Note:
This is a translation of the RSK statement entitled
Topical Peer Review „Alterungsmanagement elektrischer Kabel“
In case of discrepancies between the English translation and the German original, the original shall prevail.

Annex to the minutes of the 511th RSK meeting on 04.09.2019

Topical Peer Review on ageing management for electrical cables

STATEMENT

Contents

1 Introduction

Directive 2014/87/EURATOM [1] provides for so-called topical peer reviews to be carried out every six years for all Member States of the European Union. In 2017, through the European Nuclear Safety Regulators Group (ENSREG), the Member States of the European Union have selected ageing management of nuclear power plants as the topic for the first Topical Peer Review (TPR). In addition to general aspects of ageing management, the assessment report also had to address specific topics. The TPR applies to all nuclear power plants in operation on 31.12.2017 as well as to research reactors with a capacity > 1 MW_{th}.

In a first step, the Member States of the EU carried out a national self-assessment on the topics identified and for the plants to be considered. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) published the TPR report [3] on 28.12.2017.

In a second step, which began in January 2018, peer reviews of the national self-assessments were conducted by the other Member States and the European Commission as observer. Expert groups submitted questions, which were answered for Germany by the BMU, the *Land* authorities, GRS and VGB. Ageing management in nuclear power plants was to be reviewed within the framework of the TPR with the aim, among other things, of identifying good practices and areas for improvement. The international experts involved discussed the National Reports [3], formulated their expectations on selected aspects as “expected level of performance” (ELP) [4] and derived country-specific results [5].

By September 2019, a national action plan (NAcP) is to be drawn up describing the measures by which the expected levels of performance identified by the TPR Board can be achieved. This concerns both the country-specific results regarding the areas for improvement as well as the generic findings on the topic of “electric cables”.

2 Request for advice

At the 509th RSK meeting on 27.03.2019, the BMU requested the RSK, in accordance with request for advice [2] of 18.03.2019, to discuss the results of the TPR with regard to whether according to the state of the art in science and technology in German nuclear power plants additional measures

1. for testing the base material of the RPV and
2. the ageing management for electrical cables

are required. The RSK requested the Committee on ELECTRICAL INSTALLATIONS (EE) to consult on the topic of ageing management for electrical cables and to draw up a draft statement.

ENSREG has formulated seven general requirements for electrical cables as expected levels of performance (ELPs) and one requirement as good practice instead of country-specific recommendations to the participating States. The good practice relates to the existing cable deposit in Germany. This is not discussed below.

The BMU commissioned GRS to prepare a status report on the individual ELPs [7]. The findings were to be taken into account in the consultations.

3 Consultations

At the 270th meeting of the EE Committee on 17.04.2019, GRS presented the results of its status reports [7], [8] on the seven ELPs mentioned above. GRS explained the ELPs and referred to assigned requirements of the

German regulations. Where available, reference was also made to GRS information notices, RSK statements/recommendations, etc. that are related to the topic addressed in the ELPs. In addition, the German National Report [3] and answers of the German operators and authorities [6] were used, insofar as findings could be derived on their basis for the fulfilment of the formulated requirements. Where applicable, further sources of information were used for the assessment. Finally, an assessment was made as to whether from the point of view of GRS, measures should be taken with regard to the respective requirement. The EE Committee discussed the individual ELPs and gave its assessment. The results were summarised in a draft.

At the 271st and 272nd meetings on 21.05.2019 and 19.06.2019, the Committee continued its consultations, including discussion of the draft. After further amendments, the Committee adopted the draft by circular procedure and submitted it to the RSK for adoption at its 511th meeting on 04.09.2019. The RSK discussed and adopted the statement at this meeting.

4 Assessment criteria

The assessment basis for this RSK statement is directly derived from the ENSREG requirements. For the individual requirements, it was first checked whether they are relevant for the German nuclear power plants due to the technical conditions. For the relevant requirements, the assessment was based on the practice in the German plants and the substatutory nuclear rules and regulations concerning ageing management of electrical cables. These include the "Safety Requirements for Nuclear Power Plants" (SiAnf) [9] as well as their interpretations [10], RSK guidelines [11], RSK statements and recommendations and KTA safety standards. Among the KTA safety standards, particular reference is made to safety standards KTA 1403 "Ageing Management in Nuclear Power Plants" [12] and KTA 3706 "Ensuring the Loss-of-Coolant-Accident Resistance of Electrotechnical Components and of Components in the Instrumentation and Controls of Operating Nuclear Power Plants" [13].

Requirements for ageing management are specified in KTA 1403 "Ageing Management in Nuclear Power Plants". In addition to general requirements in Section 3, Section 4.2 describes special requirements for the ageing of electrical and I&C equipment. All safety-relevant technical electrical and I&C equipment, including cables, shall be included in the ageing management.

Regarding the procedure for mitigating relevant degradation mechanisms, KTA 1403 distinguishes between electrical and I&C components that can be examined with respect to the actual situation and those that cannot be examined with respect to the actual situation. Examinations with respect to the actual situation means that the conditions of the examination (temperature, humidity, radiation, etc.) correspond to the conditions in the event of required operation and degradation causing functional impairment can be detected.

The requirements of KTA 3706 "Ensuring the Loss-of-Coolant-Accident Resistance of Electrotechnical Components and of Components in the Instrumentation and Controls of Operating Nuclear Power Plants" [13] apply to LOCA-resistant components including cables.

In accordance with the requirements derived from KTA 3706, the operational loads (temperature, radiation) of components required for control, mitigation and monitoring of loss of coolant accidents shall be listed and the proven term of sustained accident resistance for these components (confidence time) shall be specified in this listing. The continued suitability shall be proven concurrently with plant operation before the term of sustained LOCA resistance would end. Proof can be provided analytically or by verification or special tests. Alternatively, the components or relevant component parts may be replaced before the end of the confidence time.

5 Aspects of ageing management for electrical and I&C cables in nuclear power plants

5.1 Scope

At German nuclear power plants, cables are divided into the following categories [3]:

- High- and medium-voltage cables (> 1 kV) for supplying large loads, for establishing connections to transformers and within the plant auxiliary power system.
- Low-voltage cables (< 1 kV) for supplying electrical loads such as motors, heaters and actuators.
- I&C cables for the transmission of analogue and binary signals.
- Special cables, cables for special applications, e.g. coaxial cables for neutron flux instrumentation incore/excore.

The aim of ageing management is to ensure the functionality of the cables both under normal operating conditions and under the influence of postulated accidents. Here, the electrical loads of the cables under different accident scenarios and, in particular, the loads caused by the accident atmosphere in the case of LOCAs are considered. Mechanical loads from external hazard events do not have to be considered for the cables since the associated cable support structures are designed to withstand these loads and the resulting accelerations do not represent a relevant load for the cables.

All ageing-relevant degradation mechanisms shall be compiled in accordance with [12] in the basis reports.

5.2 Testability of cables

According to KTA 1403 [12] Section 4.2.2, the relevant damage mechanisms for electrical and I&C components shall be identified, i.e. also for the cables.

KTA 1403, Section 4.2.3, describes the procedure for the mitigation of damage mechanisms. For the components that can be examined with respect to the actual situation, proof shall be provided by type testing and suitability tests and by the measures of

a) in-service inspections,

b) preventive maintenance, and

c) repair

in combination with the corresponding experience feedback that all required functional features are maintained.

For the assessment of ageing phenomena regarding cables, the following load parameters are listed according to [3]: thermal and radiological loading, exposure to UV radiation, voltage/frequency/electrical fields, mechanical loading through field forces, water influences/humidity and contact with chemicals (e.g. oil vapour, acids/bases, intumescent coatings).

In German plants, the following measurement methods are applied to assess the cables [3]:

- insulation resistance measurements (> 1 kV)

- volume resistance measurement (all cable types)
- partial discharge measurement (> 1kV)
- checking signal transmission behaviour (I&C cables)
- visual inspections (all cable types)
- thermography (all cable types)
- elongation at break testing (all cable types)
- electrical functionality under LOCA conditions (all cable types)

In order to demonstrate LOCA resistance also for certain cables subject to operational ageing, cable samples stored in a cable deposit in areas of a Konvoi-type PWR (representative for the nuclear power plants) with high radiological and thermal loads (reactor coolant line) are monitored for their ageing behaviour. At regular intervals (approximately every three years), individual cable samples are taken and the change in the relative elongation at break is used as an indicator to assess the change in the polymer material. In addition, such pre-aged cable samples are subjected to electrical tests under LOCA conditions (high-pressure and high-temperature steam atmosphere). The electrical functionality under LOCA conditions is specified as an acceptance criterion for each cable type; this is derived from the typical applications of the cable type. The results obtained can be applied to the cables that are used in the nuclear power plants and which must fulfil the corresponding requirements. In addition, the remaining service life of such a cable can be derived from the test results [3].

5.3 Knowledge base

According to KTA 1403 [12], Section 6 “Reporting System”, operators are required to prepare a plant-specific basis report on ageing management. At annual intervals, status reports on ageing-relevant activities and measures as well as findings and results from in-plant surveillance shall be submitted to the competent nuclear supervisory authority of the *Land*. Any new findings on ageing processes or methods shall be taken into account. The status reports contain a summarising assessment of the effectiveness of ageing management and of the quality or change in the quality of structures, systems and components Where potential for improvement is identified, appropriate measures must be taken to improve the effectiveness of ageing management and the quality of the structures, systems and components.

Basis reports and status reports are part of the knowledge base for ageing management [12].

In addition to corresponding manufacturer’s specifications, which are based on national and international regulations, the following sources of information on ageing management for cables are listed [3]:

- results from monitoring, in-service inspections, maintenance measures and their assessment
- failure reports, outage reports
- GRS information notices (WLN)
- reportable events from the operator's plant and from other German plants
- event reports from nuclear power plants outside Germany
- national and international research projects
- evaluation of experience by the manufacturers

- exchange of experience among the operators
- contractor reports (VGB system for the assessment of contractors)

To implement the requirements of KTA 3706, the AUREST database [14] (AUREST: AUtomatische RESTlebensdauerbestimmung – automatic determination of remaining service life) was developed as a tool to transfer results from the original type tests or in-service verifications for individual components after conversion to components in the respective installation positions. The data from the type tests and in-service verification procedures have been and are being transferred to the cross-plant component library of the AUREST database. The conversion to the components in the respective installation positions is carried out conservatively using the Arrhenius formula for thermal ageing and, taking into account the dose rate effect, for radiological ageing. In addition to input data, e.g. environmental influences at the respective places of installation, requirements from the accident classification matrix – broken down to the individual elements of the function chain (components) – are entered into the database on a plant-specific basis. Calculations of the so-called confidence times and electrical values are available as initial data for the function chain elements. On the basis of these initial data, suitability tests can be performed at the plants [14].

6 Expected levels of performance (ELPs) and assessment of fulfilment

The following sections present the seven "expected levels of performance" [4], formulated by ENSREG for electrical cables, and the assessment by the RSK.

6.1 ELP 1 relates to the documentation:

Documentation of the cable ageing management program: *"The AMP is sufficiently well-documented to support any internal or external reviews in a fully traceable manner".*

Assessment by the RSK:

The requirement under ELP 1 is covered with the fulfilment of the requirements of KTA 1403. Basis reports and status reports are part of the knowledge base on ageing management and are accompanied by expert opinions within the framework of the supervisory procedure. Further measures are not necessary from the RSK's point of view and the RSK considers ELP 1 to be fulfilled.

6.2 ELP 2 addresses methods for condition monitoring of cables:

Methods for monitoring and directing all AMP-activities: *"Methods to collect NPP cable ageing and performance data are established and used effectively to support the AMP for cables".*

ENSREG emphasises that the broadest possible basis of information sources should be used and points as a positive example to cross-border cooperation between plants of the same vendor.

In this context, ELP 4 and ELP 7 should also be considered from the RSK's point of view. There, ENSREG mentions different methods for monitoring the ageing of cables.

Assessment by the RSK:

A large number of test methods are applied in German nuclear power plants during regular inspections within the framework of ageing management. Further testing procedures methods are used for special tests. From the RSK's point of view, cable ageing is systematically monitored in the plants and procedures are established to enable this systematic monitoring. These procedures are used to determine whether the cables continue to meet their respective application-specific requirements. In addition, the AUREST methodology is used to determine the remaining service life with a view to LOCA resistance of the cables. The cable deposit is used in the context of the procedure to verify that resistance to LOCA accidents is maintained. Cable samples are withdrawn from the cable deposit at predefined intervals for corresponding testing in order to derive a statement about continued functionality. All in all, there is a wide range of information sources which are assessed.

From the RSK's point of view, it had to be answered for fulfilment of ELP 2 whether methods are applied in German nuclear power plants for effective monitoring of ageing effects on cables. From the RSK's point of view, this question can be answered positively. The national assessment report [3] describes the testing procedures used in periodical inspections in German plants grouped according to cable types. Table 1 gives an overview of the relevant degradation mechanisms and the testing procedures used in German nuclear power plants to detect these degradation mechanisms. This Table gives a general assignment of cable component to degradation mechanisms and tests for their detection. However, it must not be inferred from the table that all of these tests are used in all German plants consistently and regularly for all cables. Thus, some of these tests are only performed where required (e.g. to determine the cause of failure after deviations detected during functional testing or repairs). The testing procedures listed in the Table are applicable to all cable types unless this is expressly restricted by corresponding labelling (high- and medium-voltage cables (1), low-voltage cables (2) as well as I&C cables (3) and special cables (4)).

Compo-nent	Functional feature	Degradation mechanism	Ageing effect	Testing procedure
Cable sheath				
	Mechanical endurance for external mechanical protection	• Abrasion, vibration • Hardening, embrittlement, cracking, thermally/radiation induced oxidation, diffusion	• Loss of integrity of the cable sheath	• Visual inspection on accessible parts
	Flexibility of movable cables	• Hardening, embrittlement, cracking, thermally/radiation induced oxidation, diffusion	• Loss of integrity of the cable sheath	• Elongation at break testing • Haptic testing on accessible parts (2), (3), (4)
Conductor insulation				
	Mechanical durability for the permanent preservation of the insulation capability	• Hardening, embrittlement, cracking, thermally/radiation induced oxidation, diffusion • Moisture, partial discharges, decomposition, ion migration	• Loss of insulation of the conductor insulation	• Haptic testing on accessible parts (2), (3), (4)
	Electrical insulation strength	• Hardening, embrittlement, cracking, thermally/radiation induced oxidation, diffusion • Moisture, partial discharges, decomposition, ion migration	• Loss of insulation of the conductor insulation	• Insulation resistance measurement (1) • Partial discharge measurement (1) • Checking signal transmission behaviour (3), (4) • Elongation at break testing • Functional testing • LOCA testing • Calculation of the remaining service life (AUREST) (2), (3), (4)
	Specific electrical properties (e.g. characteristic impedance)	• Hardening, embrittlement, cracking, thermally/radiation induced oxidation, diffusion • Moisture, partial discharges, decomposition, ion migration	• Loss of insulation of the conductor insulation • Distortion of signals by increased contact resistance or leakage currents	• Volume resistance measurement • Checking signal transmission behaviour • Functional testing • LOCA testing • Calculation of the remaining service life (AUREST) (2), (3), (4)

	Flexibility of movable cables	• Hardening, embrittlement, cracking, thermally/radiation induced oxidation, diffusion	• Loss of insulation of the conductor insulation	• Elongation at break testing • Haptic testing on accessible parts (2), (3), (4) • Calculation of the remaining service life (AUREST) (2), (3), (4)
Conductor/shielding				
	Low-resistance conductivity of a sufficient cross-section	• Fatigue	• Distortion of signals by increased contact resistance or leakage currents • Limitation of the current carrying capacity in power cables	• Volume resistance measurement • Checking signal transmission behaviour (3), (4) • Functional testing • LOCA testing
	Specific electrical properties (e.g. characteristic impedance)	• Hardening, embrittlement, cracking, thermally/radiation induced oxidation, diffusion • Moisture, partial discharges, decomposition, ion migration • Corrosion, surface deposits, soiling	• Loss of insulation of the conductor insulation • Distortion of signals by increased contact resistance or leakage currents	• Volume resistance measurement • Checking signal transmission behaviour • Functional testing • LOCA testing • Calculation of the remaining service life (AUREST) (2), (3), (4)
Connectors, terminals				
	Low-resistance conductivity of a sufficient cross-section	• Corrosion, surface deposits, soiling • Fatigue	• Distortion of signals by increased contact resistance or leakage currents • Limitation of the current carrying capacity in power cables • Loss of insulation	• Volume resistance measurement • Checking signal transmission behaviour (3), (4) • Thermography (1), (2) • Functional testing • LOCA testing
	Insulation strength	• Corrosion, surface deposits, soiling • Fatigue	• Distortion of signals by increased contact resistance or leakage currents • Loss of insulation	• Insulation resistance measurement • Functional testing

	Specific electrical properties (e.g. characteristic impedance)	• Hardening, embrittlement, cracking, thermally/radiation induced oxidation, diffusion • Moisture, partial discharges, decomposition, ion migration • Corrosion, surface deposits, soiling	• Loss of insulation of the conductor insulation • Distortion of signals by increased contact resistance or leakage currents	• Volume resistance measurement • Checking signal transmission behaviour • Functional testing • LOCA testing • Calculation of the remaining service life (AUREST) (2), (3), (4)
Cable termination				
	Low-resistance conductivity of a sufficient cross-section	• Corrosion, surface deposits, soiling • Fatigue	• Limitation of the current carrying capacity	• Volume resistance measurement • Thermography (1), (2) • Functional testing
	Insulation strength	• Corrosion, surface deposits, soiling • Fatigue	• Loss of insulation	• Insulation resistance measurement • Partial discharge measurement (1) • Thermography (1), (2) • Functional testing

Table 1: Cable ageing – degradation mechanisms, ageing effects and testing procedures for their monitoring

Further test methods that are addressed in [4] but not used as standard in German nuclear power plants within the framework of ageing management are the following:

- Tan delta measurements: The results of these tests are covered by the insulation resistance and partial discharge measurements carried out in German plants.
- Time domain reflectometry (TDR): This is simply a method for locating the fault in a defective cable.
- Line resonance analysis (LIRA): The results of this test method are covered by the elongation at break measurement with respect to insulation.
- Isothermal relaxation current measurements: This method is used to detect water trees. Since only 2nd generation XLPE cables are used in German nuclear power plants, which are not susceptible to water treeing, this test method is not relevant for German plants (see ELP 4).

Descriptions of these measurement methods are given in [15], [16].

The RSK is of the opinion that not all of the test and diagnostic methods listed in [4] have to be applied in German plants. It has to be ensured that ageing processes of cables are detected by the established methods. According to KTA 1403, Section 3(3d) [12], the further development of the state of the art science and technology in particular with regard to published national and international ageing-related findings shall be pursued and assessed. At present, no degradation mechanism to cables is known that is not pursued by the standard test methods applied in Germany.

In the event of abnormalities in the cable checks, special tests can and will be carried out to determine the cause, in which some of the above-mentioned test methods may be used. All in all, the RSK considers ELP 2 to be fulfilled.

6.3 ELP 3 addresses the systematic identification of ageing mechanisms:

***Systematic identification of ageing degradation mechanisms considering cable characteristics and stressors*:** "*Degradation mechanisms and stressors are systematically identified and reviewed to ensure that any missed or newly occurring stressors are revealed before challenging the operability of cables".*

Assessment by the RSK:

In accordance with KTA 1403, basis reports were prepared containing a systematic analysis of cable ageing. In these reports, degradation mechanisms that may occur and mitigative measures are specified. The annual status reports cover, among other things, changes in the state of knowledge on cable ageing. The existing processes are updated if necessary.

All in all, the requirements of ELP 3 for cables are covered by the cable deposit (LOCA-resistant cables) and by examinations with respect to the actual situation (all other cables) together with the monitoring of the state of the art in science and technology with regard to ageing effects. The RSK considers ELP 3 to be fulfilled.

6.4 ELP 4 relates to the detection and prevention of water treeing:

Prevention and detection of water treeing*: *"Approaches are used to ensure that water treeing in cables with polymeric insulation is minimised, either by removing stressors contributing to its growth or by detecting degradation by applying appropriate methods and related criteria".

Assessment by the RSK:

For PVC cables, the ageing mechanism "water treeing" has no relevance. With regard to XLPE cables, the RSK refers to the consultations of the EE Committee at the 214th meeting on 16.11.2011, in which the topic of diagnostic procedures and trend monitoring of PE/XLPE cables was discussed. German nuclear power plants exclusively use 2nd generation XLPE cables manufactured after 1985. For 2nd generation XLPE cables, the phenomenon of water tree growth is negligible.

Thus, the RSK does not consider ELP 4 to be relevant for German plants.

6.5 ELP 5 aims at the consideration of uncertainties in the initial qualification:

Consideration of uncertainties in the initial EQ: *"The accuracy of the representation of the stressors used in the initial Environmental Qualification is assessed with regard to the expected stressors during normal operation and Design Basis Accidents".*

The aim is to determine the extent to which the loads applied during the initial qualification cover the actual loads during the qualified service life and to use findings from ageing management to improve the qualification process. In [4], the following measures are explicitly listed: application of simultaneous thermal and radiation ageing, application of low thermal acceleration factors and dose rates, use of accurate activation energy values, which are determined as precisely as possible by the Arrhenius model, and feeding oxygen into chamber during LOCA testing.

Assessment by the RSK:

By using the cable deposit, the uncertainties from the initial qualification of LOCA-resistant cables were assessed and reduced. Overall, LOCA resistance in German plants is verified concurrently with plant operation in accordance with KTA 3706 [13]. The RSK sees no need for further measures. Potential uncertainties of the original qualification of cables that are not LOCA-resistant are compensated by testing them for the specific use as well as by in-service inspections and maintenance measures. The RSK considers ELP 5 to be fulfilled.

6.6 ELP 6 includes the question of determining the operational performance of cables under the influence of the highest possible stressors:

Determining cables' performance under highest stressors**:** *"Cables necessary for accident mitigation are tested to determine their capabilities to fulfil their functions under Design Extension Conditions and throughout their expected lifetime".*

Assessment by the RSK:

The RSK interprets ELP 6 as a requirement with regard to emergency measures (DEC A and B).

The German rules and regulations do not specify any specific requirements for the verification of suitability of emergency equipment. However, specific equipment is required, the functionality of which must be ensured in the event of demand. For cables, the verification of LOCA resistance covers this requirement for DEC A.

In connection with DEC B, the RSK refers to the RSK statement on the evaluation of the implementation of RSK recommendations in response to Fukushima [17], which regarding the introduction of Severe Accident Management Guidelines (SAMG) and the accident mitigation manual (Handbuch mitigativer Notfallmaßnahmen – HMN) contains VGB statements on instrumentation. In this statement, the RSK pointed out the following, among others, with regard to the HMN:

From the point of view of the RSK, the availability of the instrumentation of the parameters relevant for the HMN is of particular importance. The extent to which the availability of the measuring points referenced in the HMN is given under consideration of the ambient conditions of the different scenarios and core damage states should be assessed in detail for each plant specifically.

With the implementation of this suggestion, ELP 6 is fulfilled.

6.7 ELP 7 relates to the techniques to detect ageing degradation of inaccessible cables:

Techniques to detect the degradation of inaccessible cables**:** *"Based on international experience, appropriate techniques are used to detect degradation of inaccessible cables".*

The choice of popular methods includes:

- *insulation resistance measurement;*
- *conductor resistance/impedance measurement;*
- *dielectric loss factor measurement (Tan δ, phase angle);*
- *signal transmission behaviour (time/frequency domain);*
- *line resonance analysis (LIRA);*
- *isothermal relaxation current analysis;*
- *partial discharge measurement.*

Assessment by the RSK:

For cables that are difficult to access or inaccessible, the detection of the relevant ageing effects is ensured by the electrical tests listed in Table 1. The test methods mentioned by ENSREG in addition to Table 1 have already been dealt with in the context of ELP 2.

ELP 7 is thus fulfilled.

7 Conclusions

Ageing of cables is systematically monitored in German nuclear power plants and procedures are in place to enable systematic monitoring.

In accordance with KTA 1403, basis reports were prepared containing a systematic analysis of cable ageing. In these reports, degradation mechanisms that may occur and mitigative measures are specified. The annual status reports cover, among other things, changes in the state of knowledge on cable ageing. The existing processes are updated if necessary.

To verify that the functional features are maintained, the cable deposit is used for LOCA-resistant cables, and for all other cables, examinations are performed with respect to the actual situation. In addition, the AUREST database is available as a tool that can be used to record the current ambient conditions at the place of installation and compare them with the design data.

Monitoring methods are available and applied for all known ageing mechanisms.

With regard to cable ageing, there is a wide range of information sources which are also assessed. There is a broad basis of experience, which is systematically maintained and accessible to the parties involved in the process.

The RSK holds the view that according to the state of the art in science and technology additional measures for ageing management of electrical cables in German nuclear power plants are not required.

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