

TITLE: DS485 Ageing Management and Development of a Programme for Long Term Operation of Nuclear Power Plants (15/09/2016)

ENISS Comments

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: ENISS Country/Organization: ENISS 2016		Page: 1 of 1 Date: 19 October					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	7.1	Delete the reference to [22] Safety Reports Series No. 57.	The guidance for LTO should be included in this Safety Guide. Confusing to have two documents dealing with the same issue.		Reference in para 7.1 was moved to footnote and modified as follows – “Further information on the programme for long term operation is provided in Ref. [23].” IAEA intention is to revise SRS No. 57 after publication of DS485 and provide more detail information on LTO.		

Finland

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: M-L Järvinen, Country/Organization: STUK		Page.... of.... Date:					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
	General	The new safety guide catches a lot of practical information enhancing		X			

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		the ageing management of the NPP and deals with very topical.					
	General	The programme and management system process has been used in this document meaning the same thing. In some of the parts the word programme is replaced by activity which is good. The word programme appears in the document XX times. In many cases it would be possible to leave the word programme out and the message is clarified. IAEA should considered reviewing the whole document and deleting unnecessary use of word programme.	Clarify	X			

France

COMMENTS BY REVIEWER				RESOLUTION			
Country/Organization: FRANCE pages			Date: 21 Oct 2016				
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	General		The section 7 on LTO makes a large “confusion” between LTO and management of ageing. For France, LTO is strongly connected to PSR, i.e. to safety improvements. The initial sections of DS485 are capturing that but section 7 is a lot less straightforward. Redevelop section 7 to avoid such shortcut	X			

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2.	Title	Ageing Management, including for the and Development of a Programme for Long Term Operation of Nuclear Power Plants	To avoid confusion between LTO and ageing management			X	Current was requested by France during DPP development and is fully consistent with SSR 2/2, Req.16.
3.	1.4	In addition, the safety of nuclear power plants during long term operation has become more important owing to the steady increase in the number of States operating organizations giving high priority to continuing the operation of nuclear power plants beyond the timeframe originally anticipated for their operation.	Clarification	X			
4.	1.7	Periodic Safety Review for Nuclear Power Plants, IAEA Safety Standards Series No. SSG-25 [7] also provides recommendations on some aspects of physical ageing of SSCs but focuses more on non-physical ageing of SSCs, i.e. their becoming out of date in comparison with current knowledge, codes, standards and regulations, and technology. It also stresses the need to look for safety improvements and implement the practicable ones if the plant continues to operate.	To insist on implementation of practicable safety improvements.	X			
5.	1.9	This Safety Guide provides guidance for operating organizations on implementing and improving ageing management and on developing a programme for safe long term operation for nuclear power plants which, among others, take due account of ageing management.	Clarification and enhanced consistency with 1.15. To avoid a misunderstanding : LTO is not solely ageing management	X			
6.	1.12	This Safety Guide focuses mainly on managing the physical ageing of SSCs within the scope of ageing management ('in-scope SSCs'). It also provides recommendations on safety aspects of managing technological obsolescence and recommendations on the programme for safe long term operation of nuclear power plants for its ageing management related activities.	To avoid a misunderstanding : LTO is not solely ageing management	X			

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7.	2.7	<p>Understanding the ageing of SSCs, as illustrated in Fig. 1, is the key to effective ageing management. This understanding is derived from the knowledge of:</p> <ul style="list-style-type: none"> - The current (and upcoming when relevant) licensing basis (including regulatory requirements, codes and standards); - Safety functions and other intended functions of the SSC; 	<p>Upcoming regulatory basis has to be taken into account as, for example, some new requirements may enter into force if LTO is accepted or as a result of a PSR.</p>	X			
8.	3.3	<p>Requirements on the use of operating experience and results from research and development are established in Requirement 6 of SSR-2/1 (Rev. 1) [1] and Requirement 24 of SSR-2/1 (Rev. 2) [2] and in GSR Part 4 (Rev. 1) [3]. Specifically for ageing management and long term operation, such activities should focus on:</p> <ul style="list-style-type: none"> - Ensuring that all levels of the analysis are either performed, or are specified and accepted, by qualified experts within the operating organization, to ensure that specific aspects relating to ageing management and long term operation are taken into account; - Improvement of the understanding of ageing effects for all in-scope SSCs by analysis of operating experience from the nuclear power plant, and from other nuclear power plants as well as other industries when relevant, and results from research and development; - Application of lessons identified in order to update and improve the ageing management. 	<p>Operating experience from other industries may also be relevant if the same equipment or similar equipment is used elsewhere....</p>	X			
9.	3.4	<p>The operating organization, in cooperation with the design organization and equipment providers, should ensure that proactive strategies for ageing management are established, especially at the stages of design, construction and commissioning.</p>	<p>Clarification</p>	X			

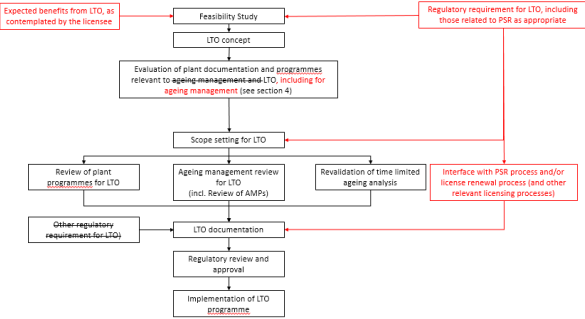
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10.	3.9		In the last bullet of 3.9, chemistry programmes are identified as mitigatory measures. Aren't they also preventive measures ? Consistency with 3.21	X			
11.	3.11	Ageing management should be addressed in the safety analysis report or other licensing documents . The description of ageing management in the safety analysis report should include general information on the following topics	In France, ageing management is only partly addressed in the safety report.	X			
12.	3.12	The operating organization should establish a specific equipment qualification programme including SSCs ageing considerations of in order to meet the safety requirements of SSR 2/1 [1].	Addition suggested in order to link the para to the question of ageing. If not added, this para does not seem relevant for the guide as qualification has a much broader scope	X			
13.	3.17	The operating organization should collect baseline data and should also confirm that critical service conditions (as used in equipment qualification) are in compliance with the design. Analyses of such data should be subject to review by the regulatory body as part of its inspection programme.	Too detailed. Other means may be chosen by the regulator to address this topics		"...as part of its inspection programme." was removed.		
14.	3.30	If long term operation is contemplated , The operating organization should establish policy documents, dedicated organizational structures and action plans to perform evaluations for long term operation well before the plant enters into long term operation.	The guide should not encourage LTO0.	X			
15.	4.5	The safety analysis report or other licensing documents should provide descriptions of activities in support of safe long term operation to ensure that the operating organization maintains the necessary information to reflect the current status of the plant and addresses new issues as they arise.	Only mentioning SAR is restrictive	X			

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16.	4.13 to 4.17	Delete 4.13 to 4.17	4.13 to 4.17 are dealing with the content of the design basis and content of SAR and go well beyond the scope of the guide. Having such recommendation in an ageing management guide is very questionable....			X	Availability of design basis is essential for TLA revalidation and for appropriate evaluation of safety improvements for LTO. It is not covered by any other Safety Guide.
17.	Fig 28	On the top box (senior management of the NPP), add a bullet : “- Ensure SSCs important to safety remain fit for duty”	Key role is missing as only supportive action are described in the 2 last bullets.	X			
18.	Page 36	Delete page	Page 36 is the exact copy of page 35	X			
19.	5.47	If the programme used to manage ageing effects involves inspection by sampling from a specific population of structures or components, the programme should describe and justify the methods used for selecting the samples to be inspected and the sample size, and demonstrate that the sampling is adequate to provide reasonable assurance that the ageing effects on the structure or component will not prevent the performance of its intended function throughout its lifetime. Plant specific probabilistic safety assessment results may be used to determine the specific members of the population that will be inspected.	We suggest deleting the last sentence. Sampling has to be defined on a SSC reliability basis (sample size, relevance of the environment of the population regarding the ageing effect...). “Safety importance” of each component according to PSA does not play a major role in the sample selection. This sentence, highlighting PSA, could be misunderstood.	X			
20.	5.55	Information on the current status of in-scope structures or components should be collected for subsequent review of effectiveness of the ageing management programmes. Performance indicators representing the effectiveness of ageing management programmes should be developed along with development of ageing management programmes (see 5.55).	The end of the para refers to itself. Needs to be corrected.	X			

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21.	6.6	1. The operating organization should identify the installed SSCs important to safety that are technologically obsolete or will become obsolete in the coming years;	Need to anticipate	X			
22.	7	AGEING MANAGEMENT WITHIN A PROGRAMME FOR LONG TERM OPERATION	To avoid a misunderstanding : LTO is not solely ageing management Para 4.53 and 4.54 (a) of SSR-2/2 is quite clear about that			X	New paras 7.2, 7.15, 7.19 and 7.40 (modified as per France comments) incorporated need for safety improvements as in SSR-2/2, 4.53 and 4.54 (a).
23.	7.1	Requirement 16 of SSR-2/2 (Rev. 1) [2] establishes requirements on the programme for long term operation*. Detailed information on the programme for long term operation is provided in Ref. [22]. Footnote *: Detailed information on the programme for long term operation is provided in Ref. [22].	Reference [22] is a safety report, not a Safety Standard	X			
24.	7.2	Requirements for long term operation should be specified within the national regulatory framework. They should cover, as appropriate, interfaces with the requirements for periodic safety review (PSR).	Clarification. See also 7.7	X			
25.	Fig 8		Improve Fig 8 to include PSR processes and other licensing process or modify 7.14 to limit scope of Fig 8 to ageing management	X			
26.	7.10	The operating organisation's staff, especially plant personnel, should be familiar with long term operation and should understand its principles and concept.	Corporate departments may be involved in the preparation of LTO	X			

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27.	7.13	The assessment for long term operation should demonstrate, in particular , that ageing effects will be adequately managed so that the intended functions of SSCs can be maintained consistent with the plant's current licensing basis for the planned period of long term operation.	To avoid a misunderstanding : LTO is not solely ageing management	X			
28.	7.14	7.14 The approach to an assessment for long term operation is outlined in Fig. 8. With regard to ageing management , An overview of major steps of the programme for long term operation should involve the following main steps: a) Demonstration that ageing effects will continue to be identified and managed for each structure or component in the scope of long term operation for the planned period of long term operation (including the feedback of operating experience and research and development findings); b) Review of time limited ageing analyses to ensure that the analyses continue to meet the criteria specified in para. 5.67.	Bullet a) and b) or only related to ageing management. They don't cover all the bullets listed in para 4.54 of SSR-2/2, especially bullet a) making link with PSR and safety improvements	X			
29.	After 7.14	Add a bullet to address safety improvements: 7.## The approach to an assessment for long term operation should also account for the licensing processes and other license related requirements, such as the performance of a periodic safety review [7]. This is to ensure that any safety improvements required for long term operation will be addressed as part of LTO preparation.	To remind interfacing regulatory processes processes and make a mirror recommendation to 7.14	X			
30.	Title before 7.15	DEVELOPMENT OF AN AGEING MANAGEMENT PROGRAMME FOR LONG TERM OPERATION	To avoid a misunderstanding : LTO is not solely ageing management			X	Para 7.19 incorporates need for safety improvements.

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31.	7.17 e)	e) The implementation of the programme for long term operation specifying the corrective actions and/or safety improvements required for safe long term operation, and the schedule and commitments of the operating organization in this respect. To be included after 7.26 SAFETY IMPROVEMENTS SUPPORTING LTO 7.## The programme for long term operation should address the safety improvements required for safe long term operation, the schedule and commitments of the operating organization in this respect.	To keep 7.15 to 7.17 focused on ageing management, a new subsection should be inserted after 7.26 to address safety improvements and capture a part of 7.17 e)		New para added after new 7.18.		
32.	7.22		Para 7.22 starts with “if”. Is such situation to be avoided? If yes, DS485 should say so....			X	It is the standard IAEA style. By the way, you proposed to add “If...” in your comment No. 14.
33.	Title before 7.24	REVIEW OF PLANT PROGRAMMES AND FOR AGEING MANAGEMENT PROGRAMMES FOR LONG TERM OPERATION	To avoid a misunderstanding : LTO is not solely ageing management			X	We mean “plant programmes” as defined in section 4 and AMP as defined in section 5.
34.	7.27	The assumptions, activities, evaluations, assessments and results of the operating organization programs, especially plant programme, for long term operation should be documented in accordance with national regulatory requirements	Corporate departments may be involved in the preparation of LTO	X			
35.	7.28	The documentation should provide detailed information on each element outlined in para. 7.17 and 7.## , and other information required by national regulatory requirements.	To take into account previous comment on creating a bullet after 7.26	X			

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36.	7.29	With regard to ageing management, The documentation should also include the following to demonstrate that ageing effects will be managed throughout the planned period of long term operation...	To avoid a misunderstanding : LTO is not solely ageing management	X			
37.	7.34	The documentation should include an update of the safety analysis report and other documents required by the licensing process reflecting the assumptions, activities and results of the plant's programme for long term operation. The update to the safety analysis report should also include documentation of the revalidation of the time limited ageing analyses for the period of long term operation.	To be consistent with footnote 2 and 4.1	X			
38.	7.38	The demonstration of safety for long term operation should be provided to the regulatory body for review and approval at a level of detail and in a manner defined by national regulatory requirements. The justification should include trends of expected ageing effects during the period of long term operation based on past studies, such as studies undertaken in past periodic safety reviews, and, when appropriate, the plant modifications to be implemented to improve safety.	For LTO, French regulator expects safety improvements.	X			
39.	7.39	The programme for long term operation should be implemented by the operating organization in a manner consistent with the requirements of the national regulatory body and national regulations.	Clarification	X			
/							

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Germany

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) (with comments of GRS)				Page			
1 of 6							
Country/Organization: Germany				Date: 2016-10-19			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	2.2	Physical ageing is a general process in which the physical characteristics of SCCs gradually deteriorate with time or use. It occurs by means of <u>due to physical, chemical or biological degradation processes or material degradation processes (i.e. chemical and/or biological degradation mechanisms).</u>	1) Number of SCCs characteristics gradually deteriorate with time or use is indefinite. 2) Processes occur unintentional. → “due to” 3) Distinction given between “physical degradation processes” and “material degradation processes” is incomprehensible from an expert point of view. 4) Processes mentioned here should be introduced as “degradation mechanisms”.	X			

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
2	2.6	Effective ageing management throughout the lifetime of SSCs requires the use of a systematic approach to managing the effects of ageing that provides a framework for coordinating all programmes and activities relating to the understanding, control , <u>prevention</u> , <u>detection</u> , monitoring and mitigation of ageing effects on the plant's structures and components.	"Prevention" before measures to "control" such as "detection, monitoring and mitigation" See also para 2.10 here: "to prevent or to control"	X			
3	2.16	In practice, ageing effects and degradation mechanisms are studied and managed at the level of the structure or component (i.e. 'structure or component level ageing management').	Overdetermined, bracket may be cancelled.	X			
4	2.17	The DO activity in Fig. 1 involves minimizing (preventing and or mitigating) expected ageing effects and degradation mechanisms of SSCs by developing a specific operational procedure, a water chemistry programme or another chemistry or environmental control programme or/and by means of other preventive or mitigatory actions.	"Minimizing" is not an umbrella term for "preventing".	X			

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
5	2.21	The closed loop of Fig. 1 indicates the continuation and improvement of ageing management, on the basis of feedback of relevant operating experience, results from industry research and development and results of self-assessment and peer reviews, to help ensure that emerging ageing issues will be addressed.	R&D results may also originate from other organizations, e.g. from universities.	X			
6	3.1	Ageing of in-scope SSCs (see paras 5.14 to 5.21) should be managed with foresight and anticipation through the entire lifetime of the plant, i.e. in design, construction, commissioning, operation (including long term operation and extended shutdown <u>suspended operation</u>) and decommissioning. Management of ageing effects should be considered during all associated activities, such as engineering, procurement, fabrication, transport and installation.	Term as used later in this chapter.	X			
7	3.9	... Materials testing programmes are in place for periodic monitoring of ageing effects during operation of the plant, taking into account the need for accessibility of the materials <u>structures and components</u> .	Structures and components have to be accessible - and are made of materials.	X			

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
8	3.9	... Provisions for relevant <u>preventive and/or</u> mitigatory measures (e.g. appropriate chemistry programmes) are considered.	Prevention, if possible, before mitigation.	X			
9	3.14	... Current knowledge about relevant potential ageing effects and degradation mechanisms as well as possible <u>preventive and/or</u> mitigatory measures are taken into account in the fabrication and construction of in-scope SSCs by manufacturers;	See comment No. 8.	X			
10	3.14	... The transport and storage conditions of manufactured equipment are appropriate <u>to avoid premature ageing effects and/or conditions which can promote subsequent ageing</u> ;	Addition for clarification.	X			
11	4.37	In-service inspection results that indicate notable degradation (e.g. if the degradation is greater than expected or if it approaches the acceptance criteria) should be evaluated to ensure that the extent of degradation at similar locations is appropriately determined. Ageing of SSCs in redundant subsystems should be monitored <u>inspected</u> independently to detect possible degradation in individual SSCs <u>differences in their ageing behaviour</u> .	1) This section is on “In-service inspection programmes”. 2) Differences, mainly in manufacturing, operating or environmental conditions, may result in a different ageing behaviour of structures and components in redundant systems. This should be addressed by an appropriate inspection strategy.	X			

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
12	4.46	... The water chemistry programme should <u>avoid and/or</u> minimize the harmful effects of chemical impurities and corrosion on plant SSCs.	See comment No. 8.	X			
13	5.25/6.	If the qualified lifetime of equipment important to safety cannot be extended, such equipment should be requalified or replaced at the expiration of its present qualification.	Chapter 5 is on ageing management, life time extension of equipment is not an issue of ageing management (This item is also not addressed in Fig. 4.).		If the qualified lifetime of equipment important to safety expires, such ...		
14	5.28	...; - Stressors on the structure or component (including loads on the structure or component) and the environmental conditions inside and outside the structure or component);	“Stressors” originate from “mechanical loads” as well as from “environmental conditions” ➔ Bracket extend	X			
15	Table 2/ Attribute 3 (Description)	Identification <u>Specification</u> of parameters to be monitored or inspected	Clarification	X			
16	Figure 5/ Box “Information and data for periodic review ...”	– IGALL information; – ... – Relevant specific and industry operating experience; – <u>Relevant results from research and development programmes.</u>	“Information and data for periodic review and continuous improvement of ageing management programmes” should also contain relevant outcome of R&D.	X			

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
17	5.48	Particular attention should be paid in developing ageing management programmes to ensuring that the programme has in place provisions to <u>prevent</u> , detect, evaluate and mitigate or prevent ageing effects of anticipated degradation mechanisms, based on the findings from the ageing management review.	More consistent order of activities (see also comments No. 2 and 8).	X			

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JRC

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: A Ballesteros Avila		Page 1 of 1					
Country/Organization: EC-JRC		Date: 10-10-16					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	2.1	2.1. This section presents the basic concepts of ageing management, including their application to long term operation, which provide a common basis for the recommendations given in Sections 3, 4, 5, 6 and 7 <u>of</u> this Safety Guide.	Word "of" is missing	X			
2	5.42	5.42 Information and example summaries of ageing management programmes specific to structures or components and specific to degradation mechanisms are provided in Ref. [5, 23].	Include additional reference [23]	X			
3	REFEREN CES	[23] INTERNATIONAL ATOMIC ENERGY AGENCY, Ageing Management of Concrete Structures in Nuclear Power Plants, IAEA Nuclear Energy Series No. NP-T-3.5, IAEA, Vienna (2016).	Additional (and very important) reference	X			

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USA

COMMENTS BY REVIEWER				RESOLUTION			
Country/Organization: USA/ NRC		Date: 10/19/2016					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	general	(1) The document has 8 figures and 2 tables that are not defined in TOC. The TOC and document would be clearer if there could be numerical subheadings. The existing subheadings could benefit from greater focus. For example, page 12, Programme for LTO should be Aging Management Programme for LTO. (2) There should be an acronym list, there are inconsistencies that would be picked up in the process, (3) Global comment on formatting – there are sections where there are large gaps in consecutive text (pp 9, 11, 27, 31, 34,. (4) Spacing between words is variable throughout document and should be corrected.	(1) The document would be easier to read (2) The document would be easier to read. Not all acronyms are defined on 1 st use (QMS, SSR, SR, FSAR) (3) consistency in layout		Final formatting will be done by IAEA editor according to IAEA rules when the document is finalized.		
2.	2.12, line 3	Defense -in-depth	Correct a typographical error (“typo”)	X			
3.	2.17, line 4	Preventive or mitigative actions	Correct “typo”	X			
4.	2.20, line	Preventive or mitigative actions	Correct “typo”	X			

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COMMENTS BY REVIEWER				RESOLUTION			
Country/Organization: USA/ NRC		Date: 10/19/2016					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
	2						
5.	2.23, line 2	Time dependent variable	Correct spelling error	X			
6.	Table 1	weaknesses in defense -in-depth or higher risk of core damage (frequency).	Correct spelling error	X			
7.	2.30, line 2	defined by the license term, the original plant design,	Correct "typo"	X			
8.	7.5, line 2	<p>7.1 Major steps of the programme for long term operation, in particular for ageing management of SSCs necessary to ensure safe long term operation [22], are illustrated in Fig. 8.</p> <p>The NRC has completed draft NUREGs 2191 and 2193 on subsequent license renewal which focuses on this topic and recommends that they be included as recommendations.</p>	The GALL-SLR and SRP-SLR would be good additional references to this IAEA document.			X	IAEA does not use Member States references in Safety Standards. These references can be and are used on the lower level of IAEA documents, e.g. Safety Reports.
9.	1.2, line 2	structures , systems, <u>structures</u> and components	Consistency with SRS 82	X			

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10.	2.7, 1st bullet 3.31, Line 2	Move Footnote 1 attached to 3.31 to 2.7, since this is the first time that current licensing basis is used	Editorial	X			
11.	2.7, new bullet 5	The environmental characteristics of any delayed construction period, as these may affect the ageing performance of the SSCs.	To ensure that relevant conditions associated with delayed construction are addressed.	X			
12.	2.7, new bullet 6	The environmental characteristics for the SSC during operation and shutdown conditions, including at a minimum temperatures, humidity levels, aqueous parameters (water quality, levels of deleterious constituents, etc.), neutron or gamma radiation fields.	The environmental characteristics for the SSC are not adequately identified in any of the other bullets.	X			
13.	2.12, line 2 5.10, 2nd bullet	<u>structures and</u> components	Clarify that structures are considered the same as components	X			
14.	2.20, line 1	<u>structure and</u> component	Clarify that structures are considered the same as components	X			
15.	2.21, line 2	results from industry research	The results from <u>all</u> research should be considered, not just industry.	X			

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Country/Organization: USA/ NRC		Date: 10/19/2016					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
16.	2.23, line 7/8	acceptability of the <u>structure or component</u> for <u>continued</u> service	Clarify that structures are considered the same as components	X			
17.	Figure 1, 1st bullet under "Understanding ageing"	Design-Current licensing basis	Consistency with 2.7	X			
18.	2.30, last line	retain their <u>ability to perform their intended safety functions functionality</u> throughout	The functionality of an SSC may be compromised (e.g., a pump stops running) without challenging plant safety if, for example, the SSC only has a safety intended function to maintain pressure boundary and not leak on adjacent safety-related electrical equipment.	X			
19.	2.32, line 5	this decision and this justification should be overseen <u>evaluated for adequacy</u> by the regulatory body	Clarify that the regulatory body does not review the <u>decision</u> to pursue long term operation (which will have economic considerations for	X			

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			example) but rather the <u>justification</u> for adequate ageing management as it affects plant safety.				
20.	3.8, line 3	equipment, <u>structures</u> or components	Clarify that structures are considered the same as components	X			
21.	3.15, before the section entitled Commissioning	<p>Add a new section entitled “Delayed Construction” with the following paragraphs</p> <ul style="list-style-type: none"> – Delayed construction occurs when the orderly construction of the plant is interrupted for a period of time that may be sufficient to affect the condition of and long term ageing characteristics of an SSC. – If a delayed construction period has occurred at the plant, the operating organization should identify and document the environmental conditions that could affect the physical condition of SSCs and their long term ageing behaviour, and make any needed modifications to the ageing management for the SSC. 	SSC ageing is affected by the history of the SSC prior to commissioning, and delayed construction periods should be considered in determining the aging management needs for the SSC.	X			

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COMMENTS BY REVIEWER				RESOLUTION			
Country/Organization: USA/ NRC		Date: 10/19/2016					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
22.	4.18, line 1	plant programmes listed in the following are essential	Clarity	X			
23.	4.44, line 3	within <u>the</u> long term operation <u>period</u> , if necessary	Clarity	X			
24.	4.44, line 3	if necessary. The documentation of the relevant initial conditions of the material samples used for surveillance should be identified, the adequacy of the information should be assessed, and the documentation should be supplemented as necessary.	Clarity	X			
25.	5.10, 1st bullet	the ageing of SSCs, <u>including any delayed construction or suspended operation periods</u> ;	This information is needed to ensure the adequacy of aging management.	X			
26.	5.10, new 2nd bullet	<u>Identification of relevant fabrication records, such as heat treatment history and certified material test reports (CMTRs).</u>	This information is critical to understanding the materials used and their possible aging effects.	X			
27.	5.16, line 1	scope of ageing management <u>(and also in the scope of long term operation)</u> :	To clarify that the scope of LTO is the same as for ageing management.			X	The idea is to refer in section 7 on LTO to section 5 on AM and not vice versa because ageing AM should be always in place but LTO is only

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
							one part of NPP life time.
28.	5.37, line 1	Ageing effects and degradations mechanisms	Editorial	X			
29.	5.43, line 5	<u>structure or</u> component	Clarify that structures are considered the same as components	X			
30.	5.64(4), line 7	analyses analysis . . . safety conclusion <u>or taken a different safety action.</u>	To clarify that the safety conclusion could involve different actions taken by the plant operator.	X			
31.	New paragraph before 7.10	<u>The scope of long term operation is consistent with the description in 5.16.</u>	To clarify that the scope for LTO is consistent with that for ageing management during the initial plant operating period (otherwise the use of 'scope of long term operation' is confusing in 7.14 (a), 7.17 (a), 7.17 (c), and 7.23			X	It is already written in para 7.18.
32.	7.11	Ageing management review and evaluation of time limited ageing analyses should have been completed previously in accordance with the recommendations in Section 5: <u>a) The existing ageing</u>	To clarify that the Ageing Management Review and Time Limited Ageing Analyses evaluation in Section 5 should be verified to adequately address the			X	It is already written in paras 7.14 - 7.17.

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		<u>management review and evaluation of time limited ageing analyses should be reviewed to ensure that they adequately address the long term operation period.</u> <u>b) If the ageing management review and evaluation of time limited ageing analyses have not been completed previously, if not, such review and evaluation should be completed for the long term operation period.</u>	Long Term Operation period.				