

Number	Comment	Reason	Technical area	Sentencing (*) (1,2,3,4)	If sentencing = 3, clarify reason for disagreement
(*) Sentencing: 1 (comment out of scope because not addressed towards the SAPs revisions); 2 (comment in scope and SAPs have been amended accordingly); 3 (comment in scope but ONR disagrees and proposes no change); 4 (comment in scope, ONR agrees with it but prefers existing text).					
001	New Text proposed - Where there are multiple sites in close proximity, a dose constraint should be applied to each site to ensure that the overall dose to a person off the site is below the 1mSv public dose limit. The IRR Guidance10 advises constraining the dose to members of the public from a single new source to less than 0.3 mSv pa. ONR's view is that any site under a single duty holder must demonstrate any new source meets the 0.3mSv dose constraint whilst ensuring the site as a whole meets the 1mSv public dose limit.	The ACoP to the IRRs states "a single new source".	ALARP	3	changes 1&2 are agreed but change 3 is outwith PHE advice.
002	The text should include an explicit reference to chemical engineering as these are intimately linked.	Fact.	CE&IH	4	
003	There needs to be a reconciliation between the chemical engineering principles and these	Consistency (should not be difficult)	CE&IH	4	
004	Safety cases should identify and analyse the chemistry aspects that may affect safety.	Systematic is covered in the following paragraph and should lead to a proportionate approach.	CE&IH	2	
005	No comments received, just the following concern: Claim – argument evidence is unnecessary – all safety cases should do this. Leaving it out makes the sentence clearer.	n/a	CE&IH	2	
006	I am concerned that the technical terms kinetics, thermodynamics and phase change are missing.	n/a	CE&IH	3	The words 'thermodynamics and kinetics' appear on several occasions in the chemical engineering SAPs, i.e. EPE.1 d), EPE.3 a), EPE.4 (last para). The words 'multi phase' appear in EPE.4 (2nd para).
007	No comments received, just the following concern: I note that the paragraph on use of codes has gone. If so, it's new location should be mentioned and referenced.	n/a	CE&IH	3	It is not clear what codes the consultee is referring to. This is the first version of chemical engineering SAPs, so it is unclear which previous version the consultee is referring to.
008	The safety case should reference all initiating faults.	Let's get into the 21st century. These are usually held on a computer database and listing is simply the old fashioned way of doing it. (There may be other examples I have not seen)	AA	1	
009	Where failures or unintended operation could make the consequences more severe then the DBA must take this into account and designate suitable safety systems to deal with it.	Self evident.	AA	1	
010	No comments received, just the following concern: will the text survive translation into Chinese, and back again? What problems will this raise?	n/a	SI	1	
011	RWM&DC instead of RWMD "the benefits of waste segregation" could indicate a bias. Surely there may also be disbenefits?	RWMD normally, though formerly, refers to Radioactive Waste Management Directive of NDA Should this not be an open question, subject to independent assessment?	RWDM	2	
012	Add an introductory sentence to the entries for Radioactive Waste Management, Decommissioning, and Contaminated Land, starting "This section sets out...."	The other sections have an introductory sentence defining the scope of each, however the sections on Radioactive Waste Management, Decommissioning, and Control of Contaminated land have no such introductory statement. This seems somewhat anomalous.	RWDM	2	
013	Add after "environmental aspects are beyond the scope of this document" " <u>and are addressed through the UK's wider regulatory framework</u> "	42 footnote: the change in the text here is important, so let it be clarified what is being said: the words now in brackets, namely "(these are addressed through the UK's wider regulatory framework)" apply to each of the three IAEA (SF1) Fundamental Principles which are not included in the present document, ie Role of Government, Justification of Facilities and Activities, Radiation risks in situations outside the NIA, (and not just the last of these three as implied by the lack of a comma after "outside the NIA" in the 2006 version). With regard to the flagged up change in FP8, namely the omission of the words "and the environment" from the equivalent IAEA Principle (SF7: "People and the environment, present and future, must be protected against radiation risks"), on the grounds that "environmental aspects are beyond the scope of this document", this as it stands is a negative formulation, (limiting responsibility without putting anything in its place), and I suggest that it should be brought under the same phrase previously used, namely that environmental aspects too "are addressed through the UK's wider regulatory framework". Unlike the SAPs, the IAEA's SF1 Principles contain an overall and explicit "Safety Objective", which includes "the environment": "The fundamental safety objective is to protect people and the environment from harmful effects of ionizing radiation". In as much as you claim to be "benchmarking" your revised SAPs against the revised IAEA Safety Fundamentals (see Foreword), you cannot very well ignore this clear implication: Safety includes the Environment.	FP	2	
014	Add a reference to TAG 004 here.	At the very place where these principles are formally spelled out, no reference is made to the external document which clarifies what constitutes compliance with these principles. In fact this information is to be found in a separate document, Technical Assessment Guide 004 "Fundamental Principles". It should be spelled out here, that this guide (TAG 004) is where to look for the ONR's interpretation of compliance with each principle. Strong consideration should be given to either merging the two documents, or at least printing TAG 004 as an Appendix to the Main Publication. Since TAG 004 is itself up for revision, I suggest that its text, particularly in TAG 004 paragraphs 4.12 to 4.14, should explicitly mirror that of the footnote to para 42 of the SAPs concerning the differences and similarities between SAPs and IAEA SF1 Principles.	FP	3	The TAG supports the SAPs rather than the other way around so we don't want to reference the TAG here.
015	The revised text states: Under the BSS, radiation protection is based on the principles of justification of practices and interventions, optimisation of protection and individual dose limitation. Justification of practices is not regulated by ONR and so is not considered in the SAPs.	I question the adequacy of the second sentence in this statement. According to the guidance of the Justification of Practices Involving Ionising Radiation Regulations 2004, the HSE, along with the EA/SEPA/DoENI, HPA, and FSA, are all Statutory Consultees in any justification decision of a nuclear practice, and have their own place on the Justification Co-ordinating Committee (JCC). Is it the case that this role has now been transferred to the ONR? If so, as I assume, does not the disclaimer expressed in this paragraph expressly remove from the ONR its statutory role as an expert advisor and consultee to Government on the issue of Justification? To put it another way, if Justification of practices is not regulated by ONR, what specific expertise does ONR possess to justify its continued "statutory" position on the Justification Co-ordinating Committee? ONR should formulate its answer to this question and modify para 478 accordingly. May I suggest that part of your answer is that you are expert in International Safety Standards, and therefore have a role in advising ministers accordingly?	EP, RP and criticality	4	
016	Revised text states " <i>the technical requirements deriving from it (i.e. its limits and conditions – operating rules) must be properly implemented so that the facility can be operated and maintained in a safe manner.</i> "	Comment: what is the relationship between "limits and conditions" and "operating rules" which is supposed to be conveyed by the hyphen between them? Is the second phrase a synonym for the first, ("Conditions/operating rules"), an explanatory phrase (in which case consider using "ie operating rules", or an example, in which case use "eg operating rules", or should it say "Limits, conditions, and operating rules" (a list of three items). At the moment it's ambiguous.	SC	3	The SAP text is in line with LC23 and does not need to be altered

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017	See the revised text.	<p>1.This paragraph may be of considerable relevance to Fukushima, since it highlights the role of "mental factors" which are particularly difficult to legislate for. Note the following "mental" words: "analysing safety requires creativity; it requires an extensive understanding of the facility both in the present and in the foreseeable future...experience of failures in other facilities.. Imagination is required to identify potential failure modes arising in plant or people, and opportunities for control or if necessary, mitigation. ...all of this knowledge is unlikely to be found in a single individual. All this is extremely relevant to Fukushima, and more generally to Japan and other seismic zones, failure to imagine the size of the tsunami, the lack of imagination shown in the design and construction of reactors with spent fuel ponds high above ground; reactors built on a fault –zone (Tsuruga/ Morju). To maintain the relevant qualities of human creativity, imagination, and above all, responsibility, over a sizeable period is a requirement almost impossible to guarantee. Despite their best efforts, regulators will find it a hard and maybe impossible task to maintain the required levels of creativity, imagination, extensive understanding, and experience of failures elsewhere.</p> <p>2.Further comment: In the light of proposed Chinese involvement at high levels in the UK Nuclear Industry, and in view of the profound linguistic differences between Chinese and English, I suggest that this paragraph and any others like it, should be subject to a translation into Chinese, and then back into English, by a completely independent agency, to see whether the essence of the paragraph survives the test. More specifically, what are the Chinese equivalents for creativity, imagination, extensive understanding, etc., and would potential Chinese regulators be likely to be encouraged or harshly penalised for exercising these qualities? What does "extensive experience" teach us about the fate of "whistle-blowers" in China, and what is the Chinese for "whistle-blower"? Do UK regulators have the independence of mind and action to raise these serious matters with their Chinese counterparts, in the light of Government greed and desperation to secure Chinese investment? Do UK regulators have a single person whose job is to keep track of the Chinese human rights record as it relates to whistleblowing in the Chinese state sector?</p> <p>I hope these comments have been constructive.</p>	SC	1	
018	An adequate qualitative/quantitative margin should exist between the nature of defects of concern and the capability of the examination to detect and characterise a defect.	I suggest the insertion of either the word "qualitative" or "quantitative" to remove ambiguity on what any NDE technique would have to demonstrate and the qualification (if any) that is required.	SI	1	
019	It is proposed that the use of accidents or incidents should be standardised to one description throughout the document as appropriate. (3 comments with this proposed)	n/a	Project	1	
020	It is proposed that the use of accidents or incidents should be standardised to one description throughout the document as appropriate.	n/a	SI	1	
021	It is proposed that the use of accidents or incidents should be standardised to one description throughout the document as appropriate.	n/a	ALARP	1	
022	It is proposed that the use of accidents or incidents should be standardised to one description throughout the document as appropriate.	n/a	Project	1	
023	Add the words "general and" before "statutory provisions".	The general provisions of the HSWA still hold eg Sections 2 and 3 so the removal of the words from the original text seems to give the wrong impression.	ALARP	1	S2 and S3 of HSW are actually RSPs
024	Remove the last two sentences and put them later. They could be returned to paragraph 13.	This is a follow-on from comment 1. Putting the numerical targets before relevant good practice gives the wrong message on their role. Paragraph 17 of ONR's Enforcement Policy Statement emphasises this as it says "Where relevant practice ... is not clearly established, the law effectively requires duty holders to establish explicitly the significance of the risks ..." One of the main thrusts of SAPs06 was to ensure that engineering and operational/managerial practice took precedent over risk estimates.	ALARP	3	The commenter seems worried about "the message" but we have sufficient caveats on the role and use of numerical risk estimates and the importance of RGP. The relocation of the text makes it more logical than in the 2006 version.
025	It is suggested that this paragraph would be logically better placed after paragraph 13 - New paragraph immediately before para 11.	The concept of "relevant good practice" is introduced in paragraph 13 so would serve as an introduction to the new paragraph which quotes "relevant good practice"	ALARP	3	We prefer ONR's suggested order.
026	It would be helpful if the date was given when the comparison with IAEA Safety Standards was completed for future reference.	n/a	ALARP	4	The comment is fine but we are going to introduce a formal SAPs review period hence saying when we last did an IAEA comparison will not add much.
027	Delete bracketed expression	See comment 1 in comment form.	ALARP	4	The NTs give guidance on what is or is not acceptable, there is no suggestion that, apart from the BSL(LL), they are mandatory legal requirements
028	Add "usually every ten years starting at the commencement of active commissioning" at the end of the paragraph.	In line with TAG 50	ALARP	2	
029	Replace "will be" by "should be" in the second line.	English grammar suggest "will be" is a definitive intention rather than an expectation	ALARP	2	
030	Remove "especially".	Wording suggests that "high engineering standards" may be less important for normal operation – hardly the case as it is preferable to not deviate from normal operational conditions!	ALARP	2	
031	Remove "our Numerical Targets have been met".	Meeting the numerical targets is not mandatory so to associate them with ALARP, which is mandatory in the form of SFAIRP in the HSWA, gives the wrong message: see also Comment 1 in comment form.	SC	2	
032	Add "Natural Resources Wales" to references to EA and SEPA.	Accuracy	SC	2	
033	Remove "eg ...".	See comment 1 in comment form.	FP	2	
034	Replace "HSE website" by "ONR website".	Accuracy	LMfS	2	
035	Reword start of principle along the lines: "Management processes should ensure directors, managers"	As written the principle is a statement not an issue which can be assessed in a safety case	LMfS	3	The principles refer to more than just management processes.
036	Reword final sentence to make clear this requirement it is a responsibility of the licensee to ensure that the supply chain conforms.	As written it is not clear where the responsibility lies	LMfS	2	
037	Similar suggestion as in comment 14 (relating to MS.1 - 035) in comment form.	n/a	LMfS	3	The principles refer to more than just management processes.
038	Replace "will" by "should".	See comment 8 in comment form.	LMfS	2	
039	Similar suggestion as in comment 14 (relating to MS.1 - 035) in comment form.	n/a	LMfS	3	The principles refer to more than just management processes.
040	Reinstate deleted bullet.	Optioneering is fundamental to demonstration of ALARP – as set out in ONR's Technical Assessment Guide TAST/005	LMfS	2	
041	Add a sentence along the lines "SPI are very useful at detecting trends that allow action to be taken before serious safety issues arise."	This is an obvious statement of fact: an example is the THORP Accountancy Cell incident	LMfS	2	
042	Similar suggestion as in comment 14 (relating to MS.1 - 035) in comment form.	n/a	LMfS	3	The principles refer to more than just management processes.
043	Suggest an additional bullet "(f) feedback from missions by organisations such as IAEA, WANO"	For completeness, these peer review missions can give much valuable insight into good practices globally	LMfS	4	
044	Remove reference to numerical targets.	See comment 1 in comment form.	Siting	2	
045	Replace "stop" by "prevent".	"Stop" is too specific and may not be possible: "prevent" is used in the following paragraph and the Table so should be used here for consistency	AA	3	Stop is a better word and fits in with the remaining part of the paragraph.

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046	Replace "physical barriers" by barriers, which may be physical,"	Not all barriers are physical barriers eg in the Table level 2 mentions "control, indication, alarm systems" and "operating procedures" as a "Defence/barrier"	AA	3	In the context of this paragraph physical barriers is the correct wording.
047	Define "principal means"	Comment – the phrase is unclear and could be open to (mis-)interpretation	AA	3	We believe that principal means in relation to a system is well understood from the context the remaining part of the paragraph is giving.
048	Add "and prevention of doses from radiation"	Comment: in situations where criticality is possible or exposure to radioactive materials, a significant effect is the radiation dose which may not be consequence of the release of radioactive materials eg Tokai-Mura cf paragraph 509	AA	3	ONR's three fundamental safety functions are fully consistent with those defined by the IAEA.
049	Remove "at least two"	This is a tautology: a diverse system must comprise of "at least two".	AA	3	The 'At least two' is an important clause in the principle which would be less effective if removed.
050	Replace "safety case" by "limits and conditions"	"limits and conditions" is more exact cf eg paragraph 451	AA	3	This paragraph is about the choice of the margin and therefore safety case and not limits and conditions is correct.
051	Suggest breaking sentence so "non-availability" and "site-related environmental parameters are in different sentences.	These are different concepts so better to separate;	AA	3	ONR's opinion is that the meaning is clear without breaking the sentence.
052	Replace "safety case" by "the engineering design".	The use of "safety case" should be reconsidered: it is the engineering and layout rather than the safety case that defines the safety: cf paragraph 131 on the role of fault analysis	AA	3	Safety case is correct. The safety case leads the design and therefore the safety case is where the initial specification for the engineering design should be found.
053	Rewording is needed to refer to "severe accidents".	The Commentary says this is a rewording on "severe accidents" but the paragraph does not mention this term. A possible solution is to replace "such events" by "events with more severe consequences than allowed for in the design basis"	AA	2	
054	Suggest a reference to IAEA & WENRA here on "practically eliminated".	The term is one for the lawyers: "best estimate" and "high degree of confidence" do not sit easily together, though the intention is clear.	AA	3	ONR considers that the remaining part of the paragraph provides a good definition of practical elimination consistent with the IAEA definition.
055	Replace "will be" by "should".	See comment 8 in comment form.	AA	3	The stronger 'will be' is intentional and correct.
056	More explanation of the "eg" would help.	It would be useful to explain how this approach should be applied in practice.	AA	3	Further information than the list given after the 'e.g.' can be found in ONR's technical assessment guides.
057	Use of "safety submission".	Not clear why change form "safety case" which is used elsewhere.	AA	2	
058	Reword as "Where the offsite accident consequences are potentially significant the PSA should provide information on the frequencies and consequences to people and the environment. For example for an operating power reactor ..."	n/a	AA	3	The revision removes the importance of the L2 PSA whose application is expected in other nuclear facilities.
059	Add "or equivalent" after "level 2"	Strictly level 2 refers to events within the containment so only has a meaning for LWR (or similar reactors) so does not apply to AGRs which do not have containment. Nor does it cover the need to apply this type of analysis to fuel cycle facilities	AA	3	Level 2 PSA is well defined and as with all SAPs the licensees can always offer what they believe to be equivalent.
060	"duration over which the PSA is applied"	Agreed, but why is this comment restricted to PSA? It is certainly relevant to SAA and most probably to DBA in terms of mission times for SSC.	AA	3	Duration time has a very specific meaning in the context of PSA as the results are calculated on a baseline duration. This is different to transient analysis where the duration may vary dependent on when the transient is seen to demonstrably converge to a stable state.
061	Remove "offsite".	Whilst "international consensus" on SAA may be to limit "to events with off-site consequences", it should be remembered that the definition of "severe accident" in the UK is different from that used internationally. Particularly in relation to fuel cycle plants, the consequences on site could be "severe" and for large multi-facility sites the consequences could be similar to those offsite	AA	3	ONR considers that the definition of SAA in relation to offsite consequences is consistent with international definitions. It does also go on to discuss the impact of a major relocation of radioactive materials onsite.
062	Remove from "For example ..."	This is discursive example is material for a Technical Assessment Guide rather than SAPs	AA	3	In this case ONR believes the 'For example ...' does help to give context without going into the level of detail to be found in a technical assessment guide.
063	Meaning of "measures"	Does "measures" include people? I suggest it does so the paragraph needs rewording to make this clear, as the current wording seems to cover only equipment	AA	3	The definition of 'safety measures' does cover people and equipment but in this paragraph measures is used in a more general sense and from 549 and 550 it is clear from the context that measures is referring to equipment.
064	Add "or equivalent".	See comment 38 in comment form.	AA	3	Level 2 PSA is well defined and as with all SAPs the licensees can always offer what they believe to be equivalent.
065	Define "safety class assignments".	It is not clear what this means – the term is not used in the Fault Analysis section. Is it intended to refer to the "class of accident" as in paragraph 529? It should be distinguished from "safety classification" of SSC as for example in paragraph after ECS.2	CE&I	2	
066	Remove "recommend".	It is not appropriate for SAPs to "recommend" – they are assessment principles, not guidance to designers, operators etc. Similar wording to paragraph 149 should be used.	CE&I	3	Our SAPs give guidance to ONR inspectors and this text is a correctly recommending the following guidance in the remaining part of the paragraph.
067	Change "determined" to "specified".	The title of the Principle has been changed from "requirements" to "specification": consistency suggests the text should also.	CE&I	2	
068	Remove "for a reactor".	There seems no reason to not include other facilities than reactors in this expectation	CE&I	3	For a number of sites more distributed emergency control may well be appropriate whereas for reactor sites a single location for emergency control room has been established as relevant good practice.
069	Query "on-site".	It is questioned why the stipulation of "on-site" is included. Cannot this function be provided off-site? Principle ESR.7 seems to allow for offsite communications: is there an issue of consistency here?	CE&I	3	On Site is used as ONR's judgement that this represents relevant good practice. This does not of course rule out off-site emergency centres.
070	Restore previous Principle.	The new wording of the Principle removes the reason for avoiding spurious operation and substitutes advice on how to do it. The reason is important and a Principle should not offer a route to success – that is the responsibility of the licensee to determine as they have prime responsibility for safety. See also comment 45 in comment form.	CE&I	3	The revised principle and the clarifying additional text provides better guidance to ONR's inspectors on this complex failure mode.

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071	Remove "recommend".	See comment 45 in comment form.	CE&I	3	Our SAPs give guidance to ONR inspectors and this text is a correctly recommending the following guidance in the remaining part of the paragraph.
072	Inconsistency with Principle EES.3.	EES.3 is changed as it should "apply more generally than just back-up systems" but this paragraph refers to systems providing the service "until such time as the normal supply is restored". Surely this is the definition of a "back-up system"!	CE&I	3	EES3 is all about functional capability other than time to meet the maximum demands on the safety systems the essential service system is supporting. Paragraph 371 provides additional guidance on accident sequence in terms of duration and plant state.
073	First sentence needs explanation.	The sentence might be considered as allowing for lower safety standards so needs more explicit explanation – though the general thrust of the statement may be defensible.	CE&I	2	
074	Replace "compared to" by "compared with".	English grammar	SI	1	
075	Replace "weighed" by "compared with".	Better wording – removes implication that somehow the weight of the component or structure should be considered.	SI	1	
076	Replace "while" by "whilst".	English grammar	CEEH	3	Archaic language form
077	Second sentence is incorrect in its reference to thresholds.	The sentence refers to FA.5 but incorrectly quotes from it: the threshold of 1 in 10,000 years relates to natural hazards, not external hazards (which may be man-made). Given the reference to FA.5, there seems no need to repeat the actual thresholds.	CEEH	4	
078	Add "External" to the title.	This Principle and the following paragraphs relate only to flooding external to the plane – the additional word will make this clearer	CEEH	3	Reflects intent
079	Replace "fixed" by "finalised".	Improved clarity: does not have potential misinterpretation of "being put in place" which "fixed" does	CEEH	4	
080	Remove "immediately".	The implication is that if the "cliff-edge effects" are not just beyond the design basis threshold, they do need consideration. The definition of "cliff-edge effects" given earlier (EHA.7) is more inclusive	CEEH	2	
081	Add "external" before "flooding".	See comment 58 in comment form.	CEEH	4	
082	Change title to "Monitoring Civil Structures".	The text has been expanded to include more than settlement, so the Principle title should reflect the expanded coverage	CEEH	3	reflects intent
083	Add ",if necessary," before "revised".	Revision is only needed if the review identifies the need	HF	3	This is a given, not considered necessary
084	Suggest adding reference to ICRP and IAEA GSR Part 3.	These organisations are also important in guidance/setting requirements on radiation exposure. Is the reference in the fifth new paragraph to "international BSS" intended to refer to GSR part3?	EP, RP and criticality	3	The 'guidance' mentioned here is specifically that relating to IRR99.
085	Add "and its ACOP".	Reference to this document, as a source of relevant good practice (ACOPs are quoted in this context in TAST/005), should be reinstated	EP, RP and criticality	2	
086	Explanation of responsibility for "justification".	It is accepted that ONR does not regulate "justification" but it is suggested that it would be worth saying which body is.	EP, RP and criticality	2	
87	It is unclear what is meant by "the box below".	n/a	EP, RP and criticality	2	
88	Suggested addition of a reference to Schedule IV of IAEA GSR Part 3.	This schedule gives "guidance values for restricting exposure of emergency workers" and should be a good starting point for this situation.	EP, RP and criticality	3	ONR prefers not to refer to Schedule IV of IAEA GSR Part 3 because this has not been reproduced in the EC Basic Safety Standards.
89	Add a bullet in regard to "lens of the eye".	Consistency with paragraph 481 and important as new lower levels of exposure have been recommended by ICRP and IAEA	EP, RP and criticality	2	
90	Add a sentence "Where the site emergency plan relies on the use of mobile equipment stored at a single place, the plan should clearly indicate the timescale for the need for the equipment at the different facilities so that the necessary service can be delivered in to those facilities in most urgent need."	This approach will assist emergency personnel in knowing where to deploy such emergency equipment; and so assist in ensuring that the facilities in most need of the emergency service obtain it in a timely manner and will (sentence incomplete)	EP, RP and criticality	2	
91	Suggest adding a reference to LC 22.	Consistency with other parts of SAPs	CE&IH	2	
92	Remove "process plant"	Tautology: a "process plant" is a "facility" – see Glossary	CE&IH	2	
93	Replace "tolerable" by "ALARP"	See comment 1 (in comment form), but also "tolerable" is not a legal requirement. The sentence can be read to imply that it is sufficient to have tolerable risks, which is equivalent to saying that only the BSL has to be achieved.	ALARP	3	It is very clear in the text that the Numerical Targets are an aid to judgement, except where they are actually legal limits in which case it is explicitly stated.
94	Reference to "Annex XX"	Unclear what is referred to – is it the Annex on Numerical Targets? It appears from paragraph 582 that this is Annex X	ALARP	2	
95	Reference to HSE's Enforcement Policy Statement and website	Should these be replaced by reference to ONR's Enforcement Policy Statement and website?	ALARP	2	
96	Reference to "Annex X"	Is this the same as "Annex XX"? see comment 74	ALARP	2	
97	Replace "scaled by" by "taking into account"	"Scaled" implies a fixed numerical relation, which I do not believe exists – after all we do not have a definitive legal definition of "gross disproportion" so the suggestion of a scaling of it is not plausible	ALARP	2	
98	Clarity on Target 4	The intention in SAPs06 was that target 4 should only be invoked where a robust argument was made that it was not reasonably practicable to meet the requirements in paragraph 521 b) and c). It is strongly recommended that a statement to this effect is included in this revision of SAPs	ALARP	4	The existing text is clearer that the 2006 SAPs text on this point
99	This new paragraph is a useful addition: it is suggested that it is related to the extent of the gross disproportion in any CBA calculation employed	Erring on the side of safety is to be applauded and the relationship with gross disproportion would be a useful addition	ALARP	4	
100	Remove "The principal ... sites"	There is no justification for saying that site risk targets (5 and 7) are of lesser importance than risks from single facilities (6 and 8). Indeed this statement seems to be inconsistent with the learning from the accident in Japan and the many post Fukushima-Daiichi additions to SAPs dealing with multi-facility sites risks.	ALARP	2	
101	Remove the reference to "principal target"	See comment 80 in comment form. From the point of view of a member of the public, it is the risk from the site that is important not each facility. It could, therefore, be argued that Target 7 is the more important one from the public perspective.	ALARP	2	
102	Remove "summed facility by facility"	This is at best misleading, at worse wrong. The use of summation is only viable if the risks from each facility are totally independent, which cannot be the case if external hazards (and some internal hazards) are included.	ALARP	2	
103	Reword the paragraph: "The individual risk from a site that comprises several facilities should be determined by a consideration of the individual contributions, taking into account interactions (see Principal ST.6 ff)."	This paragraph contains the same error as the preceding one (comment 83 in comment form)	ALARP	2	
104	Reinstate deleted paragraph	There is no justification for the statement that paragraph 8 covers accidents in which less than 100 deaths occur: target 8 is related to individual risk. It is well-known that the relationship between individual risk and societal (multiple fatality risk) is not a simple arithmetic one which is why different targets are used. The paragraph was intended to make clear that the target was a "marker" for where more detailed analysis was needed. The final sentence was to emphasise that the target was derived and is only appropriate where the majority of deaths are stochastic not immediate (see paragraph 625). It was specifically related to accidents where the site boundary dose was such that immediate deaths off-site would not occur, however the possibility of immediate deaths on-site might not be discounted	ALARP	3	There is sufficient on this elsewhere, e.g. the relevant annex to the SAPs or TAG 005.
105	Unclear what are the texts referred to in the revised paragraphs	See comments: 74, 76 in comment form.	ALARP	2	

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106	Explain "safety measures not under direct control of the licensee"	The statement is unclear and needs expansion or an example	RWDM	2	
107	In paragraph 692 the term "intended end-state" is used, whereas in paragraph 693 the term used is "planned end-state"	Do these terms have the meaning? If "yes" why are different words used: if "no" the difference needs explanation	RWDM	2	
108	"availability of funding"	Funding should not interfere with the requirements of safety (as in Principle DC.3) so the statement in this paragraph needs to be adjusted to be consistent	RWDM	3	This para is a statement of fact not a principle. The reviewers point is already addressed in the principles
109	Reinstate reference to LC 34 and correct to ONR website	References to LC useful: see comment 71	RWDM	2	
110	Replace "NRPB" by "PHE"	Accuracy	Glossary	2	
111	Reinstate deleted definition	This could be sub-definition of Hazard but has an importance, particularly in the context of radioactive waste, as it indicates an approach that reduces the "possibility of danger" from radioactive material even though the hazard, ie the quantity of radioactive material, has not been reduced.	Glossary	3	The original definition does not add any clarity to the preceding definition of hazard since "propensity" is a vague term not used anywhere else.
112	Consider reinstating deleted definition	This definition was taken from R2P2 and was a deliberate attempt to distinguish the concept from the "precautionary principle".	Glossary	3	The original definition does not add any clarity
113	Suggest explaining why these are called "targets" rather than "principles"	As this text has been upgraded to be included in SAPS this explanation seems useful. Reason was to make clear that whereas the fault analysis and assessment methods had to meet certain requirements, the "success criteria" were not dependent on the methodology used.	Annex	4	
114	Suggested addition "although the basic approach and figures have not changed"	To emphasise that SAPs 2006 was a development of the 1992 SAPs not a complete change.	Annex	4	
115	Correction needed to description of ToR	ToR was not written "to guide decision-making by inspectors": It was written at the request of the Sizewell B inquiry inspector to "publish guidelines on the tolerable levels of ... risk" so that "public, expert and Parliamentary opinion could be expressed" (see first paragraph of ToR). It is important to be accurate here as ToR is an explanation for the public not a guideline for HSE/ONR inspectors	Annex	3	There is a difference here, the TOR framework is used by R2P2 for guiding decisions which is what we mean. The commeter correctly notes that the origins of the TOR document was the Sizewell B inquiry.
116	Explain relationship of ALARP and SFAIRP	Although ALARP is the commonly used term, the legal phrase is So Far As Is Reasonably Practicable (SFAIRP). The test is the same (see HSE's Guidance document "Principles and guidelines to assist HSE in its judgements that duty-holders have reduced risk as low as reasonably practicable"). As this is an explanatory Annex, this connection seems worth making.	Annex	2	
117	Replace "claimed" by "demonstrated that it is"	The importance aspect is whether any £"claim" is "justifiable"	Annex	2	
118	Add "and their dose can be continuously monitored to ensure they are within the legal limits."	Important distinction between "normal operational doses" and "accident doses"	Annex	2	
119	"Figure XX"	It is assumed this figure is that in the "accident Analysis" set of revisions	Annex	2	
120	There are several additional paragraphs (some are Principles) added and removed.	The effect of this on TAGs and earlier assessments needs to be evaluated and a scheme set up to ensure that there is no confusion in referencing.	Project	2	
121	Note for comment: At the 2014 SRP Southport event, a number of ONR inspectors (xxxxxxx's talk) expressed the view that how ALARP studies are done and how ALARP is implemented should be reconsidered.	n/a	ALARP	1	
123	Include nuclear safety, radiation protection and radioactive waste management.	Reason, terms 'nuclear safety' and 'radiation protection' are being confused as some operators are poorly defining nuclear safety in their own terms, hence risk not complying with IRR 1999 (e.g. Radiation Protection is part of Nuclear Safety) whereas 'a safety case is just a prior risk assessment'	ALARP	2	
124	Suggest rewording 'ALARP is also equivalent to the phrase 'as low as reasonably achievable' (ALARA) used by other bodies nationally and internationally.'	Could state the position: The UK position is that ALARP is not the same as standard as ALARA. The UK went to EU Court to argue ALARP ≠ ALARA	ALARP	2	
125	Additional : Any departure from good practise should be justified with a robust ALARP argument.	Need to consider that not all establishments are reactors or reprocessing sites	ALARP	3	Any departures from revelent good practice (RGP) will potentially attract enforcement action. If alternatives are justified they would likely become RGP in their own right.
126	Alternative to 'low' consider using 'No harm'	Using the No harm dose argument from Nuclear Reactors (Environment Impact Assessment) Regulations gives an indication as to what is defined as low, and is consistent with Conditional Exemption 10 µSv/a	ALARP	4	
127	Addition 'Regulation 3 of the Management Regulations, and IRR 1999 Reg 7	To emphasise to operators requirement for legal compliance	ALARP	2	
128	suitable margin of safety taking into account obsolescence of safety systems.	As part of ageing, obsolescence should be considered	ALARP	4	we agree obsolescence is important but not in the context of this paragraph.
129	Additional text; This is consistent with Reg 7 and Reg 8 of IRR 1999 requiring demonstration of ALARP	IRR 1999 has no numerical targets for BSO	ALARP	4	we don't think the refernce to IRR is needed here
130	Additional text: There should also be clear decision made on implementation or not taking into account para 575 e.g. sensitivity analysis	Good ALARP practise requires a decision to implement or not	ALARP	4	the comment is OK but it is not well placed in this paragraph which is concerned with CBA.
131	Where CBA is used to support the ALARP argument, it should follow HSE's general ALARP guidance (ref). In particular, CBA should not form the whole argument justifying an ALARP decision, nor be used to undermine existing standards or relevant good practice. There are other methodologies and tools to aid decision making to be considered	There is an IRPCG ALARP standard which uses cost per man Sv, Multi Attribute Utility Analysis MAUA. MAUA can be used to capture good practise arguments. There are also techniques for analysing cost (J Value)	ALARP	3	The paragraph is concerned with CBA, not alternatives to CBA. Dutyholders are free to use other techniques but they will need to be adequately justified.
132	Add These currently include IRR 1999, supported by an Approved Code of Practice (ACoP)10.	There is a legal basis for safe working with ionising radiation, these are IRR 1999 and a legal ACoP standard to work to. Proposed wording does not highlight the role of this legislation or values the role of the RPA and radiation protection as a whole	EP, RP and criticality	2	
133	Delete/reword 'reasonable Practicability'	Gives the impression an ALARP case can be made not to comply with IRR 1999 The old phraseology gives better clarity 'These currently include IRR, supported by an Approved Code of Practice (ACoP)10. Adequate protection is that level of protection that ensures compliance with the ALARP requirements of all relevant legislation, where appropriate to the SAPs, and takes into account the latest modern standards'.	EP, RP and criticality	2	
134	Suggest use of SFAIRP and ALARP as opposed to Adequate	Potential contradiction with IRR 1999 Reg 7 & 8. The Legal requirement requires to restrict exposure SFARIP, whereas use of 'Adequate' is up to interpretation. Alternatively use the New Para from IAEA-RS-G1.1	EP, RP and criticality	4	
135	See comment 12 above (in comment form)	See comment 12 above (in comment form)	EP, RP and criticality	4	
136	Suggest 'Safety case/prior risk assessment'	'Suitable and sufficient assessment of the risk'	EP, RP and criticality	4	
137	Suggest use of SFAIRP and ALARP as opposed to Effective	Potential contradiction with IRR 1999 Reg 7, 8 & 18(6) Similar to 12,13 above legal requirement under IRR 1999 is 'SFAIRP limit the extent of the spread of contamination'	EP, RP and criticality	4	
138	Suggest using 'SFARIP Manipulation...	Potential contradiction with IRR 1999 Reg 7 & 8, as this is down to opinion	EP, RP and criticality	2	
139	Suggest 'Safety case, prior risk assessment or workstage safety report (xxxxxxx phased decommissioning safety case)	'Suitable and sufficient assessment of the risk'	EP, RP and criticality	4	

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140	An on-site emergency control centre should be provided from which an emergency response can be suitably and safely directed. At operating power reactor sites this should be separate from both the control room and the supplementary control room. 'A strategic centre should be located on or off site at which senior management can relieve the pressure on the site emergency control room by supporting responding agencies to receive information and briefings and to support the response with local government etc'.	Some sites don't allow for senior managers and responders e.g. EA/ONR for on site emergencies. Site Emergency control rooms therefore end up dealing with the emergency and the strategic axis of stakeholders etc.	EP, RP and criticality	2	
141	Replace 'Leadership and management for safety' by 'Safety governance' And also in all subsequent use of this term.	<p>ONR's publication 'Licencing Nuclear Installations' makes clear the importance to safety of those aspects dealt with in the safety management prospectus and the need for consideration of the governance structure and governance activities both in the licensee and in organisations closely related to a licensee such as its parent company or consortium partners.</p> <p>NS-TAST-GD-072 Revision 2 states that 'A licensee should be able to demonstrate continuing licensability throughout the lifecycle of the site. The coherent approach to safety management described in the SMP incorporating organisation, resources and management systems...' and 'The SMP can be regarded as a top tier safety case for nuclear safety management'. Further 'ONR expects a licensee to consider the continued suitability of the elements covered in its SMP as part of its Periodic Safety Review'.</p> <p>LC36 deals with changes to corporate aspects.</p> <p>Currently, SAPs does not give equal weight to governance issues compared with more technical ones, even though governance has, rightly, been championed by ONR as a necessary component of safety assurance.</p> <p>Revising SAPs should be an opportunity to integrate into SAPs a proper consideration of the aspects covered in the safety management prospectus regarding the corporate nature of safety governance and the influence of complex ownership and operational structures on nuclear safety.</p> <p>The term 'governance' is not novel to SAPs as it is introduced in paragraph 54 of the SAPs, and is a more useful term being less restrictive than 'Leadership and management for safety'</p> <p>This will be a recurring topic of my comments below and are based on the concern that corporate structures and the accompanying governance of nuclear safety are not given adequate emphasis in the existing SAPs.</p>	LMfS	3	we prefer LMFS
142	As above, in the title of the principle and in its text replace 'Leadership and management for safety' by 'Safety governance'. Add 'all' before 'organisations concerned with...'	<p>Revising SAPs should be an opportunity to integrate into SAPs a proper consideration of the aspects covered in the safety management prospectus regarding the corporate nature of safety governance and the influence of complex ownership and operational structures on nuclear safety.</p> <p>This principle should apply to all organisations such as contractors, partner companies, parent companies etc. whose activities have a bearing on nuclear safety.</p>	FP	3	We prefer "LMFS" to "safety governance".
143	Replace the whole by: "By a comprehensive and systematic process of safety assessment, duty holders must demonstrate effective understanding of the hazards posed by a site or facility and demonstrate the adequacy of the safety governance that relates to that facility"	To ensure that corporate structures and the accompanying governance of nuclear safety are given adequate emphasis in the SAPs.	FP	3	We prefer the existing words.
144	No text is specifically proposed. Proposal: Draft a specific new paragraph referencing Notes for Applicants and the Safety Management Prospectus and LC36 to incorporate into the SAPs for leadership a proper consideration of these as part of the safety case for the facility.	<p>To ensure that corporate structures and the accompanying governance of nuclear safety are given adequate emphasis in the SAPs. LC36 deals with changes in safety governance, staffing, deployment of resources, management structures etc." and the SAPs should cover all LCs.</p> <p>An opportunity should be taken in the revision of SAPs to incorporate the safety management prospectus into the definition of a safety case and to treat revisions to management structures, governance processes etc. (as covered in LC36), in the same fashion as other revisions to the safety case.</p>	LMfS	3	Would put a new prescriptive requirement on existing licensees to maintain a document.
145	Replace 'Leadership and management for safety' by 'Safety governance' including in the title of this chapter.	As above	LMfS	3	LMfS refers to more than governance.
146	Replace first sentence by "The organisational structure, roles and responsibilities should secure effective coordination and collaboration between all those involved, including parent companies, subsidiaries, contractors and all other entities involved in the safety of the facility".	<p>To ensure that all corporate structures are included and not to give the mistaken impression that, for example, parent companies do not have duties relating to safety arising from their governance. It also requires collaboration from elements of Government and emergency services and others.</p> <p>Note that the issue of "governance" is introduced in this paragraph – it should have been introduced as a principle.</p>	LMfS	4	
147	Insert as a) "Occur as a result of the safety culture of staff, contractors and others, which depends on a questioning attitude." Insert as final subsection: "be transparent to all participants and the regulators."	<p>It should be reinforced that active challenge should primarily be an outcome of a healthy safety culture and a questioning attitude amongst those involved and this should be above any structural or procedural aspects, to recognise its importance in this hierarchy of attributes.</p> <p>A necessary attribute of a healthy safety culture based on active challenge is that the activity should be transparent to all concerned, so that participants can be able to monitor the outcomes of their and others' suggestions for improvement thus providing positive reinforcement. Transparency to Regulators is also necessary.</p>	LMfS	2	
148	Replace "and its processes, operations and organisation" with "and the processes, operations and governance of organisations (both inside and outside the facility), with duties relating to safety" After "ONR also undertakes compliance inspections" insert "(both at facilities and of others who influence the safety of the facility)"	To introduce governance as a constituent area of a safety case (as above). Additionally, current wording implies that assessment only involves activities at the facility, assessment should cover any activity that pertains to safety whether located in the facility or outside or in another organisation.	SC	4	
149	Replace first sentence with "provide the basis for Safety Governance: i.e. the safe management of people plant and processes"	To reinforce governance as a constituent area of a safety case (as above).	SC	4	

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150	Add at end: "g) changes in safety governance, staffing, deployment of resources, management structures etc." Also, add a reference to LC36	To reinforce governance as a constituent area of a safety case (as above) and to recognise that the safety case should address compliance with all Licence Conditions (i.e. including LC36).	SC	3	The site governance should ensure that the requirements of the safety case are met - eg SQEP resource. A change would require a modification to the safety case which is covered at bullet a), as is operating methods.
151	At the end of the final sentence add "whether they be at the facility or elsewhere".	Consideration should be given to any activity that pertains to safety whether located in the facility or outside or in another organisation.	HF	3	This is implicit in the text, not considered beneficial to the understanding
152	Insert "continuing", before "fitness for duty..."	Fitness for duty has to be continuously maintained	HF	3	The SAP is focused on management controls to assure fitness for duty, this is expected to apply at start of the spell of duty and throughout.
153	First instance of term 'conventional safety'. This term is not included in the Glossary and the extent of hazards incorporated within its meaning is open to interpretation. Clarity on this point is particularly important for nuclear chemical facilities where the chemical hazards may be more onerous than the nuclear. See also comments below regarding interfaces between Regulators and used of term 'related hazards' within Safety Case discussion.	n/a	ALARP	4	the SAPs are aimed at nuclear safety and radwaste, so we don't want to stray into conventional safety here.
154	A key interface for nuclear chemical sites is the relationship with HID. It would be helpful to clarify this interface with ONR and ensure it is fully expanded within Annex 1.	n/a	ALARP	3	We don't want the SAPs saying more about interfaces with other regulators here. We acknowledge it is important but feel that annex 1 is the right place.
155	It would be helpful to make the link between these well separated areas of the SAPs explicit (or, at least, stronger than is currently the case). The new text in Paragraph 34 effectively limits the extent of claims that can be made within ALARP arguments for short remaining facility life while that in 'Para 629' makes clear that short remaining facility life may be used in support of arguments for limited operation at higher than desired levels of risk. The two points are not necessarily contradictory, and we accept that ALARP is all about striking an appropriate balance, but they are linked and we feel this should be made clear.	n/a	ALARP	4	
156	'629' makes clear that short remaining facility life may be used in support of arguments for limited operation at higher than desired levels of risk. The two points are not necessarily contradictory, and we accept that ALARP is all about striking an appropriate balance, but they are linked and we feel this should be made clear.	n/a	ALARP	4	
157	The discussion within the Annex makes reference to the 'Fault Analysis' Principles in Paras 496 to 567. These Principles do not appear to be included within the current consultation exercise – is this an omission or would we be correct to assume that there are no proposed changes?	n/a	Annex	3	Paragraphs 496 -567 were part of the consultation exercise in the accident analysis section.
158	Figure xx, referenced in Paragraphs A27, A29 and A31 is not included in the pdf available under the consultation. On the basis that the numerical targets have not changed, we assume this Figure will not be significantly different from Figure 1 in the superseded explanatory note. Please confirm this assumption is correct.	n/a	Annex	4	Yes new figure xx is similar to old figure 1.
159	This adjustment extends the scope of our Safety Cases to address 'radiological and related hazards'. For our nuclear chemical facilities, it would be helpful to clarify what is meant by the term 'related hazards' within the context of 'Conventional Safety' used elsewhere in the revised document and how ONR's expectations interface with those of other Regulators.	n/a	EP, RP and criticality	4	
160	It would be helpful to clarify that double contingency is one methodology that can be used for criticality safety assessment but licensees may also choose to employ the DBA and probabilistic approach provided it is justified for the assessment being undertaken. This would align with previous ONR guidance and discussions at the Working Party on Criticality including formal written feedback from the ONR to the WPC (Reference xxxxxxxxxxxxxxxxxxxx).	n/a	LMfS	3	Original para removed.
161	Add: These currently include IRR 1999, supported by an Approved Code of Practice (ACoP).	There is a legal basis for safe working with ionising radiation, that is IRR 1999 and the ACoP standard. Proposed wording does not highlight the role of this legislation nor value the role of the RPA and radiation protection as a whole. Licensees may lose focus on the legal compliance aspects if the IRRs are displaced.	EP, RP and criticality	2	
162	Delete/reword 'reasonable practicability'	Gives the impression an ALARP case can be made not to comply with IRR 1999. The old phraseology gives better clarity 'These currently include the IRR, supported by an Approved Code of Practice. Adequate protection is that level of protection that ensures compliance with the ALARP requirements of all relevant legislation, where appropriate to the SAPs, and takes into account the latest modern standards'.	EP, RP and criticality	2	
163	Suggest use of SFAIRP and ALARP as opposed to Adequate	Potential contradiction with IRR 1999 Reg 7 & 8. The Legal requirement is to restrict exposure SFARIP, whereas use of 'Adequate' is open to interpretation. Alternatively, use the New Para from IAEA-RS-G1.1.	EP, RP and criticality	4	
164	See comment above	See comment 1 above (in comment form).	EP, RP and criticality	4	
165	Suggest 'safety case/prior risk assessment'	'Suitable and sufficient assessment of the risk'.	EP, RP and criticality	4	
166	Suggest use of SFAIRP and ALARP as opposed to 'effective'.	Potential contradiction with IRR 1999 Reg 7, 8 & 18(6) Similar to items 2 and 3 above (in comment form), legal requirement under IRR 1999 is 'SFAIRP limit the extent of the spread of contamination'.	EP, RP and criticality	4	
167	Suggest using 'SFARIP Manipulation...	Potential contradiction with IRR 1999 Reg 7 & 8, as this is down to opinion.	EP, RP and criticality	2	
168	Suggest 'safety case, prior risk assessment or workstage safety report' (XXXXXXXXXX phased decommissioning safety case)	'Suitable and sufficient assessment of the risk'.	EP, RP and criticality	4	
169	An on-site emergency control centre should be provided from which an emergency response can be suitably and safely directed. At operating power reactor sites this should be separate from both the control room and the supplementary control room. 'A strategic centre should be located on or off site at which senior management can relieve the pressure on the site emergency control room by supporting responding agencies to receive information and briefings and to support the response with local government etc'.	Some sites don't allow for senior managers and responders e.g. EA/ONR for on site emergencies. Site Emergency control rooms therefore end up dealing with the emergency and the strategic axis of stakeholders etc.	EP, RP and criticality	2	
170	Include nuclear safety, radiation protection and radioactive waste management.	Reason, terms 'nuclear safety' and 'radiation protection' are being confused as some operators are poorly defining nuclear safety in their own terms, hence risk not complying with IRR 1999 (e.g. Radiation Protection is part of Nuclear Safety) whereas 'a safety case is just a prior risk assessment'.	ALARP	2	
171	Suggest rewording 'ALARP is also equivalent to the phrase 'as low as reasonably achievable' (ALARA) used by other bodies nationally and internationally'.	Could state the position: The UK position is that ALARP is not the same standard as ALARA. The UK went to EU Court to argue ALARP ≠ ALARA.	ALARP	2	

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172	Additional: Any departure from good practise should be justified with a robust ALARP argument.	Need to consider that not all establishments are reactors.	ALARP	3	Any departures from relevant good practice will potentially attract enforcement action. If alternatives are justified they would become RGP
173	Alternative to 'low' consider using 'no harm'.	Using the no harm dose argument from Nuclear Reactors (Environment Impact Assessment) Regulations gives an indication as to what is defined as low, and is consistent with Conditional Exemption 10 µSv/a.	ALARP	4	
174	Addition 'Regulation 3 of the Management Regulations, and IRR 1999 Reg 7.	To emphasise to operators requirement for legal compliance.	ALARP	2	
175	suitable margin of safety taking into account obsolescence of safety systems.	As part of ageing, obsolescence should be considered.	ALARP	4	we agree obsolescence is important but not in the context of this paragraph.
176	Additional text: This is consistent with Reg. 7 and Reg. 8 of IRR 1999 requiring demonstration of ALARP.	IRR 1999 has no numerical targets for BSO.	ALARP	4	we don't think the reference to IRR is needed here
177	Additional text: There should also be a clear decision made on the implementation taking into account paragraph 575 e.g. sensitivity analysis.	Good ALARP practise requires a decision to implement or not.	ALARP	4	the comment is OK but it is not well placed in this paragraph which is concerned with CBA.
178	Where CBA is used to support the ALARP argument, it should follow HSE's general ALARP guidance (ref). In particular, CBA should not form the whole argument justifying an ALARP decision, nor be used to undermine existing standards or relevant good practice. There are also methodologies and tools in addition to CBA to aid decision making that should be considered.	There is an IRPCG ALARP standard which uses cost per man Sv, Multi Attribute Utility Analysis MAUA. MAUA can be used to capture good practise arguments. There are also techniques for analysing cost (J Value).	ALARP	3	The paragraph is concerned with CBA, not alternatives to CBA.
179	Para a. should also include 'maintenance'	Maintenance of equipment prior to, and after installation is an integral part of the build process.	CEEH	2	
180	"dose" rather than "exposure"	Clause 204 replaced the concept of "radiation dose" with "radiation exposure". Clause 205 is not consistent with Clause 204. Consistent terminology should be used throughout. Dose would be our preferred option.	CEEH	4	
181	Replace "frequency" with either "frequency of return" or "return-period".	The term "frequency" within these paragraphs could lead to confusion, frequency of return or return-period may be a better description. This change should be checked for applicability through the remaining text of this file.	CEEH	4	
182	You may wish to consider the adjacent text if reviewing the relevant paragraph.	Clause a) is a repeat of the text in EHA.19. There is no significant difference in the descriptions of the exclusions for the discrete and non-discrete hazards.	CEEH	3	noted - no action required
183	Consider the addition of the following text to the end of the existing sentence, "taking into account variations in the level of the water table".	Good Practice.	CEEH	2	
184	Consider adding this text after the first sentence "Consider the effects of flooding on the ground condition and the potential for any slope instability".	Tide locking and surge should also be included and considered.	CEEH	2	
185	The paragraph could be amended to read: "The analysis should take due account of fires, missiles (e.g. gas bottles) toxic gases etc, either resulting from a fault or as part of an initiating event. The potential faults considered should include the inadvertent release of the hazardous material".	Consider adding text to describe that Missiles could arise from pressurised systems e.g. gas bottles.	CEEH	4	
186	You may wish to consider the adjacent text if reviewing the relevant paragraph.	This clause would seem to suggest that BS:ENS (Eurocodes) are not a suitable basis on which to design nuclear structures. Furthermore, the recent publication of ACI349-13 shows that there is little difference in the basic design parameters between a nuclear specific concrete code and a generic concrete code. The new version of ACI 349 adopts the same basic parameters and equations as ACI 318, and gives changes that relate to specific aspects of design that relate to nuclear plant and facilities. It is therefore questionable if ACI 349 achieves any higher reliability than ACI 318.	CEEH	4	
187	Where the safety function of a structure provides a principal role in ensuring nuclear safety (see ECE.20 para 148ff), predicted failure modes should be gradual, ductile and, for slowly developing loads, detectable.	Reference should be to ECE.20	CEEH	2	
188	The approach to validation and verification should consider whether the controlling physical equations have been correctly implemented into any spreadsheet or computer code, or, in the case of hand calculations, correctly incorporated into the calculational procedures. The safety management arrangements should ensure that calculations are validated to an extent proportionate to their importance to the safety case.	Spreadsheet validation should be incorporated into this clause.	CEEH	4	
189	You may wish to consider the adjacent text if reviewing the relevant paragraph.	This clause would be more effective if it was targeted towards structures that are sensitive to deformation or settlement rather than blanket coverage of all civil engineering structures. Inherently robust structures such as raft foundations are capable of withstanding differential settlement and would benefit little from periodic settlement monitoring. However, where elements of a structure cross a movement joint in the foundations, differential settlement could be an issue and monitoring would be beneficial.	CEEH	4	
190	The proposed new SAPs have not closed the gaps that exist between the SAPs and important concepts in the TAGs/TIGs. Much of this revolves around the TAGs and TIGs being focused on the Nuclear Site Licence Conditions rather than general principles, which is compounded by the different review timescales for each TAG/TIG. However, the gap this creates does cause problems with interpreting what Assessors and Inspectors discuss with facilities, as our arrangements have to show compliance with the LCs while the ONR staff can review against specific SAPs (sometimes not obviously linked to a TAG or TIG). For example: The new SAPs again fail to mention the concept of Safety Mechanisms, Devices and Circuits. The agreed definition of an SMDC is very close to that for a Safety Measure and Safety Function, but is subtly different. This means that Inspectors can engage the facility and engineering staff on generic Safety Function, Safety System and Safety Measure issues under LC27 while the local arrangements provide information using the terms that only support SMDCs	n/a	Project	1	
191	For new designs much of the human factors work should take place during the concept design phase in order to positively influence the design. As the design progresses detailed human factors analysis should focus on verification of the human factors claims in the safety case.	Much HF work is needed during the development of the concept design (i.e. Preliminary Safety Report). To state that the majority should be done during PCSR risks HF not being able to influence key design decisions early in the design lifecycle. Rather than refer to PCSR stage, use design lifecycle phase terms.	HF	2	
192	You may wish to consider the adjacent comments if reviewing this paragraph.	EHF.3 and EHF.4 are very similar - how are actions and admin controls defined, such that they warrant separate principles? Further description or the differences may be appropriate.	HF	4	

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193	Administrative safety measures are needed to keep the facility within its operating rules for normal operation or return the facility back to normal operations should be systematically identified.	The term 'Administrative safety measures' is used in para 376, 'Administrative controls' used elsewhere. Are these meant to be the same? It is suggested that 'Administrative safety measures' are used throughout, to align with 'safety measures' as defined in the Glossary (where safety actions are specific tasks that are required to fulfil the safety measures).	HF	4	
194	You may wish to consider the adjacent comments if reviewing this paragraph.	Why has the term 'safe operating envelope' been changed to '.operating rules for normal operation.' Is the intention that engineered safety measures that are required to be in place are now considered to be operating rules? Is there an equivalent principle for all controls (safety measures?), if not why have one just for admin controls?	HF	3	This is used throughout the SAPs and is consistent with the glossary. Operating rules refers to limits and conditions in the interests of safety and therefore can apply to engineering safety measures such as, configuration and availability.
195	You may wish to consider the adjacent comments if reviewing this paragraph.	The text in paras 49, 377 and 387 should be reviewed to consistently include contractors, and when referring to contractors.	HF	4	
196	You may wish to consider the adjacent comments if reviewing this paragraph.	Out of sequence - now comes after EHF.11 and 12	HF	2	
197	Human reliability Human reliability should analyse all human actions and administrative controls that are necessary for safety.	EHF.3 and 4 talk about a 'systematic approach' for identifying human safety actions. EHF.10 states 'Human Reliability Analysis' should identify human safety actions. Differentiate EHF.3 and 4 from EHF.10 by defining EHF.10 as just 'analyse' rather than 'identify'.	HF	4	
198	Proposed move to a position after para 377, and before EHF.4. This principle includes the identification of: pre-fault human actions during maintenance, calibration or testing activities where error could result in the non-availability of equipment or systems important to safety; actions that contribute to initiating events; post-fault human actions; and long-term recovery actions in severe accidents.	Further, move para 389 to EHF.3/4 (after 377) and reword first part of the para to "This principle includes the identification of: pre-fault actions....."	HF	3	No benefit to the proposed change
199	You may wish to consider the adjacent comments if reviewing this paragraph.	First (long) para – should also make reference to organisational arrangements being influenced by HF work as well as influencing design of plant and equipment.	HF	3	No benefit to the proposed change
200	This allocation should consider the monitoring of automatic functions, the decision making requirements associated with any necessary intervention and the potential need to assume manual control in the event of the failure of an automatic system.	Para discusses allocation of function and monitoring of auto functions etc. Should make reference to decision-making (ie not just monitoring functions but also supporting the decision-making requirements associated with intervening and taking control).	HF	3	Consider the text covers decision making and action planning process
201	Workspace Design Workspaces in which operations (including maintenance activities) are conducted should be designed to support reliable task performance. The design should acknowledge the Target Audience Description and take explicit account of human physical, physiological and psychological characteristics and the impact of environmental factors.	Not 'take account of human... characteristics...'. Should acknowledge Target Audience Description - take account of the characteristics of the intended audience... May need an explicit reference to the need for a Target Audience Description	HF	2	
202	You may wish to consider the adjacent comments if reviewing this paragraph.	This discussion of what are 'appropriate locations' should also apply to EHF 6	HF	4	
203	You may wish to consider the adjacent comments if reviewing this paragraph.	It is assumed this paragraph is referring to the under pinning C&I? but it's open to misinterpretation. However, it is considered that it should also include auditory information as well as visual information (and, arguably, other forms of presentation - haptic, olfactory, etc).	HF	2	
204	First new paragraph should read: Management controls should be established to identify and manage the effects of wider factors impacting fitness for duty, including the emotional state of personnel, stress, drug and alcohol use, illness and non-work related fatigue. Second paragraph should read: Safety actions should be identified as per principle EHF.3. Management controls should then be established to control fatigue (both chronic and acute) arising from shift patterns and hours worked.	It is considered that the emphasis of the text is wrong. The management controls should be available to control fatigue irrespective of safety actions.	HF	3	Consideration of fatigue is required under general health and safety regulations. This SAP is focused upon nuclear safety implications and as such the current sequencing supports that; inclusion of all would be disproportionate
205	You may wish to consider the adjacent comments if reviewing this paragraph.	It is considered that the criteria used to justify the omission of a CID system are inconsistent with Criterion 2 in TAG18 (which is the commonly used standard criterion for CID omission cases). TAG 18, Criterion 2 states: A CID system must be provided at all places where fissile material may be used or stored, unless it is confidently judged that in the event of the failure of any or all of those criticality controls which rely on human agency or on mechanical or electrical devices, criticality would not reasonably be expected having regard to the nature of the particular operations and facility concerned.	EP, RP and criticality	3	Comment as per 446 below.
206	Radioactively contaminated land should be remediated to the point where it no longer provides a risk to personnel and is fit for purpose before any construction of new facilities upon it.	Our organisation welcomes this approach however there is a need to agree National remedial targets that are protective of environmental receptors.	RWDM	3	Other factors apply, not just risk to personnel
207	You may wish to consider the adjacent comments if reviewing this paragraph.	The decommissioning strategy should be clear on whether or not land contaminated by radioactivity as a result of past activities should be included as part of the decommissioning programme and remediated where possible, or if it is	RWDM	1	
208	The principle is that radioactive waste should be stored in accordance with good engineering practice and in a passively safe condition, although it must be recognised that this is not always possible with legacy radioactive contaminated land.	The principle is that radioactive waste should be stored in accordance with good engineering practice and in a passively safe condition, although it must be recognised that this is not always possible with legacy radioactive contaminated land.	RWDM	1	
209	Making and keeping records Information that might be needed for the current and future safe management of radioactive waste, irrespective of its location (e.g. legacy contaminated land) should be recorded and preserved.	It would be useful if this paragraph also indicated that this should be applied to legacy contamination in the ground.	RWDM	3	There are SAPs which deal specifically with records for contaminated land
210	Licence Condition 32 (see the ONR website) requires records to be kept of radioactive wastes accumulated on licensed sites. These records should include contaminated land and be maintained in a secure and accessible form until decommissioning and site surrender is complete. Records should be kept so that sufficient information will be readily identifiable to service both current and future needs for each individual waste package. Timescales for decommissioning, waste management and disposal will mean record keeping in excess of one hundred years in many cases.	With regards to licence condition 32 and the keeping of records related to land contamination. Such records should be kept for the lifetime of the sites until decommissioning and site surrender is completed	RWDM	3	There are SAPs which deal specifically with records for contaminated land. Records will need to be kept longer for Paris Convention insurance purposes

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211	You may wish to consider the adjacent comments when reviewing this paragraph.	The decommissioning strategy should be clear on whether or not land contaminated by radioactivity as a result of past activities should be included as part of the decommissioning programme and remediated where possible, or if it is possible to delay or defer remediation of land until site surrender.	RWDM	4	
212	Timing of decommissioning The safety case should justify the continuing safety of the environment as well as the facility for the period prior to its decommissioning. Where adequate levels of environmental safety as well as facility safety cannot be demonstrated, prompt decommissioning should be carried out.	This paragraph should also include risks to the environment not just safety. It could be considered that failing to remediate the environment would result in an increasing risk to safety, however, safety should not be the only reason for needing to justify the timing of decommissioning with regards to land that is affected by radioactive contamination.	RWDM	3	The regulation of environmental risks is the responsibility of the environment agencies and therefore it is inappropriate for ONR to expect environmental information in the nuclear safety case. However, if SLCs wish to include the environmental justification in the nuclear safety case, that is a matter for them. The environmental impact is a relevant factor concerning decommissioning timing and this is included in DC 3. It is also a relevant factor in contaminated land strategies and timing, as this addressed in SAP RL1
213	the continuing maintenance of an appropriate safety management organisational structure, corporate memory and records; You may wish to consider the adjacent comments when reviewing this paragraph.	With regard to radioactive contamination in land, consideration should be given to what remedial targets are required and when these remedial targets are required to be met. The final end state for operational sites may not have been decided yet, however, it may be possible to either undertake remedial action or to defer that remedial action and that decision needs to be based on the final remedial targets.	RWDM	3	There are separate SAPs covering contaminated land. The additional detail requested is too prescriptive for SAPs.
214	the need to adopt a precautionary risk-based approach;	With regards to radioactive contamination in land whilst it is necessary to adopt a precautionary approach to remediation targets, this approach should be risk-based. As such it is recommended that this sentence is amended to read "need to adopt a precautionary risk-based approach".	RWDM	1	
215	Planning for decommissioning A decommissioning plan and should be prepared for each facility that sets out how the facility will be safely decommissioned. You may wish to consider the adjacent comments when reviewing this paragraph	This paragraph should be expanded to ensure that the facility includes land associated with that facility. Where the land is a separate facility, consideration should be given to also decommissioning or remediating that land, or deferring it as appropriate. The licensed site should also consider its decommissioning programme as a whole and this should include land affected by radioactive contamination.	RWDM	3	There needs to be a strategy for contaminated land, however it is up to the licensee to decide whether this forms part of the decommissioning strategy, or is in a separate document. There are separate SAPs dealing with contaminated land
216	The decommissioning plan should: a) define the decommissioning end-state for the facility and any interim states required to achieve it; You may wish to consider the adjacent comments when reviewing this paragraph.	Consideration should be given in this paragraph to the decommissioning end state for the structures within the facility as well as the end state for the land surrounding the facility. The Plan should consider setting remedial targets for individual isotopes such that land can be considered for remediation based on a risk target approach which could be defined at a later date. Consideration should be given to developing this remedial target for individual isotopes as a country rather than as an individual licensed site.	RWDM	2	
217	The plan should identify and address the type and quantity of wastes to be managed (including solid, liquid and gaseous wastes), the timescales over which the wastes will arise, and should be consistent with the waste management strategy (see RW.1). The plan should provide information on the proposed treatment, packaging, storage and disposal of wastes, including how decisions on their management have been, or will be, made. You may wish to consider the adjacent comments when reviewing this paragraph.	This paragraph should clarify whether it also includes land that may be affected by radioactive contamination and the level of identification or investigation required to quantify cumulated wastes in the land. This paragraph should also quantify the level of uncertainty required in identifying human rated isotopes in the land.	RWDM	3	There are separate SAPs dealing with contaminated land. The points raised are too prescriptive
218	The facility should undergo post-operational clean out. This should include: a) the removal of any residual radioactive material; b) the immobilisation of any potentially mobile radioactive material that cannot be removed; c) the removal of any readily removable contaminated or activated items. You may wish to consider the adjacent comments when reviewing this paragraph.	This paragraph should be amended to note whether it includes, or does not include, land that may be affected by radioactive contamination. It should also in item c) include the cost and risk of removing the contamination where it is contained in the land or in any water bodies within the boundary of the licensed site.	RWDM	3	ONR believes that it is clear that the SAP does not relate to contaminated land. Cost of contaminated land strategies is covered in SAP RL1
219	e) radioactive material (e.g. quantities, locations, condition and ownership) with specific focus on the inventory at the end of routine operations (see also RW.7); You may wish to consider the adjacent comments when reviewing this paragraph.	This paragraph should clarify whether it also includes land that may be affected by radioactive contamination and the level of identification or investigation required to quantify cumulated wastes in the land. This paragraph should also quantify the level of uncertainty required in identifying human rated isotopes in the land.	RWDM	3	There are separate SAPs dealing with records for contaminated land. The points raised are too prescriptive
220	Suitable and sufficient capability to function as an intelligent customer should be demonstrated for work carried out by contractors. You may wish to consider the adjacent comments when reviewing this paragraph.	The intelligent customer function should also include competencies in dealing with the environment not just the demolition and cleaning of buildings.	RWDM	3	ONR does not regulate environmental aspects. The general management SAPs cover intelligent customer issues which also apply to all activities on the site
221	The environmental regulators are responsible for the regulation of disposals on, and from, licensed sites in accordance with the Environmental Permitting Regulations (EPR10, in England and Wales) or the Radioactive Substances Act (RSA93, in Scotland), and for the regulation of other environmental legislation. The principles therefore need to be applied in a manner that is in accordance with the relevant Memoranda of Understanding (see Annex 1). You are requested to consider the adjacent comments when reviewing this paragraph.	Annexe 1 has not been provided as part of this consultation. The Environmental Permitting Regulations 2010 require that land governed by permits its remediated back to the condition of the land when the permit was granted. However, these SAPs are setting a different standard for remediation as stated in paragraph 703. The memorandum of understanding (as issued to N I GLQ) has not been released for consultation, however, comments have been provided by NI GLQ. The industry has requested that both the ONR and the Environment Agency consider a risk based approach when deriving remedial targets suitable for the next use of the site.	RWDM	1	
222	The strategy should: b) include arrangements for identifying any restrictions necessary to protect people and the environment; You are requested to consider the adjacent comments when reviewing this paragraph.	In identifying any restrictions necessary, the personnel on site would have to undertake site investigation and risk assessments. In order to do this, remedial targets need to be agreed with the regulators. The SAPs should consider stating what the U.K.'s remedial target for individual isotopes in land should be, in order to protect environmental receptors (as opposed to reduce risk and be protective of human health) it should also consider whether or not it adopts the same receptors as those identified by the Environmental Protection Act 1990 Part IIa..	RWDM	1	

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223	You may wish to consider the adjacent comments when reviewing this paragraph.	The information required in this paragraph is too detailed for a strategy document. This information is that which would be required in the decommissioning plan for an individual facility or the site as a whole. The strategy document for a site would set out the vision for the long-term management of the site as a whole and as such may not contain optioneering or remediation of individual tracts of land, especially where that site may not consider surrendering the land for a considerable amount of time.	RWDM	3	The SAP does not state that all the information listed should be contained in the contaminated land strategy. The SAP states that the Strategy should "describe or refer to the options..." The SAP recognises that the optioneering work can be documented separately.
224	b) avoiding or reducing any environmental impact now or in the future (including the potential for contamination to spread); You are requested to consider the adjacent comments when reviewing this paragraph.	In order to reduce or avoid environmental impact remedial targets that are protective of the environment need to be set. see comments in item 745 (B).	RWDM	3	ONR will consider the issues raised during the production of a new TAG on contaminated land which is planned.
225	The strategy should define and substantiate the proposed end-state(s) and any interim state(s) for contaminated land on the site, and set out the anticipated timescales to achieve these. You are requested to carefully consider the adjacent comments when reviewing this paragraph.	Depending on where in the life-cycle the facility is, for example it may still be in operation, the proposed end state may not have been agreed and may not be required to be agreed for sometime. Therefore the strategy should consider remedial targets, or returning the site to its original state when the environmental permit was issued. This should be agreed as part of the Annex 1 consultation.	RWDM	3	The SAP states that the SLC should propose the end state (which is for planning purposes). There is no suggestion that this will be the final end state. The other aspects of the comment are concerned with delicensing which are outside the scope of the SAPs. The ONR approach to delicensing is currently being reviewed.
226	The arrangements should ensure that: d) any radioactive material or contamination does not disperse and generation of radioactive waste is minimised; e) restrictions to protect people and the environment are implemented; You may wish to consider the adjacent comments when reviewing this paragraph.	A definition of minimised is required in line with the Environment Agency's GP3 document, or remedial targets and boundaries agreed with the licensed site.	RWDM	3	ONR will consider the issues raised during the production of a new TAG on contaminated land which is planned.
227	Survey, investigation, monitoring and surveillance Radiological surveys, investigation, monitoring and surveillance of radioactively contaminated land should be carried out at suitable intervals so that its characterisation is kept up to date. You may wish to consider the adjacent comments when reviewing this paragraph.	Given the half life of the radioisotopes found in land surveys, they are not required on a regular basis and this requirement should be removed or toned-down. Given that environmental permits require assurance monitoring of radioactivity this will drive any further works required to protect the environment.	RWDM	3	The SAP does not require characterisation to be carried out on a regular basis but at "suitable intervals". The fact that the environment agencies may place requirements in permits is not a reason for excluding these requirements from the SAPs (this is an area where the regulators have a common interest).
228	Construction on radioactively contaminated land Radioactively contaminated land should be remediated before any construction of new facilities upon it. You may wish to carefully consider the adjacent comments when reviewing this paragraph.	Our organisation welcomes this approach however there is a need to agree National remedial targets that are protective of environmental receptors.	RWDM	3	ONR will consider the issues raised during the production of a new TAG on contaminated land which is planned.
229	Radioactively contaminated land safety cases A safety case should be provided to demonstrate the safety of the plan for managing radioactively contaminated land and its associated control and remediation activities. The safety case should be kept up to date as the work progresses. You are requested to carefully consider the adjacent comments when reviewing this paragraph.	Individual safety cases should not be required for contaminated land. Land affected by radioactive contamination should be included in the safety case of the parent facility within which it is located. This allows the hazards to be assessed in-line with the operations of that facility. This requirement should be removed or clarified to ensure that an individual safety case for the land is not required.	RWDM	3	In the SAPs 'safety case' is defined as the totality of a licensee's (or dutyholder's) documentation to demonstrate safety, and any sub-set of this documentation that is submitted to ONR. It is up to the SLC to decide how contaminated land is documented
230	"important to safety" has been deleted by ONR, thus opening at interpretation for application of fail-safe concept to every SSC. This may still be fine considering the statement starts with "ideally".	n/a	AA	3	No new text suggested. ONR is content with paragraph 167.
231	Unclear whether the implication would encompass complete failure of the "heat transport system" yet requiring "safe condition".	n/a	AA	3	No new text suggested. The principle is covering a complete failure of the heat transport system.
232	Where failures or unintended operation of such equipment not qualified for specific accident conditions could exacerbate the consequences, or otherwise make the fault more severe, this should be assumed within the DBA.	New text seems to go beyond IAEA in what concerns boundary between single failure and postulated failure of safety-related systems exacerbating consequences. In IAEA SSG-2, Conservative Deterministic Safety Analysis, Availability of systems and components, "equipment that is not qualified for specific accident conditions should be assumed to fail unless its continued operation results in more unfavourable conditions" [stress is ours]. The previous means that only not-qualified systems are assumed to fail, no mention to "safety-related" systems' faults, which may nevertheless be those considered as single failure. The proposal for modification is along IAEA.	AA	2	
233	A substantial quantity of radioactive material is one which if released could result in the consequences specified in the societal risk Target 9, account taken of mitigation mechanisms within the facility before release to the environment.	Ambiguity might rise whether the amount of "unintended relocation of a substantial quantity of radioactive material within the facility" should be considered to be entirely released without consideration of any mitigation. Mitigation should be taken into account under best estimate approach. Modification is proposed.	AA	3	The principle is discussing the potential for a large release should all barriers including mitigation fail.
234	"... should be not be..."	Typo	AA	2	
235	e) facilitate access for necessary recovery actions and re-supply of essential stocks, materials, equipment and personnel following an accident. In case of severe accidents, design of mitigation systems should not account for accessibility to personnel in highly contaminated areas."	Requirement may not be easy to satisfy in wider interpretation of the text in the case of severe accidents. Proposed text modification.	CEEH	4	
236	"Their frequency of exceedance on their hazard curve is below once in ten million years." This threshold frequency value related to seismic events might be argued at in that for very low annual exceedance probabilities (e.g. 10 ⁻⁶ or 10 ⁻⁷ per annum) the uncertainties become very high.	n/a	CEEH	4	
237	"The potential for a hazard to affect safety should take account of the potentially widespread effects of external (and some internal) consequential or concurring hazards	Modification proposed in order to prevent unlikely combinations	CEEH	2	
238	It could be put in the context of cliff-edge effect analysis.	n/a	CEEH	4	
239	Is it the intention of the paragraph to affirm that "self-sufficiency" can be reached also with off-site structures?	n/a	CEEH	3	No action required
240	The safety case should demonstrate that risks remain as low as reasonably practicable after remediation of non-conformities or defects that may possibly occur during construction.	Proposed sentence may be too wide for the interpretation of "any problems". Change suggested.	CEEH	4	

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241	Should the number of control centres be left open?	n/a	CEEH	3	No action required
242	Why should "separated codes" be used in the first place?	n/a	CE&I	3	Many SSCs consist of a wide range of technologies such as C&I, electrical and mechanical engineering. Where these technologies are essential for the delivery of the safety function then separate codes and standards targeted at the specific technology are required.
243	including severe accidents where applicable).	Addition proposed since SSC may not be designed for coping with severe accidents.	CE&I	3	The addition of 'where applicable' is not required as the clause simply relates to severe accidents.
244	it may be linked with 160 as well.	n/a	CE&I	2	
245	(e.g. separate divisions within the design architecture)	Logic of the position of text within the sentence?	CE&I	2	
246	... to monitor its location and quantity to the extent practicable.	Monitoring location and quantity of radioactive material that may get relocated within the facility due to accidents may be too demanding. Clause "to the extent practicable" should be added in the text. See also 642. See extent of related requirements in the Finnish STUK Guide YVL C.6, 15 November 2013	CE&I	3	All SAPs are judged against practicability tests.
247	The definition does not encompass land that may become contaminated as consequence of accidents. However, this may still be consistent within SAP since "contaminated land" is used only in Para 740 in the context of "nuclear licensed sites"	n/a	Glossary	1	
248	No change proposed, definition of "inactive commissioning" not included in the glossary. Add this definition in the glossary	Definition of "inactive commissioning" not included in the glossary	HF	2	
249	No change proposed, better a question on the implementation.	This paragraph states that (§ RW 1) "the strategy for the management of radioactive waste on the site should be (§ 651 r) compatible with facility safety cases, including, where relevant, facilities at other sites." For what concerns a site A near to another nuclear site B, the text may be interpreted as that Safety Case for A should take into account the presence of the other nuclear site and have the Safety Case A coherent with Safety Case B in regard to the Strategy for radwaste management	RWDM	4	
250	Licence Condition 32 (see the ONR website) requires the rate of production of radioactive waste be minimised so far as is reasonably practicable. The safety case should therefore describe the specific design provisions, operating practices and approaches to decommissioning that will ensure waste minimisation and include a demonstration that the rate of production of radioactive waste has been minimised so far as is reasonably practicable / optimized.	Minimizing the production of waste is not always the best option, as it concentrates activity and might become too much expensive. Therefore the wording "optimized" would better fit the intent (while at the same time understanding that the best way to optimize the waste production is by not creating radioactive waste).	RWDM	4	
251	The safety case should: (...) d) address all wastes stored in a facility, including waste for which further processing is planned; and waste already in a passively safe condition	Stating "passively safe condition" would make the text coherent with wording used in § RW.5	RWDM	2	
252	Good engineering practice for storing radioactive waste includes the following elements: c) The waste should be immobile or immobilized;	It may be necessary to clarify whether you mean "immobile" or "immobilized" along the following understanding? Immobile = the waste cannot move inside its package, but should it rupture, the waste might escape and disseminate; Immobilized = the waste is safely stored in its package in a way such that, should the package rupture, the waste cannot escape.	RWDM	2	
253	A decommissioning plan and should be prepared for each facility that sets out how the facility will be safely decommissioned	"and" left from older text => it should be removed.	RWDM	2	
254	The facility should undergo post-operational clean out. This should include: a) the removal of any residual radioactive material;	More a question than a proposal: what does (a) includes. Some "residual radioactive material" may not be removed before decommissioning starts, as it requires specific tools for its treatment. Basically we here think of the used control rods or even the empty assemblies (that were emptied due to leaking fuel) that may sit in the spent fuel pool, and require specific treatment. Would you require such equipment to be removed before decommissioning or not?	RWDM	4	
255	Any radioactively contaminated land should be remediated to appropriate standards prior to construction commencing upon it.	Addition proposed since the licensee is not liable of decontamination of land in the vicinity of the construction site not belonging to own property.	RWDM	2	
256	PPE etc. may be needed very early during an accident, for which an on-site robust storage place would be an advantage. Shouldn't the requirement rather consider alternative between on-site and off-site stocks, consistently with 642 3rd New para?	n/a	EP, RP and criticality	2	
257	Detailed measurements of relocation of radioactive material within the facility due to the accident may be demanding. See also remark to ESR.8.	n/a	EP, RP and criticality	1	
258	Equipment within the facility needed to manage BDBA should survive throughout the accident for the required mission time, not only the initiating event. Its robustness should be commensurate to its survivability for the required mission time. SAP 642 text may be changed accordingly.	n/a	EP, RP and criticality	2	
259	To specify emergency control centre per multi-facility site: one in order to optimally coordinate action? See also remark to ECE.1, 4th New para.	n/a	EP, RP and criticality	2	
260	"own" instead of "our".	n/a	Siting	3	We cannot see a problem with the text
261	"through"	Typo	Siting	2	
262	The SAP text seems referring to "nuclear facilities". Therefore, ONR advice would concern future developments that may affect a (civil) nuclear installations by means of external hazards or hindering emergency plans. If this interpretation is correct, SAP does not concern directly the developer of a nuclear project but ONR themselves.	n/a	Siting	3	The SAPs are ONR guidance
263	"and" instead of "or".	n/a	Siting	2	
264	Where a site has been considered for analysis purposes as comprising several facilities, a specific consideration of overall site risks should be carried out, unless it can be shown in the safety case that the facilities are totally independently from one another. Independence in this context means there are no commonly shared safety and safety-related systems, no interactions between the facilities or the services supplying them and no fault or accident at any one facility should have repercussions at any other. Where such independence cannot be demonstrated, the overall site risk should be compared with Numerical targets 5, 7 and 9 (paras 602ff).	Planned new build nuclear power stations will be in "multi-facility sites". The text of 126 seems too wide as it may be interpreted comprising every "service", including non-safety related ones. Proposed modifications in text are in red.	Siting	4	
265	Fault, accident and severe accident conditions	Consistency with ESR.7	CE&I	2	
266	Further clarification required of the term and use of 'variables'. The safety system receives various pieces of input information to initiate operation of the safety system; is the design basis of the instrumentation to be extended so limits cannot be transgressed?	n/a	CE&I	1	Original unrevised text which is well understood within industry.
267	Title: Diversity in the detection of fault sequences conditions	Consistency with remainder of paragraph	CE&I	4	The new text is consistent with the comment, no change required.
268	This demonstration should shall be devised	Consistency with other clauses 361(a)	CE&I	3	This is guidance, should is more appropriate.
269	Faults determined by fault analysis (see paragraph 496 ff)	Clarification of why internal hazards analysis should be singled out. Is this appropriate given definition in 209, there is nothing similar for external hazards. Would internal hazards be reviewed twice?	AA	2 and 3	ONR's experience of safety cases is that the internal hazards are not well integrated hence this additional sentence is to provide clear guidance on ONR's expectations. Also this paragraph is linked to functions for internal events, hence not mentioning

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270	In particular, mitigating safety measures (Level 4) should not be regarded as a substitute for fault prevention (Levels 1 and 2) or protection (Level 3) barriers, but as further defence in depth. However for existing plant practicality should be considered for retrofitting hierarchy requirements.	Taking account of the problems of modifications to older existing plants.	AA	3	Reasonable practicability is assumed throughout and applies to any "retrofitting" .
271	The identification of initiating faults should consider the potential for combinations of hazards. At multi facility sites, the analysis should also consider the potential for specific initiating faults giving rise to simultaneous impacts on several facilities. Also the degradation of safety should be consider as successive faults develop during an incident possibly causing 'Domino' effects	Consideration of co-incident or time dependent failures, domino effects, for multi-plant sites.	AA	3	The simultaneous effects covers or bounds the domino effects.
272	c) Determine the need for segregation, diversity and redundancy of plant and equipment location of barriers to limit this impact	Relates to 217 a) to g) consistency with ECE.2	CEEH	2	
273	Safety of any system or service at the facility should also be taken into account. The effects of failure of non nuclear safety related structures and equipment should be taken into account which could affect access to control and repair plant.	Fukushima issue	CEEH	2	
274	Where it is not practicable to adopt the 'dry site concept' (particularly for existing plant), the design should include	Problems associated with existing plants	CEEH	4	
275	All other structures, systems and components should be protected against the effects of a design basis flood. See also ECE9. Consideration should be given to flood water acting as a moderator when fissile material is present.	n/a	CEEH	2	
276	With particular attention paid to overtopping of defences, 'Cliff-Edge' effects are particularly relevant (para EHA7).	See para EHA 7 on cliff edge effects	CEEH	4	
277	Performance of these elements will remain adequate for the design life. Remote monitoring techniques should be used to support claims	See ECE.20	CEEH	4	
278	Design should take account of naturally occurring explosive (or asphyxiant) gases or vapours	n/a	CEEH	2	
279	The achievement of the design specifications and the required level of safety. The effects of construction hazards on nearby safety related plant should be taken into account	n/a	CEEH	2	
280	k) Appropriate provisions should be made for dealing with any radioactive waste or its packaging that shows signs of unacceptable degradation. l) When storing liquid waste leak detection systems with appropriate monitoring should be used	Compatibility with 671 c) and RL3	RWDM/ME	4	
281	In such cases, decommissioning activities may need to balance radiological and conventional risks (see para 17). The effect on decommissioning activities on adjacent plant and safety related services should be taken into account.	n/a	RWDM	2	
282	Restore text "The timescale for the achievement of passive safety is an important aspect of strategy".	Both Fukushima and developing international practice recognise the need to achieve passive safety of radioactive wastes in timely fashion. Storage and disposal of non-passively safe radioactive waste (SNF in Fukushima fuel ponds; unconditioned wastes at WIPP) is to be avoided. The original text emphasises the importance of passive safety as an element of strategy and should be restored.	RWDM	2	
283	Remove or re-draft text italicised below: Relevant factors within the strategy will include the identification and availability of waste storage facilities and potential disposal routes	Reducing the hazard and cost of decommissioning in the UK and Fukushima will require new approaches to waste conditioning (e.g. thermal treatment) affording products with improved passive safety requiring less restrictive storage and disposal concepts compared to current waste packages. As written, the identification and availability of waste storage facilities could be interpreted as a driver for not adopting new waste conditioning processes which would be unduly constraining (particularly as 651.h refers to ALL relevant factors).	RWDM	3	The identification step is important. The wording does not preclude adopting new waste conditioning processes.
284	Restore "good engineering principles" to clause b)	Subsequent para 669 defines "good engineering principles" which should, hence, be referred to specifically in the preceding guidance.	RWDM	2	
285	Amend to "passively safe sate"	For consistency throughout document	RWDM	3	The comment relates to inconsistent terminology, and ONR has received conflicting comments from respondents about how this should be addressed. We have decided to use the term "passively safe condition" throughout.
286	Consider publishing these principles separately as 'safety management principles' or similar.	While these principles and accompanying text are clearly important, their location within the Safety Assessment Principles indicates that safety cases should include assessment against these principles. Safety cases on a 10 year cycle might not be the best way of addressing these principles, which might also be better addressed at an organisation level rather than a single plant level. LMfS might be better addressed through an appropriately reviewed and audited safety management system.	LMfS	3	Are as important to safety as other principles and should not be seen as an extra.
287	Delete para, or make more flexible	Our Site (like some other Site Licence Companies) normally assign SFCs to the safety functions of specific Structures, Systems or Components (SSCs), rather than assigning SSCs to wider safety functions. Our Site approach appears to work well for our site facilities. More flexibility in this regard in the SAPs would be welcome.	AA	3	The information in the paragraph between 175 and ERL1 is important clarification to on applying systems to a Category A function. Like all of ONR's SAPs they are subject to alternative interpretations such as that used by your site.
288	Delete para, or explain more.	The change from the emphasis on frequency reduction (in the 2006 SAPs) is welcome, but given that the claimed function here is to reduce the frequency of a fault sequence, it is not clear what is meant by the safety case including a margin of conservatism, given that 'we normally seek best estimate frequencies'.	AA	3	ERL4 (the paragraph between 180 and 181) is about the transient performance of the system (deterministic) that requires an assessment of margins to failure not the reduction gained in the frequency which is best estimate.
289	Depict boundaries of PSA. Include the 0.1 mSv boundary below which PSA is not required in accordance with Target 8 (similarly initiating event frequencies below the relevant top event frequency BSO are arguably outside the scope of PSA). A note could be added that outside the PSA region, Relevant Good Practice is still required (as everywhere on the graph).	This is a useful diagram, but it could be interpreted unhelpfully as meaning that PSA is always required.	AA	3	We do not consider that the diagram means a PSA is always needed, what it shows is that PSA can be applied across the full range of initiating events.
290	Clarify what 'Unmitigated Off-Site Consequences' means. Perhaps a note should be added to clarify that DBA and PSA consequences are assumed to be the same for an individual scenario.	Consequences of the same release may be different for DBA and PSA. If the consequences are different, arguably the graph is confusing and/or meaningless.	AA	3	Paragraph 514 describes the use of unmitigated consequences referred to in figure X. Paragraphs 503 and 504 are referring to figure X to give readers an understanding of the scope and range of DBA, PSA and SAA. So yes the figure is performing more than one function but we are not confused by it.
291	Replace 0.1 mSv with 2 mSv (worker dose), and replace 0.01 mSv with 0.1 mSv (public dose).	It is noticeable that the dose levels for fault analysis are well below the threshold levels for DBA, PSA or SAA, and it is unclear what fault analysis is intended in this region. In reality, the current thresholds for PSA are broadly equivalent to what may be allowed under normal operations, and there seems to be little merit in defining dose levels lower than the current PSA threshold levels.	AA	1	
292	Replace 'possible' with 'practicable'.	To make consistent with the 2nd sentence, and I don't think that 'possible' is right anyway.	AA	3	The word possible has been deliberately chosen to give strong expectations on this matter remembering that the majority of SAPs are subject to reasonable practicability test.
293	The same.	This change from the 2006 SAPs is very welcome. The paragraph is important in scoping when a SAA is required. The limitation to high public doses is a reasonable one.	AA	3	The word possible has been deliberately chosen to give strong expectations on this matter remembering that the majority of SAPs are subject to reasonable practicability test.

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294	The BSO for worker risk should be 1E-5/y.	The key reason is greater parity with the normal worker dose BSO, equivalent to a risk of 4E-5/y (currently 40 times higher than 1E-6/y). The conservatism typically applied in fault analysis often exceed the conservatism in normal dose analysis, so there is little if any reason to set a target risk from accidents any lower than that from normal doses. In practice, a BSO of 1E-6/y is beyond what is reasonably practicable in many instances, for both normal dose and assessed accident risk. If the BSO stays the same, there is a risk that too great an emphasis is placed on accident risk above normal dose risk. It is recognised in Para A37 that the BSO (of 1E 6/y) is demanding. The reality for safety cases is that this BSO contributes to unnecessary quantitative PSA, because qualitative PSA is only generally used when it is confidently predicted that the risk is only a small percentage of the BSO (allowing for failures to correctly assess risk qualitatively). Thus this BSO contributes to safety cases being longer and more detailed than necessary, with consequential issues surrounding accessibility of the safety case.	ALARP	3	The reasons for adopting 1e-6 are clear in the annex on numerical targets and have not changed since 2006
295	Remove the numerical targets for the 2-20 mSv consequence region.	It does not seem reasonable to expect accidental doses in this range to have frequencies at or below 1E-3/y, when the frequency of a dose in this region from normal (planned) doses may be very much higher. Para 528 argues that PSA is not necessarily required for some lower hazard plants: 'The scope and depth of PSA may vary depending on the magnitude of the radiological hazard and risks... that the safety submission is supporting. For example, for some facilities qualitative arguments, application of good practice and DBA may be sufficient to demonstrate that the risk is ALARP.' Setting numerical targets below the annual dose limit actually encourages numerical PSA to take place on lower hazard plants, which appears to be the opposite of ONR's intention as expressed in Para 528. The effect of the numerical targets in the 2-20 mSv consequence region is more quantitative PSA than is necessary or desirable, resulting in safety cases that are longer and more detailed than they should be, with consequential issues surrounding accessibility of the safety case.	ALARP	1	
296	Revise numerical values of BSOs in line with revised BSO for worker risk (see earlier comment).	If the argument for changing the worker risk BSO is accepted, the numerical values of BSOs in Target 6 should be aligned.	ALARP	1	
297	Delete sub-paragraph f), or indicate that other possibilities exist.	Implementation of surveillance, maintenance and inspection in many cases will take place according to site procedures (which include timescales), in which case the safety case does not need to spell out implementation arrangements (including programmes).	SC	2	
298	Add 'or other suitable prompt action' before 'should be carried out'. Also link with the need for a suitable interim safety case for the interim position.	It might be appropriate to install some engineering or amend operator actions, if prompt decommissioning would still leave a significant hazard being posed for a significant time.	RWDM	2	
299	Delete 'specific feature of plant designed to prevent or mitigate a radiological consequence by passive means.' If this partial deletion does not happen, complete deletion of this definition would be far preferable to leaving it in.	The inclusion of passive safety features within the safety measure definition is not in line with our experience. More importantly, this definition knocks on to the definition of unmitigated consequences, which would unhelpfully apply to the failure not only of all safety measures (that can reasonably fail) but also to the failure of all passive safety features as well. This would result in totally unrealistic fault consequences that would not serve as a useful basis for most analysis methods.	Glossary	3	The definition is more general than in the previous SAPs so we don't think that there will be adverse consequences to leaving it in.
300	Add note: Passive safety features are usually taken to be still working when assessing unmitigated consequences.	See 'Safety measure' above.	Glossary	2	
301	There is a level of prescription in the standard and associated text in most instances that can be unhelpful and perpetuate some of the misunderstanding within our company and between our company and ONR. An introductory paragraph would be helpful to provide some context that these are principles we should aspire to achieve but only in overall context and not at the expense of an overall demonstration of defence in depth and risk being ALARP (e.g. something similar to that in para 528 'the scope of PSA may vary depending on the magnitude of the radiological hazard and risks, the novelty of the design and complexity of the facility, and the nature of the decision that the safety submission is supporting. For example, for some facilities qualitative arguments, application of good practice and DBA may be sufficient to demonstrate that the risks are ALARP')	n/a	AA	3	If the SAPs used words such as shall, must etc then the accusation of prescription would be justified. However that the provision of illustrative examples has helped to clarify the underlying principle without going to the level of detail given in our TAGs.
302	This is the para – that reiterates the hierarchy – that could benefit from an 'ALARP context' addition.	n/a	AA	3	Other than those specifying legal limits all SAPs are the subject of ALARP consideration.
303	For high hazard reduction and decommissioning administrative measures are being used in lieu of automated protection not as a support which would preclude this approach	n/a	AA	3	The hierarchy neither precludes the use of non-automated actions nor requires them only to be in support of automated actions.
304	It would be better to say 'as near as reasonably practicable' rather than 'as near as possible' – this leads in some circumstances to overengineering	n/a	AA	3	This principle particularly applies during the design of a facility and in this context the 'as near as possible' is appropriate. For decommissioning and hazard reduction on existing facilities clearly the ALARP principle may well require solutions lower down the hierarchy and this is adequately covered in ONR's TAGs.
305	The message carried within the introduction and this para is reasonable, However, there is concern that is not applied appropriately and becomes lost in the detail of the subsequent principles.	n/a	AA	3	A strong statement on ALARP is made early on in ONR's SAPs to clearly state that all of the engineering principles are subject to ALARP. This avoids a considerable amount of repetition. The message hasn't been lost as paragraph 134 clearly asserts its applicability.
306	"Delay" escalation	A barrier or series of barriers could significantly extend time but still require remedial action or further investigation to prevent escalation of a fault.	AA	3	The consequences of the failure of one barrier can often be stopped by another. So we believe that stop is more appropriate than delay for para 141.
307	And then confirmed by internal hazards analysis as appropriate	Not all faults need separate consideration of internal hazards.	AA	3	All analyses are done only 'if appropriate', this avoids over use of 'if appropriate' throughout the SAPs.
308	Programme of examination, maintenance, inspection	No mention of maintenance in this para seems strange.	AA	2	
309	Para 35 3-ff	It is unclear what this is referring to	AA	2	

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310	Para should restructured to considered how the vulnerability to severe accidents has been considered.	The SAA should show how the vulnerability to a severe accident has been considered and reduced. This wording would cover malicious acts which cannot be treated on a frequency derived basis.	AA	3	Malicious acts are not covered in this guidance but elsewhere. Similarly information on vulnerabilities are covered in more detailed guidance.
311	New sentence should be "Appropriate justification should be provided for any action claimed"	The proposed requirement seems to advocate analysis of any claimed action – justification would seem more proportionate and context specific.	AA	3	The wording analysis very much links to HF approaches which are strongly supported by task analysis. I believe that in this context analysis gives better guidance than the more general 'justification'.
312	Surely the justification of the margin should be sufficient. As stated this requirement could lead to a large amount of reanalysis with little benefit	n/a	AA	3	This paragraph is giving some guidance expectations for the justification of safety margins through the variation of key DBA parameters. Done correctly this will not lead to a need for a large amount of additional work.
313	Add.... For the safety function required	This would allow designs to be developed appropriately to cover the safety function required rather than overall engineering.	AA	3	Safety function is already mentioned in the sentence so its duplication at the end is unnecessary.
314	Delete frequencies	Frequencies cannot be calculated for malicious act, thus the requirement for PSA needs to be constrained in this area to the characteristics of releases.	AA	3	The PSA SAPs do not consider malicious acts, these are covered elsewhere hence the use of frequency in this paragraph is appropriate.
315	Add any time limits applied should be adequately justified	The concept of a stable safe state needs to be considered in the context of the facility and safety functions required.	AA	3	The duration of the PSA and its justification is already covered in the paragraph.
316	Repair actions (delete recovery)	These repair and recovery actions will require inherent flexibility and the value accrued from detailed PSA of these recovery actions would be very limited (especially for SAA type scenarios). 'Recovery' implies actions after a safe state has been reached and the fault terminated.	AA	3	Modern PSAs can very effectively model recovery actions which are different to repair and needn't be restricted to longer term post accident recovery actions.
317	The comment relates the reason for the change given in the commentary	These repair and recovery actions will require inherent flexibility and the value accrued from detailed PSA of these recovery actions would be very limited (especially)	AA	3	PSA can give great insights, including guidance on different types of recovery if modelled correctly. This comment does not reflect the modern state of the art of PSAs.
318	Reinstate clause b (site and facilities)	PSA can be (and has been) a useful input for risk management on a multi facility site	AA	3	Site and facilities is specified in the main principle that the paragraph is supporting and hence doesn't need to be repeated.
319	Remove conservative standards	Given the higher degree of uncertainty inherent in severe accident analysis, the focus should be on providing adaptable and flexible solutions.	AA	2	
320	(e.g. time over which the facility should be self- sufficient, see para 642+3). Alternatively self-reliant	Simple language preferable. Autarky is not a well known term (in its geopolitical context does not have a positive track record as a concept) and can be readily confused with autarchy (the idea of rejecting government and ruling oneself and no other). If 'autarky times' is used a definition should be included in glossary.	AA	2	
321	additional measures are provided to mitigate the consequences of accidents, where appropriate, and specifically for severe accidents	For many accidents, additional mitigation is unnecessary if prevention is adequate and a blanket statement is not consistent with ALARP	AA	3	The existing text is clearer than the proposed replacement.
322	Refer out to definition of levels	Adds clarity for reader	AA	3	EKP.3 is a sufficiently good reference for the definition of levels.
323	The design of Engineered structures, systems and components (SSCs) must be adequate to enable the SSCs to deliver their required safety functions with adequate reliability, according to the magnitude and frequency of the radiological hazard, and so provide confidence.	'Need to be' is unclear	AA	3	The suggested replacement text is too prescriptive and ONR believes its existing text is better.
324	Remove (Operating Rules)	The addition of (operating rules) is superfluous and not helpful for licensees who use different terminology	AA	3	Operating rules are well-understood nationally and internationally. The SAPs do not preclude a licensee using other terminologies.
325	Not quite sure what is meant by 'margin to the failure of' in context of reprocessing and waste storage facilities. Does it relate to capacity, time, redundancy of supply or all?	n/a	AA	3	Margin to failure is well understood both nationally and internationally. If it doesn't apply to specific facility then this would be clear in the safety case.
326	Revert to original (or change commentary to allow for where appropriate in context of ALARP)	The commentary implies this is a simplification. However, the wording change actually changes the meaning from either/or to both.	AA	4	My judgement is that the revised SAP is clearer although I do agree it changes the meaning. I believe the meaning, particularly the use of and rather than or reflects relevant good practice.
327	Figure X shows no lower level cut-off. Para 504 indicates low levels of 0.01mSv to public and 0.1 mSv to worker. The latter is very low in comparison to allowable doses likely to be incurred during normal operations. It is unlikely to be commensurate to invest significant time in formal analysis of such low consequence faults and simple qualitative 'on the job' techniques, which may not be incorporated in formal submissions, will predominate.	Figure X shows no lower level cut-off. Para 504 indicates low levels of 0.01mSv to public and 0.1 mSv to worker. The latter is very low in comparison to allowable doses likely to be incurred during normal operations. It is unlikely to be commensurate to invest significant time in formal analysis of such low consequence faults and simple qualitative 'on the job' techniques, which may not be incorporated in formal submissions, will predominate.	AA	1	
328	Communication with ONR has inferred a desire to concentrate on 'nuclear safety' and focus on higher consequence events (>1mSv public and 500mSv workforce). This does not appear to be communicated at any point.	n/a	AA	3	No specific change requested - comment noted.
329	This is a useful reminder that other techniques may be used. The SAPs are not consistent in the inclusion of such reminders. Similar statements may be useful elsewhere but are omitted.	n/a	AA	4	No specific text change requested - comment noted.
330	Where credible failures or unintended operation of such equipment could exacerbate the consequences, or otherwise make the fault more severe, this should be assumed within the DBA	I would accept DBA should not take credit for active safety related systems. However, some caution should be included here, as there is a danger the statement could be taken to the extreme resulting in wildly unrealistic consequences.	AA	4	No specific text change requested - comment noted
331	Not offered as unsure of intent	The paragraph quotes a sequence frequency but surely it is the initiating event frequency that is important (as indicated in target 4). A sequence with top event frequency of 10 ⁻⁷ y ⁻¹ may still require DBA consideration to identify measures important to achieving that.	AA	4	No specific change required - comment noted. The key driver for DBAs are the initiating event frequencies, the additional text is giving guidance that the sequence is also an important measure.

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332	The arrangements should ensure that: a) the source of the radioactive contamination is established; b) any ongoing leakage or escape is terminated or minimised, and measures are taken to avoid any recurrence; c) the escaped radioactive material and/or contamination is recovered, where reasonably practicable; c) an appropriate management strategy is developed and implemented d) any radioactive material or contamination does not disperse and generation of radioactive waste is minimised; e) restrictions to protect people and the environment are implemented; f) the leakage or escape is notified, recorded, investigated and reported in accordance with the requirements of the nuclear site licence (see the ONR website); and g) the relevant environmental regulator is informed.	A perfectly safe and valid management strategy could be to simply monitor and allow radioactive decay to effectively remediate the situation, or at least be part of the overall management strategy. I suggest replacing item c) as provided.	RWDM	2	
333	It's not just about defence in depth on the release of radioactive substances – it also includes direct radiation (e.g. from criticality)	n/a	AA	3	Release of radioactivity in its broadest sense includes radiation shine.
334	'level 2' has no context here	n/a	AA	3	Context for level 2 given in parenthesis.
335	Fault analysis should be carried out comprising suitable and sufficient design basis analysis, PSA and severe accident analysis to demonstrate that risks are tolerable and ALARP and there is sufficient defence in depth	Reinforced the purpose of what is trying to be achieved rather than an academic purpose in its own right.	AA	2	
336	Add new entry In some instances, alternative methods which do not specifically identify each individual initiator (e.g. common demand approaches) to provide confidence there is adequate defence in depth. Use of such approaches must be justified	There are some instances where the identification of all theoretically credible initiating events is disproportionate and adds little in overall safety terms. Should we make the need to do this so prescriptive if adequate confidence can be attained by other means.	AA	3	Alternative methods to that specified in the SAPs are always available to the licensees. There are many alternative methods so specifying the one suggested in the comment sheet is not recommended.
337	Are the limits below which fault analysis (and hence other expectations around methods for analysis) too low? They need to be considered but is fault analysis (and all that that entails) a proportionate way to undertake that consideration?	n/a	AA	1	
338	Change 'and then confirmed by internal hazards analysis' to 'including internal hazards analysis'	IHA may not necessarily 'confirm' the adequacy / completeness of the fault analysis – it may identify additional initiators.	AA	4	My judgement is that the current wording is better than the suggested change.
339	Also state that mitigating safety measures should not be regarded as unnecessary simply because there is Level 1 -3 prevention / protection in place?	Mitigating measures may also be necessary to ensure risk is ALARP – this is hinted at in the previous paragraph (146)	AA	3	The comment is not aligned with the principles of defence-in-depth.
340	In the Note – 'the safety case should still demonstrate that the resultant risks...'	Better grammar?	AA	2	
341	'the analysis should also consider the potential for specific initiating faults giving rise to simultaneous impacts on several facilities, or for faults initiated in one facility to give rise to an impact on another facility'	I believe this is something we generally do anyway.	AA	3	The multi-facility impacts are covered in the next paragraph.
342	Change 'and then confirmed by internal hazards analysis' to 'including internal hazards analysis'	IHA may not necessarily 'confirm' the adequacy / completeness of the fault analysis – it may identify additional initiators.	AA	3	'Confirm' more precisely states our intention.
343	Also state that mitigating safety measures should not be regarded as unnecessary simply because there is Level 1 -3 prevention / protection in place?	Mitigating measures may also be necessary to ensure risk is ALARP – this is hinted at in the previous paragraph (146)	AA	3	see 339 (same comment)
344	In some cases mitigating systems are used preferentially to protection systems, which appears to be precluded	n/a	AA	3	Prevention is always preferred to mitigation but this paragraph does not preclude mitigation.
345	In the Note – 'the safety case should still demonstrate that the resultant risks...'	Better grammar?	AA	2	
346	'the analysis should also consider the potential for specific initiating faults giving rise to simultaneous impacts on several facilities, or for faults initiated in one facility to give rise to an impact on another facility'.	Add clarity of expectation	AA	3	The multi-facility impacts are covered in the next paragraph.
347	The commentary notes that "Statements that SAPs can be relevant good practice to duty holders is based on legal advice," but the revised text does not say this. The fundamental principle that the licensee is responsible for deciding how to meet the licence conditions is at risk if the SAPs are legally considered as relevant good practice; the whole point is that they may NOT be relevant to the particular licensee. See para 38, which makes clear that this is advice for inspectors	n/a	ALARP	3	The aim is to point out what we think may be RGP to help licensees. Clearly circumstances matter and it is for licensees to decide how to comply (eg with LCs), and demonstrate that it is adequate. The new text poses no threat to that principle.
348	Should this para not give the flavour of we should understand and strive to meet good practice but where we can't/won't (in overall ALARP context) this is explained and underpinned. Can 'good practice' be interpreted as 'good enough'?	n/a	ALARP	3	There is no suggested text amendment but the commenter doesn't seem to realise that meeting ALARP when you fail to meet relevant good practice is not really possible. See definition of RGP.
349	The section emphasising relevant good practice in engineering and operational safety management rather than numerical targets should be taken together with the text on numerical targets, not put in separate section	n/a	ALARP	3	There is no suggested text amendment. We believe that the current text is clear on the role of RGP and NTs
350	Should 'hazard' read 'hazard &/or risk'?	n/a	ALARP	3	We understand the comment, but in the context of para 25 we are emphasising the "threat" if the hazard is well addressed the risk could be very low, but the hazard is still high so meriting scrutiny. Risk can be low because the hazard is low, or if its high, the high hazard is well protected. The two situations are not the same.
351	In some cases, the magnitude of the potential radiological hazard may be uncertain. In these cases a precautionary approach should be applied (R2P2) by erring on the side of caution providing that treatment of uncertainty and pessimism (especially cumulative) do not skew the conclusion. Where the absence of a radiological hazard cannot be shown the assumed radiological hazard and magnitude should be clear and justified	Clear that we shouldn't be blind nor overly conservative in erring on the side of safety leading to a non-optimum or correct 'answer'. Clearly identifying that any assumptions re hazard and magnitude should be clear and underpinned not just assumed.	ALARP	4	there is no suggested text change
352	It would be helpful for this paragraph to provide guidance (which may be alternative & wholly around overall ALARP principle) for new facilities supporting decommissioning & high hazard reduction.	n/a	ALARP	3	there is no suggested text and we would assume all new facilities would meet the intent of SAPs (see para 14 though on balance)
353	This paragraph seems overly prescriptive, using phrases like 'only be accepted when...'. It would be more helpful if there was a 'consideration should be given' tone. Also it would be helpful if these paras provided clarity on the consideration and acceptability of interim measures that may be in place, especially if they are considered less than ideal (eg lower on the hierarchy) but do contribute to the overall ALARP justification and demonstration of defence in depth	n/a	ALARP	3	Para 34 is aimed specifically at situations where an argument that limited future life time of the facility means something that would otherwise be ALARP, is claimed not to be. We have clarified this in the new text.

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354	The changes to this para are likely to drive improvements to existing facilities that will delay their decommissioning and increase overall risk. This is the opposite of ONR's policy as communicated to us	n/a	ALARP	3	we disagree. See above for focus of the text
355	PSRs are more wide ranging than a restatement of the safety case and instead provide a systematic review of whether the safety case remains adequate.....	More accurate reflection of what is required from a PSR.	ALARP	2	
356	Why is this especially relevant for fault conditions? Understand the connection to other parts of the SAPs, but the 1st sentence could be argued to be equally applicable to normal and fault engineering	n/a	ALARP	2	
357	The scope of the SAPs remains essentially unchanged from 2006. They have been updated to reflect improvements in nuclear safety and radioactive waste management.	Acknowledgement that the scope of the SAPs remain essentially unchanged (nuclear safety and radioactive waste management), whilst the purpose of ONR has increased (as described in part 3 of Energy Act 2013). In particular now includes conventional safety, transport, security and safeguards. Presumably this increased role will have no impact on their approach to nuclear safety and the other aspects are addressed elsewhere?	ALARP	4	
358	The numerical risk levels are hence of most use for those novel areas for which relevant good practice does not exist.	Clarification of the use of numerical targets.	ALARP	4	the comment may be true but there is more to it than that, and we explain further in TAG 005. See also text in 005 on RGP
359	Guidance on the transfer of risks can be obtained on the HSE website	Some further useful guidance on the treatment of transfer of risk between hazards. (e.g. nuclear and conventional)	ALARP	4	we have guidance in the TAG 005 as well, so we don't think its necessary to add anything here.
360	Judging what is 'appropriate' can be far from straightforward and some further guidance would be useful. For example what reasonable steps are expected to further explore the nature of the hazard and what role operational measures may be allowed to play in obtaining more hazard information?	n/a	ALARP	4	we don't think the Saps is the palce for further guidance. Circumstances will indicate what is or is not appropriate and we don't want to be overly prescriptive.
361	Although it is acknowledged that the SAPs do not represent design guidance they represent ONR's high level view of good practice....	Clarification of status of SAPs	ALARP	4	
362	Expand on the basis of judgements as to whether suitable and sufficient measures are available for older facilities? For example what is it about older facilities that is likely to lead to a different ALARP solution to newer facilities?	n/a	ALARP	3	we say it needs to be done on a case by case basis. An example of older vs new would be a containment building might be right for a new facility but not reasonable to build over an existing facility for all sorts of reasons.
363	Insert quest for potential improvement	Surely improvement is required only when justified in line with the ALARP principle. However, the potential for improvement should be sought out.	ALARP	2	
364	The situation for decommissioning is more complicated than suggested here. For example, time should be a legitimate reason to not introduce a particular measure, even if the lifetime is not irrevocably fixed in certain circumstances. This would apply for those buildings for which the risk is currently intolerable or its risk is increasing. In which case getting to a safer end state quicker may be more important than introducing the proposed measure. Should the regulator explain how they interpret the 'decommissioning mindset'?	n/a	ALARP	4	we agree that getting to a safe end state more quickly could be safer than introducing new measures now and believe our guidance allows for this.
365	Security and Safety assessments should be reported separately (for ease of classification) but use the same base data as appropriate. Processes should ensure that any conflicts can be resolved to give an optimal solution.	n/a	ALARP	3	No text was offered it just seems like an observation
366	We agree that the need for such preventative measures must be considered – but to consider them within Safety Assessments would mean disclosing security vulnerabilities to a much wider audience. Safety Cases may on occasion have to be released under FOIA, and security information should be kept separate.	n/a	ALARP	4	
367	SAP changes don't seem to consider the situation where safety and security give competing requirements e.g. extra dose uptake as a consequence of security inspections, in which case are they assumed separate?...no attempt to optimise across both requirements?	n/a	ALARP	3	All dose uptake for whatever type of inspection or maintenance is subject to consideration.
368	Replace 'vires' with a more appropriate, more widely understood word. 'Scope' would be a suggestion for its replacement.	n/a	ALARP	3	"Vires" is well understood by inspectors for whom this guidance is primarily intended.
369	Consideration should be given to including a brief overview of the ALARP principles, including what 'holistic' ALARP entails.	n/a	ALARP	3	There is a lot of text and guidance on ALARP already as well as separate guidance, more detailed guidance in TAG 005
370	Reduce risks in accordance with the ALARP principle	English - Something missing	ALARP	3	If you put in the words for ALARP in to the comment in place of the acronym, our text makes better sense.
371	Building Act 2000, not 1984. Also NISR Amendment Regs 2006.	n/a	ALARP	2	
372	Last sentence (ONR would be concerned primarily, not solely, with the hazard) is an improvement.	n/a	ALARP	2	
373	This is fine for design of new facilities but should include a reference to overall ALARP when considering existing facilities (aka 'Decommissioning Mindset'). The comment that "The emphasis has been changed to stress that the duty to demonstrate risks are ALARP does not depend on an inspector being present." doesn't seem to relate to the text?	n/a	ALARP	3	The principles here are equally applicable to all operational states.
374	"the quest for improvement never stops." It should stop when the sacrifice is grossly disproportionate.	n/a	ALARP	3	No you should not stop looking, you don't implement grossly disproportionate measures but things change with time and technological advances so the situation should be revisited, for example at periodic reviews.
375	Do not understand "In most cases, the SAPs are applied in relation to single facilities and so the control of risks is also generally considered on a facility basis." Para 36 contradicts this.	n/a	ALARP	3	This is to do with NTs. Many eg target 8 are to do with facilities and other are to do with individual risk from the site as a whole, thus include all the facilities on the site.
376	This change reflects the different approach that has evolved over time; fault analysis is now an input to engineering design not a confirmation that design has achieved its aim. This is not necessarily a good thing and is the single most significant influence in the over-engineering that has inhibited risk reduction on legacy plants.	n/a	ALARP	3	We disagree, fault analysis should be an input to the design, or design changes. Unless you look at fault analysis then the design may not meet its intent to be adequately safe. You need to know what can go wrong and how bad it can be before deciding if a design or modification is adequate. Its an iterative process.
377	The BSO marks the risk boundary between the tolerable and broadly acceptable regions of R2P2.	Clarification	ALARP	4	we prefer the existing text
378	Clarify: Are the mandatory targets all legal limits?	n/a	ALARP	4	yes
379	..applying the legal requirement to make a grossly disproportionate sacrifice to achieve a health and safety benefit.	Clarify: Legal requirement of gross disproportion between what and what?	ALARP	4	the legal test is gross disproportion. The range of GD is not set out in law, instead it's a policy based on evidence given to the SZB public inquiry - see TAG 005

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380	A graded approach to risk should be used so that the greater the risk (or hazard) the more robust the argument need to justify	The phrase 'the greater the degree of disproportion applied' is not improved English	ALARP	4	we feel the new text is an improvement, and prefer it to the suggested revision
381	(last sentence) Removing ' If these conditions cannot be met..' removes useful guidance as to the nature of the considerations that would be taken. Should this para also address the situation where a short term increase in risk is planned (perhaps close to or even above a BSL) in order to achieve a major longer term risk reduction? Alternatively refer out to where this is covered.	n/a	ALARP	3	We feel the new text is an improvement, and prefer it to the suggested revision. Don't think this is the place for short term risk increase discussion, it is covered elsewhere in the SAPs.
382	This does not reflect ONRs recent approach to risk reduction for high hazard legacy facilities	n/a	ALARP	1	this is an observation on ONR practice, not a suggestion related to the changes in SAPs
383	Does this guidance apply equally to simple targets and legal limits? i.e. presumably there is some significance in being marginally below a legal limit? Last sentence: Does 'taking a pessimistic view' mean that the risk target will be considered to be essentially breached? As there is no intrinsic significance to the risk levels associated with the targets, why should the view of the risk estimate change with proximity to a target?	n/a	ALARP	1	this is an observation rather than suggested revision
384	Slightly different wording to para 570, is this intentional? E.g. design basis fault sequences versus design basis fault	n/a	ALARP	1	this is a query rather than a suggested revision
385	The principle here appears significantly at odds with that set in para 577. Where the target is met, surely the issue is one of confidence in factors inherent in the analysis. This is especially important where over protection of some systems could lead to the potential under protection of others. It is important that overly conservative treatment in one aspect does not skew the ALARP balance.	n/a	ALARP	3	We don't see a contradiction. Para 577 is warning against undue focuss on trying to finesse a calculation (pencil whipping) to avoid doing something, rather than looking at the engineering and operational reasons why a result is close to a criterion. The new para after 597 is warning of the non linearity in the dose bands and urging caution in the vicinity of a step change and the need to think about the impact of uncertainty. We have revised th text to try and clarify this point.
386	This states "the targets for the higher (more onerous) band may be more appropriate, for example once allowance for the degree of conservatism and uncertainties are taken into account." It's not clear what kind of allowance should be made. The SAPs should recognise that the stacking up of multiple conservatisms from each stage of the assessment is one of the main causes of over design and over protection. Our site has many examples of complex protection systems, driven by conservative safety assessments, that actually have an adverse effect on nuclear safety, firstly by distracting operator focus from the real hazards, secondly because operators incur dose maintaining the systems and finally, in many circumstances, adding complexity and delay to risk reduction.	n/a	ALARP	4	
387	Although the BSLs are set at levels that correspond to legal limits for normal operations they are not legal limits in this context.	n/a	ALARP	2	
388	Similar comment to that on 577 : Why should proximity to the arbitrary dose levels in target 6 cause particular concern in this respect?	n/a	ALARP	3	there is no suggestion, just a query. We are concerned because if the doses are high, risk may be estimated low on assumptions of people being there or not there rather than on engineering controls or measures
389	Should there also be mention of the situation in which risks are increasing, due to worsening conditions	n/a	ALARP	3	The licensee ought to be dealing with worsening conditions and not let them happen. We do not want to have "things got worse" as a reason for accepting higher risks.
390	This para is open to interpretation and although it seems reasonable for short term, high consequence scenarios, it should not be taken to apply to lower consequence examples. (In the extreme, it would be un-workable for normal operational doses (i.e. it would preclude operations in dose rate fields > 20/1400 mSv/h ~14uSv/h).	n/a	ALARP	4	
391	Although not a change, the description "new facility or activity" could be misunderstood. Many new activities at Our Site, and some new facilities, are driven by risk reduction objectives and ALARP needs to be considered at programme level. A term such as "new development" may be clearer?	n/a	ALARP	3	We are sympathetic to overall programme ALARP, but see no reason why BSLs should not be met. We would expect overall programme ALARP considerations to feature in the justification of facilities being built to reduce risk.
392	The comment above regarding stacking of conservatisms is also relevant here. In most fault scenarios at Our Site, the likelihood of anyone actually being at the point of maximum dose is very low, and the possibility that somebody would remain at the site perimeter once a release was detected is even lower. These pessimisms have a significant effect on the protection specified for relatively minor risks, skew the balance between risk to operators and external hazards and distract from the major risks, ie, where doses would be significant in local settlements where evacuation would actually be an issue	n/a	ALARP	3	This paragraph is all about NT4 and conservative DBA. It is not the place for removal of pesimisms, that comes later in calcs aimed at for example Target 8, where your point is accepted, we do not want stacked conservatisms.
393	Add para regarding end of life dealing with High Hazard reduction in ageing facilites and balance of risk Add para regarding POCO Decommissioning and demolition, balance of risk and adoption of approaches conflicting with other SAPs Add para dealing with Programme ALARP, Project/Facility ALARP generating justification for not following various SAPs	Almost all of the UK Nuclear Licenced sites have or are approaching end of operation and entering care and maintenance (quiescent state), POCO, Decommissioning and demolition phases. Many of the individual SAPs are aimed at new facilities and are not achievable or conflict with these stages. Inspectors need SAPs that are relevant to these stages	ALARP	4	
394	Retain original para with no expansion.	New requirement covers all SSC whether safety/safety related or not. Civil Engineering and External hazards seems a bizarre topic to cover the access to computer programs and reference data. .	CEEH	3	ONR consider that this is a necessary addition.
395	Remove assessed as external hazards	The inclusion of malicious acts as external hazards gives rise to a significant number of issues. <ul style="list-style-type: none"> • They are not suitable for any frequency based consideration • The design basis surrogate event set out in NIMCA are subject to much more frequent review and potential for change than other natural phemomena • Inclusion as external hazards necessitates explicit coverage with the safety case. Adequate coverage and the necessary improvements can be (and have been) achieved by developing the assessment of malicious acts outside of (but fully infomed by) the safety case process. 	CEEH	3	ONR consider that no change is necessary as malicious acts are external hazards.

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396	The inclusion of malicious acts as external hazards gives rise to a significant number of issues. • They are not suitable for any frequency based consideration (as per the new definition of a discrete hazard) • Inclusion as external hazards necessitates explicit coverage with the safety case. Adequate coverage and the necessary improvements can be (and have been) achieved by developing the assessment of malicious acts outside of (but fully informed by) the safety case process.	n/a	CEEH	3	No change required
397	Remove clause b)	It is unclear why the hazard level at which the safety function could be lost is required, especially if this is subject to high levels of uncertainty. This should be phrased as a more proportionate requirement	CEEH	3	No change required
398	The analysis should state the conditions in which the design basis cannot be met, this should be an input to the severe accident analysis	The current wording leads to a potential duplication of effort and more importantly the potential for a mismatch in the data used.	CEEH	3	No change required
399	Delete "Buildings.....them"	Replace with a separate principle clarifying Fuel ingress requirements should be applied only to new facilities.	CEEH	2	
400	Add "This should consider if they could be affected by the same initiating event as the facility"	This allows separation to be used as a valid argument , or to consider explicitly common cause effects.	CEEH	2	
401	Replace l) with i)	typo	CEEH	2	
402	The concession should be supported by an appropriate safety case which should demonstrate that risks remain as low as reasonably practicable.	Focuses the effort on safety justification at the time of the change rather than rolling over to the next formal review (when the design and construction expertise may not be readily available) Current wording could also be read as trying to foresee problems and make case in advance.	CEEH	3	Would narrow concept
403	Make reference to the need for context and proportionality when considering existing facilities	Generally, these seem ok for modern and new plants. However, where new / additional future assessment or design work is being implied, this is unlikely to be worthwhile for those plants expected to be decommissioned over the next few years or so. Although these considerations are covered in general elsewhere some specific guidance would be helpful.	CEEH	4	
404	c) minimise any interactions between a failed structure, system or component and other safety related structures, systems or components	To clarify that we are primarily interested in safety related SSCs from this point of view.	CEEH	3	Would reverse previous agreed change
405	Essential services and support facilities important to the safe recovery, operation, and / or safe shut-down of the facility should be designed and routed so that, in the event of a fault or accident, sufficient capability to perform their safety functions will remain. Support facilities and services include access roads, water supplies, fire mains, flood defences and drainage, essential services and site communications.	To include recovery and / or safe shut-down if appropriate.	CEEH	2	
406	Where there is the potential for significant consequences to arise to the public, and where the hazard cannot be deterministically dismissed or engineered out, Hazards initiators should be identified in terms of their severity and frequency of occurrence and characterised as having either a discrete frequency of occurrence,(discrete hazards), or a continuous frequency-severity relation (non-discrete hazards). All hazards should be treated as initiating events in the fault analysis.	Earthquakes, wind etc do have numerical criteria attached to them. However, some other external hazards, are written off as not being credible on the Our Site (eg seiche), whilst others argued to be adequately protected against, either at Site or local level, eg external fire, lightning strike etc	CEEH	4	
407	I agree with this paragraph, but need to make sure that the consequence or frequency arguments do not make inherent assumptions wrt the performance of SSCs.	n/a	CEEH	4	
408	Provide commentary giving reason for the change Some hazards may not be amenable to the derivation of a design basis event based on frequency. In such cases a surrogate maximum credible event, supported by scientific evidence may be defined. The severity of the maximum credible event should be compatible with the principles of FA.5.	Not clear what expectations are and what the benefit would be? Why is current approach not adequate?	CEEH	4	
409	Again give context of expectations for existing plant towards end of life or in decommissioning.	Given Fukushima it is hard to argue against this. But it will require a lot of work, both in terms of interpretation and implementation. Not clear what the value would be for plants due to enter POCO and decommissioning within the next few years?	CEEH	4	
410	Either Discrete hazards that may be excluded OR Discrete hazards may be excluded if they....	Discrete hazards may be excluded that ' - doesn't make sense	CEEH	2	
411	Discrete hazards may be excluded that: a) have no identified significant consequential effect on the safety of the facility; or	Significant' is added to • be consistent with the requirements for 'Non-discrete hazards'; and • be proportional.	CEEH	2	
412	Can guidance be provided for existing facilities which were designed to a different standard and also new facilities which directly interface with existing facilities?	n/a	CEEH	4	
413	Add some qualification regarding worst permissible plant state and time at risk.	Worst permissible plant state could be a lifting operation which takes place for half an hour, once a year. Should this really be taken as the basis?	CEEH	4	
414	...and a wide variety of generated as a result of nuclear industry operations including decommissioning wastes	Need to include decommissioning since it is a major part of ONR work. Don't like nuclear fission term because some hazardous material is from activation and actinide products	CE&IH	2	
415 Any nuclear material that was removed returned to a suitable and designated location	In some cases it might be better to place material in a safer place rather than return it to the source facility	CE&IH	2	
416	Nuclear matter should be segregated wherever practicable from incompatible materials ...	Segregation may not be the right solution for mixed waste streams and may create more hazards and extend the environmental footprint	CE&IH	1	
417	I don't understand what we mean by different types of nuclear material could be activity or waste form driven	n/a	CE&IH	2	
418 It should be stored in conditions of passive safety wherever possible ...	There may be situations where a less passive storage solution is a better solution as part of hazards reduction	CE&IH	2	
419	Nuclear matter should be characterised and segregated wherever practicable....	May not be appropriate in all circumstances. Also the degree of characterisation and segregation should be appropriate to the overall hazards management strategy	CE&IH	2	
420	It may only be possible to retrieve and inspect packaging of nuclear matter. It may be potentially hazardous to examine the waste itself	n/a	CE&IH	1	
421	Engineering and operational controls should provide the main lines of protection against leaks or escapes of radioactive, corrosive , toxic substances and flammable gas	Control of flammable gas hazards (e.g. hydrogen) in many of our plants is of fundamental importance	CE&IH	2	
422	Need to say: Safety, Operating and Design basis envelopes need to be stated together with any more extreme demands (or outliers) where contingency or mitigating responses should be considered dependant on consequences	Is not practicable to design around a bounding case in particular for decommissioning.	CE&IH	3	EPE.1 b) refers to 'consideration of bounding conditions', and not 'design to bounding conditions', as inferred by the consultee. Also, EPE.1 c) uses verb 'should' as opposed to 'shall', which allows flexibility. Finally, SAPs are guidance as opposed to prescriptive legislation.

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423	Need to say: e) The design should allow for process degradation or malfunction e.g. side reactions, accumulation of by-products, degradation products, flammable gases	Need to recognise the potential for flammable gases throughout – an important consideration within many of the our site processes and operations	CE&IH	3	The proposed change is not viewed as necessary, because the SAPs are principles, and cannot list everything single case or eventuality. The SAPs do not make a specific distinction between liquid and gaseous phases.
424	Systematic techniques such as HAZOP should be used to improve operability as well as for fault identification and confirmation of hazard management strategies	We should use HAZOP to confirm Hazard Management Strategies and Safety Measures provided.	CE&IH	3	Current text aligns more closely with common descriptions of the Hazop process.
425	Might include: Flammable Gases (Such as Hydrogen) including rate of release, variation of time and dispersion behaviours	Need to recognise the potential for flammable gases throughout – an important consideration within many of our site processes and operations	CE&IH	2	
426	Add 'licensees may use alternative schemes which meet the same intent'	Clarifies that schemes other than the 'recommended' one may be adequate to fulfil the purpose	CE&I	1	
427	Note that licensees may classify at different levels. Our organisation would not define a Class 1 CE&I system but may provide the equivalent of a Category A safety function by an appropriate combination of systems.	n/a	CE&I	1	
428	Title includes safety related but text only discusses safety systems Services only essential if they are required to deliver the SFn – should use same wording as 156	n/a	CE&I	3	This paragraph is scene setting and introduces the concept of safety related systems which are then developed further in later paragraphs.
429	Seems to ignore safety systems which support OPMs	n/a	CE&I	1	
430	Definitions – fault schedule	Not in glossary	CE&I	1	
431	Refer to 156 as well?	n/a	CE&I	2	
432	I don't understand this – is it referring to failure of services ?	n/a	CE&I	3	we judge that the principle is clear and is focussing on faults within the safety system not te services.
433	.. should disable a safety system which is designed to provide protection against that event OR Clarify if this excludes Design Basis external hazards	It is more appropriate for the design to place no reliance on CE&I systems for external hazards such that qualifying safety systems against seismic or extreme weather is unnecessary.	CE&I	3	We believe EES.18 is very clear and it has deliberately not included any qualifiers.
434	Again segregation of services is only essential if the safety function not delivered (i.e. if the SS is not failsafe on loss of services) – refer to 156?	n/a	CE&I	3	This paragraph is about safety systems and only mentions services in the context that they shouldn't be shared. It puts no particular constraint on segregation which would only become important if such a service was essential to the delivery of the safety function.
435	Statistical testing is extremely onerous and not recommended within our organisation (we state it is a last resort in our internal guidance)	n/a	CE&I	3	Statistical testing is described in a new paragraph just before 362 not ESR.3. We agree statistical testing is onerous hence it is restricted to computer based systems.
436	Only where the service is important to safety?	n/a	CE&I	3	The SAPs do not keep repeating phrases such as 'only where the is important to safety' this is established in the explanatory text at the beginning of the SAPs.
437	Clarify. Does this mean 1) the design should be tolerant to a loss of services (an ideal which is not always achievable) or 2) that the likelihood of loss of both normal and back-up systems is sufficiently remote does this or an argument with an appropriate combination of either	n/a	CE&I	3	This SAP is very clear in its reference to the combined loss of normal and back-up supplies and doesn't refer to likelihood.
438	Services may be classified using other schemes (e.g Guaranteed Non-Interruptible for electricity) to that used for the safety system although the class should be consistent in intent.	n/a	CE&I	3	All licensees can use their own classification schemes and the SAPs introduction states that any advice is not mandatory.
439	The change of word to 'safety systems' is too general. It is common and accepted practice that trip systems should not self reset but interlock systems are allowed to self reset.	n/a	CE&I	3	This is a very important principle and we don't agree with the comment about interlocks and self resetting.
440	Para 475 focuses only on long term storage of radioactive materials. The point being made is applicable to criticality safety assessments in general. It is likely to have greatest impact for long term storage of radioactive materials and in decommissioning assessments.	n/a	EP, RP and criticality	4	
441	To clarify understanding of the change, does this now mean that only justification of practices is not regulated by ONR and that justification of interventions, optimisation of protection and individual dose limitation is regulated by ONR.	n/a	EP, RP and criticality	1	
442	General comment here and in the subsequent paras. The alignment of Normal Operation with Planned exposure situations and fault and accident conditions with Emergency Exposure situations is slightly inconsistent with the definitions in ICRP 103. For example on P14 of ICRP 103, '... the process of planning protection in planned exposure situations should include consideration of deviations from normal operating procedures including accidents and malicious events.'	n/a	EP, RP and criticality	1	
443	Need to distinguish between worker doses as a consequence of an accident and emergency exposures as a consequence of recovery. Also note that neither of these are subject to IRR dose limits (ICRP103..'application of dose limits applies only for doses expected to be incurred with certainty as a result of planned exposure situations')	n/a	EP, RP and criticality	3	No revision is proposed. REPPIR guidance para 336 makes it clear that Reg 14 on emergency exposures is not concerned with doses received by employees who may be exposed to ionising radiation as a direct result of the radiation accident that leads to a radiation emergency. Reg 15 states that , in the event of a radiation emergency, Reg 11 of IRR 99 shall not apply to interventions.
444	Amend text to be consistent in intent with that in para 642 (3rd new para)	The wording on maintaining stocks of PPE is subtly different to that in para 642 (3rd new para) and which reads better in defining the requirement for safe and robust storage.	EP, RP and criticality	2	
445	Amend text to include on and off site/facility locations for emergency equipment stores	Gives flexibility to store equipment in other parts of larger facilities.	EP, RP and criticality	2	

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469	This section seems to conflict with the extant emergency planning concept of planning in detail for what is reasonably foreseeable and planning in outline for what is beyond reasonably foreseeable. We are not aware that this principle has been revised or indeed whether a revision is being considered.	n/a	EP, RP and criticality	3	Licensees and operators are expected to plan in sufficient detail to mount an effective response, for both reasonably foreseeable and beyond reasonably foreseeable emergencies. This is confusing the REPPiR off-site planning provisions with that for on-site under LC11 etc. The need to monitor and control plant in a severe emergency (which is what 642 relates to) is a Fukushima lesson and this relates to stress test commitments.
470	This para on response facilities seems rather restrictive and the intention could also be achieved for example by having a number of facilities to choose from or indeed mobile facilities.	n/a	EP, RP and criticality	4	
471	See comment 6 above (in comment form). In addition there is no definition given of how many plants should be included in a multi-facility situation.	n/a	EP, RP and criticality	1	
472	It is unclear why nuclear is different in this respect from other high hazard industries. Surely the primary duty is to ensure that facility risks are reduced at source SFAIRP.	n/a	Siting	3	Based on government policy for siting
473	This does not appear to agree with new para 104(1) and 104(4)	n/a	Siting	3	This considers a facility in detail in the context of government siting policy
474	Replace removed "nuclear facility"	n/a	Siting	2	
475	Remove "reasonable practicability arguments" and replace with "emergency response arguments"	n/a	Siting	4	
476	The states "Facilities should have their own dedicated safety systems to protect against design basis faults escalating to an accident. Such safety systems should not be shared between facilities." This is not achievable for the supply of services (power, steam, water, etc) which, even where redundant supplies are provided, will be common across the site.	n/a	Siting	3	Dedicated safety systems should take account of potential effects of loss of supply and bring the facility to a safe condition. No change proposed
477	For new designs the majority of the human factors analysis should be undertaken during the Pre-Construction Safety Report (PCSR) stage in order to influence the design and inform the safety analysis	Early engagement with HF is important to influence and shape the design but at the early stages this might not be a large amount of work, because the detail is not available. In terms of man hours, the bulk of the HF input is likely to be in support of the detailed design, which may not have been done at the PCSR stage.	HF	3	ONR is acknowledging the emphasis on HFI in support of the PCSR phase, as detailed design substantiation is expected in a PCSR submission. This does not preclude HFI at any other stage. A proportionate approach is expected throughout the design and lifecycle. Proposed change does not improve the text. Text has been revised in line with 'other reviewers' comments.
478	Contingent operator actions and dependent human errors committed by single or multiple operators should be modelled explicitly in the human reliability analysis and accounted for quantitatively. The analysis should also account for indirect dependence (ie when) and avoid unrealistically low single or combined human error probabilities being propagated through the fault analysis	It might not be appropriate to do a quantitative assessment. If the term indirect dependence is used it needs to be certain that everyone will have a consistent understanding about what it means	HF	3	It would be expected that the Licensee would provide a justification for the decision whether to quantify errors. A definition of indirect dependency is not required; SQEP HF analysts should be familiar with this term.
479	Where necessary (eg to support ALARP justification) the allocation of safety actions between humans and engineered structures, systems or components should be substantiated.	The substantiation of the allocation of safety related functions is not, in our view required for all structures, systems and components and certainly not on an individual basis. In order to speed up decommissioning and hazard remediation projects at certain sites greater use of manual measures can be expected (as it can reduce design development times and operational complexity). The important thing is to ensure that the manual measures are properly designed and implemented. If such substantiations had to be done individually, for every structure, system and component it would result in an increase in documentation with relatively minor role in the safety justification. More importantly it would detract from the most important aspects of the safety justification and arguments. It would be particularly unhelpful in situations where the safety analysis showed that the risk was small.	HF	3	ONR considers substantiation of AoF to be a fundamental design consideration. The use of manual methods requires justification whether at the programme or project level in order to demonstrate design solutions reduce risks to ALARP. AoF may be global and task/system specific. Further detail is provided in the associated TAG.
480	The analysis should evaluate the demands these tasks place upon personnel in terms of perception, decision making and action. It should also take into account the physical and psychological and cognitive factors that could impact on human performance.	Cognitive factors are addressed as part of the psychological factors	HF	2	
481	The message carried within the introduction, regarding the application of the principles being proportionate in the context and in accordance with ALARP is clear. However, there is concern that it is not applied appropriately and becomes lost in the detail of the subsequent principles. In some instances there are reminders within the detail of the SAPs but this is not consistent.	n/a	LMfS	4	
482	The addition of (operating rules) is superfluous and not helpful for licensees who use different terminology. Focus on 'limits and conditions in the interests of safety' is preferable.	Remove	LMfS	4	
483	The value of reducing the BSO to such low levels for routine dose uptake (1mSv for employees working with radiation) is debatable and may take focus away from other factors relating to overall risk. Some routine dose uptake may be necessary to achieve hazard reduction and reduce risks to the public.	Add paragraph to emphasise ALARP is a consideration in managing normal dose.	LMfS	4	
484	Para a) should be part of formal defined set of commissioning tests Para b),c),d) should be achieved either from the tests defined in para a) or additional other tests/training which are not part of formal commissioning	The formalisation of these tests in the 'Safety Case' and the additional detail places an obligation to define, organise, control, perform and record as formal commissioning whereas often data is gathered during 'setting to work' and training.	ME	3	The purpose of SAPs is to guide ONR inspectors with regulatory decision making in the nuclear commissioning process. As such this text re commissioning is appropriately placed. In the SAPs 'safety case' refers to the totality of a licensee's (or dutyholder's) documentation to demonstrate safety, and any sub-set of this documentation that is submitted to ONR. The comment appears to take a narrow definition of safety case. We agree that aspects of b), c) and d) may be done outside of the commissioning process, but they are also an important part of commissioning in itself. We are content with the existing text.
485	Where 'safety or safety related systems' are taken out of service....	It would be disproportionate to apply this to all 'equipment'	ME	2	

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486	Remove reference to operating rules	Unnecessary and potentially confusing	ME	3	Disagree - the text is consistent with the wording in licence conditions.
487	Each waste package waste should be uniquely.....	English	RWDM	2	
488	Acceptance criteria (which may include operating rules) should be established.....	Less prescriptive	RWDM	2	
489	Given the current XXXXXXXXXX mission for consolidation of fissile material and radioactive waste at XXXXXXXX, it will not always be possible for the primary criticality controls to be within the control of the licencees – perhaps tone down prescription and make more of an aspiration, with the expectation that the licensee is able to demonstrate, with confidence, how criticality control will be managed.	n/a	RWDM	2	
490	As a minimum recommend amending to '... should not, where reasonably practicable, rely on safety measures not under the direct control of the licensee.'	Where licensees take receipt of waste materials from another licensee the receiving licensee may be able to specify controls/ acceptance criteria with which they require the upstream licensee to comply but may not have direct control of these. It may not be reasonably practicable (or possible) for the receiving licensee to perform additional characterisation of waste material to ensure compliance with acceptance criteria.	RWDM	2	
491	Don't disagree that the licensee should meet the expectations of this paragraph, just question the prescription that it should have to be within or part of the safety case in all instances. For some of our facilities this should be undertaken at a site/stream/strategic level above the SC	n/a	RWDM	2	
492	Question whether this principle is needed. Perhaps expand RL.6 to include the requirement for the plan to be justified (does it have to be within a safety case)	n/a	RWDM	3	In the SAPs 'safety case' is defined as the totality of a licensee's (or dutyholder's) documentation to demonstrate safety, and any sub-set of this documentation that is submitted to ONR. It is up to the SLC to decide how contaminated land is documented in the safety case, rather than ONR to prescribe. ONR will consider whether this point needs further clarification during the development of the new TAG on contaminated land. ONR has received conflicting comments on this issue.
493	Recommend changing to '... should take into account uncertainties in the level and distribution of fissile material, neutron absorbers and moderators within the waste'	the presence of these materials alone may be insufficient to determine the criticality safety envelope. Knowledge may also be required of the distribution of these within the waste stream	RWDM	2	
494	Safety case section presents flavour of Safety Case as documents only. Are we in a position to encourage people to broaden view of Safety Case to discourage the tendency to towards document bias?	n/a	SC	3	Commentor seems to be confusing safety case with safety management. No requirement to amend the SAPs.
495	Why have we included the level of prescription re meeting numerical targets – our safety cases are likely to demonstrate meeting ALARP principles qualitatively rather than quantitatively more often going forward	n/a	SC	2	
496	Seeks to make a judgement that Targets have been met – the expectation should be that Limits have been met	n/a	SC	2	
497	Surely the aim is to demonstrate that the risk is tolerable and ALARP. The targets assist with this but the sole purpose is not to demonstrate targets are met.	n/a	SC	2	
498	Spirit of this paragraph implies the SC will develop the safety & hazard management strategy rather than capture & justify this (and its relevant outputs) using various processes and methods (ie not just SC methods)	n/a	SC	3	We dont agreee, the SAP para is clear, but the comment is not.
499	Seems to omit the requirement to capture safety management under normal operations (not just faults)	n/a	SC	3	We do not see how this comment has been arrived at in relation to this para. The para does not need changing
500	Does this include decom? If so should this be clear in the title. If not why not, where covered?	n/a	SC	2	
501	Clarify whether this relates to the design and execution of the safety case process or safety case processes for design and operation (and decommissioning)	Currently ambiguous	SC	2	
502	The additional sentence re decommissioning safety case for sudden cessation of operation is not clear. Should it not reflect the need to review the safety case for the new lifecycle, and a need to understand how management of safety may change from sudden change of use & identify key information which should influence the strategy and timescales for decommissioning?	n/a	SC	2	
503	SC should be commensurate with risk and hazard too, not just stage and interrelationships with other stages.	n/a	SC	3	The need to have safety cases commensurate with hazard is covered in SC.1. Inclusion in para 90 would add confusion eg at the design stage there is no real hazard but we would expect a comprehensive safety case before giving for example a GDA DAC.
504	Use term 'robust' instead of thorough. Avoid misunderstanding of level of complexity and detail needed.	n/a	SC	3	We are content with the use of 'thorough'.
505	c) demonstrate how good engineering practice and sound safety principle have been used to demonstrate overall safety of the facility and its operation, in the context of the rest of the safety case. (For example, a nuclear facility should aim to be designed against a set of deterministic engineering rules, such as design codes and standards, using the concept of 'defence in depth' with adequate safety margins. Instances where they have not been met should be identified and justified on the basis of ALARP principles	To reinforce that ALARP demonstration is overriding goal. Good practice is a primary way to assist with this, but absolute application may not be necessary to justify safety and may not be ALARP. However this should be clear and justified on ALARP principles.	SC	2	
506	This would be reasonable as a set of design principles but doesn't take account of existing facilities that were designed many years ago. It is possible for risk to be ALARP without meeting modern design standards. In (d), the expectation previously applied to "designated equipment important to safety" – the new text refers to "all structures, systems and components" which is much wider	n/a	SC	3	We will still judge old plant against modern standards and then expect the licensee to demonstrate that it is not ALARP to meet the modern standards, if that is the case. The reference to SSC in para 92 is only cited as an example.
507	c) justify the option chosen in terms of meeting ALARP principles, including appropriate consideration of relevant good practice. If meeting relevant good practice...	To reinforce that ALARP demonstration is overriding goal. Good practice is a primary way to assist with this, but only in the context of ALARP and not at its expense.	SC	3	We believe this point os adequately covered in para 93 b). Plus the aim of c) is to specifically draw attention to the need to meet relevant good practice.

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508	Could this paragraph reflect the appropriate treatment of 'outliers' in setting the SC and design boundary and scope. This para, as written, may perpetuate current approach to bound for everything theoretically possible given uncertainty. This potentially skews the picture of risk and leads to inappropriate conclusions which hamper true risk reduction.	n/a	SC	3	Its not clear what the commentor means by outliers - clearly the safety case needs to bound all reasonably foreseeable faults and hazards. We agree that margins etc need to be appropriate - but this is covered elsewhere in SAPs. Para 94 as written does say that the safety case should present a balanced view. However some related change was made in response to comment 645.
509	Amended because the previous version was "not legally enforceable" Does this imply that the SAPs are generally intended to be legally enforceable? That would be inconsistent with the Background on the index page	n/a	SC	1	
510	The message carried within the introduction, regarding the application of the principles being proportionate in the context and in accordance with ALARP is clear. However, there is concern that it is not applied appropriately and becomes lost in the detail of the subsequent principles. In some instances there are reminders within the detail of the SAPs but this is not consistent.	n/a	FP	3	The commentor makes no suggestion for new text, rather expresses a concern. We do not share the concern and feel that inspectors fully understand the need to be proportionate in application of the SAPs, a point that is reinforced by internal training.
511	The addition of (operating rules) is superfluous and not helpful for licensees who use different terminology. Focus on 'limits and conditions in the interests of safety' is preferable.	Remove (Operating Rules)	FP	3	The SAPs are primarily intended for use by inspectors and the terminology of operating rules is entirely consistent with nuclear site licence condition 23, that all licensees need to address.
512	The value of reducing the BSO to such low levels for routine dose uptake (1mSv for employees working with radiation) is debatable and may take focus away from other factors relating to overall risk. Some routine dose uptake may be necessary to achieve hazard reduction and reduce risks to the public.	Add paragraph to emphasise ALARP is a consideration in managing normal dose.	FP	3	New text added to para 585
513	The principle of defence in depth (EKP.3) means that these types of "design extension" or "beyond design basis" plant states should, where the potential consequences are severe, be considered in the safety case.	This appears to be the only use of the term "design extension" in the revised SAPs, and it is not explained either here or in the Glossary. It would be beneficial to define.	AA	2	
514	In addition to the inclusion of conservative assumptions, it should be demonstrated that a small change in a DBA parameter will not lead to a disproportionate increase in radiological consequences i.e. there should be no cliff-edge effect. The severity and frequency of the initiating event should be amongst the parameters considered.	Further clarification and alignment with EHA.7.	AA	2	
515	Though R2P2, TOR and SAPs set out indicative numerical risk levels, meeting relevant good practice in engineering and operational safety management is of prime importance. In general, ONR has found that meeting relevant good practice in engineering, operation and safety management leads to risks that are reduced SFAIRP and numerical risk levels that are at least low enough to be tolerable, and in many cases are so low that they are broadly acceptable.	Further clarification.	ALARP	4	
516	This includes the SAPs, which were benchmarked for the 2006 issue against IAEA's Safety Standards and have been updated to reflect subsequent changes in these Standards since 2006 for this issue.	Addition for clarification	ALARP	2	
517	An appropriate radiological hazard and magnitude should be assumed and the justification given.	Addition for clarification	ALARP	2	
518	Multi-facility and/or neighbouring sites When assessing the hazards and risks posed by a nuclear site, all the facilities, services and activities on it need to be considered. In most cases, the SAPs are applied in relation to single facilities and so the control of risks is also generally considered on a facility basis. However, there is sometimes also a need to consider the totality of risks from a site and how these are controlled, for example when a single initiating event can affect multiple facilities. The licensee has a duty to manage all the risks within its control so that total risks are ALARP, including risks from multi-facility events. In some locations there are multiple sites, governed by different licensees, i.e. there are neighbouring sites. In this circumstance, ONR expects licensees and others in control of major nuclear hazards to cooperate with one another so that the overall risks in the location, taking into account all neighbouring sites, are controlled to ALARP.	Amended to align with the use of the term "site" elsewhere in the document, particularly para 590. Suggest also adding definition of site in the context of the SAPs to the glossary. For e.g.: "A site is an area covered by a single nuclear site licence, where all the facilities and services are under the control of a single licensee."	ALARP	2	
519	TOR2 discussed the effects on society of a major accident and suggested, based on the findings of the 1990 Barnes report on Hinkley Point C 11, that an event leading to one hundred to several hundred immediate and eventual deaths ought not be more frequent than one in a hundred thousand years, allowing for the influence of weather conditions. The TOR2 approach was used in deriving the societal risk target (Target 9).	See comments on Target 9 for Annex below	ALARP	4	
520	Normal operation – any person on the site The targets and a legal limit for effective dose in a calendar year for any person on the site from sources of ionising radiation are normally: Employees working with ionising radiation: BSL(LL): 20 mSv BSO: 1 mSv Other employees on the site: BSL: 2 mSv BSO: 0.1 mSv Note that there are other legal limits on doses for specific groups of people, tissues and parts of the body (IRR).	The targets and legal limits quoted are from Schedule 4 Part I are those normally applicable, unless the licensee can demonstrate "in respect of any employee that the dose limit specified in paragraph 1 of Part I of Schedule 4 is impracticable having regard to the nature of the work undertaken by that employee", in which case the limits can in Schedule 4 Part II apply. As the 20mSv is not the absolute legal limit, it may not be appropriate to applied that it is without further explanation.	ALARP	1	
521	Normal operation – any group on the site The targets for average effective dose to defined groups of employees in a calendar year working with ionising radiation are: BSL: 10 mSv BSO: 0.5 mSv	Makes it clearer that the averaging is over the group of workers rather than the calendar year	ALARP	1	
522	ONR is responsible for regulating the off-site doses received as a result of direct radiation shine from sources on the site. Off-site doses resulting from discharges and disposals from civil nuclear sites are regulated by the Environment Agency (EA) in England, by the Scottish Environment Protection Agency (SEPA) in Scotland and by Natural Resources Wales(NRW) in Wales, by means of permits or authorisations granted under EPR10 (in England and Wales) or authorisations granted under RSA93 (in Scotland).	Clarity of terminology	ALARP	4	
523	See comments on Target 9 in Annex below	n/a	ALARP	1	
524	Unauthorised access Unauthorised access to, or interference with structures systems and components or their reference data, including Building Information Modelling (BIM) data, should be prevented.	There is a government-inspired move (endorsed by XXXXXX and LICENSEE NAME) to provide extensive Information Models of new facilities including virtual 3D walk through models.	CEEH	2	

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525	Additional point: j) for new structures consideration should be given to the provision of cast-in corrosion monitoring, strain monitoring and similar devices. Coupons and/or dummy components exposed to similar environments (e.g. buried or exposed to marine salt laden air) may also be considered to model and predict whole life performance of Civil Engineering SSCs.	There is a growing body of practice both within the nuclear industry and bridge construction to provide condition monitoring of Civil Engineering structures as noted in CIRIA Report C661. This is also partially covered under the new paragraphs under ECE.20 and ECE.24. For monitoring of NEW structures it may be wise to advise or prescribe (reinforcement) corrosion monitoring technologies, wireless strain monitoring and/or the use of coupons/dummy components constructed simultaneously with the main works and exposed to the same environments (e.g. buried or exposed to the marine atmosphere) as required in XXXXXXXX specifications.	CEEH	2	
526	For structures that are not of major safety significance, the list of factors in para 282 remains relevant, though the stringency of their application should reflect the safety classification of the item. Catastrophic failure of structures that are not of safety significance shall be ALARP	OPEX following the loss of a light sheeting roof from an ancillary building at XXXXXXXX which caused (or had the potential to cause) damage to overhead power lines and LOOP.	CEEH	4	
527	Proof pressure tests Pressure vessels constructed using pre-stressing or other techniques, and containment structures should be subjected to a proof pressure test, which may be repeated during the life of the facility.	The inner containments of both the ABWR and AP1000 are not pre-stressed. The current wording implies that only pre-stressed concrete pressure vessels need proof testing.	CEEH	4	
528	Control of nuclear matter The term nuclear matter should be interpreted as described in the glossary. In addition to fuel present in operating reactors, it includes matter being reprocessed in fuel cycle facilities, fuel stored in ponds and a wide variety of radioactive material generated as a consequence of nuclear fission. The principles in this sub-section apply to all types of nuclear matter unless the wording makes it clear that limited application is intended, or unless the total amount of nuclear matter concerned is sufficiently small or is in such a chemical or physical form as to make application of the principles disproportionate. However, when nuclear matter has been designated as radioactive waste, the principles in the section on Radioactive waste management (paragraph 646 ff.) also apply. Many of the more specific principles in other sub-sections are also relevant, e.g. Containment and ventilation (paragraph 418 ff.).	The sentence suggested for removal appears to restrict the definition of nuclear matter beyond that in the glossary. For example, it is not clear that it would include materials in enrichment and fuel manufacture facilities.	CE&IH	2	
529	f) road, rail and sea transport provisions.	Some material is transported by sea, so suggest it is appropriate to include this.	CE&IH	1	
530	Plant components such as vessels, pipework, ducting and secondary containment structures should be designed to avoid unintended accumulation of nuclear matter, and to facilitate decontamination both internally and externally.	Whilst obvious that post event it is desirable to have minimal internal inventory which may be lost from damaged process plant, should that equipment be required to be removed to facilitate recovery it is desirable and good engineering practise to ensure the external surfaces can be decontaminated / are designed with minimal contamination traps in mind.	CE&IH	3	The proposed change is not viewed as necessary, because the SAPs are principles, and cannot list everything single case or eventuality.
531	Temporary re-routing of nuclear matter (e.g. for sampling purposes) should only be undertaken where necessary and suitably justified. Once the need for temporary re-routing has passed, the facility should be restored promptly to its normal configuration and any nuclear matter that was removed transferred to its designated location.	With reference to samples as the paragraph explicitly states samples can often be consumed or their physical or chemical nature altered such that it is not practicable or compatible to 'return' the sample to its designated location. Sampling facilities material stores may thus become the designated location that the material is transferred to.	CE&IH	4	
532	a) Sources of energy within the process should be minimised. For instance use of reactive chemicals should be minimised; inventories should be the minimum consistent with safe and reliable operation; and processes that function at or below ambient temperatures and pressures, or maximise the time spent under these conditions, should be preferred; and plant should be designed to fail to an engineered de-energised state upon detection of faults.	Energy may also be present in a process due to the equipment being used – e.g. hydraulic / pneumatic pressure energy.	CE&IH	3	The principle is that 'sources of energy should be minimised, and a few examples are provided. The list is not meant to be exhaustive, and cannot possibly list all eventualities.
533	b) Processes should be tolerant of the widest range of feedstock (in terms of both physical, and chemical and radiochemical properties) and throughputs justified by the safety case. This should include consideration of bounding levels of decay heat from radioactive decay and the capabilities of the cooling systems, including under fault conditions;	New Technical Area Chemical Engineering etc Part 3 makes an explicit definition in para 1 therein that "chemistry" should be interpreted to mean chemical or radiochemical parameters or effects. An analogous clarity be added in Chemical Engineering etc Part 2 if the same interpretation is to be undertaken therein.	CE&IH	2	
534	c) Design documents such as flow sheets should be based on normal expected operating conditions but also include the most restrictive conditions justified in the safety case, including during fault conditions and foreseen subsequent faults;	The original wording can lead to a scenario where a plant is over designed and difficult to operate normally. Flowsheets etc. are often part of the plant operating manual and should represent normal operation as well as restrictive conditions and make clear the distinction. Over design for all possibilities no matter how remote doesn't correlate with "decommissioning mindset". Initial faults may not cause a release of materials but foreseen subsequent faults may be need to taken into account within the design.	CE&IH	2	
535	e) The design should tolerate the effects of process degradation or malfunction e.g. side reactions, accumulation of by-products, degradation products, and accumulation of solids; and	A good process design will prevent by-products, degradation products etc – it should not 'allow' them. Where these cannot be designed out then the process should be design to tolerate the effects. (EPE.2 section d in the proposed SAP already reflects this.)	CE&IH	2	
536	Process behaviours that could be pertinent to severe accident analysis include cliff edge effects such as column flooding, complete loss of process [or site] utilities and support services or transition to multi phase flow. Where the transient is fast, then adiabatic or similar limiting assumptions should be made. Otherwise, the analysis should adopt a best estimate approach.	Pertinent in the UK context for site resilience post-Fukushima.	CE&IH	2	
537	c) time dependent conditions or limits based on transient modelling, relevant operational experience or commissioning e.g. for the degradation of feedstock, reagents or process materials, the build up of undesirable by products or energetic reactions;	During recovery from shutdown wider issues in a major disruption such as Fukushima may mean considerable delay before restarting a process (even to clean out the plant). Many feeds and reagents may degrade in this time and not be fit to perform as per the design intent, but the supply chain may not be able to supply them at short notice to allow recovery operations to re-start.	CE&IH	2	
538	The safety assessment principles described in this sub-section are concerned with how chemistry can affect nuclear safety, operational procedures, radiological protection or radioactive waste management. In the principles that follow, the term "chemistry" should be interpreted to mean chemical or radiochemical parameters or effects.	Operational aspects are referred to in paragraphs 4 and 9, and inclusion in paragraph 1 would ensure completeness at the start of the section.	CE&IH	4	
539	c) the products from reactions and how these evolve, including mass transfer and advection processes, heat generation and phase changes, transport and accumulation; and	Mass transfer and advection are important processes in fission product behaviour in reactor faults.	CE&IH	4	
540	The safety categorisation scheme employed should be linked explicitly with the licensee's design basis safety analysis (see para FA.9+1). Various schemes are in use in the UK; these principles have been written assuming categorisation on the following basis:	Safety functions also address avoidance of failures during normal operation and beyond design basis (design extension) / severe accident situations	CE&I	3	Design basis analysis is the correct starting point for all safety functional categorisation. The broader safety analysis is described in the following paragraphs by introducing concepts such as likelihood which will be derived from PSA.
541	b) the consequences of failure of the item to perform its safety function(s);	For improved consistency / clarity of wording.	CE&I	1	
542	c) Class 3 – any other structure, system or component that performs or contributes to a safety function.	To indicate that Class 3 is not intended for SSC that only perform non-safety functions.	CE&I	1	
543	Power reactors should be provided with safety systems to shut them down safely in normal operating and fault conditions and then maintain it them in a shutdown condition.	Grammar	CE&I	2	
544	Adequate provisions should be made to enable the monitoring of the plant facility state in relation to safety and to enable the taking of any necessary safety actions during normal operational, fault and accident conditions.	For consistency with other similar use of 'facility'. For consistency with use in EQU. 1.	CE&I	2	
545	Any mechanism that might give rise to the fault condition being misdiagnosed or remaining undetected should be analysed and appropriate corrective or compensating measures adopted.	Corrective measures may not always be possible	CE&I	3	Corrective measures include compensating or mitigating actions.

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546	Diversity in the detection of fault Sequences Conditions	For consistency with changes made in other parts	CE&I	4	
547	Time for without human intervention	To more closely reflect the revised wording that relates to the autonomy of the safety system	CE&I	3	Time for human intervention' is correct and used widely
548	Connections between any part of a safety system and a system external to the plant facility (other than to safety system support and monitoring features) should be avoided.	For consistency with changes made in other parts	CE&I	2	
549	Where external connections to electrical, electronic or computer-based safety systems cannot be avoided, they should be restricted in function to unidirectional links, and should incorporate adequate isolation features so that faults and intentional spurious actions cannot propagate, and then jeopardise the functions of the safety system.	Cyber Security has become a larger issue since 2006, especially with the Stuxnet virus. IEC 62645 will align Cyber Security to IEC 61513, and although this isn't yet issued, the wording in this paragraph could suggest the topic is at least considered.	CE&I	3	Intentional spurious actions are excluded from this type of analysis.
550	For a complex Class 1 safety system (e.g. one which is computer-based), spurious actuation brought about by common cause failures of system components (e.g. separate architecture) or intentional sabotage should be analysed as a design basis fault (see paras 154 and 512ff). The fault analysis should assume that the common cause also disables all other safety functions provided by the system, but may assume such disabling does not further exacerbate the fault.	See comment on para 354.	CE&I	3	Sabotage is not included in the SAPs but is covered elsewhere in ONR's assessment.
551	Where a safety system comprises several redundant or diverse sub systems, only one sub system should be permitted to be out of service or vetoed at any one time.	Clarification request: If a design includes two diverse 'systems' that act in response to a fault, should these be considered as two safety systems or two diverse sub-systems of a safety system for the purposes of this paragraph?	CE&I	3	This is paragraph is about a single safety system employing either identical redundant trains or trains where there is an element of diversity. It is not about two fully diverse systems.
552	The rigour of the standards and practices applied should be commensurate with the level of reliability required claimed. The standards and practices should demonstrate 'production excellence' and, through the application of 'confidence-building' measures, provide proportionate confidence in the final design.	For consistency with changes made in other parts	CE&I	3	We are content with 'required' because the claims have to become safety requirements for the system and this is primarily about the system.
553	Standards for computer based equipment in safety related systems.	To reflect the revised emphasis within the text	CE&I	2	
554	An analysis should be provided that identifies the foreseeable ways in which control system faults, including multiple spurious faults or failures on demand, could generate a demand on a safety systems (see also ESS.4, ESS.10 and ESS.11).	Grammar	CE&I	2	
555	Capacity, duration, availability, resilience and reliability.	To reflect the revised content within the text	CE&I	2	
556	The safety case should analyse such losses of service events and demonstrate the continuing safety of the facility.	To link with use of 'event' in items c) & d) that follow	CE&I	2	
557	Proportionate analysis should be carried out of all tasks important to safety and used to justify the effective delivery of the safety functions to which they contribute.	Use of the word 'all' implies that analysis of all tasks is expected. In a proportionate approach, it may not be necessary to analyse all tasks (e.g. simple tasks that are not performed under challenging conditions or timescales may not require HF analysis.)	HF	3	Not required, proportionality is a fundamental principle which guides ONR's assessment of Licensee's submission
558	Suggest changing 'both for normal operations and in accident conditions...' to 'for normal, fault and accident conditions' Task analysis completed under EHF.5 should provide the basis for establishing required staffing levels, both for normal operations and in accident conditions for normal, fault and accident conditions. Further guidance on staffing levels in accident conditions is provided in para 643.	Inclusion of fault conditions is consistent with the wording used in the other EHF SAPs.	HF	2	
559	Suggest using 'unavailability of equipment or systems important to safety'... 'rather than 'non-availability of...' The human reliability analysis should include: pre-fault human actions during maintenance, calibration or testing activities where error could result in the non-availability unavailability of equipment or systems important to safety; actions that contribute to initiating events; post-fault human actions; and long-term recovery actions in severe accidents.	Change proposed for consistency with commonly used reliability/availability terminology.	HF	4	
560	d) recognising and resolving conflict between safety and other goals (eg production commercial pressures);	Although commercial pressure and production pressure are often used interchangeably, commercial pressure may more meaningful/appropriate to non-power reactor licensees.	LMfS	2	
561	An integrated management system should be adopted in order to minimise the potential for goal conflicts and conflicting responsibilities and relationships conflicts relating to goals and responsibilities.	Minor change proposed to simplify and clarify meaning of sentence.	LMfS	2	
562	Suggest introducing a full stop after all activities and starting new sentence with 'This includes those undertaken by contractors...' Being a capable organisation requires the retention and use of knowledge so that safety requirements are understood and risks are controlled throughout all activities. This includes including those undertaken by contractors at all levels within the supply chain. An 'intelligent customer' capability should therefore be maintained to ensure that the use of contractors in any part of the business does not adversely affect its ability to manage safety.	Minor change proposed to improve readability (current paragraph is quite long).	LMfS	4	
563	The organisation should sustain, or in the case of new facilities develop, a design authority capability.	The word sustain suggests this only refers to an existing organisation/DA.	LMfS	4	
564	e) broader factors and requirements such as environmental, security, production quality, policy, external, legal, economic or commercial aspects.	It is not clear why quality has been changed to 'production quality' as this has a narrower meaning. Decisions should consider impacts on quality in a broader sense on aspects other than production such as documentation (e.g. safety cases, procedures) and training.	LMfS	2	
565	Reliance solely on quantitative indicators should be avoided since the picture they create can be over-simplistic and misleading.	Quantitative indicators can also give a misleading picture, as well as over-simplistic (e.g. Davis Besse).	LMfS	2	
566	d) testing and validation of safety procedures under normal operational and fault conditions normal, fault and accident conditions;	Terminology is not consistent with para 65 item e) which uses normal, fault and accident situations	LMfS	4	
567	Commissioning should be more than a demonstration that the plant will work. It should also include safety tests as a key step in assuring safety. This is the intent of Licence Condition 21 (see the ONR website). The tests should be designed to demonstrate that the plant and associated safety systems provide the intended degree of protection against faults, including human errors. Equipment designed to mitigate severe accident scenarios should be tested as far as practicable during commissioning testing.	Whilst it is unlikely that the conditions can be replicated to fully test the functionality of equipment designed to mitigate against severe accident scenarios, such equipment should be tested to the extent reasonably practicable.	ME	2	
568	Inactive testing should also be used to confirm the operational features of the facility and be used to develop the operating instructions, which should then be validated during active commissioning. Before active commissioning can begin, the necessary arrangements to satisfy Principles MS.2 and SC.6, especially in relation to operating rules, together with accident management and emergency preparedness, should be in place. Validation of operating instructions for systems designed to mitigate severe accident scenarios should be carried out as far as practicable during inactive and active commissioning testing.	Whilst it is unlikely that the conditions can be replicated to fully test operating instructions for systems designed to mitigate against severe accident scenarios, they should be tested to the extent reasonably practicable.	ME	4	
569	Provision should be made for testing, maintaining, monitoring and inspecting structures, systems and components (including portable equipment) in service or at intervals throughout their life, commensurate with the reliability required of each item. This provision shall also meet legislation.	There will also be legislative requirements for EIMT placed on many components or systems.	ME	3	Legislation must always be complied with as appropriate, so the suggested amendment is unnecessary and potentially confusing.
570	In-service functional testing of structures, systems and components should prove the complete system and the safety function of each item. For systems designed to mitigate severe accidents, functional testing should be carried out as far as practicable.	See comment on para 183	ME	4	
571	Containment and associated systems should be designed to minimise radioactive releases to the environment in normal operation, fault and accident conditions. Releases from systems designed to mitigate severe accident scenarios should also be minimised.'	n/a	ME	4	

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572	THE REGULATORY ASSESSMENT OF SAFETY CASES ONR's assessment process consists of examining submissions from duty holders to enable a judgement to be made that risks are ALARP, our Numerical Targets have been met and that appropriate attention has been paid to aspects important to safety and to radioactive waste management and decommissioning. ONR's assessment covers both normal operation and fault conditions, including internal and external hazards and human errors, all of which have the potential to cause the exposure of workers or the public to significant unplanned doses of ionising radiation or releases of radioactivity. It also covers analysis of accidents. A submission assessed by ONR might not cover a complete facility, for example, it may relate to a plant modification to part of a facility or to equipment within a facility.	Referring to targets using "our" gives the wrong emphasis to the ownership of the targets. For consistency with the proposed update to paragraph 92 to now explicitly include accidents as well as faults.	SC	3	Only change proposed by commentator is that in red font. This is already covered in the existing text by fault conditions.
573	ONR's assessment involves the examination of documentation and arrangements that demonstrate the safety of a facility and its processes, operations and organisation. In addition, it also involves inspection of the facility to verify the accuracy of the safety case as a description of the facility, its assumptions, safety provisions and requirements. ONR also undertakes compliance inspections to determine whether the procedures needed to implement these provisions and requirements have been followed. These examinations and inspections are important in establishing confidence in the reliability of the information and conclusions presented in the safety case.	Minor change, for consistency with introduction of 'ONR' halfway through the same paragraph.	SC	2	
574	ONR uses a sampling approach in deploying its resources and not every safety case is assessed fully in every respect. The extent of our sample and our subsequent permissioning decision taken in light of the safety case will take into account: a) the level of confidence ONR has in the dutyholder's process for producing safety cases; b) the level of confidence ONR has in the dutyholder's approach to leadership and management for safety; and c) the risks and hazards associated with the activities covered by the safety case and d) recent events or operating experience at the facility, or similar facilities.	For consistency with paragraph 100.	SC	2	
575	A safety case is a logical and hierarchical set of documents that describes the radiological and related hazards in terms of the facility, site and the modes of operation, including potential faults and accidents, and those reasonably practicable measures that need to be implemented to prevent or minimise harm being incurred. It takes account of experience from the past, is written in the present, and sets expectations and guidance for the processes that should operate in the future if the hazards are to be controlled successfully.	By the definition in the glossary an accident causes some 'harm', hence the need for the word minimise in that case.	SC	2	
576	HSE, EA, SEPA and NRW have a number of areas of mutual interest, for example: a) siting of any new facility for the disposal of radioactive waste; b) construction of new facilities on nuclear licensed sites, or modification of existing facilities, which have implications for discharges to the environment or for the disposal of solid radioactive waste; c) authorisation of radioactive discharges; d) decommissioning and de-licensing of existing facilities, including Quinquennial Reviews; e) Periodic Safety Reviews carried out by the licensee; and f) Periodic Authorisation Reviews carried out by the licensee for EA/SEPA/NRW; g) radioactive waste management (both short and long term); h) inspections, enforcement and incident investigation on matters which may affect the other regulator.	NRW (in 2 places) is Natural Resources Wales. This also affects para 19.	SC	2	
577	Lifetime margins Adequate margins should exist throughout the life of a facility to allow for the effects of materials ageing and degradation processes on structures, systems and components.	Removal of superfluous words ("...that are important to safety.") as per Project Board advice. It is not clear why these words are regarded as superfluous here and not elsewhere. For example they are retained in EAD1, EAD5, 258, EMC5, 320. Suggest SAPs adopt a consistent approach or better explain any exceptions.	SI	1	
578	Discharge routes Pressure discharge routes should be provided with suitable means to ensure that any release of radioactivity or toxic material from the facility to the environment is minimised. The potential to create an explosive atmosphere from the discharge should also be considered. All consequences of the discharge should be considered, including the potential to create an explosive atmosphere.	Minor editorial suggestion.	SI	3	The additional text proposed is unnecessary
579	Note: These principles are supplemented by the other principles for metal components that should also be met in these situations (see Principles ECS.3 (paragraph 156 f.) and EMC.4 to EMC.34).	"Ought" does not seem an appropriate term and may be lost in translation with a foreign audience. "Shall" and "should" are terms that are more familiar to an international audience.	SI	1	
580	Safety case and assessment The safety case should be especially robust and the corresponding assessment suitably demanding, in order that a properly-informed engineering judgement can be made that: a) the metal component or structure is as defect free as possible; and b) the metal component or structure is tolerant of defects.	You need the word and if you are going to take away the language of having two distinct requirements. See EGR.1 where you have used OR.	SI	1	The examination need not be undertaken by an independent body. But we would expect independent oversight.
581	In the first instance The safety case development process should identify situations that fall under Principle EMC.1. For non-redundant items (e.g. a pressure boundary), the emphasis will be on avoiding defects; for redundant items (e.g. some support structures) the emphasis might lie more in the redundancy argument than in the avoidance of defects.	Use of the language "in the first instance" could be misinterpreted as referring only to EMC.1 a).	SI	1	
582	The flow limiting devices should be as close to the main circuit as practicable. Where appropriate, consistent with the importance of the safety function provided, there should be redundancy and diversity of such devices. Closure times of valves and the flow conditions under which they can close should be consistent with the protection they need to provide. Dynamic loadings due to valve closure should be considered.	Clarification.	SI	1	
583	As a rule of thumb, generally accepted in the UK for many years, is that it is difficult to substantiate a claim of much less than about 1 x 10 ⁻⁷ per vessel year for the gross failure. Substantiation of a claim of much less than about 1 x 10 ⁻⁷ per vessel year for gross failure is generally accepted to be difficult.	Strengthening of wording.	SI	1	
584	e) use of proven materials, supported by confirmatory testing to demonstrate that the parent materials and welds have the appropriate material properties, especially strength and the necessary resistance to fracture;	Please retain the original numbering of a) – o) for consistency. These are well known in their current order to the international audience and incrementing the numbering from f) onwards has the potential to cause much confusion. Suggest to merge e) and the proposed new f) into a bigger e). Use the language "supported by" to link the two clauses – consistent with the language used in j) - old i).	SI	1	
585	The strength and extent of the evidence provided here should be commensurate with its importance to the overall safety case.	Use of the word "here" seems inappropriate.	SI	1	

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586	Second-party or Third-party inspection Manufacture and installation should be subject to appropriate second-party or third-party independent inspection to confirm that processes and procedures are being followed. The use of a second-party or third-party to perform inspection should be commensurate with the safety significance of the item.	Is it possible to include the possibility for second-parties to perform inspection of manufacture and installation? Could add another paragraph below, as the paragraphs will be renumbered when EMC27 – 30 are moved. Use of second-parties to perform manufacturing inspections represents a development of international good practice since 2006 (XXXXXXX User Inspectorate and XXXXX).	SI	3	The use of second party inspection is a dilution of requirements, not a development in international good practice. Whilst it may be acceptable in some circumstances, this will be on a case by case basis and limited. Some element of third party inspection will always be necessary.
587	As EMC.17 has been deleted, the placement of EMC.18 and the logic of the order of the remaining SAPs needs to be considered. EMC.18 was linked to EMC.17 and so now should go immediately after the new EMC.27, i.e., so that the examination that is performed is subject to third (or second) party oversight to ensure that processes and procedures are being followed.	n/a	SI	1	
588	These should now go after EMC.30 as the requirements for non conformities and records apply equally to EMC.18 and EMC.27-30. Suggest putting a note to explain so.	The order could possibly then be: EMC.27, EMC.18, EMC.28, EMC.29, EMC.30, EMC19, EMC.20, and associated paragraphs. Then lead into EMC.21 Operation.	SI	1	
589	Manufacturing, pre- and in-service examination and testing EMC.27 Examination Provision should be made for appropriately independent examination that is capable of demonstrating with suitable reliability that the component or structure has been manufactured to an appropriate standard and will be fit for purpose at all times during future operations.	EMC.18 requires for inspections to be performed independently but EMC.27 does not? Suggest addressing this inconsistency.	SI	3	The examination need not be undertaken by an independent body. But we would expect independent oversight.
590	For components or structures important for safety, and where it is not possible to directly qualify them that cannot be qualified directly under the most onerous conditions, additional analysis should be carried out which utilises available test results and justifies the item's performance and reliability. Reference data should be taken from commissioning, model, rig or experimental tests for use in such analyses. Reference data from commissioning, model, rig or experimental tests should be established to justify extrapolations from in-service test results.	Although the term CMF only appears twice in the SAPs, it is a term used widely in current UK safety cases for nuclear power stations and hence it would seem helpful to retain it in the glossary.	SI	1	
591	Confinement Prevention or control of releases of radioactive material to the environment in operation or in accidents.	The term "confinement" is widely used in the SAPs and it is useful to draw out the distinction between it and "containment".	Glossary	1	
592	Containment Methods or physical structures designed to prevent the dispersion of radioactive material (based on IAEA Safety Glossary definition). Although related to confinement, containment is normally used to refer to methods or structures that perform a confinement function, namely preventing or controlling the release of radioactive substances and their dispersion in the environment.	See comments above on "confinement".	Glossary	1	
593	Diversity The presence of two or more systems or components to perform an identified function, where the systems or components have different attributes so as to reduce the possibility of common cause failure, including common mode failure (IAEA Safety Glossary).	If 'common mode failure' is retained in this definition, then a definition of what CMF is should be retained in this Glossary. Even a single use of the term merits explanation if it is not obvious what it means.	Glossary	1	
594	Employees working with ionising radiation The term 'employees' is used in IRR. Working with ionising radiation has the same interpretation as in IRR, namely work involving the production, processing, handling, use, holding, storage, transport or disposal of radioactive substances (IRR). For the purposes of assessment, employees can be regarded as the same as workers, and includes sub-contractors working temporarily with ionising radiation on the facility.	Use of "employees" rather than "workers" could otherwise exclude subcontractors from the definition.	Glossary	2	
595	Fault Any unplanned departure from the specified mode of operation of a structure, system or component due to a malfunction or defect within the structure system or component or due to external influences or human error, and which does not meet the criteria in the definition of an accident.	Accidents are 'unplanned departures', but are defined elsewhere in the Glossary as being 'beyond fault conditions'; i.e. distinct from faults. So a fault cannot be any unplanned departure.	Glossary	1	
596	Safety-related system An item important to safety that is not part of a safety system (IAEA Safety Glossary). Safety-related systems are therefore systems in place to perform an operational function but which also provide a safety benefit. This is distinct from safety systems, which are systems which do not perform any operational functions and are included solely because of the safety functions they perform.	Comment on impact of proposed change: The definition proposed appears to be sensible. However it would have implications for the understanding of existing safety cases and existing regulatory review documents. For example the ONR xxxxxxxx report for the xxxxxxxx, on the subject of xxxxxxxxxxxx, says xxxxxxxxxxxx that the MHSI is a safety related system. This would not be consistent with this proposed update to the definition. This observation is not necessarily a reason to reject the proposed change – it is just a comment that adoption of the change should be clearly communicated by ONR to all potential SAPs users, to ensure consistent use of terminology in the future.	Glossary	4	
597	Safety System A system that acts in response to a fault to protect against a radiological consequence. See also safety-related system.	The text is not consistent in whether safety systems "protect against" or can also "mitigate against" radiological consequences. For example, para 169 says: ... a safety system (which acts in response to a plant fault, to protect against or mitigate a radiological consequence) . . .	Glossary	2	
598	Consider removing any unnecessary references to 1992 SAPs to simplify the text. Most practitioners should be familiar with the 2006 SAPs by now	Document would be easier to read.	Annex	3	We want to keep the an auditable trail and the big change in SAPs was 1992 to 2006, so we think its worth retaining.
599	This paragraph could be updated with dose information from 2004 to present.	This would provide more up to date contextual information for the reader.	Annex	4	
600	. . . Using the currently accepted dose/risk risk/dose value of 4% per Sv for a working population (ICRP-103), ...	In discussing the risk/dose value some reference could also be made to the Linear No Threshold model and the uncertainty and inherent pessimism in applying this value to very low doses.	Annex	2	
601	This dose equates to a fatality risk of 5 x 10 ⁻⁵ /yr (based on 5% per Sv for members of the general population (ICRP-103).)	n/a	Annex	4	
602	The BSO (0.02 mSv/yr) is also unchanged from the 1992 SAPs. It equates to the 1 x 10 ⁻⁶ /yr level proposed in R2P2 as the broadly acceptable risk to an individual of dying from a particular cause. Though this is a relatively low dose rate, evidence to the 1990 Hinkley Point 'C' Public Inquiry ⁷ suggests it corresponds to an ALARP level for new facilities on 'green-field' sites. This BSO is therefore appropriate for new facilities designed to modern standards, although a less onerous ALARP level may be more realistic on multi-facility sites with older facilities.	It would be helpful to add a note of clarification that the Hinkley Point C referred to is not the current Hinkley Point C development.	Annex	4	
603	Where there are multiple sites in close proximity a single location, it is important to ensure that the overall dose to persons near these sites is below the relevant IRR limits. For this reason, a suitable dose constraint should be applied to each site. In cases where there is more than one employer site, and hence licensee, they should co-operate to derive suitable constraints for their respective sites (see Regulation 8(3) and 15 of IRR). Public Health England (which includes the former National Radiological Protection Board) has recommended that the "constraint on optimisation for a single new source" should not exceed 0.3 mSv/yr (Ref). ONR considers that a single source should be interpreted as a site under a single duty holder's licensee's control, in that it is an entity for which radiological protection can be optimised as a whole.	Attempt at consistency with terminology used elsewhere in SAPs.	Annex	3	we don't want to change from employer to licensee here.

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604	Suggest Deleting Target 9 altogether OR possibly to keep the link with R2P2, change it to 100 immediate fatalities only.	Target 9 does not seem to be consistent with the latest advice from ICRP or UNSCEAR (see below). ICRP, 2007. 2007 Recommendations of the International Commission on Radiological Protection (Users Edition). ICRP Publication 103 (Users Edition). Ann. ICRP 37 (2-4). The collective effective dose quantity is an instrument for optimisation, for comparing radiological technologies and protection procedures, predominantly in the context of occupational exposure. Collective effective dose is not intended as a tool for epidemiological risk assessment, and it is inappropriate to use it in risk projections. The aggregation of very low individual doses over extended time periods is inappropriate, and in particular, the calculation of the number of cancer deaths based on collective effective doses from trivial individual doses should be avoided. [emphasis added] United Nations Report of the United Nations Scientific Committee on the Effects of Atomic Radiation, Fifty-ninth session (21-25 May 2012), General Assembly Official Records, Sixty-seventh session, Supplement No. 46 (f) In general, increases in the incidence of health effects in populations cannot be attributed reliably to chronic exposure to radiation at levels that are typical of the global average background levels of radiation. This is because of the uncertainties associated with the assessment of risks at low doses, the current absence of radiation-specific biomarkers for health effects and the insufficient statistical power of epidemiological studies. Therefore, the Scientific Committee does not recommend multiplying very low doses by large numbers of individuals to estimate numbers of radiation-induced health effects within a population exposed to incremental doses at levels equivalent to or lower than natural background levels; [emphasis added] The text seems to acknowledge this target is problematic. The series of 9 sets of targets could benefit from some simplification. Does Target 9 really add any value? Does it capture anything not captured by Target 8 and the other Targets? Also reference to this target could contribute to fear of nuclear facilities in the public.	Annex	4	We do think target 9 adds some value over target 8 for larger releases. If we deleted it we would probably need to extend target 8 to lower frequencies.
605	ALARP taken under the design of a plant safety case, dictates engineered control and safety processes that do not on their own align with later operational ALARP acceptance. Two varying standards of ALARP therefore exist, the second formed under the definition of 'good practice' which is presumably what is referenced under this para. Assistance in the emphasis between the operational ALARP and its place within a safety case is requested.	n/a	ALARP	1	
606	The consideration of balancing all safety identified risks under the ALARP setting requires more supportive guidance. In view of the BSO target of 1mSv for employees working with ionising radiation (see Target 1 under ALARP part 2) the resulting potential dose must be expected to exceed 1mSv prior to the consideration of conventional type hazards for the balancing of risks to be beneficial. Are there examples of comparatives hazards equivalent to 1mSv dose and above?	n/a	ALARP	1	
607	Complimentary nature of security to ALARP is not apparent in practice with many examples that lead to additional exposures driven by security requirements. Delivery of a balanced approach is essential under plant design analysis and post design for existing plants. Guidance of the balance between these two safety arguments is sought.	n/a	ALARP	1	
608	BSO 0.02mSv for any person off site does not align with the explanation under the clearance & exemption code of practice which defines public exposure in the order of 10uSv as acceptable up to 30uSv i.e. 0.03mSv. It would be helpful to ensure values across the guidance, codes of practice and other legislation support a single target. It would be beneficial if under the statement 'immobile' regarding waste for storage, there is some direction or reference to the definition of immobile	n/a	ALARP	1	
609	It would be beneficial if under the statement 'immobile' regarding waste for storage, there is some direction or reference to the definition of immobile	n/a	RWDM	4	
610	It might be worth reminding the reader that the term "accumulation" is a legal one and is distinct from "disposal" so it does not cause confusion when applied to radioactive waste disposal facilities.	Ensure certainty of application	RWDM	4	
611	"Decisions to mix waste streams should be properly justified and demonstrate provide a net benefit..."	We are concerned that the term "demonstrate" might imply a new test needs to be carried out by licensees. There should be a clear net benefit, but it should be one consideration within assessments carried out by licensees to ensure doses to employees and others are kept as low as reasonably practicable and that the best practicable means or best available techniques are used to minimise the volume of radioactive waste disposed of by transfer to other premises.	RWDM	2	
612	Sub-paragraph (c) "gas generation (e.g. deriving from resulting in pressurisation, flammable mixtures, deformation)"	Gas generation will cause these consequences, not derive from them.	RWDM	2	
613	"The design of waste packages should take account of aim to ensure future management steps can be carried out, including compatibility with handling, retrieval, transport, storage and disposal."	The phrase "should take account of" seems a little weak – the fundamental purpose of a waste package is that it should be capable of being subjected to many, if not all, of the future management steps.	RWDM	2	
614	We are concerned that the SAPs should give much greater prominence to the importance of the completion of records at the time of the waste processing/packaging.	We are concerned that the SAPs should give much greater prominence to the importance of the completion of records at the time of the waste processing/packaging.	RWDM	4	
615	The notion of "a precautionary approach" being used in relation to certain aspects of radioactive waste management and decommissioning. We note ONR's decision to remove the expression "the precautionary principle" from the glossary and change the phrasing to "a precautionary approach", but consider that an explanation as to what this is likely to mean in practice is needed in each context in which it is used.	No specific suggestion	RWDM	4	
616	"At the time of writing, the Government's policy on managing populations around nuclear sites is delivered by means of administrative arrangements involving ONR as a non-statutory consultee" is confusing in that the Government policy referred to in the previous new paragraph relates to the siting of nuclear power plant, not nuclear sites in general. ONR needs to clarify what Government policy (if any) it would use to inform the advice it provides to planning authorities in relation to development involving nuclear facilities that are not nuclear power plant. Would this policy be suitable for the siting of a geological disposal facility?	No specific suggestion	Siting	4	
617	"... even if the BSLs are met, the risks may not be ALARP and, in such cases, the dutyholder must reduce the risks still further this should then drive risks lower."	More precise language	ALARP	2	
618	"Deciding when the level of risk is ALARP needs to be justified by the dutyholder on a case by case basis, applying the legal requirement of gross disproportion by demonstrating that no further reduction in risk could be achieved without a sacrifice (in terms of time, trouble or money) which would be grossly disproportionate to that reduction."	More precise language	ALARP	4	

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619	"The BSOs form benchmarks that reflect modern safety standards and expectations. The BSOs also recognise that there is a level beyond which further consideration of the safety case would not be a reasonable use of ONR resources, compared with the benefit of applying these resources to other tasks. Inspectors therefore need not seek further improvements reductions in risk from the dutyholder but can confine themselves to assessing the validity of the arguments that the dutyholder has presented. The dutyholder however, is not given the option of stopping at this level. ALARP considerations may be such that the dutyholder is justified in stopping before reaching the BSO, but if it is reasonably practicable to provide a higher standard of safety reduce the risks still further, then the dutyholder must do so by law."	More precise language - with respect to the last suggested change, we would argue that the phrase the "standard of safety" applies to the standard of protection required by the law i.e. 'as low as reasonably practicable', so the (next) higher standard of safety would be 'as low as practicable'. This is clearly not what ONR intend.	ALARP	4	
620	We are pleased to see ONR promoting the consistent use of ALARP and CBA across nuclear risks and more 'conventional' industrial risks.	No change required	ALARP	4	
621	"Where doses will predictions depend on dose rates from normal operations and those arising from build-up of contamination, dose predictions should use the maximum values expected to occur during the life of the facility should be used."	More precise language	ALARP	1	
622	Paragraphs 586 and 587 might benefit from being the other way around (i.e. putting 587 before 586).	Clearer presentation	ALARP	1	
623	At several points throughout the SAPs, ONR has given general effect to standards etc. that have a specific application (e.g. Civil Engineering and External Hazards has adopted principles from IAEA SSR-2/1, which is specific to nuclear power plant). Is ONR satisfied that by adopting these specific standards generally, that this will not cause problems for the operators of facilities for which the specific standards were not originally intended? A suitable qualification or qualifications should be included if necessary.	No specific suggestion	Project	1	
624	Provision should be made for examination that is capable of demonstrating with suitable reliability that the component or structure has been manufactured to an appropriate standard and will be fit for purpose at all times during the lifetime of the facility.	The use of the word "operations" implies that the component(s) only have to be fit for purpose while the plant is actually in use (not after closure/before decommissioning).	SI	1	
625	In many instances it will be possible for dutyholders to demonstrate that the magnitude of the radiological hazard will result in doses that will be so low, (e.g. in relation to legal limits), that detailed consideration of off-site effects and / or worker risks is unnecessary.	Suggest addition of brackets to aid clarity.	ALARP	2	
626	A PSR includes a comprehensive assessment of the facility's condition, operating experience, safety case, and management arrangements and culture, looking forward at least the next 10 years and (where applicable) normally to the end of life.	Large civil structures (such as cooling ponds or submarine construction facilities) could be in place for 50+ years, so a PSR to cover this timescale could be impracticable.	ALARP	4	
627	Change from "autarky" to maintain plain english within document.	(e.g. self-sufficient times, see para 642+3).	AA	2	
628	The tests should be divided into stages to complete as much inactive testing as possible and practicable before the introduction of radioactive material.	Mainly for typographical reasons, but practicability should also be considered, as some testing can only take place with active material.	ME	2	
629	"... The design should take account of the physical, physiological and psychological characteristics of the intended audience, which should be properly defined"	It is too broad to require the characteristics of all humans to be taken into account. This is an opportunity to ensure that the concept of the Target Audience Description is recognised.	HF	2	
630	The discussion of 'appropriate locations' should also relate to EHF6 (Workspaces)	Clarify that both EHF 6 and 7 need to be applied to the broad array of locations	HF	4	
631	The same comment applies as indicated in Comment 1 above – the concept of the TAD should be used to limit the scope of this requirement	It is too broad to require the characteristics of all humans to be taken into account. This is an opportunity to ensure that the concept of the Target Audience Description is recognised.	HF	2	Revised to 'Intended user' TAD is not a universally adopted term
632	Reference is made to 'operators'. Unless the term is defined earlier, it may be more appropriate to continue to use 'user' as a more all-embracing term that is less likely to be interpreted selectively	There is a risk that readers may not make the link with staff who hold other roles	HF	3	These paragraphs are focused on front line operators - no perceived benefit
633	a) recognise the competence requirements for the tasks and support the acquisition of competence	Text could be elsewhere in EHF9, but it would be beneficial explicitly to make the link between procedures and competence management arrangements, and to require this link to be explicitly recognised	HF	3	Not necessary, this would be covered in the procedure development phase
634	"Management arrangements should be established to control fatigue (both acute and chronic) arising from shift patterns and hours worked. Particular attention must be paid to how these arrangements would support safety actions identified as per principle EHF3"	The order is reversed. Management arrangements should be available irrespective of the nuclear safety significance of the actions, if possible.	HF	3	Consideration of fatigue is required under general health and safety regulations. This SAP is focused upon nuclear safety and as such the sequencing supports that; inclusion of all would be disproportionate
635	Wording is incorrect due to double use of "non-metallic"	Editorial	SI	2	
636	Wording is incorrect as it makes reference to ENC.7	Editorial	SI	2	
637	The identification of safety functions should be based on an analysis of normal operation and all significant fault sequences arising from possible initiating faults determined by fault analysis (see paragraph 496 ff.), and should include consideration of internal hazards analysis that might have across plant safety function delivery implications (see paragraph 208ff).	Internal hazards analysis does not confirm the identified safety functions or the analysis of normal operation or fault sequences. Instead, it complements these.	AA	4	Changed due other external comments which we believe to be slightly clearer than that proposed.
638	Secondly, it will not always be reasonably practicable to incorporate the robust, conservatively-designed preventative and protective safety measures expected for design basis faults when the initiating event is highly unlikely or difficult to predict. Indeed, it is not the intent to extend the design basis to include design basis type protection measures for such events. However, planning for how such events would be managed, and providing the plant, equipment and procedures that would be needed to control or mitigate their consequences is often reasonable, Plant states which could merit such planning include those arising following: a) High consequence events of very low frequency for which the design safety measures may be ineffective; b) Design basis events where, conservatively, the safety provisions are assumed to fail; c) Malicious acts such as from terrorism or sabotage. Plant states arising from c) may require safety assessment for the reasons set out in paras 35-3ff.	The benefits of planning the response for beyond design basis events where reasonably practicable are welcome. However, there is a need to avoid unnecessary 'design basis creep' within the Safety Case where design basis type safety integrity measures are expected to protect against the types of events listed in a) to c). This would appear to be the intent of Para 500 and the two subsequent new paras proposed, but consider something along the lines of the additional wording indicated. Additionally, consider explaining this paragraph in the context of the requirements of REPIIR and the identification of a 'Reference Accident' under its provisions. These aspects are largely addressed under FA15 to FA25 and therefore need to be made consistent with their intent.	AA	3	We don't agree that this is 'design basis creep'. It doesn't call for design basis type measures to be applied to beyond design basis events. It is simply describing the need to have plans in place for beyond design basis events.
639	The fault analysis principles have been written to apply to apply to criticality safety. Criticality safety is important because of the very high levels of neutron and gamma radiation fields associated with criticality accidents. Unplanned criticalities can result in individuals in the immediate vicinity receiving high radiation doses, which could be fatal. For this reason, an unplanned criticality is a major radiological hazard, and suitable and sufficient measures should be taken to reduce the risks of such events. The principles that need to be applied when identifying these measures are no different to those needed for other applications of fault analysis. Further explanation of the consideration and treatment of the double contingency principle within this context is provided (insert ref and guidance elsewhere)	The principle that criticality is just another radiological fault is agreed, but the treatment of double contingency requirements needs to be expanded upon within this context.	AA	3	ONR acknowledges the importance of double contingency but it is but one of many defence in-depth measures that can be used.
640	The calculated doses should include those arising from the potential release of radioactive material, direct radiation, and criticality incidents. The calculations should, where relevant, take into account local (site) aspects relevant to the dose uptake pathways and its potential effects on people (see ST.3).	It is not only the release pathway under discussion here.	AA	3	The paragraph is not excluding other release pathways.
641	In addition to the inclusion of conservative assumptions, it should be demonstrated that a small change in a DBA parameter will not lead to a disproportionate increase in radiological consequences. The severity and frequency of the initiating event should be amongst the parameters considered. The aim is to be conservative without being overly pessimistic.	To ensure the overall conservatism is not overly pessimistic as this can result in focus and resources away from more important and significant safety areas.	AA	2	

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642	529 Where the off site accident consequences are potentially significant, such as for an operating power reactor, the PSA should be at least to level 2 (i.e. provide information on the frequencies and characteristics of different fission product releases to the environment) and include analysis of all external events (including "beyond design basis" events) that could realistically lead to a significant off-site release (see para 504).	In general the revised SAPs are explicit in stating applicability to reactors, processing facilities etc where it needs to be. There are however some examples where the text needs to remove specificity to reactors or include other types of sites where this is appropriate. The whole revised SAPs should be reviewed and updated to reflect this.	AA	3	We think giving the example of power reactors reflects international practice and doesn't rule out other high hazard facilities.
643	531 The identification of initiating faults should consider the potential for combinations of hazards. At multi facility sites, the analysis should also consider the potential for specific initiating faults giving rise to simultaneous impacts on several facilities.	The principle is agreed but in practice this will need to take a pragmatic view on the likelihood of combinations of significant events to avoid loss of Safety Case focus and visibility. Consider incorporating some words to this effect.	AA	3	We don't believe this important paragraph will lead to a loss of focus, indeed it will throw much needed important focus on multi-facility sites.
644	543, 544, 549	See comments 2 and 3 above (in comment form) against 500, New Para	AA	3	We do not agree that the new paras are introducing 'design basis creep' as they do clearly distinguish the difference between conservative and best estimate methods. Also on this occasion we do not believe it is necessary to specifically introduce "mitigated".
645	94 The safety case should present a balanced view of the level of knowledge and understanding, and of the resultant risks. It should provide a proportionate fit-for-purpose justification that includes appropriate and sufficient conservatism without undue pessimism. This will assist focus where most safety benefit can be gained. Otherwise, it can mislead those who need to use the safety case to take decisions on risks and on managing safety. An unbalanced case will also fail to identify areas where more work might be needed, either to support the current conclusions or to provide a valid basis for any subsequent work if the safety case needs to be revised (eg due to a proposed plant modification or a change to the operating regime or procedures). This principle encompasses optimism and uncertainties and appropriate conservatism in the design of a facility (e.g. material properties, defects, dynamic behaviour) and in the basis of the safety case (e.g. analytical methods and codes, underlying assumptions, data, margins and factors of safety). Areas of uncertainty should be offset by appropriate levels of conservatism without undue pessimism.	The aim is a proportionate fit-for-purpose justification that includes appropriate and sufficient conservatism without undue pessimism. This will assist focus where most safety benefit can be gained	SC	2	
646	474 The double contingency approach involves a demonstration that unintended criticality cannot occur unless at least two unlikely, independent, concurrent changes in the conditions originally specified as essential to criticality safety have occurred.	Some further clarification on the demonstration of the principle would be helpful.	EP, RP and criticality	1	
647	A26. Where there are multiple sites in close proximity, it is important to ensure that the overall dose to persons near these sites is below the relevant IRR limits. For this reason, a suitable dose constraint should be applied to each site. In cases where there is more than one employer, they should co-operate to derive suitable constraints for their respective sites (see Regulation 8(3) and 15 of IRR). Public Health England (which includes the former National Radiological Protection Board) has recommended that the "constraint on optimisation for a single new source" should not exceed 0.3 mSv/yr (Ref). ONR considers that a single source should be interpreted as a site under a single duty holder's control, in that it is an entity for which radiological protection can be optimised as a whole.	Further clarification details on the interpretation and application of the 0.3mSv dose constraint would be helpful. The stated ONR view makes reference to the NRPB source reference document, but there are a number of other aspects of this target that are omitted in the selective statement provided. These include: <ul style="list-style-type: none"> • Relevance to a single site not part of a multiple site • The recognition of the past and new dose contributions when comparing against this constraint • Its intended regulatory use in relation to the 1mSv BSL and 0.02mSv BSO for a new or existing facility on a site. • Application to date for reactor sites and applicability to other non-reactors sites • Industry developments and its continued relevance since its introduction • Relevance to measured compared with predicted dose 	Annex	3	This is the same as comment 1 - our response is "changes 1&2 are agreed but change 3 is outwith PHE advice."
648	Clarification on change in wording required. This is a significant change in wording – prevent implies some sort of engineering defence. Original wording of mitigate seems to fit more with the principle of so far as is reasonably practical.	n/a	AA	3	Prevention does generally mean some form of engineering defence. The original wording was not mitigate but prevent so there is not a significant change in wording.
649	This could be a significant change, is this unintended? Clarification required. Prevent to protect implies more positive protection required. as to what change is going to take place and why	n/a	AA	1	
650	Further clarification required on TAG expectation as it may affect PSA going forward.	n/a	AA	1	
651	Disagreement with the revised text. The text should just be referring to protected sequences since the PSA should also include low frequency sequences, where protection systems aren't successful, that don't lead to stable safe states.	n/a	AA	2	
652	Clarification Required. They are titled chemical engineering when the whole focus is, using common current parlance, and process safety. Clarification on title possibly?	n/a	CE&IH	3	The title 'chemical engineering' is consistent with ONR's specialism structure.
653	Clarification Required. The application to mechanical processing facilities is not made clear. Further expansion and clarification needed.	n/a	CE&IH	3	The end of para 1 of the Chemical Engineering SAPs includes the following statement: "...there are principles which can also be applied to ancillary processes on power reactors and to mechanical processing facilities." We believe that no further addition is required.
654	Query of the content of this paragraph. Process safety is aided by reducing intensity and extent of hazard; to describe it as controlling the energy seems too narrow. Suggest paragraph is reworded.	n/a	CE&IH	3	Para 2 of page 1 includes the qualifying statement "...one of the major drivers ...". It is not an exhaustive list, but identifies one of the major concerns in fuel cycle facilities.
655	Clarification Required A valid point but I missed why it was relevant and important to make this statement here	n/a	CE&IH	3	page 1, para 3: Chemical Engineers are often at the centre of decisions concerning plant throughput, on line times, optioneering. There are often pressures to minimise plant footprint, cost, redundancy of equipment, etc., and para 3 reinforces the importance to safety of plant throughput. It is not solely an economic consideration.
656	Suggested change The direction to the COMAH site should indicate which topics to look at e.g. ageing plant. Is there a TAG based on this? Suggest that the TAG and COMAH site sections should be referenced	n/a	CE&IH	3	There is extensive guidance on COMAH on the HSE website, and it is easy to find. References in the SAPs must remain valid throughout their lifetime, even if legislation evolves and / or websites are re-organised. We therefore do not recommend to include a hyperlink to the guidance on COMAH. Also, there are no TAGs, but there is extensive HSE guidance.

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657	Suggested Change. If referring to inherent safety it would seem sensible to use Eliminate / Minimise / Moderate / Simplify to anchor the concept (or Intensify Substitute Attenuate Simplify). Suggest expansion of paragraph to incorporate this	n/a	CE&IH	3	EKP 1 to 5 outline the safety principles which underpin the hierarchy of safety measures, defence in depth, inherent safety, etc. The words 'eliminate, minimise, moderate, simplify' are useful techniques for designers to ensure that these principles are applied in their designs and in their facilities. There are many different ways in which to articulate these concepts, and we believe that the wording of EKP 1 to 5 is effective at communicating the required principles.
658	Disagree with the reference to inherent safety. Making processes capable of handling wide ranges of feedstock is not inherent safety; it is making the system robust which may well make it more complex and expensive. Paragraph needs reviewing	n/a	CE&IH	3	Our objective is to ensure that processes remain safe even if feedstocks are changed. This is to ensure that the principle of fault tolerance is also applied to feedstocks. The objective is not to increase the complexity or cost of facilities, but rather to ensure that feedstocks are not omitted / forgotten from the safety assessment.
659	Clarification Required This implies creating Flow sheets for fault conditions. Flow sheets are in my experience for normal operation and then deviations from this are assessed as part of testing the design. Clarification required on whether the ONR are actually wanting the production and use of flow sheets	n/a	CE&IH	3	ONR is not prescribing the use of any particular document or technique. Flow sheets are given as one example of design documents, hence use of the words "... such as ...". Flow sheets are typically for normal conditions, but the design of critical safety equipment would need to be based on the full envelope of foreseeable conditions. Flow sheets could be one way of modelling the process for those conditions.
660	Clarification Required Further expansion of paragraph to make it more explicit. Suggest inserting 'The design should cater for exothermic runaway if it cannot be eliminated through inherent safety principles'.	n/a	CE&IH	3	We believe that our proposed wording captures the principles which we are trying to convey. The consultee's proposed alternative could be misinterpreted to imply the tacit acceptance of exothermic runaway reactions provided the design has taken them into consideration. The licensee's safety case must demonstrate the safety of the nuclear facility.
661	Suggested Change HAZOP is a good method for assessing the detail characteristics in design but other hazard analysis techniques are often a more pragmatic approach for operating facilities because op experience is available to 'replace' HAZOP. Some discussion is needed about studying operating sequence / batch systems although again recognising that techniques like CHAZOP are best fitted to new design. Worth considering whether the incorporation of other HAZAN techniques should be mentioned here.	n/a	CE&IH	3	The words "...such as ..." indicate that HAZOP is one example of systematic techniques. ONR does not wish to be prescriptive in recommending one technique over others.
662	Suggested Change Suggested word change to clarify statement. 'According to degree of confidence in their behaviour under the range of foreseeable conditions and applications'.	n/a	CE&IH	3	We prefer our proposed wording, which makes direct reference to process safety.
663	Clarification Required Query the accuracy of the paragraph. Fully integrated processes aren't separated by buffering and are vulnerable to complexity and interactions; I do not see that they promote stable predictable operation. Also the focus should be on highly reliable (capable) processes to minimise the need for buffer stock which is only there to cater for uncertainty. Lower stock = less hazard.	n/a	CE&IH	3	Solids handling is a case in point where flow problems, blockages, etc. often result in poor plant availability. Careful selection and design of buffer storage can result in much higher overall plant availabilities, because the whole process chain does not need to stop when there are localised problems.
664	Suggested Change This is about avoiding potential for loss of containment and loss of process flow. I do not think it explains simplification. Suggest that the paragraph is clarified somewhat and the incorporation of a comment to say 'Simplification and protection to mitigate Loss of Containment and loss of process flow of plant and equipment....'	n/a	CE&IH	3	EPE.2 e) is much broader than 'loss of containment' and 'loss of process flow'.
665	Clarification Required Adequate control of chemistry needs planning early in the design....the effects and their importance will likely vary from stage to stage and explain why (phase is an inappropriate term for lifecycle stage in a chemistry section). Query the use of phase in this content. Paragraph needs re-clarifying.	n/a	CE&IH	4	
666	Significant Change This is a significant change for non-reactor sites. Significant impingement on licensee for such a rare low frequency event. Question as to whether this is applicable to non-reactor sites where the consequences are lower.	n/a	CEEH	4	
667	Clarification Required Clarification and consistency seems to be missing in this section. There is a small but significant change which suggests inspectors should be looking for all safety systems to be automatically initiated. . However, subsequent paragraph (ESS 9) seems to allow human intervention within the accident sequence. Clear guidance required.	n/a	CE&I	2	
668	Clarification Required More guidance and clarification on proportionate assessment is required. More specific information on what needs to be included in the assessment would be helpful	n/a	HF	3	this is not the place for such information - the Human Reliability TAG provides further detail
669	Clarification Required More information and clarification on lining Task Analysis to other tools would be helpful.	n/a	HF	3	this is not the place for such information - it is expected that a SQEP HF analyst would be familiar with task analytic techniques and their application
670	Clarification Required Query the wording of the new paragraph. Is the pragmatic and demonstrable management control to ensure adequate manning and supervision levels to ensure achievement of SAs?	n/a	HF	3	staffing and supervision levels are only one of the factors contributing to risk of fatigue
671	Clarification Required Is this a genuine HF principle or more relevant to leadership management of safety?	n/a	HF	3	yes, fatigue is a performance shaping factor associated with performance decrement
672	Clarification Required The revised wording leads the reader to focus on rerouting where there is change to the facility but also quotes sampling as an example. It implies samples must be put back where they came from but roll this up with restoring temporary plant mods to standard. Some confusion as to what the paragraph is intending to read and consequently it needs refining and clarifying further.	n/a	CE&IH	2	
673	Clarification Required Why has "of nuclear matter" been removed?	n/a	CE&IH	2	
674	Suggested enhancement Believe the paragraph should also contain the detection element as part of a mitigating step	n/a	CE&IH	3	The proposed change is not viewed as necessary, because the SAPs are principles, and cannot list everything single case or eventuality.

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675	Query as to whether storage capacity should also be added to paragraph d.	n/a	RWDM	3	Consideration of future storage capacity is already covered under radioactive waste strategies, para 651q
676	Should external dose rates of packages also be considered here?	n/a	RWDM	3	This is too prescriptive and other package details would also need to be kept
677	Two section d's entered	Correction Correct to section d and section e	RWDM	2	
678	Clarification Required No guidance as to what 'highest reliability' components are. Further clarification and detailed explanation required on 'highest reliability' components.	n/a	SI	3	Rejected on the basis that the SAPs already contain extensive discussion on this matter.
679	Clarification Required Lack of clarity and consistency in the paragraph. New words have been added to state their assessment will "enable a judgement to be made that risks are ALARP, our Numerical Targets have been met and..... Stating 'have been met' is a strong statement, rather than judgement against the targets to determine ALARP. I presume this is pushed at new facilities, but could make writing against legacy not meeting them. Note that guidance in Annex A22 says the targets are not mandatory. Clarification needed on whether new facilities or all facilities fall into the 'have been met' criteria, or whether all facilities continue to be judged against the numerical targets to determine whether the risks proposed by the facility is ALARP.	n/a	Annex	4	
680	The identification of safety functions should be based on an analysis of normal operation and all significant fault sequences arising from possible initiating faults determined by fault analysis (see paragraph 496 ff.) and then confirmed by internal hazards analysis (see paragraph 208ff).	Fault sequences should be derived from fault analysis and hazards analysis.	AA	4	Text altered to align with a previous comment using a slightly clearer wording.
681	First "New Para" under EHA.5- The analysis should apply an appropriate combination of engineering, deterministic and probabilistic methods in order to: • understand the behaviour of the facility in response to the hazard; and • confirm high confidence in the adequacy of the design basis definition and the associated fault tolerance of the facility.	It is not necessary or always appropriate to apply all three methods to adequately understand the hazard.	CEEH	2	
682	New SAP EHA.18 (after para 217)- ditto	ditto	CEEH	2	
683	"New Para" under new SAP EHA.18- Analysis of beyond design basis events should: a) Confirm the absence "cliff edge" effects just beyond the design basis (EHA.7); b) Identify the hazard level at which safety functions could be lost (i.e. determine the beyond design basis margin); c)	No words proposed. This appears not to recognise a fundamental characteristic of margins analysis and underlying fragility analysis that the "margin" depends on both failure probability and statistical confidence level, thus even in the simplest cases it is not possible to define margins in the simple unique manner that this proposed revision appears to imply. It is suggested that the expectation arising from this guidance is clarified to recognise that what is being required here relates to an intrinsically probabilistic question with no unique answer.	CEEH	3	No amendment submitted
684	Second "New Para" under EHA.7- ditto	ditto	CEEH	3	No amendment submitted
685	Margins should be such that civil engineering structures will continue to provide their residual safety function(s) following the application of beyond design basis loads by either having sufficient design margins, or by failing in a manner that suitably limits the radiological consequences.	No words proposed. This requires acceptable performance from every civil engineering structure under all beyond design basis loading conditions without limit. This is an unrealistic and unachievable requirement. Consideration should be given to qualifying this requirement to give an indication of the expected range of beyond design basis loading to be considered. Perhaps this could be along similar lines to the qualifying statements included in the proposed revisions to ECE.7 or the new paragraph under ECE.6. It is noted, however, that these latter two proposed revisions do not appear to be entirely mutually compatible in this respect, indeed the intent of the requirement in the new paragraph under ECE.6 would itself benefit from some clarification.	CEEH	4	
686	Where changes in parameters assumed in the safety case (such as the severity of seismic loading magnitude of seismic events, ground water levels, differential settlement or pre-stressing tendon loads) could affect the capability of a structure to meet its safety functional requirements, arrangements should be provided to monitor these.	This requires monitoring of the "magnitude of seismic events". It is unclear whether "magnitude" is being used here in the technical sense of Richter (or similar) magnitude or simply in the colloquial sense of "size of earthquake". The Richter (or similar) magnitude is unlikely to be of direct interest. Proposed words would avoid confusion.	CEEH	2	
687	Temporary re-routing of nuclear matter (e.g. for sampling purposes) should only be undertaken where necessary and suitably justified. Once the need for temporary re-routing has passed, the facility should be restored promptly to its normal configuration and any nuclear matter that was removed returned to its designated location or disposed of in an appropriate manner via an authorised disposal route.	Proposed words added for completeness.	CE&IH	2	
688	Design documents such as flow sheets should be based on the most restrictive conditions justified in the safety case, including during fault conditions;	In general "flow sheets" has a specific purpose of describing the normal process operation and design and should be based on such parameters. The "most restrictive conditions" may need to be identified on the flow sheet when used in a safety case context, thus the text should perhaps say "the most restrictive parameter or condition including that during fault condition should be identified on the flow sheet in the context of design/safety case functions".	CE&IH	2	
689	Chemical reactions should be controllable and either be endothermic, or have reaction properties that change relatively slowly in terms of equipment response times. The thermodynamics and kinetics should be analysed for all normal operation and fault conditions identified in the safety case. Side reactions, interactions with adventitious materials and the potential for cliff edge effects should also be considered in the analysis;	Even endothermic reactions could create hazards like "freezing the process fluid and blockages" for example. In general, the nature of the reaction scheme will be selected based upon the merits of its utility to the process rather than its endothermic or exothermic nature. Perhaps the text could say "where there are various options available, reaction schemes which lead to passively safe design and/or operation and relatively slowly changing conditions should be preferred. Where selected reaction schemes have an endothermic or exothermic nature, appropriate kinetic and thermodynamic analysis should be undertaken for all normal operations and fault conditionsetc."	CE&IH	2	

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690	Chemistry can affect materials, systems and processes and their associated hazards in a variety of ways. For example, it can have an influence on reactivity, radioactivity, radioactive waste and radiation doses to the public and workers, as well as an influence on the performance of structures, systems and components, for example the integrity of vessels and fuel cladding. Adequate control of chemistry therefore needs planning in design, consideration in safety cases, and may demand rigorous controls over certain operations. The effects of chemistry may be important throughout the full lifecycle of the facility, although the effects and their importance will likely vary from phase to phase.	With regard to the final sentence, it seems that phases of the facility lifecycle are meant here; thus appropriate text should perhaps be added at the end to ensure that there is no ambiguity with the "physical material phases".	CE&IH	2	
691	Consideration should be given to the safe and effective addition and/or removal of chemicals to/from the system. The safety, effectiveness and reliability of the system to control the chemistry should be demonstrated in all normal operational, fault or accident conditions where the system provides such a safety function. The system design should incorporate appropriate levels of redundancy, diversity and segregation (see EDR.2).	Incorporation of appropriate levels of redundancy, diversity and segregation is rightly addressed elsewhere (EDR.2); thus here perhaps it should simply say that "the safety function of the system should not be compromised as a result of chemical effects".	CE&IH	4	
692	Stocks of Personal Protective Equipment (PPE), monitoring equipment, dosimeters etc. that are needed for emergency response should be properly maintained and held in separated (eg remote from the facility or site), robust, secure stores.	For decommissioning sites that can no longer have a site wide event with a large impact it may not be sensibly required to store PPE "remote from the facility or site" depending on the site/facility risk assessment. This proportionality issue also applies to other SAPs.	EP, RP and criticality	1	
693	Fundamental principle FP.7 (paragraph 42 f.) states that arrangements must be made for emergency preparedness and response in the case of nuclear and radiological incidents. For licensees these arrangements are regulated through various licence conditions, including Licence Condition 11 (Emergency Arrangements, see the ONR website). In addition, REPPiR places duties on all operators of nuclear facilities and on local authorities in regard to emergency preparedness.	This should allow for sites or facilities exiting REPPiR. This REPPiR issue also applies to other SAPs.	EP, RP and criticality	1	
694	REPPiR ONR uses RoA and HIRE reports to help define the REPPiR Off-site Emergency Planning Area. Local authority emergency planners are then required to develop detailed off-site emergency plans covering this area. It is good practice for local authority emergency planners to also consider the extendibility of countermeasures beyond the REPPiR Off-site Emergency Planning Area.	This links countermeasures to the REPPiR Off-site Planning Area but ONR have stated that these are independent of each other. Is it a left-over from the DEPZ term which meant the area where urgent countermeasures are required?	EP, RP and criticality	1	
695	Accident management strategies should be developed to manage the escalation of accidents and to restore control. The dutyholder's HIRE analysis should be used to form a suitable basis for developing these strategies. Where the hazard potential is significant (see para 544), the HIRE should be informed by severe accident analysis.	The HIRE addresses reasonably foreseeable faults rather than severe accident analysis. Would accident strategies be better built on the site/facility safety case rather than the HIRE?	EP, RP and criticality	2	
696	The procedural support requirements should include emergency operating procedures and accident management guidelines. The accident management guidelines should be based on the facility's severe accident analysis	This is not proportional for decommissioning sites where emergency scenarios are dynamic.	EP, RP and criticality	1	
697	Examination, inspection, maintenance and testing are a part of normal operation and it should be possible to carry out these tests without any loss of any safety function. Where equipment is taken out of service for examination, inspection, maintenance or testing, the continuing safety of operations should be justified. Furthermore, the potential for the examination, inspection maintenance or testing to initiate a fault should be analysed and the risks so arising mitigated or appropriately justified	Clarification.	ME	4	
698	Where glove boxes and associated ventilation systems are provided, their design should: a) prevent containment boundary failure due to pressure excursions caused by ventilation faults; b) accommodate glove failures and still provide confinement by minimising the migration of airborne activity; and c) ensure that a major failure in one glove box or its systems does not compromise the containment performance of associated glove boxes.	This paragraph relating to glove box design is out of place under "Minimisation of personnel access"; perhaps it might be more appropriate for it to be included in the guidance text under ECV.3 (Confinement).	ME	4	
699	safeguarding the facility and personnel against ingress of gases, vapours, etc from external sources where this ingress could prejudice the safety of operators or operations due to its chemical or radioactive properties etc.	Here the "toxic" property is implied under "chemical" property; perhaps this should be explicitly identified for consistency as per para 436(l).	ME	2	
700	Licence Condition 32 (see the ONR website) requires the rate of production of radioactive waste be minimised so far as is reasonably practicable. The safety case and/or associated documents (such as radioactive waste management cases) should therefore describe the specific design provisions, operating practices and approaches to decommissioning that will ensure waste minimisation and include a demonstration that the rate of production of radioactive waste has been minimised.	Issues such as operating practices, approaches to decommissioning and demonstration that the rate of production of radioactive waste has been minimised may not be best presented in a safety case. These issues are usually much better presented in other documents such as Radioactive Waste Management Cases.	RWDM	3	ONR expects the detailed justification of waste minimisation to appear in the relevant facility safety case, though the SLC may also include a summary in the Radioactive Waste Management Case. This is consistent with the Joint Guidance which has recently been updated and subject to stakeholder consultation.
701	The development and application of good characterisation and segregation practices for radioactive wastes provide a sound foundation for their safe and effective management from generation through to disposal. However, for some existing wastes, the extent to which characterisation and segregation can be applied may be limited. Where this is the case (e.g. due to past poor practice), in all cases, the safety case should justify how these wastes will be managed safely, highlighting relevant uncertainties and how these will be accommodated, adopting a precautionary approach.	The reason why limited characterisation and segregation has been applied to existing wastes (where this is the case) is not necessarily relevant to how the wastes should be safely managed. Even where wastes have been characterised and segregated, there will be residual uncertainties that will have to be addressed and accommodated in the safety case.	RWDM	2	
702	Decisions to mix waste streams should be properly justified and demonstrate a net benefit in favour of safety or environmental factors. Such decisions should take into account the later safe management of the waste through to disposal. Where radioactive waste is to be mixed with other wastes or materials (including nonradioactive wastes), their mutual compatibility should be established in the safety case-a disposability justification and BAT case. Mixing of incompatible wastes should be prevented. Dilution of wastes solely to reduce their category should be avoided.	Compatibility of mixed waste streams would be justified either as part of the Waste Enquiry Process or the Letter of Compliance process and should not need to be established again in a safety case.	RWDM	3	In the SAPs 'safety case' is defined as the totality of a licensee's (or dutyholder's) documentation to demonstrate safety, and any sub-set of this documentation that is submitted to ONR. It is up to the SLC to decide how it documents its waste management arrangements in the safety case. ONR considers the LoC to be part of the safety case. ONR is the primary regulator for radioactive waste on nuclear licensed sites and we use terminology derived from safety legislation rather than environmental legislation which we do not enforce.

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703	The safety case should: e) justify the adequacy of the facility's structures, systems and components (including waste packages and containers) and administrative safety measures in normal, fault and accident conditions; and	A waste package comprises the waste container and the waste form. Containers have no bearing on storage of radioactive waste and passive safety except as part of a waste package.	RWDM	3	Waste packages could be overpacked into containers.
704	Good engineering practice for storing radioactive waste includes the following elements: g) The design, construction standards, construction materials, maintenance and inspection, and refurbishment of the facility should take account of the entire planned storage period, including allowance for potential ageing and degradation (see EAD.1 and subsequent principles);	Need to cover converted existing facilities as well as new build facilities. But for any stores, it is currently not possible to gain material guarantee on any cladding of buildings for the period of passive storage required (at least 100 years). It is therefore important to consider any refurbishment and associated safety implications during the design and construction stage.	RWDM	2	
705	Decommissioning and waste retrieval should be taken into account during the planning, design, construction and operational stages of the a new facility or modification of an existing facility, including:	To take into account that we may have converted facilities as well as new ones.	RWDM	4	
706	The overall strategy should: b) contain information of a type and level of detail commensurate with the site, its associated radiological risks and hazards and anticipated decommissioning timescales;	All risks and hazards should be considered, not just radiological ones.	RWDM	2	
707	The strategy should describe, or refer to, the process by which stakeholder views will be taken into account to enable confirmation or otherwise of the planned intended end-state.	Consistency in terminology (eg. with 692).	RWDM	4	
708	The strategy should take account of relevant factors, and show how these have been accommodated. These are likely to include the factors affecting the timing of decommissioning listed in para 703. Other factors that should be taken into account include the magnitude of the remaining radiological hazard, the duration of the work, the overall status of the facility, the availability of a suitably qualified and skilled workforce for each stage, and the fact that the overall objective of the work is to remove, or significantly reduce, the radiological hazard.	All risks and hazards should be considered, not just radiological ones.	RWDM	2	
709	Timing of decommissioning The timing of decommissioning is an important aspect of decommissioning strategies and will may be a matter of significant interest to local and other many stakeholders. Many factors can however influence this timing, not all of which will necessarily be within the control of the dutyholder (e.g. the availability of funding on sites owned by the Nuclear Decommissioning Authority (NDA)). Equally, prompt or early decommissioning may not be a viable option for technical or logistical reasons. The rationale for the timing of decommissioning therefore needs to be transparent and properly justified, taking all relevant factors into account.	Local stakeholders should not be identified separately from a wider range of stakeholders. The presumption that timing of decommissioning will be a matter of interest to stakeholders has not been justified in this document.	RWDM	2	
710	The timing of the decommissioning should be rigorously justified, taking all relevant factors into account. Prompt decommissioning should be the preferred option. Relevant factors, which may apply in the period prior to decommissioning, during decommissioning, or both, will include: n) the future availability of suitably qualified and experienced personnel throughout the decommissioning period; p) future uncertainties, including from climate change;	The presumption that prompt decommissioning should be the preferred option has not been rigorously justified in this document. If this preference is to be explicitly retained then a) provide some basis for it and b) add something to the effect that the early decommissioning is preferred if all else is equal (to recognise that sometimes it may not be preferred). Availability of suitability qualified and experienced personnel is not necessarily only an issue for the future. Similarly for uncertainties, these will be different at different stages of decommissioning.	RWDM	2	
711	The decommissioning plan should: a) define the intended decommissioning end-state for the facility and any interim states required to achieve it; and b) be supported by appropriate evidence to demonstrate that decommissioning can be undertaken safely and that the intended end-state (and any interim state) will be achieved.	Consistency in terminology.	RWDM	2	
712	The type of information and level of detail contained in the plan should be commensurate with the type and status of the facility, its associated radiological risks and hazard, its decommissioning timescales and the practicability of obtaining the information.	All risks and hazards should be considered, not just radiological ones.	RWDM	2	
713	The facility should undergo post-operational clean out. This should include: a) the removal of any residual radioactive material; b) the immobilisation of any potentially mobile radioactive material that cannot be removed provided that this does not foreclose future decontamination and/or waste management options; c) the removal of any readily removable contaminated or activated items.	Avoidance of unintended consequences.	RWDM	2	

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714	<p>CONTROL AND REMEDIATION OF RADIOACTIVELY CONTAMINATED LAND The principles in this section are concerned with the safe management of radioactively contaminated land on nuclear licensed sites. ONR treats radioactively contaminated land and emplaced radioactive material as accumulations of nuclear matter, unless they are, or arise from, authorised disposals. The principles apply both to the ongoing control and remediation of contaminated land and to activities undertaken in preparation for achieving the site's final endstate.</p>	<p>General Comments</p> <p>1. Throughout the text relating to the 'RL' SAPs, the phrase 'control and remediation' arises repeatedly. It suggests that 'control' and 'remediation' are distinct activities or concepts. The SAPs Glossary definition of remediation surely includes 'control'. It may be that (in some instances at least), the term 'remediation' is being used where in fact 'removal/retrieval of contamination' is what is meant. In such cases, 'control' would be a distinct activity/concept.</p> <p>2. It would help to include a statement (either here or in the Glossary) on the status of radioactively contaminated groundwater (i.e. being within the scope of the Licence Conditions but without any defined levels or radionuclides below which groundwater is considered to be uncontaminated). To 'retrieve radioactive material' is a slightly odd concept for land contamination. Duty-holder is presumably not expected to investigate radioactive contamination on an adjoining site operated by a different licensee. Duty-holder is presumably not expected to investigate radioactive contamination on an adjoining site operated by a different licensee. Once the 'nature and extent of radioactively contaminated land' has been 'established', surveys and investigations may be able to cease. Is this (now) really about radioactively contaminated land or arrangements to comply with LC34 for plant? This is no longer written from the perspective of discovering a leak from plant by detecting land contamination (as was the case in the 2006 SAPs). What is meant here by 'surveillance'? It is an unusual word to use in this context.</p> <p>The phrase 'at suitable intervals' implies that results of 'radiological surveys' and 'investigations' inevitably become out of date over predictable timescales, which is not necessarily the case. 'retrievals' is an unusual word to use in this context. Does it mean "excavation", as proposed here?</p> <p>We assume 'soil treatment' means treatment for decontamination (as opposed to in situ stabilisation).</p> <p>We assume 'hydrogeological controls' means 'relying on existing hydrogeological conditions for control' (as opposed to engineered hydraulic controls). This is an improvement on the version in the 2006 SAPs, provided that 'remediation' can include control of contamination as well as removal. See comments on para. 740 and the Glossary definition of 'remediation'.</p>	RWDM	3	The definition of remediation includes control, but only in the context of reducing radiation exposure. There may be other reasons for controlling contaminated land, such as reducing the amount the waste that might eventually be produced.
715	<p>The strategy should describe the licensee's policy and objectives for the management of radioactively contaminated land from the present through to the final end-state. In order of preference, the strategy should aim to:</p> <p>a) retrieve remove radioactive contamination for appropriate management; b) establish measures to achieve in-situ stabilisation; or c) prevent (or where this is not practicable, minimise) the migration of contamination on-site. This will minimise both future waste volumes and the potential for contamination to spread off-site.</p>	To 'retrieve radioactive material' is a slightly odd concept for land contamination.	RWDM	2	
716	<p>Actions to identify radioactively contaminated land This principle relates to the need for licensees to understand the extent and nature of radioactive contamination on and around or from the licensed site.</p>	Duty-holder is presumably not expected to investigate radioactive contamination on an adjoining site operated by a different licensee.	RWDM	4	
717	<p>Identifying radioactively contaminated land Steps should be undertaken to identify any areas of radioactively contaminated land on or adjacent to from the site.</p>	Duty-holder is presumably not expected to investigate radioactive contamination on an adjoining site operated by a different licensee.	RWDM	4	
718	<p>A programme of ongoing surveys, investigation, monitoring, surveillance and analysis should be in place to establish the nature and extent of radioactively contaminated land.</p>	Once the 'nature and extent of radioactively contaminated land' has been 'established', surveys and investigations may be able to cease.	RWDM	2	
719	<p>Management of leaks and escapes As part of compliance with LC34, Arrangements should be in place to ensure leaks and escapes giving rise to radioactive land contamination are promptly identified and controlled.</p>	Is this (now) really about radioactively contaminated land or arrangements to comply with LC34 for plant? This is no longer written from the perspective of discovering a leak from plant by detecting land contamination (as was the case in the 2006 SAPs).	RWDM	2	
720	<p>Survey, investigation and monitoring and surveillance Radiological surveys, investigation and monitoring and surveillance of radioactively contaminated land should be carried out at suitable intervals so undertaken such that its characterisation is kept up to date, as necessary.</p>	<p>What is meant here by 'surveillance'? It is an unusual word to use in this context.</p> <p>The phrase 'at suitable intervals' implies that results of 'radiological surveys' and 'investigations' inevitably become out of date over predictable timescales, which is not necessarily the case.</p>	RWDM	2	
721	<p>The plan should identify the proposed means for controlling or remediating the contaminated land to achieve the proposed end-state, for example:</p> <p>a) excavation retrievals; b) in-situ or ex-situ soil treatment for removal of contamination; c) in-situ stabilisation; d) surface caps or covers; e) natural or artificial containment barriers; f) existing hydrogeological controls; g) engineered hydraulic controls; h) groundwater treatment; i) control of personal access; j) control of local flora and fauna; and k) other restrictions necessary to protect people and the environment.</p>	<p>'retrievals' is an unusual word to use in this context. Does it mean "excavation", as proposed here?</p> <p>We assume 'soil treatment' means treatment for decontamination (as opposed to in situ stabilisation).</p> <p>We assume 'hydrogeological controls' means 'relying on existing hydrogeological conditions for control' (as opposed to engineered hydraulic controls).</p>	RWDM	2	
722	<p>Construction on radioactively contaminated land Radioactively contaminated land should be remediated before any construction of new facilities upon it.</p>	This is an improvement on the version in the 2006 SAPs, provided that 'remediation' can include control of contamination as well as removal. See comments on para. 740 and the Glossary definition of 'remediation'.	RWDM	3	Comment noted. ONR prefers to maintain the IAEA definition.

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723	Guidance on assessing plans for managing radioactively contaminated land is provided under principle RL.6. The safety case should be proportionate to the extent, nature, risks and hazards posed by the contamination and its spread or potential to spread. It should include all aspects of how the contaminated land, or its management might affect safety on the site, eg where the presence of contamination near a facility might impact the safety of its operations. Where conventional (non-radiological) hazards such as biological or chemical hazards affect how the radioactively contaminated land will be managed, the overall balance of risks should be justified (see para 17).	Suggest that 'the land' should read 'the radioactively contaminated land'. Otherwise it could be construed that ONR expects the safety case to cover non-radiological hazards from land contamination, regardless of whether radioactive contamination is present or not.	RWDM	2	
724	Radioactively contaminated land Land containing radioactive contamination at levels that would preclude its delicensing.	General Comments The 'levels' in this definition cannot be quantified in a generic sense, given that the delicensing criterion is risk-based and therefore location-specific levels for de-licensing would apply which will not be defined until a delicensing proposal is made. ONR expectations of the levels of radioactive contamination in land that warrant control under the Licence Conditions therefore remain unclear. Definitions and terminology relating to radioactively contaminated land should be tightened up, including in relevant site licence conditions and associated guidance. It would be more helpful for the ONR definition of 'radioactively contaminated land' to link to that of nuclear matter (see para. 740) and to the 'in/out-of-scope' criteria for the definition of solid radioactive material under radioactive substances legislation (consistent with the Licence Condition 1 definition), while not contradicting Government's position that land contaminated by radioactivity is by definition not within the scope of radioactive substances legislation.	RWDM	3	ONR is reviewing its approach to delicensing and it is inappropriate to change the definition. The definition is linked to the law that ONR enforces (ie NIA). ONR is also reviewing the licence conditions and this will include their application to contaminated land.
725	Remediation As applied to radioactively contaminated land, any measure that may be carried out to reduce the long-term radiation exposure from existing contamination of land areas and/or to restrict its spread through action applied to the contamination itself (the source) or to pathways by which it may spread (including exposure pathways to humans) (based on IAEA Safety Glossary).	The un-edited definition does not explicitly state that justifiable remediation may (more often than not?) be undertaken to 'reduce the radiation exposure' only very indirectly or not at all (e.g. by eliminating or reducing the potential for spread of contamination that could give rise to future arisings of solid radioactive waste for disposal to a facility where such disposals might or might not ultimately result in a radiation exposure). Moreover, justifiable remediation may be undertaken that aims to reduce the potential for spread of contamination and/or reduce very small doses/risks to the public, while incurring much greater (albeit acceptable) doses to workers undertaking the remediation; i.e. the aim is not necessarily a net reduction in radiation exposure. The proposed editing may mean that the reference to the IAEA Safety Glossary is no longer appropriate.	RWDM	1 and 3	ONR prefers to retain the existing SAPs text and to retain the IAEA definition for remediation, as this places explicit emphasis in the SAPs on the control aspects
726	THE REGULATORY ASSESSMENT OF SAFETY CASES ONR's assessment process consists of examining submissions from dutyholders to enable a judgement to be made that risks are ALARP, our Numerical Targets have been met and that appropriate attention has been paid to aspects important to safety and to radioactive waste management and decommissioning. ONR's	No words proposed. As written, it expects that numerical targets are met, which includes both BSL and BSO. There is no requirement to meet a BSO as long as the risk is ALARP.	SC	2	
727	Defences in Depth Nuclear facilities should be designed and operated so that defence in depth against potentially significant faults or failures is achieved by the proportionate provision of multiple independent barriers (inherent features, equipment and procedures) to fault progression.	To include the understanding of proportionality The barriers are only as good as the controls placed on them. The proposed modification loses this link when the term 'barrier' is used as per the glossary. (e.g. the requirement to control the state of Nuclear Fuel within its limits and also the requirement for interlocks for access control to highly contaminated or high dose rate areas could be lost if only 'barriers' are considered)	AA	3	Adding qualifying words such as proportionate is less clear than the very straightforward description given in EKP.3
728	These levels of defence in depth should prevent faults, or if prevention fails should ensure detection, limit the potential consequences and mitigate escalation.	Propose to change 'stop' escalation to 'mitigate' to reflect the principles of prevention, protection and mitigation.	AA	3	The intention is to stop escalation, the mitigation comes under the clause 'limit the consequences'.
729	The identification of safety functions should be based on an analysis of normal operation and all significant fault sequences arising from possible initiating faults determined either by fault analysis (see paragraph 496 ff.) or by internal hazards analysis (see paragraph 208ff)	It is appropriate that safety functions are always 'confirmed by internal hazards analysis (see paragraph 208ff). My understanding is that internal hazards analysis should be used to check that the list of safety functions is complete – rather than being used to confirm the safety functions (some of which may not be required to mitigate internal hazards.	AA	2	
730	The availability and reliability of the safety measures should be commensurate with the significance of the radiological hazards being controlled and their safety functions within the defence in depth hierarchy (EKP.3). In particular, mitigating safety measures (Level 4) should not be regarded as a substitute for fault prevention (Levels 1 and 2) or protection (Level 3) barriers, but as further defence in depth. More generally, priority should be given to providing reliable and effective barriers (inherent features, equipment and procedures) earlier in the hierarchy so that later barriers (inherent features, equipment and procedures), though in place, need not be called upon.	What is meant by defences? Does this capture engineered control functions or operating rules and instructions? Should effective barriers be defined based on the text in Para. 140?	AA	2	
731	Evidence, including from quality management, should be provided to demonstrate the adequacy of these measures. This should include a reliability analysis of both random and systematic failures. Assumptions made in the course of the reliability analysis should be justified.	The reference to quality management seems superfluous to the requirement for reliability analysis. Adequate quality arrangements are required for all supporting analyses.	AA	2	
732	Engineered safety features Where reliable and rapid protective action is required, automatically initiated, engineered safety features should be provided	Engineered Safety Measures should remain as Engineered Safety Features to keep in line with the classification process/ principles The text discusses safety systems need to provide reliable and rapid protection and thus required as part of the safety analysis and thus should be classified. In addition "engineered safety systems" should be restored to "engineered safety features". For example a pressure relief valve will provide the required safety function. It may be part of a system but the valve on its own provides the required safety function. Systems may be provided to support the feature (e.g. monitoring) but the pressure relief valve may not need these to complete its function. This would then be in line with IEC 61226 I&C categorisation criteria; monitoring functions can be provided by a lower classified system. The definition of 'Safety measures' in the glossary include procedures but here the discussion is in engineering provisions.	AA	2 and 3	Measures is judged to be a better word than features and is used throughout the SAPs and is consistent with the principles of Classification. We agree with the comment about safety systems and have replaced it with safety measures.

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733	This principle covers normal operation, including refuelling, testing and shutdown, and design basis fault conditions. The main safety functions are: a) Control of reactivity (including re-criticality following an event); b) Removal of heat from the core c) Confinement of radioactive material, shielding against radiation and control of planned radioactive releases, as well as limitation of accidental radioactive releases.	We understand that the IAEA are moving towards Main Safety Functions rather than Fundamental Safety Functions SSR2-1 has extended the definition relating the confinement of radioactive material	AA	2 and 3	Disagree with the change from fundamental to main as IAEA still uses the former from SSR2/1 which is a recent publication. Change to: Confinement of radioactive material, shielding against radiation and control of planned radioactive releases, as well as limitation of accidental radioactive releases.
734	There should be suitable and sufficient margins between the normal operational values of safety related parameters and the values at which the physical barriers to release of fission products are challenged. These should be chosen so that safety features (or administrative safety measures) will provide robust and reliable protection against any such release.	This ensures the scope is wide enough and links into the classification process as to what is important to the Nuclear Safety analysis	AA	3	The intention is to be broader than specific safety measures and to focus on the safety systems.
735	There should be suitable and sufficient design margins to ensure that any reactivity changes do not lead to unacceptable consequences. Limits (operating rules) should be set for the maximum degree of positive reactivity.	"Operating Rules" should be removed. Some Licensees use Technical Specifications rather than Operating Rules for defining limits.	AA	3	The concept of operating rules is well understood and licensees are free to use their own terminology.
736	Sufficient coolant inventory and flow should be provided to maintain cooling within the limits (operating rules) derived for normal operational and design basis fault conditions.	"Operating Rules" should be removed. Some Licensees use Technical Specifications rather than Operating Rules for defining limits.	AA	3	The concept of operating rules is well understood and licensees are free to use their own terminology.
737	Provision should be made to: a) minimise the effects of faults within the facility that may propagate through the heat removal or ventilation systems. Personnel and structures, systems and components should be protected where necessary from the radiation, thermal and/or dynamic effects of any fault involving the heat transport fluids; b) prevent an uncontrolled loss of coolant. Provision should be made for the detection of significant losses of heat transport fluid or any diverse change in heat transport that might lead to an unsafe state. Provisions should be made in the design to minimise leakages of the coolant and keep it within specified limits (operating rules). Isolation devices should be provided to limit any loss of radioactive fluid. Bottom penetrations and lines that are prone to siphoning faults should be minimised as far as is practicable in spent fuel ponds; c) provide, where appropriate, a sufficient and reliable supply of reserve heat transfer fluid, separate from the normal supply, to be available in sufficient time in the event of any significant loss of heat transfer fluid.	"Operating Rules" should be removed. Some Licensees use Technical Specifications rather than Operating Rules for defining limits. There may be good reasons why it is not always practicable to minimise bottom penetration in spent fuel ponds	AA	3	The concept of operating rules is well understood and licensees are free to use their own terminology. The point on bottom penetrations is subject to ALARP and like many of the principles this is stated early on to avoid a considerable level of repetition.
738	Secondly, it will not always be reasonably practicable to incorporate the robust, conservatively-designed preventative and protective safety measures expected for design basis faults when the initiating event is highly unlikely or difficult to predict. However, planning for how such events would be managed, and providing the plant, equipment and procedures that would be needed to control or mitigate their consequences is often reasonable. Plant states which could merit such planning include those arising following: a) High consequence events of very low frequency (see Para. 517) for which the design safety measures may be ineffective; b) Design basis events where, conservatively the safety provisions are assumed to fail; c) Malicious acts such as from terrorism or sabotage. Plant states arising from c) may require safety assessment for the reasons set out in paras 35-3ff	Do the SAPs include an outline of what could be considered very low frequency? Perhaps a link to the new text in 517	AA	2	
739	The nature and extent of the fault analysis undertaken will depend on the circumstances. It should be very rare for safety submissions in support of permissioning decisions not to include DBA, even if this is just to demonstrate that there are no qualifying design basis faults. Safety cases for power reactors, or where there is significant complexity, or where the Numerical Targets may be challenged should include PSA. Where the consequences are high (see para 544), the safety case should include SAA.	Propose replacing hazards with the more bounding terminology of consequences.	AA	3	The intention here is to consider the hazard potential not the consequences.
740	Where the fault analysis is in support of a design under development, the analysis should wherever possible be against a well-defined reference point in the design process. Where facility-specific or site-specific details have yet to be finalised, all the assumptions made in lieu of these should be stated explicitly and then used to support the later design and construction activities.	It is not always possible for the fault analysis of a design under development to be fully consistent with a single design reference point. What is important is that 'all the assumptionsshould be stated explicitly and then used to support the later design and construction activities'	AA	3	The principle of a single design reference under change control is important and key to this principle. This is about developing a safety case ultimately for an operational facility. This does not preclude early and conceptual fault studies analysis on a developing design.
741	Correct performance of safety-related and non-safety related equipment should not be assumed where this could alleviate the consequences. Where failures or unintended operation of such equipment could exacerbate the consequences, or otherwise make the fault more severe, this should be assumed within the DBA (where appropriate based on Human Factors assessments).	Suggest that the failure of equipment to be operated is appropriately based on Human Factors assessments rather than generically.	AA	3	The principle is covering a wide range of failures including human factors but also failure of engineered safety measures.
742	In addition to the inclusion of conservative assumptions, it should be demonstrated that a small changes in DBA parameters that are uncertain, will not lead to a disproportionate increase in radiological consequences. The severity and frequency of the initiating event should be amongst the parameters considered.	As currently written the paragraph appears to require uncertainty analysis to be applied for all DBA parameters for all faults. This needs to be suitably limited since it is not practicable to perform this amount of analysis/ - Also the requirement for uncertainty analysis appears to be repeated in Paragraph 539	AA	3	All parameters are uncertain so the modification makes no sense. As with many SAPs reasonable practicability allied to engineering judgement can be applied.
743	The licensee's DBA procedures should be consistent with and linked explicitly to its safety function categorisation and SSC safety feature classification methodologies (see paras 149ff) so that safety measures claimed in the DBA are designed and operated (etc) to appropriately high standards."	Discusses safety function categorisation and SSC classification but then discusses safety measures which include procedures. This provides the link to cat/ class and can capture SSCs + procedures. Only stating SSCs wouldn't obviously make the link to procedures which safety measures allows and is a key part.	AA	3	Safety features are a subset of SSCs so the latter is correct.
744	DBA should provide the main basis for: a) performance requirements and safety settings (e.g. actuator trip settings) for safety systems and safety related equipment; b) conditions governing permitted plant configurations and the availability of safety systems and safety-related equipment; and c) the safe operating envelope for the facility. These aspects should be defined through explicit limits and conditions derived within the DBA, or from the results of the DBA. The DBA should also inform the preparation of the operating instructions for implementing these limits and conditions at the facility.	Remove "Operating Rules" should be removed. Some Licensees use Technical Specifications rather than Operating Rules for defining limits.	AA	3	The concept of operating rules is well understood and licensees are free to use their own terminology.

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745	PSA should be directly related to existing facility and site information, data and documentation. Assumptions used in the absence of such information should be justified and careful consideration taken of their impact on the analysis. The PSA should be updated regularly, which for power reactors should mean adopting a "living PSA". If there is a significant change to the plant that could invalidate previous conclusions reached from consideration of the results from the existing PSA. Where the PSA is in support of a design under development, the guidance set out in para FA.1+3 should be followed.	There is no point in updating the PSA unless changes in the plant are sufficient that the conclusions reached by the previous version of the PSA, are likely to be challenged.	AA	3	This paragraph is clear on ONR's expectations for a living PSA. The comment from the author doesn't take into account multiple so called smaller changes which could lead to a significant safety impact. However the control and implementation of such changes will be taken into account in a licensee's modification arrangements.
746	Scope and extent PSA should cover all significant sources of radioactivity where there is a potential on-site and/ or off-site radiological consequence, all permitted operating states and all relevant initiating faults.	It should be made clear that this is where there could be an unmitigated off-site or on-site impact	AA	3	Wherever there is a significant source of radioactivity there will inevitably be the potential for onsite and offsite consequences.
747	Appropriate use of PSA should be made in activities such as: a) designing the facility; b) supporting modifications to design or operation; c) supporting the demonstration that risks are tolerable and ALARP; d) informing the selection of safety function categories or the safety class of structures, systems and components (see paras 150 and 153); e) setting Operating Rules or Technical Specifications f) informing arrangements for examination, maintenance inspection and testing (e.g. the frequencies of these activities); g) plant configuration control (including maintenance planning), which for power reactors is normally through the use of risk monitors; h) event analysis and investigating significant incidents and events; i) developing and changing operating procedures and associated training programmes for managing faults and accidents (including severe accidents); j) helping to determine initiating event frequencies for DBA; and jk) providing an input to SAA and to analyses performed under REPPiR (Ref).	This is a list of possible uses of the PSA – it should be clear that it is not a requirement to use PSA for these activities. Some Licensees use Technical Specifications rather than Operating Rules for defining limits.	AA	3	SAPs are not requirements and please see previous comment on operating rules. Final clause does need changing from j to k.
748	Measures identified under a) above need not necessarily involve the application of conservative engineering practices used in the DBA, but could instead be based upon realistic or best estimate assumptions, methods and analytical criteria. Such approaches have advantages in a severe accident context in that they can result in the provision of simple and flexible remotely stored measures that can be stored remote to the site and then be deployed in the well suited to the uncertain and degraded environment following a major event. The SAA should consider the nature of the safety functions to be provided by the additional measures, the conditions and circumstances under which they will need to operate (see paragraph 163) and the ease with which they could be deployed. Some safety functions will need to be fulfilled in situ and in circumstances where the design basis provisions will by definition have already failed. This will likely dictate the use of robust designs and conservative standards. The appropriateness of the engineering standards adopted should be justified on a case by case basis.	I am not sure what is meant by 'remotely stored measures well suited to the uncertain and degraded environment following a major event.'. Is this referring to centrally held equipment that could be deployed to assist a facility which is suffering a severe accident ?	AA	2	
749	The text does not provide an explanation as to why Figure X only presents the 'off-site' target 4 limits	n/a	AA	3	The figure is simply illustrating the range of applicability of DBA, PSA and SAA
750	INTRODUCTION The purpose of the Safety Assessment Principles (SAPs) The SAPs apply to assessments of safety and security at nuclear facilities that may be operated by potential licensees, existing licensees, or other dutyholders. This is usually through our assessment of safety cases in support of permissioning decisions. The term 'safety case' is used throughout this document to encompass the totality of a licensee's (or dutyholder's) documentation to demonstrate high standards of nuclear safety and radioactive waste management, and any subset of this documentation that is submitted to the Office for Nuclear Regulation (ONR).	This paragraph states that "The term 'safety case' is used...to demonstrate high standards of nuclear safety." Since Nuclear Security Cases (as part of Nuclear Site Security Plans submitted to ONR under NISR03) fundamentally support nuclear safety, it would follow that the principles of ALARP/SFAIRP should also apply to Nuclear Security Cases. It is understood that the vices of safety vs security regulations differ, but surely the ultimate focus is nuclear safety?	ALARP	3	The security legislation is not a relevant statutory provision of HSW though it is of the Energy Act. We acknowledge that there needs to be links between safety and security considerations but SFAIRP does not apply to security.
751	NIA is not the only health and safety law that applies on nuclear licensed sites. Nuclear operators must also comply with the relevant statutory provisions of the Health and Safety at Work etc Act 1974 (HSW Act). In particular, Additionally radiation protection is regulated under the Ionising Radiations Regulations 1999 (IRR) and emergency preparedness and associated radiation protection are regulated against the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPiR). Other relevant legislation includes the Management of Health and Safety at Work Regulations 1999 (the Management Regulations), that require, among other things, a suitable and sufficient risk assessment; the Provision and Use of Work Equipment Regulations 1998; the Lifting Operations and Lifting Equipment Regulations 1998; the Personal Protective Equipment at Work Regulations 1992; the Pressure Systems Safety Regulations 2000; the Control of Major Accident Hazards Regulations 1999 and the Dangerous Substances and Explosive Atmospheres Regulations 2002 which requires a risk assessment for any substance identified in the Chemicals (Hazard Information and Packaging for Supply) Regulations 2009). This list is not exhaustive. Nuclear operators must comply with these regulations in the same way as any other employer, and the codes of practice associated with these regulations will often contain relevant good practice that can be used in safety cases when demonstrating what is reasonably practicable.	Text currently doesn't make sense and implies that there may be a hierarchy of legislation.	ALARP	1	
752	Though R2P2, TOR and SAPs set out indicative numerical risk levels, meeting relevant good practice in engineering and operational safety and security management, is of prime importance. In general, ONR has found that meeting relevant good practice in engineering, operation, and safety and security management leads to risks that are reduced SFAIRP and numerical risk levels that are at least tolerable, and in many cases broadly acceptable.	Given the broad applicability alluded to in Para 1 and also given the new safety/security boundaries explanatory paragraphs following paragraph 33, this broad term should also refer to security management.	ALARP	3	See text for 750 - we don't want to include security here.
753	The starting point for demonstrating that risks are ALARP and safety is adequate is that the normal requirements of good practice in engineering, operation, and safety and security management are met. This is a fundamental expectation for safety cases. The demonstration should also set out how risk assessments have been used to identify any weaknesses in the proposed facility design and operation, identify where improvements were considered and show that safety is not unduly reliant on a small set of particular safety features.	Removal of the sentence "safety is adequate" as this is subjective and open to mis-interpretation. ALAP is already enough for the legal context. Given the broad applicability alluded to in Para 1 and also given the new safety/security boundaries explanatory paragraphs following paragraph 33, this broad term should also refer to security management.	ALARP	3	see text for 750 - we don't want to include security here.

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754	The development of standards defining relevant good practice often includes ALARP considerations, so in many cases meeting these standards will be sufficient to demonstrate that legal requirements have been satisfied. In other cases, for example where standards and relevant good practice are less evident or not fully applicable, or the demonstration of safety and security is complex, the onus is on the dutyholder to implement measures to the point where it can demonstrate that the costs of any further measures would be grossly disproportionate to the reduction in risks achieved by their adoption.	SAPs are not requirements or regulations they are principles to guide ONR assessors of licensee safety cases. As currently written, the last sentence could be taken as implying that the SAPs are either regulations or requirements, but they are neither; they are principles to guide ONR assessors of safety cases. Suggest that "and guidance" is added to the second sentence to make it clear	ALARP	3	See text for 750 - we don't want to include security here.
755	International Framework The UK is a member state of the International Atomic Energy Agency (IAEA) and contributes actively to the development of Safety Standards that the IAEA publishes. The UK applies these Safety Standards and ensures that its own regulations, and regulatory requirements and guidance are consistent with them. This includes the SAPs, which were benchmarked for the 2006 issue against IAEA's Safety Standards and have been updated to reflect subsequent changes since 2006 for this issue.	SAPs are not requirements or regulations they are principles to guide ONR assessors of licensee safety cases. As currently written, the last sentence could be taken as implying that the SAPs are either regulations or requirements, but they are neither; they are principles to guide ONR assessors of safety cases. Suggest that "and guidance" is added to the second sentence to make it clear	ALARP	2	
756	In addition to working with IAEA on Safety Standards, ONR assists the UK Government on matters arising from the review meetings of the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Other areas where ONR is active in the promotion of improvements to nuclear safety include participation in the Western European Nuclear Regulators Association (WENRA), the European Nuclear Safety Regulators Group (ENSREG), the International Nuclear Regulators Association and the Organisation for Economic Cooperation and Development's Nuclear Energy Agency (NEA). ONR's guidance to inspectors seeks to take account of developing advice and guidance arising from the work of all these and other relevant organisations. In particular, the WENRA safety reference levels are explicitly incorporated as relevant good practice within ONR's technical assessment guides.	ALARP para 93 says that a safety case should justify that a chosen option needs to meet RGP. Thus paragraph 21 implies that all UK safety cases should meet WENRA safety reference levels. This requirement is not proportionate.	ALARP	3	WENRA reference levels relate to nuclear power reactors and are adopted as RGP where they are relevant - see TAG 005. So all UK safety cases don't have to meet the WRLs. "Meeting WRLs" as RGP allows for licensees to achieve the same level of safety implied by the WRLs in their own (justified) way.
757	New Facilities One of the aims of the SAPs is to support the regulatory safety and security assessment of new (proposed) nuclear facilities. They represent ONR's view of good practice and we would expect modern facilities to have no difficulty in satisfying their overall intent.	ONR (CNS) are involved in the GDA process and the ongoing assessment of new nuclear security arrangements.	ALARP	3	The security legislation is not a relevant statutory provision of HSW though it is of TEA
758	Facilities built to earlier standards Inspectors should assess safety cases against the relevant SAPs when judging if a dutyholder has demonstrated that legal requirements have been met and risks have been controlled to ALARP. The extent to which the principles ought to be satisfied must also take into account the age of the facility or plant. For facilities designed and constructed to earlier standards, the issue of whether suitable and sufficient measures are available to satisfy ALARP, will need to be judged case by case.	The text ' need to ' should have been in RED since it is new text	ALARP	2	
759	Ageing As a facility ages, safety margins may be eroded and a dutyholder may argue that making improvements is not worthwhile. The short remaining lifetime of the facility may be invoked as part of the ALARP demonstration. However, this factor should not be accepted to justify the facility operating outside legal requirements, or at levels of risk that are unacceptably high (see SAPs Numerical Targets). A safety case which argues for not making an improvement based predominantly on limited future lifetime should only be accepted where the maximum extent of the future operational life is irrevocably fixed and provides a suitable margin of safety. In cases where the planned lifetime is not irrevocably fixed, a minimum period of ten five years (or the unavoidable necessary life of the facility, if longer) should be considered for the purposes of judging whether risks are ALARP	The referral to an assumption of a minimum 10 years where the lifetime of a facility is not irrevocably fixed seems excessive. Suggest a figure of 5 years based on experience of the lifetime extensions typically applied to the Magnox plant	ALARP	3	The 10 yr period is compatible with TAG 005 and the aim is to discourage repeat short life extensions in which the short number of years plays a role in minimising the reasonably practicable cost.
760	Safety and Security Assessments Safety and security legislation impose separate, specific duties on licensees / duty holders. Sometimes these duties overlap, as in REPPIR [Ref] where Hazard Identification and Risk Evaluation (HIRE) assessments need to consider both safety-derived initiators and potential unauthorised behaviour of employees or the public. On other occasions they are interrelated. For instance, while malicious acts such as sabotage, theft or terrorism would not normally be considered when determining the reasonably practicable preventative or protective measures needed in the interests of safety, what might be done to mitigate (etc) the consequences from such acts should nevertheless be considered within safety assessments.	Aligns better with NORMS.	ALARP	2	
761	In general, the aims of safety and security legislation will be complementary, in that both are intended to lead to measures that reduce the risk of harm to the public and workers arising from nuclear facilities to ALARP, and so measures that adequately address the requirements of one set of legislation will often satisfy the requirements of the other. On other occasions a common solution will not be possible, and dutyholders will need to determine a solution that separately addresses the requirements of safety and security legislation. In practical terms this may mean (for instance to reduce the total amount of documentation required) that duty holders may choose to combine safety- and security-derived assessments into single documents, or choose to keep those parts of the safety case which are also needed to meet security duties separate from the rest of the safety case. Such approaches are perfectly acceptable provided the totality of these documents addresses the totality of the duties from the two areas. In particular, the combining of assessments in this way should not be taken to imply security assessments lie within the remit of safety legislation, or vice versa.	Paragraph 1 states that "The term 'safety case' is used...to demonstrate high standards of nuclear safety." Since Nuclear Security Cases (as part of Nuclear Site Security Plans submitted to ONR under NISR03) fundamentally support nuclear safety, it would follow that the principles of ALARP/SFAIRP should also apply to Nuclear Security Cases. It is understood that the vires of safety vs security regulations differ, but surely the ultimate focus is nuclear safety? For consistency (term is described as a single word in paragraph 1).	ALARP	3	SFAIRP/ALARP is not applicable to security.
762	The structure of the targets is based on the TOR2 framework, which was extended in R2P2. In assessing the safety of nuclear facilities, inspectors should examine the safety case to judge the extent to which the targets are achieved, noting that some are also legal limits in the IRRs (and therefore cannot be exceeded, even if the risks are shown to be ALARP). These targets are suffixed with (LL) to denote this fact. Some of the targets are in the form of dose levels; others are expressed as frequencies or risks. Each is set in terms of a Basic Safety Level (BSL) and a Basic Safety Objective (BSO); these have this terminology has been used to translate the TOR (R2P2) risk policy framework as described in Annex xx. The BSO marks the start of the broadly acceptable level in R2P2.	Clarity. Text added from para 570 that is better here.	ALARP	3	ALARP type arguments are not applicable to formal legal requirements, so you can not show a risk is ALARP if you fail to meet the legal limit.
763	Separate targets are defined for normal operations, design basis fault sequences, individual risks, accident frequencies and societal risk. Most of the targets are not mandatory.	Removed text is better in 569.	ALARP	4	

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764	Basic safety levels It is ONR's policy that a new facility or activity should at least meet the BSLs. However, even if the BSLs are met, the resultant risk may not be ALARP, therefore additional work may be required to reduce the risk further. Deciding when the level of risk is ALARP needs to be justified by the dutyholder on a case-by-case basis, applying the legal requirement of gross disproportion. A graded approach should be used so that the higher the risk (or hazard), the greater the degree of disproportion applied, and the more robust the argument needed to justify not implementing additional safety measures.	Clarity	ALARP	3	If the risks are not ALARP there is no "may" need to do more, "must" do more is the requirement.
765	Existing facilities may have been designed and constructed to earlier safety standards, or safety related structures, systems and components may have deteriorated with the passage of time. Safety cases for such facilities may, in the first instance, demonstrate that the facility exceeds one or more of the BSLs. If the BSL is a legal limit, measures must be taken by the dutyholder to restore compliance and appropriate enforcement action should be considered by inspectors. For other BSLs, ONR's policy is that the level of gross disproportion in ALARP considerations should be very high and so inspectors should assume it is highly likely that additional improvements to safety will prove reasonably practicable. Inspectors should therefore press dutyholders to demonstrate that a robust optioneering process has been undertaken, including considering the development of new options through research, to control the radiological hazard. Continuing to operate while failing to meet a BSL should only be acceptable if the dutyholder can demonstrate that there are no options that are reasonably practicable to reduce risks further in the short term. Moreover, if operation is to continue, then inspectors should seek a clear longer-term plan to manage and reduce the risks within a period that is as short as is reasonably practicable. Where a BSL is exceeded, consideration should be given to regulatory action to shut down the facility or prohibit or curtail the activity.	Clarity	ALARP	2	
766	When applying the BSLs, it must be remembered that the TOR2 framework does not in itself, provide inspectors with a basis for recommending particular actions, as it has no legal status. The framework does nevertheless help to identify when serious consideration should be given to formal enforcement as a means of achieving compliance with legal requirements, ie reducing risks to ALARP, in accordance with HSE's Enforcement Policy Statement (see the HSE website).	Grammar	ALARP	2	
767	Basic safety objectives The BSOs form benchmarks that reflect modern safety standards and expectations. The BSOs also recognise that there is a level beyond which further consideration of the safety case would not be a reasonable use of ONR resources, compared with the benefit of applying these resources to areas of higher hazard/greater risk. Inspectors therefore need not seek further improvements from the dutyholder but can confine themselves to assessing the validity of the arguments that the dutyholder has presented. The dutyholder however, is not given the option of stopping at this level. ALARP considerations may be such that the dutyholder is justified in stopping before reaching the BSO, but if it is reasonably practicable to provide a higher standard of safety, then the dutyholder must do so by law.	Clarity	ALARP	2	
768	Uncertainties in the dutyholder's safety analyses, and claims of accuracy and precision in numerical estimates should be assessed, e.g. through sensitivity analyses.	Minor error corrected.	ALARP	2	
769	ALARP demonstrations are sometimes supported by Cost Benefit Analysis (CBA). CBA compares the benefits of implementing further measures to improve safety, scaled by an appropriate gross disproportion factor, with the costs of implementing those safety measures. Where CBA is used to support the ALARP argument, it should follow HSE's general ALARP guidance (ref). In particular, CBA should not form the whole argument justifying an ALARP decision, nor be used to undermine existing standards or relevant good practice.	Clarity	ALARP	4	
770	Safety cases should be assessed against the SAPs numerical targets and legal limits for normal operational, design basis fault, and radiological accident risks to people on and off the site.	It is the responsibility of licensees to define numerical targets against which they assess their risk calculations. Whilst most licensees choose to align with the SAPs a licensee may choose more restrictive limits which would be acceptable. The proposed change would force a licensee to compare against the SAP targets rather than their own targets	ALARP	4	
771	There should be appropriate management controls in place for other people who may be in the facility or on the site, e.g. trainees under 18 years of age and members of the public visiting the site, to restrict their exposures in accordance with the IRRs. Persons under 16 years old should be prevented from working with ionising radiations (International Labour Organisation (ILO) Convention 115 (1960) Article 7.2).	Clarity	ALARP	2	
772	The doses during normal operations predicted for people outside the site should be based on calculated doses to the relevant reference groups from direct radiation and from discharges of activity to air and other media.	Exposure has a specific use which I don't think is intended here. While I understand the general usage, I think it is best avoided in a document of this nature to eliminate the potential for confusion.	ALARP	2	
773	Dose targets for design basis fault sequences The numerical targets for DBA represent criteria for assessing the safety of the facility's design and operations for significant faults within the design basis. They are based on initiating fault frequencies and so take no account of the reliability of the claimed safety measures. Instead, they place the focus on the effectiveness of the safety measures in addressing the fault's consequences (effective dose). The BSOs are set at levels where the resultant consequences will be broadly acceptable, given the likelihood of the initiating fault. Consequences at these low levels will normally only be achievable through installation of appropriately engineered safety measures rather than mitigating systems (see paragraph 142). The DBA should demonstrate that adequate robust safety measures are in place, including the presence of at least one intact barrier at sequence termination.	Clarity	ALARP	3	It is for all faults within the design basis, not just significant ones and the criteria help to define the design basis.
774	For 'frequent' faults (i.e. those with an initiating fault frequency exceeding 1×10^{-3} pa) the BSLs are set at the legal limits for normal operational exposures. For less frequent faults, higher fault consequences are likely to be consistent with a requirement to reduce risks to ALARP, and the greater level of effort this requires leads to the stepped relationship shown schematically in paragraph xx.	Clarity	ALARP	2	

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775	<p>The effective doses calculated for comparison with Target 4 should be evaluated conservatively. In addition to the general aspects set out in paragraphs 505ff, it should be assumed for off-site releases that:</p> <p>a) the person remains at the point of greatest dose for the maximum duration, although for extended accidents a more realistic occupancy may be assumed after a suitable interval;</p> <p>b) the conditions under which the accident is analysed has characteristics which produce the highest dose to that person; and</p> <p>c) no emergency countermeasures are implemented, other than those whose implementation is shown to be highly likely.</p> <p>In the application of design basis analysis to assess the consequences of releases on-site, the detail and extent of the analysis should be proportionate to:</p> <p>1) its suitability/appropriateness to assess the facility of interest; and</p> <p>2) the suitability/appropriateness of other analysis techniques that ensure on-site doses are ALARP.</p>	<p>The design basis methodology is unsuitable for producing on-site radiological consequence estimates for power reactor facilities.</p> <p>Further clarification could be provided in the Radiological Consequences TAG.</p>	ALARP	3	The onsite doses here are for identifying DBA faults and establishing the scope of design basis analysis - if all of the faults with onsite effects are effectively captured by the faults with offsite potential then that is fine. For comparison with other targets a best estimate methodology is preferred
776	There should be checks to ensure that the Target 5 BSL is not exceeded, particularly if there are contributing dose bands in Target 6 where the predicted frequencies approach its BSLs. In determining the risk to the most exposed person on site, due account should be taken of risk contributions from all facilities on the site, and not just the facilities where the person usually works.	It is not clear how this would be done practically e.g. would have you to consider where the worker has worked in the past and where the worker could work in the future?	ALARP	2	
777	The individual risk levels in R2P2 include the risks arising from normal operational doses. Although the legal limit of 1 mSv (Target 3 BSL) equates to a risk of death of approximately 5×10^{-5} pa, in general the normal operational doses received are significantly lower. Therefore normal operational risks are not a significant factor when setting individual risk targets for accidents. Moreover, it is very unlikely that the predicted risks from normal operation and accidents will both be near the BSL for any particular individual. As such, the BSL and BSO for Target 7 have been set in line with R2P2.	Too vague, even for a quantity with a level of uncertainty associated with it. The numerical targets annex states a value for 1 mSv and this section should be consistent.	ALARP	2	
778	The term 'power reactor' should be included into the Glossary	n/a	ALARP	3	Don't think we need to define power reactor
779	Short term high risks that would exceed a BSL if they had instead been evaluated as a long term continuous risk should be avoided except in special circumstances. These circumstances should be justified in advance. They may include situations not originally foreseen in the design of the facility, or which are unavoidable because of the need to increase risks for a short time in order to reach a safer state in the long term (e.g. during the recovery phase following an event or in end of life legacy situations highlighted in paragraph (XX629+1)).	Text added to say that it may be acceptable to incur a short term period of high risk during 'event recovery'	ALARP	2	
780	Suggest moving this principle to be part of Control, Electrical and Instrumentation Principles	Unauthorised access includes remote access to computer programs and reference data'. Suggest this should be part of Control and Electrical Engineering rather than Civil Engineering and External Hazards	CEEH	3	No change required
781	Internal hazards are those hazards to the facility or its structures, systems and components that originate within the site boundary and over which the dutyholder has control in some form. The term is usually limited to apply to hazards external to the process, in the case of nuclear chemical plant, or external to the primary circuit in the case of power reactors. Internal hazards include internal flooding, fire, toxic gas release, dropped or impact loads and internal explosions/ and internal missiles. Again, this list is not exhaustive.	<p>A load lifted by a crane can swing uncontrollably and impact adjacent structures without a drop taking place. Of course, an uncontrollable swing of the load could also be followed by a drop (of the load).</p> <p>Certain explosions could lead to the generation of missiles, thus the amalgamation of the two hazards is understandable. However, missiles could also be generated by other events such as the failure of rotating machinery (e.g.: turbo-generators or reactor cooling pumps) or the failure due to over-pressurisation of high energy pressure equipment/pipework (e.g.: tanks, pumps, valves...). In other words, it is preferable to consider these two internal hazards as individual hazards. The word "internal" in front of each hazard is necessary to avoid confusion with external explosions and external missiles.</p>	CEEH	2	
782	Identification and characterisation An effective process should be applied to identify and characterise all external and internal hazards that could affect the safety of the facility.	<p>The word "characterisation" should be defined.</p> <p>Characterisation of a hazard can be given various interpretations depending on the person you are speaking to. So, to avoid any misinterpretations it is suggested to add a definition of the word "characterisation" in the context of hazards studies into the Glossary.</p>	CEEH	4	
783	Hazards should be identified in terms of their severity and frequency of occurrence and characterised as having either a discrete frequency of occurrence (discrete hazards), or a continuous frequency-severity relation (non-discrete hazards). All hazards should be treated as hazard initiating events (HIEs) in the fault hazards analysis unless they have been screened according to EHA.19.	<p>Normally a design basis fault analysis considers postulated initiating events (PIEs) which are plant faults. Similarly, a design basis hazards analysis should consider HIEs. A definition of a HIE could be:</p> <p>HIE = A starting point for safety analysis, comprising a single unplanned event or occurrence that causes subsequent degradation or failures, potentially arising from a natural or external event or a Hazard Initiating Fault (HIF) (where HIF = a specific SSC failure or human error that could potentially generate a hazard if unmitigated).</p> <p>Clarification that hazards may be excluded in alignment with principle EHA.19</p>	CEEH	4	
784	The identification process should include reasonably foreseeable and credible combinations of independently occurring hazards, causally-related hazards and consequential events resulting from a common initiating event (see FA.2).	There are instances where combinations of hazards could be foreseeable but not credible, hence the suggested addition. Of course the credibility criteria will be defined by the designer / operator of a particular plant.	CEEH	4	
785	Design basis events hazards For each internal or external hazard which cannot be excluded on the basis of either low frequency or insignificant consequence (see EHA.19), a design basis event-hazard should be derived.	A design basis event could be perceived as a design basis fault depending on the context of the text. So, to avoid confusion it is suggested to differentiate between faults and hazards in this context. In other words the overall Design Basis Analysis should consider both design basis faults and design basis hazards.	CEEH	4	
786	For external hazards, the design basis event should be derived conservatively to take account of data and model uncertainties. The thresholds set in FA.5 for design basis events are 1 in 10,000 years for natural external hazards and 1 in 100,000 years for man-made external hazards and all internal hazards (see also para 515).	The cross-reference to FA.5 is currently incorrect as the distinction has to be made between natural and man-made external hazards.	CEEH	2	

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787	Some hazards may not be amenable to the derivation of a design basis event based on frequency. In such cases a surrogate maximum credible event, supported by scientific evidence may be defined. The severity of the maximum credible event should be compatible with the principles of FA.5. In some cases it may not be possible to derive a design basis event on either frequency or evidential grounds, in these cases appropriate application of codes and standards should be sought	Not all hazards are amenable to derivation by frequency, or by derivation of a credible maximum using scientific evidence, so retention of use of codes and standards is essential. To not have this would mean making the nuclear industry responsible for a lot of blue sky research, which may, or may not, be successful.	CEEH	3	No change required
788	Analysis of beyond design basis events should: a) Confirm the absence "cliff edge" effects just beyond the design basis (EHA.7); b) Identify the hazard level at which safety functions could be lost (i.e. determine the beyond design basis margin); If applicable identify the hazard level at which safety functions could be lost, or demonstrate adequate margin to a point beyond the design basis where loss has still not occurred c) Provide an input to probabilistic safety analysis of whether risks targets are met (see para 568ff); d) Ensure that safety is balanced so that no single type of hazard makes a disproportionate contribution to overall risk (see para 618); and e) Provide an input to severe accident analysis (see paras 543ff).	In some cases it may not be possible to identify the hazard level at which safety function loss occurs, so it would be useful to be able to demonstrate that a point far beyond the design basis still has no impact and that therefore identifying the point of function loss is not required.	CEEH	4	
789	Types of weather conditions to be analysed should include, but not be limited to abnormal wind loadings, wind-blown debris, precipitation, accumulated ice and snow deposits, lightning, extremes of high and low temperature, humidity and drought.	List may be too limiting.	CEEH	2	
790	Flooding Facilities should be shown to withstand flooding conditions up to and including the design basis event. Severe accidents involving initiated by flooding should also be analysed.	Makes sentence clearer.	CEEH	4	
791	Facilities should be protected against a design basis flood by adopting a layout-based on maintaining the 'dry site concept'. suitable methods. In the 'dry site' concept, Where practicable all vulnerable structures, systems and components should be located above the level of the design basis flood, together with an appropriate margin in accordance with EHA.7. This may be accomplished by locating the plant at a sufficiently high elevation, or by structural arrangements that raise the ground level (e.g. by use of fill material). In the latter case, the safety functions delivered by these structures should be assured through appropriate safety management arrangements including the ECS principles (para 148ff).	The 'dry site concept' is very prescriptive for ONR; it is requested that the licensee adopts a protection concept for the necessary SSCs to a method deemed suitable. Note that heat sink SSCs need to be located at low levels.	CEEH	3	IAEA Guidance - good practice
792	In line with EKP.3 (defence in depth), consideration should be given to extreme hydrological phenomena. The design of all structures, systems and components needed to deliver the fundamental safety functions in any permitted operational states should be augmented by waterproofing protected from water ingress as a redundant measure to provide a further barrier in the event of flooding of the site.	Protection from water is not just through waterproofing, so change sentence to allow other protection mechanisms.	CEEH	2	
793	Though structural reliability data is becoming more freely available for non-nuclear structures, this is often may not be directly applicable to the design and construction of nuclear structures. For instance the data is often not based on comparable analysis methods or design, construction or materials standards. There are thus specific international codes for nuclear structures which describe how to achieve appropriate levels of reliability. These may be supported by good civil engineering practice, appropriate material specifications and good construction practice. The appropriateness of the limit states specified in these codes may need to be considered.	The revised text could be written more clearly	CEEH	4	
794	Clause k) is a post-Fukushima enhancement.	Clause k) is a post-Fukushima enhancement. Where is clause k? – either delete this or add clause k)	CEEH	4	
795	In-service inspection, testing and monitoring Inspection, testing and monitoring Provision should be made for inspection, testing and monitoring during normal operations aimed at demonstrating that the structure continues to meet its safety functional requirements until the next planned inspection.	It is not sufficient for a structure to meet its functional requirements at the instant of inspection, there must be confidence in this ability up to the next planned inspection.	CEEH	2	
796	Civil engineering structures that are important to safety , that retain or prevent leakage should be tested for leak tightness prior to operation.	Not all civil engineering structures that retain or prevent leakage will be important to safety.	CEEH	4	
797	Inspection of sea and river flood defences Provision should be made for the routine inspection of sea and river flood defences to determine their continued fitness for purpose. These inspections may have to extend beyond the site boundary.	If these defences are not engineered defences e.g. natural foreshore, coast line or dunes, the inspections may need to extend beyond the site licence boundary.	CEEH	2	
798	The safety categorisation scheme employed should be linked explicitly with the licensee's design basis analysis (see para FA.9+1). Various schemes are in use in the UK; these principles have been written assuming categorisation on the following basis: a) Category A – any function that plays a principal role in ensuring nuclear safety. b) Category B – any function that makes a significant contribution to nuclear safety. c) Category C – any other safety function contributing to nuclear safety	Categorisation applies only to nuclear safety, where there are non-nuclear safety functions, even with very serious non-nuclear consequences, they should not be categorised. Additionally this makes the definition consistent with Cat A and Cat B.	CE&I	2	
799	A number of different safety classification schemes are in use in the UK. The following scheme, linked to the categorisation scheme outlined in para 149, is recommended in these principles: a) Class 1 – any structure, system or component that forms a principal means of fulfilling a Category A safety function. b) Class 2 – any structure, system or component that makes a significant contribution to fulfilling a Category A safety function, or forms a principal means of ensuring a Category B safety function. c) Class 3 – any other structure, system or component contributing to a categorised safety function.	Only SSCs performing categorised nuclear safety roles should be classified otherwise the expectation is that every component at a nuclear plant must be at least class 3.	CE&I	2	

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800	Appropriate nuclear industry specific national or international codes and standards should be adopted for classified structures, systems or components. If there is no appropriate nuclear industry specific code or standard an appropriate non-nuclear code or standard should be applied instead.	If there are no appropriate nuclear-industry standards that could be applied to Class 1 and 2 then what should be applied. It is noted that several of the nuclear standards apply only to NPP and may not be applicable to other facilities.	CE&I	3	There are appropriate standards for Classes 1 and 2 SSCs so the clause purely relating to Class 3 is correct. For facilities other than NPP often NPP codes can be applied but IAEA and bodies such as IEC are working hard to get full coverage coverage of other nuclear facilities.
801	The qualification procedures should provide a level of confidence commensurate with the item's safety classification of the structure, system or component .	Clarifying the text.	CE&I	2	
802	The qualification procedures should address all every relevant operational, environmental, fault and accident condition (including severe accidents).	More precise English.	CE&I	1	
803	The procedures should include a physical demonstration that individual items can perform their safety function(s) under the conditions, and within the time substantiated-claimed in the facility's safety case.	If it has been substantiated then the demonstration must have been made and the evidence referred to.	CE&I	1	
804	The procedures should ensure that adequate arrangements exist (Licence Condition 6, see the ONR website) for the recording and retrieval of lifetime data covering the item's structure, system or component's construction, manufacture, testing, inspection and maintenance to demonstrate that any assumptions made in the safety case remain valid throughout operational life.	Clarifying the text.	CE&I	1	
805	Diversity in the detection of fault sequences All Each Class 1 protection systems should employ diversity in their detection of and response to fault conditions, preferably by the use of different variables.	Reword to cover any Class 1 system and not solely reactor protection systems.	CE&I	1	
806	For Class 1 and 2 systems and components statistical testing is highly recommended as an approach for demonstrating the numerical reliability of computer-based safety systems. Such testing may play a role in both 'production excellence' and 'confidence-building' aspects of the safety justification.	Application of statistical testing on Class 3 computer based systems is unlikely to be reasonably practicable, particularly for pre-existing products.	CE&I	1	
807	If weaknesses are identified in the production process, compensating measures should be applied to address these. The choice of compensating measures and their effectiveness should be justified in the safety case.	It is unclear why the use of compensating measures must have specific reference within the safety case as the whole assessment for a CBS should be referenced within the safety case. If what is meant is specific justification within the safety report then this could be overwhelming level of detail for a new plant.	CE&I	3	Compensating measures are an important part of a safety case hence it should be described in the higher level safety report with more detailed information given in supporting references. The other comment is speculation about work loads and has not been ONR's experience of the assessment of new plant.
808	Provision of controls Adequate and reliable controls should be provided to maintain all every safety-related plant parameter within its specified range (operating rules).	More precise English	CE&I	1	
809	Where the source, or elements of the source are located on the site, its safety classification should be assigned in accordance with para 156, (i.e. be based in the first instance on the classification of the systems or equipment it supports).	Wording need to be more precise. It is not clear from the wording what the requirement is. It is intended to ensure the supply meets specific reliability requirements? As it is it could cause confusion and the objective needs to be made more precise. It suggests for example a Class 3 system cannot be fed from a Class 2 when it can if assigned as an associated circuit. Also it fails to consider if the connected load is fail safe in which case a lower classification of supply may be acceptable.	CE&I	1	
810	It should be shown demonstrated that the safety functions of all the each facilities will be delivered in all each permitted operating modes (including during maintenance) and for fault and accident conditions (see also para 124).	More precise English	CE&I	1	
811	Over-protecting can be detrimental to safety. The overall provision of protection devices and their potential effects on the facility and its safety systems should therefore be analysed and justified.	An irrelevant statement; suggest deleting.	CE&I	2	
812	Providing adequate protection for members of the public and for workers against exposure to ionising radiation and radioactive contamination is required both in normal operations and fault and accident conditions. All facilities must be designed , operated, inspected, maintained and decommissioned in compliance with regulations relating to the safe use of ionising radiations. Adequate protection is that level which ensures compliance with the reasonable practicability requirements of all relevant legislation, taking the latest modern standards into account.	Addition of the word design to ensure this important phase is captured.	EP, RP and criticality	2	
813	"Regulation 8(2) establishes a hierarchy of control measures for restricting exposure. First and foremost, in any work with ionising radiation, radiation employers should take action to control doses received by their employees and other people by removing or eliminating the hazard and then by engineered means. Only after these have been applied should consideration be given to the use of supporting systems of work and other administrative controls . Lastly radiation employers should provide personal protective equipment to further restrict exposure where this is reasonably practicable."	Better wording to align with hierarchy of controls.	EP, RP and criticality	2	
814	In line with guidance in the ACoP10, the safety case should give preference to the use of appropriate engineering controls and design features. The restriction of exposure to radiation and radioactive contamination should not preclude admission to, or occupancy of, any facility area where access is needed to achieve or maintain a stable safe state.	Not sure of alternative wording, but currently this wording complicates and confuses what are "acceptable" conditions in an emergency and provides no guidance therefore to support either the inspector or the operator.	EP, RP and criticality	4	
815	Instrumentation should be provided to give prompt, reliable and accurate indication of airborne activity and direct radiation, particularly in operating areas in areas where these conditions could change during operation and where actions would need to be taken to ensure the protection of personnel from those hazards . These should be fitted with alarms to indicate any significant changes in levels necessitating prompt action. The design of this equipment should take into account the required reliability levels and the environmental conditions in which it will need to provide safety functions (see paras 166ff). Consideration should also be given to the provision of remote indication of radiological conditions following accident situations (see para 642).	Original wording did not make it clear where instrumentation should be provided and implied that it could be anywhere and everywhere.	EP, RP and criticality	2	

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816	Remove paragraph 492	This paragraph is duplication with IRR 99.	EP, RP and criticality	3	Paragraph does partly duplicate IRR99 requirements but we are proposing minor changes to bring it into the style of SAPs and address comments by other consultees. We think its inclusion is appropriate.
817	Remove paragraph 494	This paragraph is duplication with IRR 99.	EP, RP and criticality	3	Paragraph does partly duplicate IRR99 requirements but we are proposing minor changes to bring it into the style of SAPs and address comments by other consultees. We think its inclusion is appropriate.
818	An on-site emergency control centre should be provided from which an emergency response can be suitably and safely directed. At operating power reactor sites this should be separate from both the control room and the supplementary control room. Where reasonably practicable this facility should be of robust design and suitably protected from radiation and other hazards potentially present in accident scenarios.	Learning from Fukushima - Addition of requirement to have a robust emergency control centre as per wording used for the next paragraph.	EP, RP and criticality	2	
819	Facilities A facility should also be provided for managing the deployment and return of emergency response teams, including briefing and rest/recuperation areas. Where reasonably practicable, these facilities this facility should be of a robust design and suitably protected from radiation and other hazards potentially present in accident scenarios. These facilities This facility should be designed to operate independently, without any need for off-site support.	Changed to singular facility, although likely that the design of the emergency arrangements would need more than one facility for managing team deployment, not all of these would need to be fully equipped for welfare purposes, and designed to withstand BDB hazards.	EP, RP and criticality	3	This restates the existing paragraph but introduced a grammatical error.
820	For new designs the majority of the sufficient human factors analysis should be completed during the pre-construction safety report (PCSR) stage in order to influence to appropriately de-risk the design and inform the safety analysis. As the design progresses, the human factors analysis should start to focus on verification of the human factors claims in the safety case influence the design and inform the safety analysis via appropriate design evolution and modification processes. As the design is realised, the focus of human factors analysis should progressively shift towards the verification of the human factors claims in the safety case.	As previously written the SAP risks loading too much assumptions based HF analysis in to the PCSR step, far sooner than many key HF design items can be properly assessed and influenced (e.g. HMIs, Procedures, Training Packages, etc.); further there is a risk that this will be interpreted to imply that if HF is not done by PCSR then it can all be left until verification. I propose rewording to show a realistic phased transition from PCSR through to final verification. It should be noted that any significant new build project will have many different sub-projects that will progress at different rates, and be at different levels of "HF design maturity" at the facility PCSR stage – so to achieve effective integration of HF at the right time a more phased approach will be needed which recognises that at PCSR stage the design of more HF sensitive items such as HMIs and procedures may be relatively immature compared to the overall gross design of the facility that the case is being used to permission.	HF	3	ONR expects HF to inform the design through the design cycle this should focus upon the HF aspects relevant to the design stage.
821	This principle includes identifying all the safety actions of personnel responsible for monitoring and controlling the facility and of personnel carrying out maintenance, testing and calibration activities. It also includes consideration of the impact on safety arising from engineers, analysts, managers directors and other personnel who may not interact directly with plant or equipment.	"Directors" has been deleted from the text because they make decisions that could impact globally, but are at a strategic rather than operational level, hence should be assessed within the scope of SAPs associated with organisational arrangements and / or nuclear safety culture; not one that addresses nuclear safety actions. The scope of this SAP should be limited to personnel capable of having an operational (direct or indirect) impact on the plant – as such a director MIGHT perform such an action, but such an action would be bounded by managerial actions.	HF	3	Directors have a role in decision making for example under severe accident conditions
822	"The human reliability analysis should include: pre-fault human actions during maintenance, calibration or testing activities where error could result in the non-availability of equipment or systems important to safety ; safety classified structures, systems or components ; actions that contribute to initiating events; post-fault human actions; and long term recovery actions in severe accidents.	This should ensure a link to the safety case and systems claimed in the safety case through the Categorisation/Classification is clear. I think this link needs to be present to ensure the analysis is bounded in a proportionate manner to safety analysis and safety case. It could be recognized that equipment or system important to safety captures the wider systems on-site than just those which are classified. However that could be interpreted that the safety classification is therefore not comprehensive enough. Para. 150 outlines that "the potential for a functional failure to initiate a fault" if a non-classified system can be incorrectly maintained it can fail in a manner which could cause a fault and thus should be classified. Defining the link to safety classified structure systems and components should there capture all systems important to safety.	HF	4	
823	The value of safety as an integral part of good business and management practice should be reinforced through interactions between directors, managers, leaders and staff, including contractors, to establish a common purpose and collective social responsibility. Consultation and involvement of all staff secures effective engagement and co-operation in the development, maintenance and improvement of safety and promotes a shared concern for achieving safety goals. As a result, people at all levels in the organisation should be engaged in a common purpose that recognises collective responsibility and accountability to each other and external stakeholders to ensure high standards of safety. This engagement with the value of safety should extend into the supply chain to underline the importance of safety requirements and meeting behavioural expectations.	Minor change suggested to emphasise that the extension to the supply chain should apply to the whole paragraph (i.e. engagement with the value of safety) rather than just the final point in the paragraph	LMfS	4	
824	The management system should give due regard to safety, and safety should be considered explicitly when developing and implementing new arrangements for managing the organisation. An integrated-The management system should be adopted in order to minimise the potential for goal conflicts and conflicting responsibilities and relationships. The management system should: a) be based on national or international standards or other defined documents; b) be aligned with the goals of the organisation and contribute to their achievement; c) be subject to regular review, seeking continual improvement; and d) support a positive safety culture.	The line "An integrated management system should be adopted in order to minimise the potential for goal conflicts and conflicting responsibilities and relationships" is the only text that specifies Integrated Management System. I'd propose the change or changing the other references to the "Management System" to be "Integrated Management System."	LMfS	4	
825	This treatment of how security and safety interact appropriately raises the issue.	New para expanding final sentence of 32. Mention of resilience here is a post-Fukushima enhancement..	SC	4	
826	The management system should give due regard to safety, and safety should be considered explicitly when developing and implementing new arrangements for managing the organisation. An integrated The management system should be adopted in order to minimise the potential for goal conflicts and conflicting responsibilities and relationships. The management system should: a) be based on national or international standards or other defined documents; b) be aligned with the goals of the organisation and contribute to their achievement; c) be subject to regular review, seeking continual improvement; and d) support a positive safety culture.	The line "An integrated management system should be adopted in order to minimise the potential for goal conflicts and conflicting responsibilities and relationships" is the only text that specifies Integrated Management System. I'd propose the change or changing the other references to the "Management System" to be "Integrated Management System."	LMfS	2	

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827	Need to be consistent between "safety" and "nuclear safety".	Does the term "Safety" refer to wider safety or nuclear safety?	LMfS	2	
828	Decisions affecting safety should consider the following factors (where relevant): a) the quality and sufficiency of the information b) and the significance of uncertainties; c) the questioning of assumptions; d) exploration of all relevant scenarios that may threaten safety; e) the criteria and standards that should be applied; and f) broader factors and requirements such as environmental, security, production quality, policy, external, legal, economic or commercial aspects.	The 'quality and sufficiency of the information' and 'the significant of uncertainties' are 2 different factors to be considered when considering decisions affecting safety.	LMfS	2	
829	Decisions at all levels affecting safety should also cater account for the potential for error, uncertainty and the unexpected, and those taken in the face of uncertainty or the unexpected should be appropriately and demonstrably conservative.	It is the 'potential for error' rather than 'error' itself that should be taken into account.	LMfS	2	
830	Active challenge should be part of decision making throughout the organisation including at board and senior management levels. The organisation should encourage a questioning attitude from all staff and contractors. Though the form and function of the challenge will vary between different areas, designing-in appropriate active challenge mechanisms should be an inherent part of all decision making processes affecting safety. Active challenge should: a) occur by design in all key decision making processes that may affect safety; b) not originate solely from independent nuclear safety assessment or peer review; c) have a preoccupation with failure, being proactive in looking for ways that things could go wrong; d) be applied to technical/facility-based and management decisions; and e) be used in operational decision-making in normal, fault and accident situations.	It is not conducive to safety to 'have a preoccupation with failure'. This phrase should be removed.	LMfS	2	
831	Information should be sought actively and systematically from external sources, including from beyond the nuclear industry, to identify learning and improvement opportunities. Sources outside the organisation should include: a) reviews against international standards and practices; b) lessons from the investigation of incidents in other organisations both within and outside the nuclear industry; c) benchmarking safety performance, safety management and learning methods and processes against those of other 'high reliability' organisations from both within and outside the nuclear industry; d) safety data, e.g. reliability data and general operating experience feedback; and e) feedback on safety performance and issues from regulators.	Emphasis that learning should be from 'high reliability' organisations rather than 'organisations' in general.	LMfS	3	Not practicable or desirable to restrict benchmarking to 'high reliability organisations'.
832	The tests should be divided into stages to complete as much inactive testing before the introduction of radioactive material. Inactive testing should demonstrate that the facility or plant has been constructed, manufactured, and installed correctly and that it is functioning to specification (e.g. instrumentation is correctly calibrated). The tests should begin with component and system testing prior to performing integrated tests. Where any deviation from the documentation is found, this should be demonstrated not to conflict with the safety case or the safety case should be updated.	Removal of detail information Removal of identifying order of tests appears as unnecessary detail A possible outcome for deviations is also an update to the safety case as per Para 184.	ME	2	
833	For components of particular concern and where it is not possible to confirm their ability to operate under the most onerous design conditions additional analysis should be carried out which utilises available test results and justifies the component's performance and reliability.	Missing word in sentence	ME	2	
834	Functional testing In-service functional testing of structures, systems and components should prove the complete system and the safety function of each item functional group	Unclear what an "item" is and so a functional group may have more meaning.	ME	2	
835	Licence Condition 32 (see the ONR website) requires the rate of production of radioactive waste be minimised so far as is reasonably practicable. The safety case should therefore describe the specific design provisions, operating practices and the approaches to decommissioning: a) the specific design provisions; b) the operating practices; and c) the approaches to decommissioning that will ensure waste minimisation and include a demonstration that the rate of production of radioactive waste has been minimised.	The new drafting in the paragraph reads as if the safety case should focus on the minimisation of waste during decommissioning. The proposed change in text will ensure that the emphasis is removed from decommissioning and includes design and operation as individual requirements.	RWDM	2	
836	The strategy should be integrated with other relevant strategies. Depending on the site, these might include strategies for: a) radioactive material, including nuclear matter (see ENM.1) and radioactive wastes (see RW.1); b) wider radioactive waste management and decommissioning, such as those set by the HMG, Nuclear Decommissioning Authority (NDA) and, where relevant, the Ministry of Defence (MOD); c) control and remediation of radioactively contaminated land (see RL.1); and d) services, utilities and transport.	"HMG" added to item b) as they set the national Policy and Strategy for compliance by all, and under the Energy Act 2008, and the associated regulations, they provide strategic assumptions which should be made for New Build. "where relevant" – added to item b) as the MOD strategies do not affect everyone.	RWDM	3	It is not the intention of the SAPs to list all relevant strategies. Also the proposed change is incorrect
837	Move to follow DC.3	As 701 is dealing with timing of decommissioning, is it more appropriately located under DC.3?	RWDM	3	The para is already part of DC3

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838	decommissioning should be rigorously justified, taking all relevant factors into account. Prompt decommissioning should be the assumed preferred option, with variance from this option rigorously justified. Relevant factors, which may apply in the period prior to decommissioning, during decommissioning, or both, will include: a) worker and public health and safety, including compliance with the Numerical targets (see para 568ff); b) environmental impact; c) security; d) technical practicability; e) radionuclide decay or in-growth; f) ageing of facilities (see EAD.2) and the potential for safety to degrade; g) the costs of different options, including care and maintenance and infrastructure costs; h) the volumes and categories of decommissioning wastes and the availability of interim storage facilities and waste management routes; i) the presence of radioactively contaminated land, its potential impact on the site and the wider environment, the possibility of dispersion during decommissioning and how this might affect achieving the facility or site's proposed end-state (see para 740ff); j) interactions with and dependencies on other facilities or services; k) compatibility with site and national strategies (see DC.2 and RW.1); l) the continuing maintenance of an appropriate safety management organisational structure, corporate memory and records; m) the continuing maintenance of site infrastructure; n) the future availability of suitably qualified and experienced personnel; o) systematic and progressive hazard reduction (see RW.6); p) future uncertainties, including from climate change; q) the need to adopt a precautionary approach; r) possible burdens on future generations; and s) the potential for re-use;	The principle previously stated as DC.3 is fundamental to the timing of decommissioning and should be moved here instead of deleting. Suggest deleting the second sentence and combining the principle into a new sentence as presented here, where it is suggested that there should be an assumption that prompt decommissioning is applied, and any variance from this justified.	RWDM	2	
839	Should decommissioning need to be deferred, the safety case should justify this explicitly. The case should limit the period of proposed deferment and Should deferred decommissioning be strategically justified, the safety case should explicitly cover this. The period of proposed deferment should be minimised and rigorously justified, and the safety case should demonstrate that the risks posed will be acceptable and properly controlled throughout. It should also justify how demonstrate that future safe decommissioning and the management of the resultant radioactive wastes will not be prejudiced by the deferment. The safety case should include all the activities needed to maintain the facility in a safe condition or to aid the eventual decommissioning.	ONR's new text suggests that the safety case has to justify the strategy and that it should limit the period of deferment. Surely, the safety case demonstrates that a strategy, determined by other means, can be carried out safely. I suggest redrafting as proposed.	RWDM	2	
840	Planning for decommissioning A decommissioning plan and should be prepared for each facility that sets out how the facility will be safely decommissioned	Typographical error	RWDM	2	
841	The decommissioning plan should: a) define the decommissioning end-state for the facility and any interim states required to achieve it; and b) be supported by appropriate evidence to demonstrate that decommissioning can be undertaken safely and that the end-state (and any interim state) will can be achieved.	"Will" replaced by "can" in the last statement (as before), because will is too firm a commitment to make for a plan which may not be implemented for many decades.	RWDM	2	
842	The type of information and level of detail contained in the plan should be commensurate with the period before implementation, the type and status of the facility, its associated radiological risks and hazard, its decommissioning timescales and the practicability of obtaining the information.	Application of proportionate regulation should also determine that it is acceptable that the level of detail in a plan prepared early in the life of a facility is less than that for a plan to be implemented, but that this should increase with time. I suggest the modification shown.	RWDM	3	The point is essentially already covered. This is discussed in more detail in the decommissioning TAG
843	The plan should identify and address the type and quantity of wastes to be managed (including solid, liquid and gaseous wastes), the timescales over which the wastes will arise, and should be consistent with the waste management strategy (see RW.1). The plan should provide information on the proposed treatment, packaging, storage and disposal of wastes, including how decisions on their management have been, or will be, made.	The paragraph rightly identifies that the management of wastes should be consistent with the radwaste strategy, and to describe how they will be managed. Surely, it is for the radwaste strategy to set out how strategic decisions on have been made, which should not be duplicated here.	RWDM	3	ONR has received conflicting comments on this point and has decided to retain the existing text.
844	Passive safety Facilities should be made passively safe before entering a care and maintenance phase. Passive safety should be achieved, as far as is reasonably practicable, before a facility enters care and maintenance.	The test that a facility should be made passively safe, so too absolute and onerous a test, when there will be a level of passivity, for which a very robust safety case can be made. I suggest revising the statement as provided.	RWDM	3	The term "as far as reasonably practicable" applies to all the SAPs so there is no need to repeat it here.
845	The facility, or parts of the facility, should be decontaminated where appropriate, eg to reduce risks or to produce waste of a lower waste category.	The principle of decontamination to reduce the risk of contamination spread, reduce risk to the work force and reduce risk to the public is well understood. However the specific example quoted works only in certain circumstances, in growth from alpha decay. If, for example the contamination is Cobalt-60 dominated, then it could be beneficial to wait for the waste to decay to a lower category. I suggest deleting this part of the example.	RWDM	3	Decontamination to produce waste in lower category is still a valid point.
846	This paragraph supports the suggestion in relation to DC.5 regarding adequate passivity.	n/a	RWDM	4	
847	Why does paragraph 726 precede DC.7 when it is the subject of DC.7?	n/a	RWDM	4	
848	While it serves as an introduction to DC.8. it is considered that it would be better following DC.8, with appropriate revision to the text for its relocation.	n/a	RWDM	3	This is a presentational issue not a technical matter. We prefer to keep the original order
849	While it serves as an introduction to DC.9. it is considered that it would be better following DC.9, with appropriate revision to the text for its relocation.	n/a	RWDM	3	This is a presentational issue not a technical matter. We prefer to keep the original order

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850	<p>The strategy should describe, or refer to the options and timescales that were considered during its development and substantiate those chosen. The optioneering process should take account of the factors that might have a bearing on the management of radioactively contaminated land, for example:</p> <ul style="list-style-type: none"> a) worker and public safety, including individuals and groups who may currently be exposed, those who may be exposed as a result of control and remediation actions, and those potentially exposed in the future; b) avoiding or reducing any environmental impact now or in the future (including the potential for contamination to spread); c) waste minimisation (see RW.2); d) the results and reliability of survey, investigation, monitoring, surveillance and characterisation work (see RL.4 and RL.5); e) continuing radioactive contamination from known sources; f) the availability of waste processing and disposal routes, including technical practicability aspects; g) costs; h) future requirements for surveys, investigation, monitoring, surveillance and characterisation (see RL.4 and RL.5); i) interaction and dependencies with other facilities and other areas of radioactive contamination on the site; j) the effectiveness of control and remediation measures; k) possible burdens on future generations; l) the maintenance of corporate memory and records; m) the need to adopt a precautionary approach; n) plans for the future use of the site (or parts of the site); o) the biological, chemical and other hazards relating to the radioactively contaminated land; p) incidents, accidents and unusual occurrences at the site and the management actions taken to address these, e.g. the clean-up of any spills or other known contamination events; and q) how to achieve the final end-state. <p>r) the natural radioactive decay of specific material to safe levels, or levels resulting in lower categorisation of waste for disposal.</p> <p>The arrangements should ensure that:</p> <ul style="list-style-type: none"> a) the source of the radioactive contamination is established; 	<p>Suggest adding an additional factor here, to reflect the potential benefit of monitoring the ground contamination, without intervention, if the contamination is sufficiently immobile and low hazard. Paragraph 747 effectively recognises this as a valid management approach.</p>	RWDM	2	
851	<p>I suggest introducing a) in-situ monitoring; as item a and re-numbering the remainder. The plan should identify the proposed means for controlling or remediating the contaminated land to achieve the proposed end-state, for example:</p> <ul style="list-style-type: none"> a) in-situ monitoring b) retrievals; c) soil treatment; d) in-situ stabilisation; e) surface caps or covers; f) natural or artificial containment barriers; g) hydro-geological and hydraulic controls; h) groundwater treatment; i) control of personal access; j) control of local flora and fauna; and k) other restrictions necessary to protect people and the environment 	<p>As explained above, in-situ monitoring, without any other action may in itself be a control and remediation strategy in certain circumstances.</p>	RWDM	2	
852	<p>ONR uses a sampling approach in deploying its resources and not every safety case is assessed fully in every respect. The extent of our sample and our any subsequent permissioning decision taken in light of the safety case will take into account:</p> <ul style="list-style-type: none"> a) the level of confidence ONR has in the dutyholder's process for producing safety cases; b) the level of confidence ONR has in the dutyholder's approach to leadership and management for safety; and c) the risks and hazards associated with the activities covered by the safety case and d) recent events or operating experience at the facility. 	<p>Not all ONR assessment of safety cases result in a permissioning decision</p>	SC	2	
853	<p>A safety case is a logical and hierarchical set of documents that describes the radiological and-related hazards in terms of the facility, site and the modes of operation, including potential faults and accidents, and those reasonably practicable measures that need to be implemented to prevent harm being incurred. It takes account of experience from the past, is written in the present, and sets expectations and guidance for the processes that should operate in the future if the hazards are to be controlled successfully.</p>	<p>It is unclear what "related" hazards means. This could be misunderstood by licensees and ONR as any hazards industrial or environmental. Safety cases should focus on nuclear safety</p>	SC	2	

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854	<p>a) identify the facility's hazards by a thorough and systematic process;</p> <p>b) identify the failure modes of the plant or equipment by a thorough and systematic fault and fault sequence identification process;</p> <p>c) demonstrate that the facility conforms to relevant good engineering practice and sound safety principles. (For example, a nuclear facility should be designed against a set of deterministic engineering rules, such as design codes and standards, using the concept of 'defence in depth' and with adequate safety margins);</p> <p>d) provide sufficient information to demonstrate that engineering rules have been applied in an appropriate manner. (For example, it should be clearly demonstrated that all structures, systems and components have been designed, constructed, commissioned, operated and maintained in such a way as to enable them to fulfil their safety functions for their projected lifetimes);</p> <p>e) analyse normal operations and show that resultant doses of ionising radiation, to both members of the workforce and the public are, and will continue to be, within regulatory limits and ALARP;</p> <p>f) analyse identified faults/ and accidents, using complementary fault analysis methods to demonstrate that risks are ALARP;</p> <p>g) demonstrate that radioactive waste management and decommissioning have been addressed in an appropriate manner; and</p> <p>h) provide the basis for the safe management of people, plant and processes. (For example the safety case should address management and staffing levels, training requirements, maintenance requirements; operating and maintenance instructions, and contingency and emergency instructions).</p> <p>Further guidance on these topics is set out in the relevant section(s) of these Principles</p>	Item f) - This makes a distinction between "faults" and "accidents" – where is the distinction between these made? Suggest changing to 'faults/accidents' – If ONR are considering 'faults' and 'accidents' as distinct, then they should be defined in the Glossary.	SC	2	
855	<p>To demonstrate risks have been reduced to ALARP, the safety case should:</p> <p>a) identify and document all the options considered;</p> <p>b) provide evidence justifying the criteria used in decision-making or option selection;</p> <p>e) justify the option chosen in terms of meeting relevant good practice. If meeting relevant good practice is claimed to be grossly disproportionate, the safety case should demonstrate this. present an assessment of benefits and disbenefits including relevant good practice</p>	The proposed change does not appear proportionate and could allow regulatory ratcheting	SC	3	There is a clear requirement that facilities should meet relevant good practice and this is a major part of an ALARP assessment. The proposed para is therefore proportionate.
856	<p>Initiating fault / event The starting point of a fault sequence. This may be an internal failure, or caused by an internal or external hazard or by human action or a combination of these.</p> <p>Inherent safety is a higher standard than passive safety in that the former requires a demonstration that it is physically impossible for the harm to arise.</p>	Internal failure should be clarified to ensure this captures plant faults but also internal hazards due to these potentially originating anywhere inside the site controlled by the operator. Definition could be misinterpreted.	Glossary	2	
857	<p>Intelligent Customer The capability of an organisation to understand where and when work is needed should be placed out to contract; specify what the contract needs to be done; produce; understand and set suitable standards; supervise and control the contracted work and review, evaluate and accept the work carried out on its behalf. the output of the contractor.</p>	As currently written, the definition of Intelligent Customer does not make clear that it is referring to work being performed by a contract organisation on the behalf of a licensee.	Glossary	4	
858	<p>Structure, system and/or component (SSC) An item important to safety within the facility design which provides a safety feature function.</p> <p>The safety function feature provided by the SSC may be direct or indirect, e.g. the SSC may be important to safety because it supports another SSC which provides a safety function feature.</p>	SSCs do not provide safety functions, the safety features provide the safety functions. Safety features are made up of SSCs. IAEA outlines "Structures are the passive elements [generally corresponding to the civil structures]: buildings, vessels, shielding, etc. A system comprises several components, assembled in such a way to perform a specific (active) function. A component is a discrete element of a system. Examples of components are wires, transistors, integrated circuits, motors, relays, solenoids, pipework, fittings, pumps, tanks and valves."	Glossary	3	We consider that SSCs do perform safety functions, but its not a big disagreement with the commenter.
859	The BSL value of 20 mSv/yr for employees working with ionising radiation is the IRR annual dose limit for employees and is denoted by BSL(LL). Using the currently accepted dose/risk value of 4% per Sv for a working population, the value of 20 mSv equates to an annual risk of death of 8×10^{-4} , which is slightly lower than 1×10^{-3} /yr proposed in Reducing Risks, Protecting People (R2P2)6 as the limit of tolerability for the risk to workers from all sources. R2P2 remains the basis of ONR's risk policy document that sets out ONR's expectations and policy with regard to the management and acceptability of risk.	Clarity.	Annex	4	
860	R2P2 sets the corresponding broadly acceptable risk level at 1×10^{-6} /yr. This value equates to an annual dose of 0.025 mSv, which is well below dose levels that would normally be reasonably practicable for employees working routinely with ionising radiation. Recognising this, the BSO was set in the 1992 SAPs at 2 mSv/yr. However, this was reduced to 1 mSv/yr in 2006, in view of the trends in dose reduction discussed earlier. A BSO of 1 mSv/yr remains ONR's view of a representative level consistent with ALARP even though 1 mSv/yr (corresponding to a fatality risk of about 4×10^{-5}/yr) exceeds the broadly acceptable level of risk proposed in R2P2. It remains ONR's view that a BSO of 1 mSv/yr is representative of a level of dose that is consistent with the ALARP principle. This view is held, even though 1 mSv/yr equates to a fatality risk of about 4×10^{-5}/yr, which exceeds the broadly acceptable level of risk proposed in R2P2.	Clarity. Avoids the mixing of risk and dose in the comparison.	Annex	4	
861	Paragraph 60 of the Approved Code of Practice (ACoP)2 for the IRRs states that particular steps should be taken to restrict the exposures of any employees who would not normally be exposed to ionising radiation in the course of their work, and that dose control measures should make it unlikely that such persons would receive a dose greater than 1 mSv/yr. The BSL is therefore set at 2 mSv/yr; a value which should readily accommodate the unlikely doses greater than 1 mSv/yr, and below which reasonably practicable dose control measures should be capable of restricting exposures.	Clarity/grammar.	ALARP	2	

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862	The second purpose of Target 4 (see para A10) is to define success criteria (ie performance requirements) for the design basis safety measures. These are set in terms of the residual dose consequences from the faults assuming successful operation of the safety measures. In keeping with the preference for safety measures that fully protect against, or terminate fault sequences in their early stages, the BSOs have been set at a level comparable with the BSOs for operational doses in Targets 1 and 3. In cases where it is not reasonably practicable to provide safety measures protecting to these levels (see also para 521), the DBA should demonstrate suitable safety measures are nevertheless in place to reduce (i.e. mitigate) potential doses to levels below the relevant Target 4 BSLs. The logic for this is as follows: any fault in the DBA Region whose mitigated consequences cannot be reduced below the BSLs would then constitute a further DBA initiating fault in its own right. However, this fault would be unprotected, in breach of para 521. Hence, Target 4 defines where ONR expects to see DBA applied; the success criteria for DBA safety measures; and a region where inspectors should explore the reasonable practicability of providing protective safety measures rather than mitigating ones.	Clarity	Annex	2	
863	Introduces the term "design authority", which is more <i>how</i> . The 2006 wording covers the required outcome, so the change doesn't add any value.	n/a	LMfS	3	Design Authority' has value as the term most commonly used to describe a specific function and accountability that we believe is necessary. It is further supported now by a TAG.
864	Changes introduce lots of prescriptive detail. This is also true of many of the changes proposed in this Leadership & Managing for Safety section	n/a	LMfS	3	The comment is considered too general to be addressed.
865	Para could be construed as self-contradictory, with lots of detail about the importance of having the right set of indicators and how to develop Indicators but then advice not to trust them.	n/a	LMfS	2	
866	The proposed text "our numerical targets have been met" is potentially contradictory with the wording of para 572, which recognises that in some instances it may be acceptable to continue operation while exceeding a BSL providing a longer-term plan is developed "to reduce risk within a period that is as short as is reasonably practicable." Our Proposed Revised Text: ONR's assessment process consists of examining submissions from duty holders to enable a judgement to be made that risks are ALARP, our Numerical Targets have been or will be met and that appropriate attention has been paid to aspects important to safety and to radioactive waste management and decommissioning.	n/a	SC	2	
867	The proposed text includes the phrase "normal requirements of good practice". The meaning of this phrase in the context of good practice is not fully understood and it may be more appropriate to talk about the application of relevant good practice which is considered to be a widely held concept in the nuclear industry. Our Proposed Revised Text: b) the extent to which the duty holder has demonstrated that the safety objectives and regulatory requirements have been met, including the application of relevant good practice in engineering, operation and safety management;	n/a	SC	2	
868	Phrase used is "...describes the radiological and related hazards". The term "related hazard" is unclear and potentially confusing. Clearly other hazards may have their origin from within the Licensed Site boundary (e.g. toxic gas, explosion, fire) which may impact directly upon worker and public or indirectly through the subsequent generation of a radiological hazard. However, fundamentally as stated in para. 70 the safety case is required to describe risk. Our Proposed Revised Text: A safety case is a logical and hierarchical set of documents that describes risk in terms of the facility, site and the modes of operation, including potential faults and accidents, and those reasonably practicable measures that need to be implemented to prevent harm being incurred. It takes account of experience from the past, is written in the present and sets expectations and guidance for the processes that should operate in the future if risk is to be controlled successfully.	n/a	SC	2	
869	Commentary implies a change to align with LC14, but no change in the text is highlighted nor (from comparison of the wording) has any change been made. Is a change intended?	n/a	SC	1	
870	Text appears to allude to a scenario where a new facility/plant is being constructed and a PSR, PCSR, PCmSR and POSR type safety case strategy is being employed. For in-service plant modifications this structure is unlikely to be utilised, with a single safety case covering all aspects. It is however, accepted that the opening sentence covers such a scenario, i.e. "...The specific content and depth of information in a safety case will vary from stage to stage, and should be commensurate with the nature of the particular stage and interrelationships with other stages."	n/a	SC	1	
871	Not sure this is adding anything materially to the principals.	n/a	SC	1	
872	Suggested for clarity only, in a similar manner to the new paragraph on LC15. Our Proposed Revised Text: The responsibility for ownership of a safety case may change within the duty holder as the facility moves through its lifecycle, or if the duty holder changes. Such changes of ownership are important to safety and so need to be properly managed and controlled in accordance with LC36	Suggested for clarity only, in a similar manner to the new paragraph on LC15.	SC	2	
873	It is not clear why the new clause "and then confirmed by internal hazards analysis" has been introduced. Para 504 clearly states that the process for identifying faults needs to include internal hazards, and by definition the safety functions are needed to protect against faults.	n/a	AA	2	
874	Last sentence - this implies that "the safety functions might be affected by security considerations" and on reflection we wonder if it is necessary to have this stated here.	n/a	AA	3	While generally the SAPs do not consider security this does provide a useful reminder of taking account of security aspects and should be retained.
875	This seems to be at a level of detail in terms of conduct of maintenance that we wonder if it is really needed in a Principles document.	n/a	ME	3	Disagree with comment. Problems with foreign material are a continuing theme concerning challenges to nuclear safety.
876	As a licensee assessor it is difficult to quantify 'terrorism' as a hazard and as such does not appear in any of our safety cases. The SAPs would be better written if 'terrorist;' acts were treated separately and not confused with quantifiable external and internal hazards.	n/a	CEEH	4	
877	It would help the licensee to know what the SAPs reference list of hazards is, particularly external hazards such that we can have an agreed consistent approach to hazard analysis.	n/a	CEEH	3	Licensee should develop list

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878	EHA.1 and new paras below to para 217 [2] Is all this extra commentary really needed? It's just increasing the prescription levels.	n/a	CEEH	3	No text proposed
879	It is not clear where the ONR Assessors expect to see this review; we would not want them to think that it comes part of our safety cases. It should be noted that the way our organisation addresses 'cliff-edge' in our safety cases wrt to External hazards, is by defining a Design Basis event and then demonstrating plant tolerance to this event with 'margin'. The level of margin is not prescriptive but needs to be commensurate with the ALARP principle.	n/a	CEEH	3	No text proposed
880	New EHA.18 and following new para [2] [5]. This is more how. The Principle should be that there are no cliff-edges – the new paragraphs are more and more about how this needs to be demonstrated. The new clauses a) – f) are far too prescriptive about how, and for me don't add anything. It seems inconsistent to identify Design Basis margins as an input to SAA, given earlier statements that the SAA shouldn't be based on detailed DBA fault sequence assessments (new para under FA.15). Frankly, the whole structure of the new SAPs does just not hang together here [2].	n/a	CEEH	3	No text proposed
881	Are 'malicious acts' different to terrorism? See Comment on para 208 above (in comment form)	n/a	CEEH	3	No text proposed
882	What is ONR's definition of the accident that 'should be analysed'? Our organisation's safety cases are reliant on a commensurately conservatively defined Design Basis hazard and to demonstrate that there is no cliff-edge to the event	n/a	CEEH	3	No text proposed
883	Analysis of weather conditions at greater than 10-4 magnitudes is so uncertain that to make it a Principle is questionable.	n/a	CEEH	3	No text proposed
884	Why is it necessary to emphasise role of PSR here?	n/a	CEEH	3	No text proposed
885	6 new paras have been introduced which are all about the how - it goes on through all paras to 302. There is lots of additional material that has been added which simply prescribes the ONR approach to safety case ever more tightly. This doesn't feel like appropriate material for the SAPs	n/a	CEEH	3	No text proposed
886	As with other changes they seem to add more prescriptive detail about how which doesn't seem to add to the Principle.	n/a	CE&I	3	The additional text provides clarification rather than prescription and helps to give some context to the principle.
887	As with other changes they seem to add more prescriptive detail about how which doesn't seem to add to the Principle.	n/a	CE&I	3	The additional text provides clarification rather than prescription and helps to give some context to the principle.
888	Clarification required as this would infer comms systems now required to be in safety case rather than in arrangements [2] [5], and consistent with emergency arrangements.	n/a	CE&I	3	Fukushima shows that comms systems have a very important role to play for nuclear in a wide range of fault and accident conditions. So yes the intention is that where relevant to nuclear safety comms should be included in a safety case.
889	As with other changes they seem to add more prescriptive detail about how which doesn't seem to add to the Principle.	n/a	CE&I	3	See 886.
890	The new clause "including severe accidents" is OK, but need to be careful that it isn't weighted equally with the other aspects of the new text i.e. we need to be proportionate when considering normal operation, faults, accidents and severe accidents. Given the new text doesn't include that proportionality it may prove to be a retrograde step.	n/a	HF	4	
891	The use of "within the safe operating envelope" rather than "within its operating rules" seems similar to the challenge between a Compliance culture vs. safety culture. This is potentially not intended however the previous form sits better with cultural aspects of nuclear safety	n/a	HF	3	Terminology is consistent throughout the SAPs and is explained in the glossary
892	The change here introduces "all", and that is a very tall order for Licensees to prove and ONR to defend – and it's not necessary. There are 2 more examples in the next 2 paragraphs, as well as scattered elsewhere in the proposed changes. Similar commentary was made on the 2006 update.	n/a	HF	3	Proportionality is a key principle guiding ONR assessment of Licensee's submission. The accompanying paragraphs provide context that the focus is on safety significance
893	The changes introduce more and more detail which expands the para without necessarily adding any value.	n/a	HF	4	
894	Refers to "ventilation design and its associated safety case". Similar to comments on chemistry our view is that we don't need a ventilation safety case, but the H&V systems can support the safety case e.g. for hazards. Their function is an input to the management of safety rather than an end in itself.	n/a	ME	2	
895	Additional sentence is unobjectionable, but is it really needed. This has been standard practice for years.	n/a	AA	3	It can be useful to remind people of good standard practice particularly on matters as important of the maintenance of subcriticality and its link to uncertainty analysis.
896	The following comment is applicable to the huge number of occasions on which "(operating rules)" is included after any mention of specified limits on parameters. Surely the status of the limits depends on the significance of compliance with them? In this example, it may be that if the properties of the heat transport fluid are not as per the design intent then the outcome is detectable plant degradation, which can be readily controlled in such a way as to avoid any nuclear issue (although there would likely be a commercial one). Therefore, the "default" inclusion of a reference to operating rules seems to me to be misguided.	n/a	AA	3	Operating rules (see licence condition 23) are an important element of the safety case analysis hence the constant reminder in ONR's SAPs. We are aware that terminology has changed with some licensees but our SAPs and site licence conditions are consistent.
897	Our proposed change is we believe clearer and simpler reflecting the requirements in REPPIR. Propose revised text Arrangements should be in place to enable the IRR dose limits to be revoked and "emergency exposures" to be applied as defined in REPPIR.	n/a	EP, RP and criticality	2	
898	The new clause c) explicitly links the potential need for SAA in response to malicious acts such as terrorism or sabotage. Is this really wise?	n/a	AA	2	
899	Explicitly now states that BDB plant states should be considered in the safety case. The 2006 wording for me is fine, because it highlights that these issues need to be considered in the overall defence in depth structure. The new paras are an attempt to put more detail in, but beyond making links to others' terminology ("design extension" and "practically eliminated") all they do is provide a somewhat confusing recipe for how the guidance is to be followed. As above, it could be interpreted as a fundamental shift in the required safety case content, which does not seem to me to be a wise approach. Elsewhere in the proposed revisions (para 422), there is a comment about the importance of avoiding "should" statements in the italicised context (scene-setting, para 574) paras, so it would seem better to avoid that here, too. Suggest this is deleted – see comment about paras 543 and 544.	n/a	AA	2 and 3	My judgement is to retain the paragraph but I do agree that some of the wording needs to be improved and have made some changes.
900	Fig X is claimed to have been moved from SAA but we couldn't see it in current SAPs.	n/a	AA	1	
901	Identification of "initiation" faults- "initiating" would be more consistent with general usage.	n/a	AA	2	
902	Nice to see reflection of custom and practice that fault sequence frequencies of 10-7 pa is a typical cut-off.	n/a	AA	1	
903	Claims to be rephrased but no change made.	n/a	AA	2	
904	The addition of this new para is OK, although there is a lot of discussion of cliff-edges elsewhere (Principle EHA.7), so not sure it adds much.	n/a	AA	2	
905	New sentence at the bottom about fault schedule is about "how" again.	n/a	AA	4	

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905	Last sentence assumes that alternative equipment is the approach being adopted.	n/a	AA	3	It is only assuming alternative equipment if the analysis shows that is indeed the case. The SAPs try to minimise the use of 'where appropriate' to avoid tedious repetition.
906	Why has the word "submission" been included rather than "case" in the 2006 wording? This could be interpreted as a culture that this is all about assessment of paper cases, rather than nuclear safety in the round.	n/a	AA	2	
907	This is absolutely defining an expectation about the PSA, The 2006 wording restricted itself to pointing out that the PSA is an aid to judgement about managing risk. The new para is defining how, which is flawed as an approach for the SAPs.	n/a	AA	3	This is a paragraph supporting the 'pure principle' where we believe it is reasonable to set out regulatory expectations. A licensee or other duty holder is free to interpret the 'pure principle' in another way, as long as they provide adequate justification.
908	Adds desire for a shutdown PSA – which is in debate with ONR xxxxxxxxxx roll out.	n/a	AA	3	The SAPs are guidance for our assessment. Like the majority of SAPs, the licensee can debate whether performing a shutdown PSA is necessary on a case by case basis.
909	See comment on new paragraph above. Updates of the PSA should themselves be subject to an assessment of Reasonable Practicability i.e. what are the benefits/disbenefits of doing them.	n/a	AA	3	The SAPs are guidance for our assessment. Like the majority of SAPs, the licensee can debate whether performing a shutdown PSA is necessary on a case by case basis.
910	Why is this included here. Combinations of hazards are dealt with elsewhere e.g. para 211.	n/a	AA	4	
911	I'm not sure why this is in the PSA section either. Agreed that the deterministic assumption that any fault can be terminated after 24 hours needs to be addressed and challenged, and what that means either for on-site or off-site actions needs to be worked through. But NOT including these mitigations in the PSA will surely always be conservative in terms of the assessed risk.	n/a	AA	3	This section is in the PSA sections as mission times and the modelling of repairs and recovery actions are important for all modern PSAs. Fukushima showed that factors such as mission time and the modelling of recovery are of crucial important in helping to design a wide range of operator responses.
912	Notes refer to 532(i) but should it be 532(g)	n/a	AA	4	
913	Key is the first sentence of the proposed text which emphasises the need for "appropriate use". Equally we do not believe (g) is true for AGRs, and is not required because of the risk range demonstrated as resulting from planned maintenance activities. Clause j) is completely circular – does the PSA help determine initiating event frequencies for DBA, or does the deterministic DBA safety case feed fault frequencies into the PSA.	n/a	AA	3	Not every principle will apply to every facility, I note however that some AGRs do have the equivalent of risk monitors. On the second point I do not believe that clause j is circular. Determination of frequency of failures is for the initiating events for DBA largely a probabilistic exercise driven, for example, by FMEAs that are based on databases of component failure frequency data. The deterministic part of DBA is in the conservative transient analysis following the derivation of the frequency of the postulated initiating event.
914	A reasonable way of setting the context which works much better than the new para under para 500.	n/a	AA	4	
915	The use of the words that are not in common usage should be avoided to ensure the clarity of communication especially as "autarky" is in parenthesis.	n/a	AA	2	
916	paras 568-628 Seem to be expanding, and yet it is still deemed necessary to provide the Annex explaining where the Numerical Targets come from. Just in terms of information management, it would seem to me that the duplication between this section of the SAPs and the Annexe could be removed. The targets are what they are, and the scene-setting paras are effectively reproduced in the Annex.	n/a	ALARP	4	
917	This seems to say that relevant good practice always trumps CBA. It's important to take care that this itself doesn't undermine the overall approach that improvements are reasonably practicable if the time, trouble and cost isn't grossly disproportionate to the safety benefit. Relevant good practice is important, but it's not an end in itself – it only matters if it provides a risk benefit, so this feels to me like another change which doesn't actually improve on the 2006 wording.	n/a	ALARP	3	The aim is to prevent CBA arguments from undermining existing RGP. CBA is best used where RGPs are met and the examination is for further improvements rather than trying to reduce accepted safety standards.
918	Says that the storage of any plant needed for accident management, and the delivery arrangements if that storage is remote from site, should be addressed in the safety case. Should it not be in the Emergency Plan?	n/a	EP, RP and criticality	1	
919	Technical readiness and hazard reduction requirements may be factors. Reference to Best Available Techniques (BAT) concept as part of Radioactive Substance Regulation (RSR) by the environmental regulators could be useful.	n/a	RWDM	3	ONR does not believe that the factors proposed are significant. BAT is not a term used in nuclear safety regulation.
920	Change proposed because of Developments in international nuclear safety standards and relevant good practices since 2006. Proposed revised text Trends in radioactive waste generation should be monitored and the effectiveness of the waste minimisation measures employed demonstrated. This shall be undertaken in a holistic manner, taking into account plant operations, and all forms of radioactive waste media. Reviews should be undertaken to seek further opportunities for radioactive waste reduction. Targets should be set and tracked as part of a formal management system.	n/a	RWDM	2	
921	Note sure how one 'achieves' a principle, suggest "Note: this principle also forms Licence Condition 32 of the standard Nuclear Site Licence. The principle applies"	n/a	RWDM	3	The proposed change was rewording, not a technical issue. ONR prefers the existing wording.
922	It could be useful to reference Best Available Techniques (BAT) concept as part of Radioactive Substance Regulation (RSR) by the environmental regulators	n/a	RWDM	3	BAT is not a term used in the nuclear safety regulatory system
923	The wording could be clearer, mandate stronger and justification of dilution related to BAT concept. Could intentional dilution occur within nuclear plant and facilities by ill-conceived design and operation?	n/a	RWDM	3	BAT is not a term used in the nuclear safety regulatory system. ONR believes the intent is clear.
924	Is the use of both "appropriate" and "prevailing" meant to convey something different? If not suggest revert to form used in original text without qualifiers.	n/a	RWDM	2	

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925	Factors that influence timing should include: a) worker and public risks, including from normal operations and accidents; b) environmental impact; c) security; d) the availability of disposal routes, the disposability of the waste (package), and the potential need for reworking; e) technical and logistical practicability; f) current and future wastes expected to be generated ; g) interaction and dependencies between facilities and strategies (see RW.1); h) possible burdens on future generations; i) maintenance of corporate memory and records; j) cost; k) the need to adopt a precautionary approach; l) ongoing or proposed research and development; m) the magnitude of the hazard; n) the current state and rate of deterioration of the waste, associated containers and packages, and existing storage facilities; o) reduction of dependence on active safety systems, maintenance, monitoring and human intervention to ensure safety (see para 671); and p) radionuclide decay or in-growth.	n/a	RWDM	2	
926	We do not believe the current UK policy to be a presumption for "prompt decommissioning" rather that it should be carried out "as soon as reasonably practicable"	n/a	RWDM	2	
927	The phrase "as soon as reasonably practicable" has a shared meaning which is not the case for "without undue delay".	n/a	RWDM	3	The phrase "as soon as is reasonably practicable" generally refers to the timing of decommissioning, not the updating of plans.
928	Bullet c) how will "unusual occurrences" be defined?	n/a	RWDM	3	ONR does not believe that it is necessary to define this
929	There is good recognition that the principles don't just apply to the preparation for achieving site end states but also to ongoing management of contaminated land. It is notable that throughout the contaminated land sections there is limited reference to any justification for when work will be carried out. This is in contrast to Radioactive Waste (ref para 679) and Decom/g (ref paras 703/804)	n/a	RWDM	3	ONR believes that the point is covered as the SAPs require the timescales to be substantiated
930	1. Bullet i) - should this refer to adjacent sites as well 2. should this paragraph be consistent with para 759, for example should 759 bullet (h) be included?	n/a	RWDM	3	ONR believes that referring to adjacent sites would be an unnecessary complication and could be subject to misinterpretation. We do not believe that it is necessary to repeat hydrogeology etc. here as the list is not intended to be all inclusive.
931	Note that this comment applies to both the existing paragraph and proposed amendments, which set out an order of preference for managing radioactively contaminated land, starting with retrieval of radioactive material, followed by in-situ stabilisation. This paragraph does not recognise that there may be circumstances where in-situ stabilisation is preferable / represents a lower risk compared with the retrieval of radioactively contaminated land.	n/a	RWDM	2	
932	The revised text provides good clarification.	n/a	RWDM	1	
933	The use of the word 'promptly' is ambiguous and open to interpretation.	n/a	RWDM	3	ONR believes the meaning is clear in the context
934	The revised text states that arrangements should ensure that radioactive material is recovered where reasonably practicable. This does not recognise that although recovery may be reasonably practicable, it may not represent the best environmental option or present the lowest exposure risk.	n/a	RWDM	2	
935	Note that this comment applies to both the existing paragraph and proposed amendments, which state that radioactive contaminated land should be remediated before any construction of new facilities upon it. Firstly, there is no definition of remediation in this context and the regulator may take this to mean hazard removal as opposed to, for example containment. Also excavating contamination (i.e. removing it) before constructing new facilities may conflict with the principle of protection of people, as the excavation works are likely to increase the potential for contaminant exposure (particularly where the contamination would otherwise have been managed in-situ and the hazard reduced by decay / attenuation). This particular issue (in another context) has been raised by the Nuclear Industry Group for Land Quality.	n/a	RWDM	4	
936	see comment on paras 568 to 628 above.	n/a	Annex	4	
937	Accident Change proposed to improve clarity/readability. Propose revised text In this document, the term 'accident' describes undesired circumstances from beyond fault conditions giving rise to ill health or injury; damage to property, plant, products or the environment; production losses or increased liabilities.	n/a	Glossary	2	
938	Bounding Case Consistency with terminology used elsewhere in the definitions. A single fault sequence used to represent a wider class of situations that is more extreme than any member of the class in all important respects.	n/a	Glossary	3	We wanted it more general than fault sequences.

Number	Comment	Reason	Technical area	Sentencing (*) (1,2,3,4)	If sentencing = 3, clarify reason for disagreement
(*) Sentencing: 1 (comment out of scope because not addressed towards the SAPs revisions); 2 (comment in scope and SAPs have been amended accordingly); 3 (comment in scope but ONR disagrees and proposes no change); 4 (comment in scope, ONR agrees with it but prefers existing text).					
939	<p>Common Mode Failure CCF/CMF are considered to be interchangeable, although purist definition might argue that CCF infers an external influence resulting in failure, while CMF is an internal influence resulting in failure.</p> <p>Rather than delete perhaps a cross-reference would be better. See Common Cause Failure</p>	n/a	Glossary	3	We accept that CMF and CCF are sometimes considered interchangeable but strictly speaking common mode failure is where the way something fails - eg fail to start - is common, and common cause failure is that the reason they fail - eg corrosion, is common.
940	<p>Design Basis</p> <p>Proposed definition should be reconsidered. Para 514 of the 2006 SAPs cross references to Para 504 and FA.2. While Para. 514 is a list of exclusions from the Design Basis and therefore present and incomplete definition.</p> <p>Proposed revised text . A fault sequence meeting the criteria set out in Paragraphs 504 and 514 of the Fault Analysis</p>	n/a	Glossary	1	
941	<p>Fault condition</p> <p>Change proposed to improve clarity/readability. Proposed revised text Fault conditions include faults with consequences that have not been (or cannot be) justified within the safety case as acceptable for normal operations</p>	n/a	Glossary	2	
942	<p>Incident</p> <p>Typo Proposed revised text n undesired circumstance or 'near miss', e.g. an initiating event or a fault condition, that has the potential to cause an accident.</p>	n/a	Glossary	2	
943	<p>Safety System Support Features</p> <p>Cross-reference to safety related systems seems more appropriate here than under the Safety System definition Proposed revised text See also safety-related system</p>	n/a	Glossary	2	
944	<p>Safety Systems, Structures and components</p> <p>Cross-reference considered to support definition Proposed revised text See also safety system and safety-related system</p>	n/a	Glossary	2	
945	<p>There are chemistry parameters as input to system safety cases and where relevant or significant to Nuclear Safety adequate controls are in place. (e.g.: Boron Level in ponds). There are many chemistry parameters which are controlled but would not be a limiting parameter in any safety case assessment, such as those to preserve the plant life time etc.</p> <p>These suggest that we need a Chemistry safety case, with limits defined (see comment on paragraph 465 above). It's important that, as implied in the scene-setting paras, that this should not be a stand-alone set of Principles, but rather that the appropriate requirements should be implemented where there is a direct effect on nuclear safety. Earlier comment about limits/operating rules applies strongly here.</p>	n/a	CE&IH	3	This comment appears to relate to this licensee's particular approach to the chemistry elements of their safety cases. It does not affect the scope or intent of the principles suggested (i.e. all L&Cs should be derived from the safety case and their implementation is driven by LC23 arrangements etc.)
946	See comment on Proposed New Chemistry Principles above.	n/a	CE&IH	3	Licensee makes no specific comments regarding the chemical engineering SAPs, but refers back to their comment(s) regarding Chemistry section of SAPs. No specific response required.