, or the design thereof, and to verify their conformity to requirements. (EN 17020)

Steel structure

Steel structure shall refer to structural steel components that are delivered as construction products. Typical steel structures of nuclear facilities include: load-bearing structures of buildings, load-bearing steel structures of the concrete reactor containment, vessels subject to hydrostatic pressure, piping break sup-

ports, missile protectors, storage racks for fresh and spent fuel, gates and linings of spent fuel pools, crane rail supports, doors and hatches, steel platforms and spent fuel handling equipment and crane rails.

Testing

Testing shall refer to determining one or more characteristics of an object evaluated for conformity to requirements (SFS-EN ISO/IEC 17000, 2005).

System/structure/component important to safety

System/structure/component important to safety shall refer to a system, structure or component needed, either as such or indirectly, to bring a nuclear power plant to a safe state, maintain it in a safe state, or monitor and prevent the dispersion of radioactive substances in normal operation as well as in disturbances and accidents. This refers to systems, structures and components in safety classes 1, 2 and 3 and systems, structures and components in class EYT/STUK that protect the systems executing the safety functions against internal or external hazards, or that are needed to control a DEC C event as laid down in Guide YVL B.1.

Safety-classified system/structure/component

Safety-classified system/structure /component shall refer to a system, structure or component assigned to safety classes on the basis of its safety significance.

Conformity assessment

Conformity assessment shall refer to the demonstration that the requirements (SFS-EN ISO/IEC 17000, 2005) relating to a product, process, system, person or body are fulfilled.

Conformity assessment body

Conformity assessment body shall refer to a body that implements conformity assessment services (SFS-EN ISO/IEC 17000, 2005).

Manufacturer

Manufacturer shall refer to an individual or organisation responsible for the design, manufacture, testing, inspection and installation of equipment or sets of assemblies. A manufacturer may subcontract one or more of the said tasks under its responsibility.

Control of manufacturing

Control of manufacturing shall refer to a process to monitor the progress of manufacture to ensure that a product or delivery follows all designs and plans.

Individual competence

Individual competence shall refer to a person's knowledge and skills, suitability for a task, attitudes towards and understanding of the safety significance of his or her own work and tasks, and an ability to apply the above to the defined safety-significant task.

References

1. Nuclear Energy Act (990/1987).
2. Nuclear Energy Decree (161/1988).
3. Government Decree on the Safety of Nuclear Power Plants (717/2013).
4. Government Decree on the Security in the Use of Nuclear Energy (734/2008).
5. Government Decree on the Safety of Disposal of Nuclear Waste (736/2008).
6. Act on the Openness of Government Activities (621/1999).
7. Act on Electronic Services and Communication in the Public Sector (13/2003).
8. Administrative Procedure Act (434/2003).
9. Language Act (423/2003).
10. Sámi Language Act (1086/2003).
11. Tort Liability Act (412/1974).
12. Act on the Accreditation of Conformity Assessment Services (920/2005).
13. Act on the Amendment of the Act on the Centre for Metrology and Accreditation (921/2005).
14. Government Decree on the Amendment of the Decree on the Centre for Metrology and Accreditation (1193/2005).
15. Government Decree on the Conformity Assessment Advisory Board (977/2005).
16. Pressure Equipment Act (869/1999).
17. Decree on the Inspection Organisations Referred to in the Pressure Equipment Act (890/1999).
18. Benchmarking the European inspection practices for components and structures of nuclear facilities, WENRA (2012).
19. EN ISO 9001, Quality management systems – Requirements (ISO 9001).
20. EN ISO 17000 series, Conformity assessment – Vocabulary and general principles (ISO/IEC 17000).
21. EN ISO/IEC 17025:2005: Competence of testing and calibration laboratories General requirements.
22. EN ISO/IEC 17020:2012: Conformity assessment – Requirements for the operation of various types of bodies performing inspection.
23. EN ISO/IEC 17021:2011: Conformity assessment. Requirements for bodies providing audit and certification of management systems.
24. EN ISO/IEC 17024:2012: Conformity assessment. General requirements for bodies operating certification of persons.
25. EN ISO series, Quality management systems – Fundamentals and vocabulary (ISO 9000).
26. EN ISO 27000 series, Information technology – Security Techniques – Information Security Management Systems (ISO 27000).
27. ASME QAI-1-2010, Qualifications for Authorized Inspection (Revision of ASME QAI-1-2005).

APPENDIX A The general division of inspection responsibilities between STUK and an authorised inspection body (IO)

The detailed division of inspection responsibilities (STUK/IO) is presented in the E series Guides for specific fields of technology.

Approval or control	Safety class		
	1	2	3 **)
Licensing, planning, and other advance approvals			
Manufacturers	STUK	STUK/IO	STUK/IO
Inspection organisations	STUK	STUK	STUK
Testing organisations (E.12)	STUK	STUK	STUK
Requirement specification for design and quality control	STUK	STUK	STUK
Systems design	STUK	STUK	STUK
Construction plan	STUK	STUK/IO	STUK/IO
Type approval documentation	STUK	STUK/IO	IO
Manufacturing, and construction inspection			
Control of manufacturing	STUK	STUK/IO	STUK/IO
Construction inspection	STUK	STUK/IO	STUK/IO
Installation and commissioning inspections			
Installation	STUK	STUK/IO	STUK/IO
Commissioning *)	STUK	STUK/IO	STUK/IO
Pressure equipment registration	STUK	STUK	STUK
In-service supervision and inspections			
Maintenance, repair work and modifications	STUK	STUK/IO	STUK/IO
Periodic inspections (E.5)	STUK	STUK	STUK
Periodic inspections (E.6)	-	STUK	STUK/IO
Pressure equipment periodic inspections (E.3)	STUK	STUK	STUK/IO

*) Pre-operational testing programmes fall under STUK's sphere of inspections.

**) Those inspections of safety class 3 components and structures that are marked with the annotation STUK/IO primarily fall within the IO's area of operations.

APPENDIX B Competence required of an authorised inspection body and its personnel

B01. Competence requirements for the inspector/organisation in the conformity inspection of pressure and mechanical components and structures (piping, containers, heat exchangers, valves, pumps, emergency power supplies, structures).

B02. The requirements shall also apply to the licensee's in-house inspection organisation, where applicable.

B03. Competence is required of the inspecting organisation, at minimum, in those areas that are pivotal to the assessment of the component's design bases in terms of integrity and operability.

B04. Training and experience for inspection tasks

- Applicable technical training that has been supplemented, as necessary, with further training – such as IWI, IWE and NDT qualifications. Minimum inspector experience of 2 years; if experience is less than that, the guidance of an experienced inspector is required.

B05. YVL Guides

- E series YVL Guides
- YVL B.1
- YVL B.6
- YVL B.8
- YVL A.3
- YVL A.4
- YVL A.5
- YVL D.3-D.5.

B06. Manufacture technology, material technology and equipment technology

- Familiar with the manufacturing procedures used, and knows how to assess the qualification procedures and acceptability of the manufacturing instructions.
- Knows how to assess the acceptability of construction materials and welding consumables used for their purpose of use.

- Knows the ageing phenomena of structures and components that are typical for nuclear facility operation.
- Knows how to assess the operational experiences of the component and/or type-testing, and compare their adequacy to the location requirements.
- Familiar with the structure and operation of the component in assessing its conformity at the factory.

P07. Quality management, inspection technology and testing technology

- Knows how to assess the acceptability of manufacturers with consideration to the requirements of the E series YVL Guides.
- Familiar with the inspection and testing requirements of the YVL Guides and standards, and knows how to assess the acceptability of the inspection plans.
- Familiar with the inspection/testing methods and their application, and knows how to assess the inspection/testing instructions and the acceptability of the results.

B08. Strength engineering

- Familiar with the calculation methods, dimensioning and stress analyses, fracture mechanisms, fatigue analyses and the standards applied when required by the inspection object.
- Knows how to do approximate corroborating calculations and/or assess the calculation results
- Familiar with the fundamentals of dynamics, recognises related potential challenges, and knows how to assess acceptability while taking these fundamentals into account.
- Thermal engineering and flow dynamics
- Knows how to assess functional dimensioning, for example pump operation, valve capacity or heat exchanger performance

- Familiar with thermohydraulic loads as well as pressure transients and temperature transients
- Knows how to do approximate calculations.

B09. Electrical and I&C equipment

- Knows how to assess the acceptability of electrical and I&C equipment (in mechanical components)
- Applicable electrical or I&C training
- Familiarity with electrical safety regulations.

B10. Power plant engineering

- Familiar with the purpose of use of the component in the process system
- Knows how to assess the conformity to requirements of the component and structures
- Familiar with the operational principles behind a nuclear power plant.

B11. Construction engineering

- The personnel of an inspection organisation inspecting construction plans shall have sufficient experience in the design of demanding structures corresponding to structures of a nuclear power plant. Competence requirements applied to the designers of structures are presented in Guide YVL E.6.
- A person in charge of plan inspection work and persons performing inspections shall fulfil the same competence requirements listed in Guide YVL E.6.
- The inspector of fire plans shall have the competence required of a special planner in the field laid down in the Land Use and Building Act and decrees as well as experience in fire safety planning at industrial plants similar to a nuclear facility.

APPENDIX C Documents prepared by the authorised inspection body in various phases of the life cycle of a component or structure

STUK's part	Life cycle of a component or structure, and document produced by the authorised inspection body				
System design documentation, and the design bases of components and structures Decision Presentation memorandum Inspection memorandum	Construction plan	Manufacture/ construction	Installation plan	Installation inspection	Commissioning inspection
	Decision Justification memorandum Inspection memorandum *)	Inspection protocol	Decision Justification memorandum Inspection memorandum *)	Inspection protocol	Inspection protocol Certificate of conformity

*) Inspection memorandum to be drawn up in demanding cases, or if there is more than one inspector. Conformity assessments created into information systems may also be considered inspection memorandum.