

# Safety Standards

of the  
Nuclear Safety Standards Commission (KTA)

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**KTA 1404 (6/01)**

**Documentation during the Construction and Operation of  
Nuclear Power Plants**

(Dokumentation beim Bau und Betrieb von Kernkraftwerken)

A previous version of this Safety Standard  
was issued 6/89

If there is any doubt regarding the information contained in this translation, the German wording shall apply.

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# KTA SAFETY STANDARD

June 2001

Documentation during the Construction and Operation  
of Nuclear Power Plants

KTA 1404

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PLEASE NOTE: Only the original German version of this safety standard represents the joint resolution of the 50-member Nuclear Safety Standards Commission (Kerntechnischer Ausschuss, KTA). The German version was made public in Bundesanzeiger No. 235 b on December 15, 2001. Copies may be ordered through the Carl Heymanns Verlag KG, Luxemburger Str. 449, 50939 Koeln (Telefax +49-221-94373-603).

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**Comments by the editor:**

Taking into account the meaning and usage of auxiliary verbs in the German language, in this translation the following agreements are effective:

- |                        |  |
|------------------------|--|
| <b>shall</b>           | indicates a mandatory requirement,   |
| <b>shall basically</b> | is used in the case of mandatory requirements to which specific exceptions (and only those!) are permitted. It is a requirement of the KTA that these exceptions - other than those in the case of <b>shall normally</b> - are specified in the text of the safety standard, |
| <b>shall normally</b>  | indicates a requirement to which exceptions are allowed. However, the exceptions used, shall be substantiated during the licensing procedure,  |
| <b>should</b>          | indicates a recommendation or an example of good practice,   |
| <b>may</b>             | indicates an acceptable or permissible method within the scope of this safety standard.  |

## Fundamentals

(1) The safety standards of the Nuclear Safety Standards Commission (KTA) have the task of specifying those safety related requirements which shall be met with regard to precautions to be taken in accordance with the state of science and technology against the damage arising from the construction and operation of the facility (Sec. 7 para. 2 subpara. 3 Atomic Energy Act) in order to attain the protection goals specified in the Atomic Energy Act and the Radiological Protection Ordinance (StrlSchV) and which are further detailed in the "Safety Criteria for Nuclear Power Plants" and in the "Guidelines for the Assessment of the Design of PWR Nuclear Power Plants against Incidents pursuant to Sec. 28 para 3 of the Radiological Protection Ordinance (StrlSchV) - Incident Guidelines".

(2) Criterion 2.1 of the Safety Criteria requires that the documents needed for the assessment of quality shall be available. Further details concerning this requirement are contained in the "Principles Regarding the Documentation of Technical Documents by the Applicant/Licensee in the Course of the Construction, Operation and Decommissioning of Nuclear Power Plants" (BAnz. No. 56 dtd. March 22, 1988) approved by the Federal Committee for Nuclear Energy.

(3) The documentation during the construction and operation of nuclear power plants comprises all technical documents which will serve as proof in the licensing and supervisory procedure. Basically, the documents needed to assess the quality of design, manufacture, construction and testing as well as of the operation and maintenance of safety-related components shall be kept available during the entire lifetime of the plant.

(4) The purpose and function of documentation are to

- a) indicate the existence of or compliance with statutory prerequisites (e.g. licensing prerequisites in accordance with Sec. 7, para. 2 of the Atomic Energy Act) as well as
- b) describe the desired state of the plant and essential processes during its construction,
- c) permit an assessment of the actual state of the plant,
- d) represent the facts required for the safe operation of the plant,
- e) permit feedback of experience.

(5) This safety standard contains general provisions concerning the type and scope of documentation as well as periods and locations of its retention, thus reflecting the requirement contained in Sec. 12 of KTA 1401. The specification of details concerning type, form and scope of the documentation shall be laid down in the component-related standards as well as in the building codes of the federal states, the Federal Immission Protection Act, the Environmental Acceptability Testing Act, the Water Resources Act and the clean water acts of the federal states.

## 1 Scope

(1) This safety standard shall apply to the documentation to be prepared within the scope of the licensing and supervisory procedure in the course of the planning, construction, commissioning and operation of a nuclear power plant and shall also apply, where required, to spare materials and material samples.

(2) Documents concerning components and component parts which have been finally removed from the nuclear power plant are not subject to the specifications of this safety standard.

## 2 Definitions

(1) Operational documentation

Operational documentation is the compilation, made in the course of operation, of

- a) essential safety-related operating records,
- b) proofs concerning the preservation of the quality of the plant and its components,
- c) records concerning the radiological protection of personnel and environment,
- d) further proofs concerning compliance with provisions and conditions imposed.

(2) Data carrier

A data carrier is a medium on which data are stored or recorded.

(3) Document

A document is the material unit of a documentary data carrier.

*Note:*

*Unless otherwise defined, documents are both analogous (documents as paper version) and digital documents.*

(4) Documentation

Documentation is the systematic compilation of documents.

(5) Final file

Final file is that part of the documentation which is preserved during the lifetime of the plant or of the documented parts of the plant. Final file includes the licensing documentation as well as parts of the quality documentation and the operational documentation.

(6) Licensing documentation

Licensing documentation is the compilation of the various licenses as well as of the documents quoted in the licenses.

(7) Quality documentation

Quality documentation is the compilation of the proofs of the quality of the plant and its parts, including design review documents. It comprises documents for final file and for interim file.

(8) Stamping

Stamping is the confirmation of a positive result of a test in the documents of quality documentation for the purpose of a proof in the case of

- a) tests resulting in a yes/no statement

or

- b) tests the performance and desired values of which are laid down in the specification or test instructions so that it will not be necessary to record the actual values necessary to assess the quality.

(9) Interim file

Interim file is that part of the quality documentation which is stored by the manufacturer over the manufacturing time of the components until their delivery and until review of the documents belonging to the final file. The interim file comprises such documents which are important as proof of the course of manufacture but are not needed for the description of the final state of the plant or its parts. This includes, for example,

- a) proofs of tests which will be repeated when the plant or its parts have reached its/their final state,
- b) recordings concerning the quality assurance system.

### 3 General requirements for documentation

#### 3.1 General principles

(1) The documents compiled shall be complete with respect to the safety-related information contained and shall describe both the desired values and the actual state of the plant and its parts. These documents include

- a) documents concerning the requirements on which the construction and testing of the plant and its parts are based,
- b) documents concerning the safety-related tasks and modes of functioning of plant components and systems,
- c) maintenance plans,
- d) documents concerning the results of safety-related measurements and tests,
- e) documents stating compliance with safety-related requirements (e.g. proofs by recalculation and design plans or drawings) for the plant and its parts,
- f) essential safety-related operational records,
- g) documents concerning the radiological protection of personnel and environment,
- h) other documents to prove compliance with safety provisions, conditions imposed pursuant to Sec. 17, para. 1 of the Atomic Energy Act and instructions issued pursuant to Sec. 19, para. 3 of the Atomic Energy Act,
- i) documents relating to building codes, clean water acts and the Federal Immission Protection Act and the Environmental Acceptability Testing Act,
- k) all licenses.

(2) The applicant or licensee shall be responsible for the preparation, maintenance and updating of the documentation. Tasks resulting with respect to the fulfilment of these obligations may be delegated to sub-contractors.

(3) Both the documentation system and the extent of documentation shall be specified already at the planning stage. That part of the documentation which is intended for final file shall be updated over the manufacture, construction, commissioning and operational period and be retained until the removal of the respective component from the plant (see Section 4.1).

(4) Analogous documents may be replaced by microfilms or electronic data carrier if the principles specified in **Annexes A** and **B** are adhered to. In this case, all original documents except for the licensing documentation may be destroyed unless they have to be retained as original document for the purpose of legal prescriptions, rules, ordinances, licenses and regulatory prescriptions.

(5) Where descriptions of systems and functions are not part of the licensing documentation, these shall be made part of the final file.

#### 3.2 Licensing documentation

The licensing documentation shall be kept separately within the final file or be marked as such in a suitable manner.

#### 3.3 Quality documentation

(1) The extent of quality documentation shall be laid down in the licensing or design review documents unless specifications to this effect are contained in the specific safety standards.

(2) The detail information to be contained in the documentation may be graduated to correspond to the safety-related significance of the components and individual parts of the plant.

(3) The design review documents may be used for the verification of tests (e.g. by way of stamping). Therefore, the design review documents including the test records shall be adapted to this purpose, where required. The design review documents shall be made part of the final file. Changes in design review documents shall be carried out in accordance with Sec. 5.4 of KTA 1401.

(4) Tests in which several parties are involved may be verified by way of test records established in common unless other KTA safety standards contain other specifications.

(5) It shall be ensured that all documents required for documentation are established, compiled and examined in parallel to the manufacturing process.

(6) Where proofs have to be corrected or supplemented for material reasons, the original document shall be revised by those parties who signed the original. These changes shall be marked as such. If this procedure cannot be applied an additional document shall be established.

#### 3.4 Operational documentation

(1) The detail information to be contained in the documentation may be graduated to correspond to the safety-related significance of the components and individual parts of the plant.

(2) Operating and test instructions may be used to verify operation and tests.

(3) Tests in which several parties are involved may be verified by way of test records established in common unless other KTA safety standards contain other specifications.

(4) Where proofs have to be corrected or supplemented for material reasons, the original document shall be revised by those parties who signed the original. These changes shall be marked as such. If this procedure cannot be applied an additional document shall be established.

#### 3.5 Components of identical design

If components of identical design exist several times, the documentation may be divided into

- a) a common part  
and
- b) a part-related documentation section.

#### 3.6 Duplicate documentation

(1) A duplicate copy shall be prepared of all important documents.

(2) The content and scope of the duplicate documentation shall be based on the requirement contained in Sec. 53, para. 1 of the Radiological Protection Ordinance so that it is ensured that even in the case of restricted access to, destruction or partial destruction of the final file, it will still be possible for the licensee to safely and quickly cope with the consequences of incidents and accidents and for the authorities to carry out a comprehensive and fast ascertainment of the damage involved. The content and scope of the duplicate documentation are specified in detail in **Annex C**.

(3) The documents which are part of the duplicate documentation shall be stored and compiled such that, upon request, it will be possible for a task force outside the power plant to plan and initiate measures to ensure

- a) subcriticality,
- b) residual heat removal,
- c) limited release of radioactive substances,
- d) the integrity of the containment.

### 3.7 Updating service

An updating service shall be set up to ensure that the documents in the final file and in the duplicate documentation are kept up to date and complete. In particular, the updating service shall ensure that

- a) the documents are supplemented and updated to the required extent,
- b) the users of excerpts of the documentation are informed without delay on any exchange of or supplement to the documents.

## 4 Retention and storage (Filing)

### 4.1 Final file

(1) From the beginning of erection of the respective plant part (or from the commissioning in the case of electric equipment), an updated copy of the documents intended for final file shall be kept available on the nuclear power plant site.

(2) Rooms and administrative facilities shall be available to enable authorities and authorized inspectors to inspect or review the documents at any time.

(3) The data contained in the documents of the final file shall be available on the nuclear power plant site to correspond to the progress of construction work.

(4) At the time of commissioning of the plant, the documentation shall be stored such that it is protected against fire, flood, detrimental influences of temperature, light and humidity as well as against insects, other parasites and unauthorized access of third parties.

### 4.2 Spare materials and material specimens

The spare materials to be kept as provided for in specific safety standards (e.g. KTA 3201.1) and the material specimens to be kept shall be stored on the nuclear power plant site such that they are protected against detrimental environmental influences, can be identified on the basis of their markings and are capable of being handled.

### 4.3 Duplicate documentation

The duplicate documentation shall be retained such that access to the documents is not endangered by any impact that may originate from the plant; see Section 3.6.

## 5 Documentation system and techniques of final file and duplicate documentation

(1) The documents shall be filed in the documentation in accordance with a classification system offering a detailed key so that they can be easily allocated. The structure of the classification system shall be specified (e.g. following the hierarchical principle).

(2) There shall be possibilities for controlled supplementation and updating as well as for checking the completeness of the documents. The modalities of access to the documentation shall be laid down on an intra-plant basis to ensure completeness of documents.

(3) The documentation system shall permit the safe retrieval of the desired information and preclude any confusion with obsolete information.

(4) The analogous documents shall be legible. The selection of the paper quality as well as of the inscription and duplication techniques shall be such that none of the original information will get lost during the intended period of document retention.

(5) In the case of magnetic layer and other data carriers with restricted lifetime, suitable storage techniques or the timely duplication of the data onto other data carriers shall be used to ensure that no information will get lost that may misrepresent their content.

## 6 Documentation of structural engineering

### 6.1 Extent and subdivision of documentation

(1) The extent of the documentation shall comply with the requirements of nuclear law, building codes and water conservation law, Federal Immission Protection Act and Environmental Acceptability Testing Acts.

(2) The documents shall be subdivided as to

- a) the planning of structures
- and
- b) the construction of structures.

### 6.2 Type of File

When filing the documents to be documented, the following two types of file shall be distinguished:

- a) final file (E)
- and
- b) interim file (Z).

### 6.3 Documents on planning of structures (licensing documentation)

#### 6.3.1 General

Documents concerning the planning of structures shall be understood as documents accompanying the application as approved by the competent authorities. When filing these documents they shall be subdivided into

- a) entire plant-related documents
- and
- b) structure-related documents.

#### 6.3.2 Applications for construction and respective licenses

All licensing documents required in accordance with the provisions of the state building codes shall be made part of the final file in their approved form.

#### 6.3.3 Applications under the Water Resources Act, Federal Immission Protection Act and Environmental Acceptability Law and the respective licenses

All licensing documents required in accordance with the Water Resources Act, Federal Immission Protection Act and Environmental Acceptability Law in conjunction with the respective legislation and ordinances of the federal states shall be made part of the final file in their approved form.

### 6.4 Documents on construction of structures (quality documentation)

#### 6.4.1 General

Documents on construction of structures shall be understood as the documents which contain the requirements for the construction of structures and their parts. When filing these documents, they shall be subdivided into:

- a) documents for the construction of structures
- and
- b) proofs of the construction of structures.

**6.4.2 Documents for the construction of structures**

(1) All plans for the construction of structures, including the respective explanatory reports and technical specifications in their final form shall be made part of the final file.

(2) The plans for the construction of structures include:

- a) formwork plans,
- b) anchoring formwork plans,
- c) reinforcement plans,
- d) steel construction plans,
- e) plans for the waterproofing of structures,
- f) ventilation plans,
- g) fire protection plans.

(3) Where the documents for the construction of structures are licensing documents, they shall be stored together with the licensing documentation.

**6.4.3 Proofs of construction of structures**

(1) Basically, proofs of construction of structures shall be made part of the interim file. Only such proofs as confirm the proper execution of the construction work shall be transferred

to the final file. These are the final acceptances and the finalizing review reports.

*Note:*

*The following proof forms are used for documenting the construction of structures:*

a) *within the scope of surveillance by the licensee:*

- 1) *construction job-records or daily reports,*
- 2) *checks of supplies - forms,*
- 3) *manufacturer's test certificates,*
- 4) *forms concerning tests,*  
*These include e.g. the forms issued by the Joint Committee of the German Concrete Association (DBV) and the Concrete BII Construction Sites Quality Control (GSV -BII),*
- 5) *logs concerning field tests;*

b) *within the scope of surveillance by third parties:*

- 1) *acceptance records,*
- 2) *test certificates, test notices and permits granted by the building supervision authorities,*
- 3) *surveillance reports issued by third party carrying out surveillance.*

(2) The various proofs of construction of structures, including their allocation to the interim and final file, are listed in **Table 6-1**.

Survey of typical proofs		Type of file	
		E	Z
<b>1</b>	<b>Earthworks and foundation engineering</b> Records on laboratory and filed investigations		Z
<b>2</b>	<b>Pressure-retaining waterproofing</b>		
2.1	Materials used		
	a) Forms for the inspection of supplies (e.g. bituminous construction materials, copper band, plastic sealing sheets)		Z
	b) Forms concerning tests (e.g. filler content of bitumen)		Z
2.2	Execution		
	a) Forms concerning tests (e.g. tapping tests)		Z
	b) Acceptance test records	E	
<b>3</b>	<b>Concrete and reinforced concrete construction</b>		
3.1	Base materials		
	a) Forms for the inspection of supplies		Z
	1) Checking of the delivery note and the inscription on the packing material		
	2) Visual examination and control of the test mark		
	3) Checking of the proof of the quality control of the following construction materials and products		
	- cement		
	- concrete aggregates		
	- concrete admixtures		
	- concrete additives		
	- ready mixed concrete		
	- reinforcing steel		
	- prefabricated parts		
	b) Test certificates (e.g. for the water to be added if no tap water is used and disturbing impurities are suspected)	E	

**Table 6-1:** Documents regarding construction of structures

Survey of typical proofs		Type of file
		E Z
3.2	Execution of work a) Daily reports (on the incorporation of the reinforcing material in accordance with reviewed reinforcement plans) b) Forms concerning tests 1) Unset concrete (e.g. consistency, water, cement) 2) Hardened concrete (e.g. compressive strength) 3) Technical equipment (e.g. calibration of the batching units for concrete base materials and functional check of the mixing equipment) c) Test notices for concrete pressure pipes d) Supervision reports on the quality control of B II concrete construction sites e) Acceptance records (e.g. checking of reinforcement work) f) Test notices concerning combined construction sections g) Carcass acceptance records	Z Z E Z Z E E
<b>4</b>	<b>Steel construction</b>	
4.1	Structural steel members and weld filler metals supplied to site a) Forms for the inspection of supplies b) Manufacturer's test certificates	Z Z
4.2	Execution a) Approval testing of welders b) Welding records and welding procedure sheets c) Forms concerning tests (e.g. functional check of welding equipment during production testing; production control tests, tests on test coupons)	Z Z Z
<b>5</b>	<b>Steel internals</b>	
5.1	Receiving inspection of product forms and coating materials a) Forms for the inspection of supplies b) Manufacturer's test certificates	Z Z
5.2	Checks during manufacture a) Forms concerning tests, daily reports (e.g. procedure performance qualifications, production control tests; corrosion protection; type, location and number of internals prior to the application of concrete) b) Acceptance records	Z E
<b>6</b>	<b>Structural fire protection on the site</b>	
6.1	Construction materials and structural parts supplied for fire protection closures, ventilation systems, fire detection systems and fire extinguishing systems Forms for the inspection of supplies	Z
6.2	Installation of fire protection closures, ventilation systems, fire detection systems, and fire extinguishing systems Acceptance records	E
<b>7</b>	<b>Decontamination coating</b>	
7.1	Quality proof of the coating materials Forms for the inspection of supplies	Z
7.2	Tests during execution a) Forms concerning tests (e.g. control areas) b) Construction job records or daily reports	Z Z
<b>8</b>	<b>Prestressed concrete</b>	
8.1	Receiving inspection of the material (e.g. prestressing steel, base materials of injection mortar) Forms for the inspection of supplies	Z
8.2	Field tests a) Forms concerning tests b) Records (e.g. prestressing record; injection record) c) Construction job records or daily reports d) Acceptance records	Z Z Z E
<b>9</b>	<b>Construction parts and types requiring a license under the building code (special construction measures)</b> Examples: Casting of the steel containment vessel; liner structure for the gas-tight lining of vessels and pools; dowel jobs and through-wall assemblies	
	a) Construction job records or daily reports b) Test records c) Acceptance records	Z Z E

Table 6-1: Documents regarding construction of structures (continued)

**7 Documentation of mechanical engineering and process engineering**

(1) The confirmation of tests carried out shall be made either by proofs or by stamping of design review documents or other suitable documents (e.g. check sheet, stamping list, attestation list).

(2) When filing proofs, a distinction shall be made between the following types of file:

a) final file (E)

and

b) interim file (Z).

Unless specifications are contained in the component-related safety standards, the type of file shall be laid down in the licensing or design review documents.

General specifications concerning the type of file are contained in **Table 7-1**.

Survey on typical proofs	Type of file	
	E	Z
<b>I Proof that manufacturing prerequisites have been met</b>		
Material approval		Z
Trial of manufacturing processes		Z
Procedure qualification tests		Z
<b>II Proofs of material tests</b>		
Review of manufacturing prerequisites	E <sup>1)</sup>	
Checking of processing ability		Z
Material tests in the heat treatment or fabrication condition to prove that the required mechanical properties have been obtained	E	
Interim material tests		Z
Release of documentation	E	
<b>III Proof of field fabrication and in-process inspections</b>		
Review of manufacturing prerequisites	E <sup>2)</sup>	
Final inspection of parts	E <sup>3)</sup>	
In-process inspection of parts		Z <sup>3)</sup>
Supervision of production		
- collective certificate	E	
- record		Z
Release of documentation	E	
<b>IV Proofs of commissioning tests</b>	E <sup>3)</sup>	
1) To be effected by the acceptance test certificate or proved by stamping. 2) To be proved by stamping. 3) May be proved by stamping if the only purpose of the test is to demonstrate that the desired values have been complied with.		

**Table 7-1:** Documents relating to mechanical and process engineering

(3) Where specified that tests are to be confirmed by stamping, the preparation of test certificates shall only be necessary if the test result or the performance of the test is not in compliance with the specified desired values and a non-conformance report has to be prepared in accordance with the specifications of the licensing or design review documents.

(4) Proofs which were intended to be included in the interim file or were to be effected by stamping shall be included in the final file if a non-conformance report has to be prepared because of test results deviating from the desired values.

**8 Documentation of electric as well as instrumentation and control equipment**

**8.1 Subdivision of documentation**

The documents may be subdivided with respect to

- a) planning including approval and design review,
- b) tests during manufacturing
- and
- c) construction.

**8.2 Type of file**

(1) When filing proofs, a distinction shall be made between the following types of files

a) final file (E)

and

b) interim file (Z).

(2) Unless specifications are contained in the component-related safety standards, the type of file shall be laid down in the licensing or design review documents. General specifications concerning the type of file of documents which have not yet become licensing documents are contained in **Table 8-1**. Under I, this table addresses documents referring to the

- a) instrumentation and control equipment of the safety system,
  - b) incident instrumentation,
  - c) instrumentation for radiological protection and environmental monitoring as well as the meteorological instrumentation,
  - d) the means of communication,
- and under item II, documents referring to
- e) the electric power supply of the safety system, including grounding, lightning protection and lighting equipment,
  - f) the active and passive electric components of systems which are important in terms of safety.

(3) Tests may also be confirmed by stamping.

**9 Documentation of operation**

**9.1 General**

The documents of licensing and quality documentation shall be complete and reflect the actual state of the plant and its parts. The documents shall be updated in particular with a view to

- a) the storage of spare parts,
- b) maintenance measures
- and
- c) modifications.

The updating and filing of the quality documentation shall be made in accordance with Sections 6, 7 and 8.

**9.2 Operational documentation**

**9.2.1 Management of operation**

The data and results obtained in the course of the management of operation may be recorded and documented in different manners in accordance with the respective requirements. Specifications concerning the type of recording shall be laid down in writing in the operating manuals in accordance with KTA 1201. Typical documents to be prepared in connection with the management of operation are listed in **Table 9-1** under item I.

### 9.2.2 Maintenance and inspections

The valid maintenance instructions shall be documented. Maintenance records shall be retained until the next maintenance activity.

### 9.2.3 In-service inspections

- (1) The performance and results of the initial tests of the in-service inspections listed in the test schedule in accordance with KT 1202 shall be documented and retained as long as the parts tested are integral parts of the plant.
- (2) The performance and results of the in-service inspection shall be documented.
- (3) Basically, the proofs of in-service inspections shall be retained as long as the parts tested are integral parts of the plant, with the exception of results within the prescribed tolerances; these need only be retained until the next similar in-

service inspection unless they indicate tendencies which may be important for safety.

(4) Test instructions which are no longer valid shall be subject to the same retention period as the results of the respective in-service inspection.

(5) In accordance with Sec. 5.3 of KT 1202, the reasons leading to changes in the test schedule and the test instructions contained shall be documented. The respective documents shall be retained during the lifetime of the plant.

### 9.2.4 Radiological protection

The documents required in connection with the radiological protection of personnel and environment and with the handling of radioactive substances shall be documented and retained in accordance with item II of **Table 9-1**.

Survey of typical proofs	Type of file E Z
<p><b>I Documents of instrumentation and control equipment of the safety system</b></p> <p>Proofs of tests performed during manufacture</p> <p>1 Type testing</p> <p>(1) Test records (e.g. in accordance with Sec. 6.2 of KTA 3503 and Sec. 6.2 of KTA 3505)</p> <p>(2) Test certificates (e.g. in accordance with Sec. 6.3 of KTA 3503 and Sec. 6.3 of KTA 3505)</p> <p>(3) Certificates of supplementary tests (e.g. approval or qualification test)</p> <p>2 Manufacturer's test</p> <p>(1) Report on the review of the quality assurance system (e.g. in accordance with Sec. 6.3.1 of KTA 3507)</p> <p>(2) Certification of product-specific quality assurance measures (e.g. in accordance with Sec. 6.3.1 of KTA 3507)</p> <p>(3) Manufacturer's test certificates of the equipment (e.g. in accordance with Sec. 6.3.2 of KTA 3507)</p> <p>Proofs of tests performed during construction/erection</p> <p>1 Assembly</p> <p>(1) Records, reports, certificates</p> <p>(2) Records, reports, certificates of safety-related importance</p> <p>(3) Test lists, records and certificates</p> <p>2 Commissioning</p> <p>(1) Records, reports, certificates</p> <p>(2) Records, reports, certificates of safety-related importance</p> <p>(3) Test lists, records and certificates</p> <p>3 Gauging and calibration reports of radiation measuring instruments</p>	<p>Z</p> <p>E</p> <p>E</p> <p>Z</p> <p>Z</p> <p>E</p> <p>Z</p> <p>E</p> <p>E</p> <p>E</p> <p>E</p> <p>E</p>
<p><b>II Documents of the electric power supply of the safety system</b></p> <p>Proofs of tests performed during manufacture</p> <p>1 Type testing</p> <p>(1) Test records (test reports)</p> <p>(2) Test certificates</p> <p>(3) Certificates of supplementary tests (e.g. in accordance with Sec. 4.16 of KTA 3701 regarding e.g. vibrations, operating and incident conditions)</p> <p>2 Component tests, manufacturer's tests</p> <p>(1) Test records</p> <p>(2) Test records of safety-related importance</p> <p>(3) Test certificates</p> <p>Proofs of test performed during construction/erection</p> <p>1 Assembly</p> <p>(1) Records, reports, certificates</p> <p>(2) Records, reports, certificates of safety-related importance</p> <p>(3) Test lists, records and certificates</p> <p>2 Commissioning</p> <p>(1) Records, reports, certificates</p> <p>(2) Records, reports, certificates of safety-related importance</p> <p>(3) Test lists, records and certificates</p>	<p>Z</p> <p>E</p> <p>E</p> <p>Z</p> <p>E</p> <p>E</p> <p>Z</p> <p>E</p> <p>E</p> <p>E</p> <p>E</p> <p>E</p>

**Table 8-1:** Documents of the electric as well as instrumentation and control equipment

Survey of typical proofs	Retention period (a : no. of years; E : Final file)
<b>I Operational and monitoring documents</b>	
1 Supplementary operating instructions upon expiration of period of validity	1a
2 Records of inspection rounds and analyses	1a
3 Simulation, interlocking and isolation manuals (engineered safety)	5a
4 Wiring and switching manuals, record books, key manual	5a
5 Records concerning start-up and shutdown	E
6 Records concerning refuelling (e.g. fuel arrangement plans)	5a
7 Shift books including shift transfer records	10a
8 Recorder tapes	10a <sup>1)</sup>
9 Records on special operational monitoring	10a
10 Records on the monitoring and measuring of activity discharges (Sec. 48 of the Radiological Protection Ordinance)	30a
11 Records on sequence of incidents	E
12 Measuring records of environmental monitoring (Sec. 48 of the Radiological Protection Ordinance)	E
13 Monthly reports (important operating data)	E
14 Reports on incidents and unusual events as well as on the measures taken	E
15 Proofs of training and exercises	5a
16 Reasons for changing the operating manual	10a
<b>II Radiological protection documents</b>	
1 Attendance records of personnel subjected to radiological protection instructions (Sec. 38, para. 4 of the Radiological Protection Ordinance)	5a
2 Evaluation record of the official measuring agencies (Sec. 41, para. 3 of the Radiological Protection Ordinance)	E
3 Records of the measurements of individual doses and the determination of body doses (Sec. 42, para. 1 of the Radiological Protection Ordinance)	30a <sup>2)</sup>
4 Certificates of medical supervision (Sec. 60, Sec. 61 of the Radiological Protection Ordinance)	10a
5 Records of functional tests and maintenance activities on radiation measuring instruments (Sec. 67, para. 2 of the Radiological Protection Ordinance)	10a
6 Accounting of the production, acquisition, transfer and other whereabouts of radioactive substances (Sec. 69, Sec. 70 of the Radiological Protection Ordinance)	30a
7 Certification of the leak tightness of encapsulated radioactive substances and related periodic inspections (Sec. 66, Sec. 69 para. 2 of the Radiological Protection Ordinance)	3)
8 Release certificates for transports of radioactive substances, fluids and equipment from the controlled area (Sec. 7.2 (h) of KTA 1301.2)	5a
9 Records of radiation measurements in controlled areas (Sec. 4.9 of KTA 1301.2)	E
10 Records of contamination measurements in accordance with Sec. 44 of the Radiological Protection Ordinance if limit values are exceeded (Sec. 42, para. 3 of the Radiological Protection Ordinance; Sec. 4.11 of KTA 1301.2)	30a
11 Recordings concerning feedback of experience (sec. 6.2, para. 4 of KTA 1301.2)	10a
<p>1) Where suitably compacted data are transferred to the final file, recorder tapes need only be retained for a period of five years.</p> <p>2) The documents shall be retained until the person surveilled has reached or would have reached the age of 75 years, but at least 30 years after termination of employment of said person.</p> <p>3) Same retention period as for documents showing the results of in-service inspections (see para. 9.2.3).</p>	

**Table 9-1:** Documents of the operational documentation

## Annex A

### Principles for the microfilming of documents liable to retention

(Source: Letter of the Federal Minister of Finance (BMF) of February 1, 1984 - IV A 7 - S 0318 - 1/84)

#### A 1 General

(1) If documents liable to retention are recorded on microfilms and if the originals are not retained, it shall be ensured that the microfilming method used is in compliance with the generally accepted accounting principles (GoB) and the microfilm image is identical with the original.

(2) If the computer-output-microfilm method (COM method) is used for recording documents on microfilm the stipulations of **Annex B** shall apply.

#### A 2 Process description

(1) The process for the recording of documents on microfilm and for the retention of these microfilms shall be laid down in a process description to be prepared by the person liable to retain the documents.

(2) The way how to resort to a microfilm image shall be described such as to enable a third party to retrieve it.

(3) The process description shall be in compliance with the principles of sections A 3 to A 7.

#### A 3 Classification principle of recording

(1) The principle of order for microfilm recording shall be stated in the process description. It shall be possible for an expert third party to find any microfilm image within an adequate period of time.

(2) It shall be possible to unambiguously attribute the microfilms to the person liable to retain the documents.

(3) If the contents of a document to be recorded in accordance with the process description are continued overleaf, it shall be recorded such that it can be attributed unambiguously.

#### A 4 Process Control

The person liable to retain the documents shall ensure that minutes are kept to contain the following information:

- a) type of document recorded,
- b) place and date of recording,
- c) statement to the effect that the document was recorded completely without being changed. This statement shall be signed by the person doing the microfilming. The original statement shall be retained unless it is recorded along with the document.

#### A 5 Film check

Upon recording, the microfilm shall be checked for technical defects. Defective recordings shall be repeated. Otherwise, the original document shall be retained. The result of the check shall be laid down in the minutes.

#### A 6 Retention

The microfilms shall be retained in a safe and systematic way. Individual microfilm images may also be retained provided a principle of order is laid down in the process description.

#### A 7 Reading and reproduction

##### A 7.1 Reading

Suitable viewers shall be made available for reading the microfilms.

##### A 7.2 Reproduction

It shall be ensured that legible reproductions (microfilm prints) can be made within an adequate period of time, which shall be legible without any additional equipment.

## Annex B

### Principles for electronic archiving of documents liable to documentation

(Source: Letter of the Federal Minister of Finances (BMF) dated November 11, 1995 - IV A8 - S0316 - 52/95)

#### B 1 General

(1) Documents liable to documentation and other documents required may be filed on data carriers if this type of archiving including the procedure used meets the requirements of sections B 2 to B 7. Besides image recording media machine-readable data carriers (e.g. magnetic tape, magnetic disks, electro-optical disks) may be taken into account as data carriers.

(2) Electronic archiving shall ensure that signatures are preserved in pictorial or digital form.

#### B 2 Electronic archiving procedures

(1) Distinction shall be made between the two electronic archiving procedures:

- a) storage of analogous documents (paper versions of documents),
- b) storage of originally digital documents.

(2) Analogous documents shall be scanned and upon scanning be archived on digital data carriers. The digital document established by scanning shall be indexed invariably. The hardware and software shall ensure that the scanned results are invariable.

(3) Originally digital documents shall be archived by transmitting the content and formatting data on a digital data carrier. In the case of originally digital documents, the hardware and software shall ensure that the data cannot be changed either during or upon data transmission to the storage medium. The indexing process shall be the same as for scanned documents.

(4) The procedure of electronic archiving of documents liable to documentation shall be laid down in a procedure description.

#### B 3 Principle of order

(1) Documents liable to documentation are considered to be orderly filed if they have been recorded and stored completely, formally correctly and in time. Storage of the documents in accordance with a specific ordering feature is not prescribed. The requirement for a principle of order is considered to have been met if direct access to the documents stored is possible.

(2) Program chaining between indexing, digital document and data carrier shall be ensured during the entire period of retention.

#### B 4 Control system

##### B 4.1 General

(1) Complex and integrated electronic data processing systems require machine and manual control for completeness and correctness in which case the machine and manual control processes shall be well coordinated.

(2) The responsibilities for electronic archiving shall be laid down in writing where the principle of separating specific duties or functions shall be taken into account. Where this is

impossible or economically not reasonable, further adequate organisational controls are required.

(3) Machine or manual controls performed shall be documented (coordination controls/plausibility controls, release procedures).

(4) Regarding control measures it shall be taken into account that manual controls may be bypassed or not performed with due care, thus requiring subsequent monitoring. Machine controls are test requirements integrated in program flows which are intended to prevent unclear or incomplete data from being stored. Such machine controls may be established both on operating system or system-related software level and on application program level.

##### B 4.2 Safeguarding of program identity

(1) Within a functionable control system the program identity shall also be safeguarded i.e. it shall be checked at specific intervals whether the archiving system used has corresponded to the actual documented system (see also section B 6.2, para. 5).

(2) The necessity of safeguarding the program identity is independent of the type of computer system used (from large computer mainframer to standalone personal computer).

(3) Besides the requirements of section B 6.2, para. 5 a further important prerequisite to safeguard the program identity is

- a) the use of test data sets/systems,
- b) the performance of program employment controls.

(4) With respect to the general requirements for transparency, controllability and reliability of the electronic archiving system used it shall be ensured that each program productively used has been authorized for the right purpose in which case the actually used program version shall be traceable and be documented.

##### B 4.3 Safeguarding of data integrity

Measures for safeguarding the program identity are considered those measures which ensure that data and programs cannot be changed by unauthorized persons. These measures include the description of the access authorization method and the proof of correct allocation of access authorizations.

#### B 5 Data security

##### B 5.1 General

(1) The information stored on data carriers, which is relevant to archiving shall be safeguarded against loss and unauthorized changes as well as against unauthorized access.

*Note:*

*In this connection, information means the software (operating system, application programs), tabular data and master files, activity files (e.g. data of a process) as well as other recordings.*

(2) The information relevant to archiving shall be secured and be protected at least for the period of retention in accordance with section 9. The enterprise shall decide whether and for which information an extended period of retention shall be valid for shop-internal reasons.

(3) Since the requirement that information relevant to archiving has to be made readable at any time, can only be met if the data and software, but also the hardware are always available, the data securing concept shall also include the securing of electronic data processing installations (e.g. hardware, lines).

*Note:*

*The way how to permanently ensure the required data security in the individual enterprises depends on the given technical conditions as well as the possibilities arising therefrom in each individual case.*

(4) To ensure the readability of data carriers during long-time storage of information liable to archiving, it shall be advised at which intervals the readability of data carriers has to be checked. The extension of intervals depends on the storage technology used.

(5) The data integrity concept shall be adapted to the respective actual requirements.

#### **B 5.2 Protection of information against unauthorized changes**

(1) The protection of information against unauthorized changes shall be ensured by effective access authorization and access controls.

(2) The controls of access authorization shall be effected such that only authorized persons have access to programs and data to the extent required for fulfilling their duties.

(3) The controls of access to rooms where the data carriers are stored shall prevent unauthorized persons from having access to data carriers.

#### **B 5.3 Safeguarding of information against loss**

(1) The safeguarding of information against loss requires

a) the performance of data securing procedures for the programs and data installed on the electronic data processing system

*Note:*

*It is purposeful to perform periodic data securing and supplementary ad-hoc securings if in the period between two data securings extraordinarily intense programs and/or data have been changed/processed.*

and

b) measures by which the risks of non-traceability, destruction and theft are reduced to the extent required for the secured programs/data sets.

(2) Security copies shall be additionally made of data and programs liable to documentation and other sensitive data, and shall be retained at another location (spatial separation).

(3) The risk of destruction of data carriers shall be reduced by establishing conditions at the locations of data carrier retention which largely exclude a destruction/impairment of the secured information (e.g. by fire, temperature/moisture, magnetic fields).

(4) The risk of theft of data carriers shall be reduced by retaining them in locked rooms or safes sufficiently safeguarded against burglary.

## **B 6 Procedure description and documentation**

### **B 6.1 General**

(1) Like conventional archiving, electronic archiving shall be controllable by an expert third party with respect to its formal and functional correctness within reasonable time. A procedure description shall be established for electronic archiving,

and the procedure shall be documented during the archiving process.

(2) The extent of the required procedure description and documentation depends on the complexity of electronic archiving (e.g. number and extension of programs, structure of interconnections, use of tables). The requirements for procedure description and documentation shall be set independently of the size/capacity of the electronic data processing system (hardware), i.e. a respective procedure description and documentation shall be established for both large computer mainframers and personal computer systems.

(3) Program changes shall be indicated in the procedure description and documentation. Unless program changes are documented automatically, additional measures shall ensure that the old and new conditions of a program are verifiable. Changes of tables with program functions shall be documented such that for the duration of the period of retention the respective contents of a table can be ascertained.

(4) Even if software is purchased from another house where the documentation is established by the software writer, the enterprise shall be responsible for the completeness and contents of information of the procedure description and documentation. Therefore, the enterprise is also responsible that upon request those parts of the documentation can be reviewed which were not handed over to it.

(5) The procedure description and documentation on electronic archiving shall be retained for the same period as the documents to be archived which were recorded, established or processed when using the respective procedure.

### **B 6.2 Procedure description**

(1) The procedure description on which archiving is to be based shall indicate the contents, structure and performance of archiving. The procedure description shall especially show that the requirements of sections 3 to 5 regarding a correctly performed procedure have been met.

(2) The procedure description shall specifically describe the:

- a) function-logic solution,
- b) program solution,
- c) changes of system adjustments by the user which are admitted by the program,
- d) how to maintain the program identity,
- e) how to preserve data integrity,
- f) data securing concept, especially the process/procedures of data securing,
- g) scanning instructions,
- h) the instructions for document reproduction.

(3) The function-logic description shall describe the tasks from the user's viewpoint and shall contain at least the following items:

- a) responsibility for electronic archiving,
- b) definition of operations relevant to archiving and determination of their sequence,
- c) general tasks,
- d) description of variable user-defined problem definitions,
- e) description of user's input and output levels including manual entries,
- f) description of data stock,
- g) description of processing rules,
- h) description of data exchange (exchange of data carriers/data transfer),

- i) description of control system (machine and manual controls and their documentation - of especial importance are the man-machine interfaces),
- k) description of error messages and measures to be taken due to errors indicated,
- l) interfaces to other systems.

(4) The description of the program solution shall show how and where the function-logic requirements have been converted into programs. Tables which may be used to influence functions of the programs shall be treated like programs.

(5) With the description how to preserve the program identity, the enterprise shall prove that the function-logic requirements of the programs used will be or have been met. This includes the precise description of the release procedure with regulations regarding release competences, of the test runs to be performed and the data to be used in such runs as well as instructions for controlling the use of programs.

The verification of the program identity principally includes the statement of release in connection with test data stock available. The release statement shall show which program version is intended for effective use at which point in time. In addition to the verification of program identity a program record (conversion list, translation list) shall be established.

The following instructions regarding programming, program tests, program releases, program changes, changes of master files and tabular data, access procedures, as well as the orderly use of data bases, operating systems and networks shall be contained.

(6) The operating instructions which shall be available for the user to ensure correct performance of his tasks also belong to the procedure description and shall be laid down in writing. This especially concerns the manual controls and adjustments provided by the procedure. The interfaces to downstream or upstream systems shall be taken into account.

(7) The scanning instructions shall lay down:

- a) who is allowed to scan,
- b) at which point in time scanning is allowed,
- c) which analogous documents have to be scanned,
- d) whether a pictorial or content-related conformity with the original is required,
- e) how to effect quality control regarding readability and completeness, and
- f) how to proceed if errors occur.

(8) The instructions for reproduction of documents shall lay down the procedure for reproducing (data output) the documents archived on image recording media and other data carriers (e.g. by printing instructions, COM instructions, instructions for dialog modes for the selection and representation of stored documents on displays, e.g. if optical memory systems are used), the principle of order for the reproduction and the procedure for ascertaining the completeness and correctness of the data reproduced.

(9) The risk of non-retrievability shall be minimised by maintaining a systematic list of the programs/data sets secured. This list shall indicate the location, contents, date of securing and earliest date of erasion of data carrier contents.

### **B 6.3 Procedure documentation**

The procedure documentation shall show that the procedure has been performed in accordance with its description.

### **B 7 Reproduction of documents stored on data carriers**

(1) The enterprise shall ensure that the documents stored can be made readable at any time. Upon request of the supervising authority, the enterprise shall submit reproductions of documents readable without any aid.

(2) The content-related or, if required, pictorial conformity of the reproduced data with the documents archived on machine-readable data carriers shall be ensured by the respective archiving procedure. A complete colour reproduction is required if the colour has evidential value.

(3) It shall be possible to review the content-related conformity of selectively reproduced documents with the documents archived on machine-readable documents.

### **B 8 Responsibilities**

(1) The enterprise alone shall be responsible for compliance with the principles of electronic archiving as laid down in sections B 2 to B 7.

(2) The responsibilities cover the use of electronic archiving systems established by the enterprise itself or external firms.

(3) Where electronic archiving is sub-contracted to external firms, the compliance with the above principles is also the responsibility of the firm who placed the order to the sub-contractor.

## Annex C

## Contents and scope of the duplicate documentation

**C 1 Operating manual****C 1.1 Tasks**

In accordance with Sec. 3 of KTA 1201, the operating manual shall contain all operating and safety-related instructions for the shift personnel, which are required for normal operation of the plant and for coping with incidents, as well as the shop rules which shall be valid for the all persons working in the nuclear power plant.

**C 1.2 Scope**

A complete copy of the operating manual shall be kept available.

**C 1.3 Objective**

The purpose of the operating manual is to maintain communication with and support the shift personnel employed and, where required, to make the initiation of supplementary measures possible.

**C 2 System circuit diagram and system descriptions****C 2.1 Tasks**

System circuit diagrams and system descriptions shall be compiled on the basis of which it is possible to evaluate the measures taken in view of the following protective goals:

- assurance of subcriticality,
- assurance of residual heat removal,
- limitation of the release of radioactive substances,
- assurance of the integrity of the containment.

**C 2.2 Scope of documents**

(1) System circuit diagrams of the following systems shall be kept available. System descriptions are only required of the systems marked with an "x".

*Note:*

*The following is a list typical for pressurized water reactors. In the case of other reactor types, the selection shall be made analogously.*

Fuel pool cooling system	FAK	x
Clean-up system for fuel pool cooling	FAL	
Demineralized water supply system	GHC	
Seal water supply system	GHW	
Make-up boration system	JDH	x
Reactor coolant pump system	JEB	
Reactor coolant pipes	JEC	x
Reactor coolant pressurizer system	JEF	x
Reactor coolant relief system	JEG	x
Seal fluid supply system	JEW	
Leakage control and extraction system	JMM	x
H <sub>2</sub> monitoring and limitation system	JMU	x
Emergency cooling and residual heat removal system	JNA	x
	JND	x
	JNK	x
	JNP	x
Nuclear closed cooling system	KAA	x
	KAB	

Volume control system	KBA	x
Boric acid and demineralized water injection system	KBC	
	KBD	x
Cold water supply for off-gas system	KJM	
Ventilation system for		
- Reactor building interior	KLA	x
- Reactor building annulus	KLB	x
- Reactor auxiliary building	KLE	
Activity monitoring system	KLK	x
Compressed air supply system	KLX	
Treatment and storage of liquid radioactive effluents	KPF	
	KPK	
Nuclear off-gas system	KPL	
Reactor building plant drainage	KTA	
Reactor building interior drainage	KTF	
Reactor building annulus drainage	KTG	
Nuclear sampling system	KUA	
Feedwater piping system	LAB	
Start-up and shutdown piping system	LAH	x
Pump system	LAJ	x
Emergency feedwater system	LAR	x
Emergency feedwater pump system	LAS	x
Main steam piping system	LBA	x
Control air for main steam safety isolation valve	LBX	
Main condensate system	LCA	
Main condensate pump system	LCB	
Condensate injection water system	LCE	
Steam generator blowdown system	LCQ	
Condensation system	MAG	
Evacuation system	MAJ	
Bypass station including attemperation	MAN	
Main cooling water system	PA	
Service water for conventional parts	PC	
Service water for protected parts	PE	x
Conventional closed cooling system	PG	
Protected closed cooling system	PJ	x
Gas supply system	QJB	
Refrigerant system	QK	
Conventional sampling systems	QU	
Ventilation system for conventional area	SAD	
	SAC	x
	SAL	x
Working air distribution system	SCB	
Fire extinguishing water system		
- conventional area	SGA	x
- nuclear area	SGB	x
Spray water extinguishing system	SGC	x
	SGD	x
Emergency diesel units	XJ	x
	XK	x
(2) General arrangement drawings shall be available of the following components and systems:		
<i>Note:</i>		
<i>The following is a list typical for pressurized water reactors. In the case of other reactor types, the selection shall be made analogously.</i>		
Reactor pressure vessel (RV, RV closure and RV internals)	JA	
Control element drives	JDA	

Steam generators	JEA
In-core instrumentation	JKS
	JKT
Feedwater storage tanks	LAA

### C 2.3 Objective

These documents shall permit

- the assessment of the operability of the safety systems,
- the planning and initiation of measures for the improvement or fulfilment of the respective protective goals in accordance with Section C 2.1.

## C 3 Location plans of buildings and facilities on the power plant site

### C 3.1 Tasks

Location plans shall be compiled to provide a survey of the arrangement of buildings and access routes to the power plant site and to the individual buildings.

### C 3.2 Scope of documents

Location plans of the entire power plant area and of the access routes, including the location of the buildings and of the pipes and cables which connect the safety systems between the buildings, shall be kept available.

### C 3.3 Objective

The purpose of these documents is to permit

- the assessment of the possibilities of access to the power plant site,
- the assessment of the accessibility of the buildings,
- the planning and initiation of measures.

## C 4 Building plans (including installation of the components)

### C 4.1 Tasks

Building plans shall be compiled to provide a survey of the spatial arrangement and the locations of installation of the components within the individual buildings.

### C 4.2 Scope of documents

Building plans (plan views and sections) shall be kept available of the following buildings

*Note:*

*The following is a list typical for pressurized water reactors. In the case of other reactor types, the selection shall be made analogously.*

Switchgear building	UBA
Emergency power generation building with central chilled water station	UBP
Reactor building interior	UJA
Reactor building annulus	UJB
Main steam and feedwater valve compartment	UJE
Reactor auxiliary building	UKA
Emergency feed building	ULB
Turbine building	UMA
Service water pump structures	UQB
Cooling tower structures (service water)	UR

### C 4.3 Objective

These documents shall permit

- the assessment of the accessibility of the compartments,
- the planning and initiation of measures,
- the assessment of possible consequences of incidents and accidents.

## C 5 Fire protection plans, rescue route plans

### C 5.1 Tasks

Documents shall be compiled to permit the fighting of fires and provide a survey of the existing fire cells and fire extinguishing equipment.

### C 5.2 Scope of documents

Fire protection and rescue route plans shall be kept available for the entire power plant area.

### C 5.3 Objective

These documents shall permit

- the preparatory work for fighting against detrimental consequences,
- the assurance that necessary information to external emergency services is provided.

## C 6 Functional diagrams and functional group diagrams

### C 6.1 Tasks

Documents shall be compiled to document the electric functions of the safety systems.

### C 6.2 Scope of documents

The functional diagrams and functional group diagrams of the following systems shall be kept available:

*Note:*

*The following is a list typical for pressurized water reactors. In the case of other reactor types, the selection shall be made analogously.*

Make-up boration system	JDH
Reactor coolant pressurizer system	JEF
Reactor coolant relief system	JEG
Leak detection and extraction system	JMM
H <sub>2</sub> monitoring and limitation system	JMU
Emergency cooling and residual heat removal system	JNA
	JND
	JNG
	JNK
	JNP
Nuclear closed cooling system	KAA
Ventilation system for reactor building annulus	KLB
Activity monitoring system	KLK
Emergency feed system	LAR
Emergency feedwater pump system	LAS
Main steam piping system	LBA
Service water for protected systems	PE
Protected closed cooling system	PJ
Ventilation systems for the conventional area	SAC
	SAL
Emergency power diesel units	XJ
	XK

**C 6.3 Objective**

These documents shall permit the assessment of the function of the safety systems.

**C 7 Unit protection block diagram****C 7.1 Tasks**

Documents shall be compiled to provide a survey of the initiation criteria of grid feeding and start-up grid feed-in, including auxiliary power transformer.

**C 7.2 Scope of documents**

The unit protection block diagram (main and standby grid feed-in as well as other feed-in possibilities) shall be kept available.

**C 7.3 Objective**

This document shall permit the assessment of disturbances in the auxiliary power supply system and the planning and initiation of measures for the removal of disturbances.

**C 8 Electric single-line diagram****C 8.1 Tasks**

Documents shall be compiled to permit a survey of the auxiliary and emergency power supply systems.

**C 8.2 Scope of documents**

The electric single-line diagrams of the auxiliary and emergency power supply systems (auxiliary power network, emergency power networks) shall be kept available.

**C 8.3 Objective**

These documents shall permit the planning and initiation of switching measures (interconnection of bus bars, external grid supply).

**C 9 Reports on reactor protection, incident instrumentation and radiological protection instrumentation****C 9.1 Tasks**

Documents shall be compiled to permit the assessment of the structure, the function and possibly the measures initiated.

**C 9.2 Scope of documents**

The following documents shall be kept available:

- a) Reactor protection system: general description in terms of process engineering, diagram for the processing of limits values,
- b) Incident instrumentation including meteorological instrumentation: description,
- c) Radiological protection instrumentation: description.

**C 9.3 Objective**

These documents shall permit

- a) the assessment of the operability of the reactor protection system and of the components which have been triggered,
- b) the monitoring of the measures initiated automatically,
- c) the assessment and analysis of disturbances.

**C 10 Administrative rules for plant-internal accident management****C 10.1 Tasks**

Documents shall be compiled to describe the implementation of the plant-internal accident management measures.

**C 10.2 Scope of documents**

All documents concerning the administrative precautions taken by the licensee for implementing accident management measures shall be kept available.

**C 10.3 Objective**

These documents are intended to

- a) ensure the organizational sequence of accident management measures,
- b) support accident management measures by keeping available specific documents.

## Annex D

### Regulations referred to in this Safety Standard

(The references exclusively refer to the version given in this Annex. Quotations of regulations referred to therein refer to the version available when the individual reference below was established or issued.)

AtG		Act on the Peaceful Utilization of Atomic Energy and the protection against its hazards (Atomic Energy Act) of December 23, 1959 (BGBl. I, p. 814) as Amended and Promulgated on July 15, 1985 (BGBl. I, p. 1565), last Amendment by the Act of March 5, 2001 (BGBl. I, p. 326)
StrlSchV		Ordinance on the Protection against Damage and Injuries Caused by Ionizing Radiation (Radiological Protection Ordinance - StrlSchV) dated October 13, 1976 (BGBl. I, p. 2905, 1977, p. 184, 269), as Amended and Promulgated on July 20, 2001 (BGBl. I, p. 1714)
KTA 1201	(6/98)	Requirements for the Operating Manual
KTA 1202	(6/84)	Requirements for the Testing Manual
KTA 1301.2	(6/89)	Radiation Protection Considerations for Plant Personnel in the Design and Operation of Nuclear Power Plants. Part 2: Operation
KTA 1401	(6/96)	General Requirements Regarding Quality Assurance
KTA 3201.1	(6/98)	Components of the Reactor Coolant Pressure Boundary of Light Water Reactors; Part 1: Materials and Product Forms
KTA 3503	(11/86)	Type Testing of Electrical Modules for the Reactor Protection System
KTA 3505	(11/84)	Type Testing of Measuring Transmitters and Transducers of the Reactor Protection System
KTA 3507	(11/86)	Factory Tests, Post-Repair Tests and Demonstration of Successful Service for the Instrumentation and Control Equipment of the Safety System
KTA 3701	(6/99)	General Requirements for the Electric Power Supply in Nuclear Power Plants

## Annex E (informative)

### Changes with respect to the edition 6/89 and explanations

(1) The word "written material", unless part of a standing term, was substituted by the word "document".

(2) New definitions were taken over for the words "document" and "data carrier".

(3) The stipulations of section 6 were adapted to changed responsibilities due to the deregulation of building codes.

(4) The essential change with respect to the edition of 6/89 is the permission of electronic data carriers for final file.

The employment of electronic data carriers requires comprehensive technical and organisational measures to ensure the completeness, actual state and on-the-spot availability of the documents stored electronically.

The new Annex B contains requirements for the process description and the process documentation to be established.

The basis for Annex B were the so-called principles of orderly data-processing supported accounting systems

(GoBS) published by letter of the Ministry of Finances (BMF) IV A8 - S0316 - 52/95 of November 7, 1995 in the Financial Gazette.

These GoBS precise the generally accepted accounting principles (GoB) with respect to data-processing supported accounting and describe measures the person liable to accounting must take to ensure that bookings and other records required are made completely, correctly, in time and orderly.

Since archiving of commercial documents does principally not differ from archiving of technical documents, the requirements of GoBS, as far as relating to electronic archiving of documents, can also be applied adequately to the electronic archiving of documents within the scope of application of KTA Safety Standard 1404 and is considered purposeful.

(5) Where required, the references were adapted to the actual publication dates of the respective standards.