

SOARCA STAFF COMMENTS - Summary (sorted by location) requiring additional review as of August 10, 2010

No.	Name	Document	Location	Comment	Supporting Basis	Status
S98	Siu	Summary	1.1, page 1, 2nd para	Last sentence only refers to conditional results. Recommend pointing out that Section 6.2 provides unconditional results as well.		Issue - Not sure the "absolute" risk numbers are appropriate!
S103	Tinkler	Summary	1.2	Retitle the section to Historical Studies or Historical Perspectives and list as section 1.4	Consistent with comment 2	?? Need Staff Review
S101	Tinkler	Summary	1.2	Move the 2nd paragraph to the new background section.	This is an elaboration of a key point in the background (plant improvements have been made) and was developed in specific response to a peer review comment.	?? Need Staff Review
S102	Tinkler	Summary	1.2	Create section 1.3 Approach, discuss overall approach, focus on 2 pilot plants, plant specific studies, focus on important sequences, risk metric, Discuss summarily the peer review. Identify technical elements of project. Portion of existing section 1.3 titled "Objectives" may be used.	Consistent with comment 2. Items are consistent with presentation to ACRS on 6/21/10.	?? Need Staff Review
S104	Tinkler	Summary	1.2.1	Delete this section entirely or revise it including quotes from the document in lieu of summary statements.	This is no clear value to a discussion of WASH-740 (1957). If retained then direct quotes from the document would be superior to summary statements without reference since the document is not commonly available nor familiar to the reader.	?? Need Staff Review
S118	Siu	Summary	1.2.4, page 5, last para	To avoid appearance of bias, suggest characterizing results for the other plants. (Sentence refers to "most".)		?? Need Staff Review
S124	Tinkler	Summary	1.3	This text should be moved to the new section on text.	Consistent with comment 7.	??
S131	Siu	Summary	1.4, page 8, 5th para	Recommend providing the basis for the conclusion.		??
S132	Siu	Summary	1.4, page 8, last sentence	Please ensure that the stated conclusion is consistent with the agency's response to the recent 2.206 petition and provide a reference.		??
S143	Tinkler	Summary	1.7.2, first sentence	The sentence should be modified to address timing for declaration of EALs and offsite notification.	The EAL timing is important to demonstrating evacuation begins, for many scenarios, long before release to the environment.	?? Need Staff Review

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No.	Name	Document	Location	Comment	Supporting Basis	Status
S146	Schaperow	Summary	1.8, 2nd paragraph, 3rd sentence	Revise the sentence to "The impact of epistemic model parameter uncertainty as well as other aleatory uncertainties..."	Other aleatory uncertainties exist in the SOARCA study beyond the weather. For example, the accident could happen during the day when adults are at work and children are in school or at night while people are home.	?? Need Staff Review
S157	Siu	Summary	2.1, 1st para	Recommend indicating if the timing of important phenomena was the only severe accident progression characteristic considered in grouping sequences and, if not, what were the other characteristics.		?? Need Staff Review
S160	Schaperow	Summary	2.2	Include an example showing how the scenario selection process was applied for internally initiated events.	The process for selecting internally initiated events is inscrutable. For example, it is not clear how the timing associated with internal events was used to group scenarios.	?? Need Staff Review
S161	Siu	Summary	2.2	Consider focusing the discussion on the Surry and Peach Bottom models (and not on SPAR in general).		?? Need Staff Review
S167	Tinkler	Summary	2.2.1, 1st paragraph	The last sentence needs clarification as to the significance of the statement and why the approach is acceptable	The last sentence raises a question it does not answer.	??
S170	Siu	Summary	2.2.1, 3rd para	Recommend providing a reference to the report providing dominant sequence information.		?? Need Staff Review
S171	Tinkler	Summary	2.2.1, 3rd paragraph	This paragraph is weak and unclear. The last sentence, "whenever possible" is non specific. The 2nd sentence is astoundingly vague and lacks a reference.	This paragraph, like much of this section, raises more questions than points and methods clarified.	?? Staff Review - No technical basis provided
S175	Siu	Summary	2.3.1, Initiating Event 1 Scenario Summary	Given lack of information for AFW characteristics, recommend describing here or later in the report how these characteristics were determined for the purpose of the MELCOR calculations		?? Need Staff Review
S406	Siu	Summary	2.3.2 and 2.4.2	Recommend indicating units for PGA		Need staff review
S196	Siu	Summary	2.5, page 19, 2nd bullet	Noting the dates of the ATWS Rule (1984) and SBO Rule (1988) - both predate the publication date of NUREG-1150 - consider rewording		?? Need Staff Review

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No.	Name	Document	Location	Comment	Supporting Basis	Status
S200	Prato	Summary	3.0, 1st or 2nd para	Do we want to mention that the 10 CFR 50.54(hh) consist mostly of black start/run of RCIC or TDAFW pumps and portable equipment (pumps, power supply, air bottles and related components/equipment)?		?? Need Staff Review
S205	Schaperow	Summary	3.1, 5th paragraph	The ability to use the CST to supply RCIC is not clear.	We requested from Peach Bottom the water level in the surrounding concrete berm during our June 10, 2010, site visit.	?? Need Staff to Address
S208	Siu	Summary	3.1, page 21, 1st para	See Comment 20 above. Consider rewording to state simply as an approximation with unknown degree of conservatism/non-conservatism		??
S209	Prato	Summary	3.1.1, 1st para	Why did we assume the PB CST to fail and not Surry's ECST during the long term SBO, both are flat bottom tanks?		?? Need Staff to Address
S210	Tinkler	Summary	3.1.1, 2nd paragraph	The 4th sentence contradicts the discussion in section 2.2.1, pg 15.	Corresponding sections ought to be consistent.	??
S211	Tinkler	Summary	3.1.1, 3rd paragraph	Delete the word insert the word "potentially" in front of higher.	Consistent with comment 48.	??
S213	Tinkler	Summary	3.1.1, 6th paragraph	Include a specific reference for the "German study".	Not self evident to the reader.	?? Need Staff to Address
S219	Siu	Summary	3.1.2, page 23, 3rd para	To provide appropriate perspective for the SOARCA estimates, recommend providing timing information used in the NUREG-1150 analyses (as well as in the SPAR and licensee PRAs)		?? Need Staff Review
S220	Siu	Summary	3.1.2, page 23, 3rd para, 2nd sentence	Recommend indicating if the licensee staff agrees with the assessment that the PRA models do not credit the "significant time available," or is this only the judgment of the SOARCA team		?? Need Staff Review

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No.	Name	Document	Location	Comment	Supporting Basis	Status
S20	Nosek	Summary	3.2 Unmitigated Scenarios - Truncation of Releases	To quantify the benefits of the mitigation measures and to provide a basis for comparison to past analyses of unmitigated severe accident scenarios, the project staff also analyzed the scenarios conservatively assuming the events proceed as unmitigated by available onsite mitigation measures and lead ultimately to an offsite release.	The report is inconsistent in describing why we analyzed the "unmitigated scenarios". Here it says we have the to "quantify the benefits of the mitigative measures", and "as a basis of comparison to past analyses". However, this omits a much more fundamental reason (described in Section 1.6: "Mitigated and Unmitigated Cases"), that in our approach, "a comprehensive human reliability assessment has not been performed to quantify the probabilities of plant personnel succeeding in implementing these measures and the likelihood of success or failure is unknown." From my viewpoint, we should be consistent in saying this when describing the purpose of the "unmitigated scenarios", because bounding the analysis of operator actions is fundamental to the defense of our approach and our study.	?? Need Staff Review
S227	Tinkler	Summary	4	Consider referring the study as the "1982 Siting Study" as opposed to the "Sandia Siting Study". This text may be elsewhere?	We don't in the text refer to WASH-1400 as the Rasmussen report.	?? Need Staff Input
S64	Mitchell	Summary	4 very end of chapter	we need to add a new section to this chapter that discusses our present view of containment behavior as modeled in MELCOR. Our view is substantially different from previous studies in that early containment failure probabilities are less for good reasons	this is an area that deserves mention in the main report. It is a big reason why the source terms are much smaller than in past analyses	?? Need Staff Review
S228	Tinkler	Summary	4.0, 1st paragraph, 8th sentence	The sentence beginning, "In the Sandia Siting Study..." is incorrect and needs to be revised.	The 1982 siting study did not, as is stated in the text, use the frequency distribution of the five prescribed source terms to calculate the risk.	?? Need Staff Review
S229	Tinkler	Summary	4.0, 9th sentence	Delete modifier "all significant" preceding source terms.	Not needed and not true. (NUREG-1150 did not include large seismic source terms included in NUREG/CR-4551)	?? Need Staff Review
S230	Tinkler	Summary	4.1, 8th paragraph	Revise the text starting "Since the greatest source of uncertainty is...." [Since the greatest source of uncertainty was believed to be...]	The text is probably true of the sentiments at the time of NUREG-1150 but is not demonstrably true now.	?? Need Staff Review
S231	Tinkler	Summary	4.2	Recommend deleting this section. As currently written it is not essential or helpful.	Reader is not helped by a depiction of the 1996 two tiered code system.	?? Need Staff Input

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No.	Name	Document	Location	Comment	Supporting Basis	Status
S232	Siu	Summary	4.2, page 31, last para	Recommend indicating when effort will be complete, and providing specific connection with SOARCA		?/ Need Staff Review
S235	Siu	Summary	4.4	To provide appropriate context for the results reported in Section 6.2, the main report needs to state how many MELCOR analyses were performed for each "scenario/sequence group" identified in Section 2, describe how the input parameters for each analysis/run were determined, and what key assumptions/approximations were made in establishing these parameter values.		?? Need Staff Input
S236	Tinkler	Summary	4.4.1, 2nd paragraph, 1st bullet	Change "normal or high temperature conditions" to "addressing stochastic and high temperature failure modes."	More precise description is needed. "Normal conditions" language is potentially misleading	?? Need Staff Review
S27	Nosek	Summary	4.4.2 Best Modeling Practices	Direct containment heating (DCH) causing containment failure in PWR containments. Decades of NRC research show an early failure of the reactor coolant system due to high temperature natural circulation will depressurize the system prior to vessel failure. In the unlikely event there is a high-pressure vessel failure, the resolution of the DCH issue found the early containment failure to be very unlikely [29].	Unless I am misunderstanding (which is possible), I believe we mean to say:Decades of NRC research show an early failure of reactor coolant system due to high temperature "melt ejection is not credible because" natural circulation will depressurize the system prior to vessel failure. I propose we add the new text in the quotes above (i.e. "melt ejection is not credible because")	?? Need Staff review
S245	Siu	Summary	4.4.2, page 40, 2nd para	Recommend summarizing results of sensitivity analyses (or providing a link to where these results can be found)		?? Need Staff Review
S246	Siu	Summary	4.4.2, page 40, last para	I seem to recall there were some conditions on the applicability of this finding. (Perhaps the type of containment?) If there are conditions, consider specifying.		?? Need Staff Review
S247	Schaperow	Summary	4.4.3	The following sentence appears to be unsupported: "While having little effect on the net release of Cs, this change had a significant effect on the release of Mo."	The lower vapor pressure associated with the chemical form cesium molybdate is responsible for the low cesium releases predicted in SOARCA.	?? Need Staff Review
S248	Tinkler	Summary	4.4.3, 2nd paragraph	The statement that the change in the assumed dominant chemical form of Cs had little effect on the net release is not accurate and should be revised.	In earlier analyses Cs and I releases were typically nearly identical for most scenarios. With the use of CsMo4 modeling, cesium releases for non bypass scenarios are typically lower than iodine by a substantial factor.	?? Need Staff Review

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No.	Name	Document	Location	Comment	Supporting Basis	Status
S249	Siu	Summary	4.4.3, page 41, 3rd para	Consider providing some indication of the degree of dominance, and a statement regarding the treatment (or non-treatment) of non-dominant forms, if they could have an effect on the results		?? Need Staff Review
S251	Siu	Summary	4.4.4.3 and 4.4.4.4	Consider providing inventory and decay heat information used in the 1150 studies to indicate if there were any significant differences that might affect the overall results		?? Need Staff Review
S31	Mitchell	Summary	4.4.4.3 peach bottom model	two specific issues are not mentioned in this section: the depletion for the cycle of interest for MELCOR was to the mid-cycle point, and the values were reanalyzed to provide the core-wide inventories of the radionuclides used by MACCS2 at the calculated time of shutdown.	these are important factors that should be documented	?? Need Staff Review
S253	Siu	Summary	4.4.4.3, page 43, last para; section 4.4.4.4	Section 4.4.4.3 refers to 27 TRITON runs for Peach Bottom; Section 4.4.4.4 seems to imply that a single value was used. Recommend clarifying.		?? Need Staff Review
S254	Tinkler	Summary	4.4.4.4	Paragraph should be expanded to indicate the degree of conservatism in the Surry decay heat treatment.	We should clarify conservatisms where appropriate.	??
S255	Siu	Summary	4.4.4.5, page 45, last para	Recommend summarizing findings of the various assessments/reviews.		??
S259	Schaperow	Summary	5	Include a comparison to the NUREG-1150 results given in Sample Problem A which is the calculation for worst-case early fatality risk from the Surry NUREG-1150 analysis. Rerun the Sample Problem A calculation to reflect the non-evacuating cohort that was actually used in NUREG-1150 (0.5%).	This is needed to show how consequence estimates <u>have changed</u> over the last 20 years since NUREG-1150 was published.	?/ Need Staff Review
S260	Schaperow	Summary	5	For each unmitigated <u>sensitivity</u> case, add a comparison of the source term timing and the evacuation and relocation timing to show how much overlap, if any, exists.	<i>There are in the Appendix - would it be acceptable to mention that this information is not provided in the report. Is the Calves report with a? Given the illustration of impact?</i>	?? Need Staff Review

NO

NO

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 NOT accepted,
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 with old
 studies
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 difficult -

08/10/2010

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 6 of 16
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No.	Name	Document	Location	Comment	Supporting Basis	Status
S262	Tinkler	Summary	5	It would be useful to clarify why retaining the NUREG-1150 treatment of rain bins is adequate, if practical.	Much of SOARCa describes how and why we are doing things better, <u>more realistically</u> . This item is one in which we simply say, we are doing it as before..	??
S257	Siu	Summary	5, page 46, 1st bullet under MACCS2 discussion	Recommend identifying specific improvements. Also recommend summary discussion of WinMACCS/MACCS2 treatment of dispersion, especially with respect to plume segmentation and movement	Can add a short section that notes, some of the <u>some of the</u> language in the appendix	?? Need Staff Review
S266	Schaperow	Summary	5.0, 3rd paragraph, 1st bullet	State what atmospheric transport and dispersion modeling improvements were made.	Accepted, will do The bullet does not include this information.	??
S268	Schaperow	Summary	5.0, 3rd paragraph, 7th bullet	State what options were added.	Accepted, will do The bullet does not include this information.	??
S271	Schaperow	Summary see 154-157 sects. 1	5.1	Clarify the process that MACCS uses to sample weather. For example, what is "weather binning," and what is "the non-uniform weather binning approach in WinMACCS?"	Accepted. The approach is discussed. This section is incomprehensible without this information. 2 para pages down- Ponder will be added.	??
S272	Schaperow	Summary	5.1	State what criteria were used to determine that 1000 weather samples were appropriate for SOARCA. as I read the view of notes on the lead	1000 weather samples seems excessive, because a) there are only 8760 hours of weather in a year and b) the recent analysis performed by Sandia (in support of the planned SOARCA uncertainty study) indicated that 25 weather samples may be sufficient. 25 IS NOT good enough	?? Need Staff Review
S33	Mitchell	Summary	5.1 weather sampling 4th para	notes that nureg-1150 leveraged weather data through rotation to get 1750 results for the computational price of 125	need to clarify that the results are not fully independent using that strategy, compared with the fully independent results of the present strategy Accepted, will do	?? Need Staff Review
S274	Schaperow	Summary	5.2	Explain what is meant by "joint data recovery rate." Explain why the data recovery for the 2 years of met data from the licensee is acceptable for best-estimate analysis.	Accepted - will be placed over 90% data recovery will allow acceptable with 90% in data	Need staff review
S34	Mitchell	Summary	5.2 weather data 1st para	notes noaa database as a comparative tool	Accepted, will do no result of this comparison is discussed. Without that, this sentence is not useful. Also, we should note that the licensee cooperative effort was to provide data from the on-site met tower	?? Need Staff Review

relating to qualifications? clarified that he meant AED

sanitized numbers sampling to as "Sandia realistic"

as any other sampling (MC, LHS) provided adequate samples are chosen. we can add a sentence or two that notes that the present scheme focuses on ensuring the early health effects are adequately sampled. by ensuring that the weighted weather data behind to be important are sampled. we have updated the number of weather data points that were sampled - what was done in 1150, to 1150, to

do that - not need of anyone, just that we need more time work with the weather data - 8/10/2010 more every suggested tower work (200-500 ft) all work
The number of weather trials only 1000 is fewer than others have sampled - 7 of 16 sense that the bins were larger numbers

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No.	Name	Document	Location	Comment	Supporting Basis	Status
S276	Schaperow	Summary	5.2.1	State how the met data was parsed into the following stability classes: unstable, neutral, and stable.	<i>accepted - this section will be completely rewritten - will include</i> This section does not include this information.	<i>not</i> Need staff review
S35	Mitchell	Summary	5.2.1 summary of weather data 1st para	states that table 2 presents ground level wind directions and states that the wind speeds varied from 2.02 to 2.63	no such wind direction data is in the table and it would help the reader to know that 2.02 comes from surry and 2.63 comes from PB <i>accepted - this section will be completely rewritten -</i>	?? Need Staff Review
S278	Schaperow	Summary	5.3, 3rd paragraph, 1st sentence	State under what conditions people outside of the EPZ would evacuate or relocate.	The statement that "in the event that this proves necessary" is vague.	Need staff review
S279	Schaperow	Summary	5.3, 4th paragraph, 3rd sentence	The following statement appears to contradict SOARCA modeling: "It is not expected that areas beyond the EPZ would need to take protective actions."	SOARCA modeling includes relocation of people living outside of the EPZ. My understanding is that this modeling is invoked for every unmitigated scenario.	Need staff review
S280	Schaperow	Summary	5.3, 4th paragraph, last sentence	Explain the significance of the assumption that evacuees travel to a point 30 miles from the site.	<i>accepted - will do - no specific</i> This assumption is not supported, <i>intentional</i> <i>workable</i> <i>by school districts</i> <i>for</i> <i>congregation centers</i> <i>as a guess</i>	Need staff review
S281	Tinkler	Summary	5.3, 4th paragraph, (last paragraph on pg 50)	The sentence, "It is not expected that areas beyond the EPZ..." needs to be revised. It is unnecessarily open ended. Did our calculations reveal relocation of the population?	<i>work to allow for that before</i> The text should not be written conditionally since we are describing analyses of the issue. Was our expectation well-founded?	Need staff review
S283	Schaperow	Summary	5.3, 6th paragraph	Clarify what is meant by "long-span bridges."	This term is vague. <i>accepted, will do</i>	Need staff review
S284	Schaperow	Summary	5.3, 6th paragraph	Clarify how backup power would survive the earthquake.	No basis is provided for the assumption that backup power would survive the earthquake.	Need staff review
S286	Siu	Summary	5.3, page 50, last para	Recommend describing how expectation regarding protective actions "based on plume projections" were modeled in analysis. (For example, were people for whom WinMACCS indicated a dose above a certain threshold assumed to take shelter? Moved 30 miles out? If so, what were the thresholds?)	<i>will clarify - include that probability, for example, and relocation per air was prescribed - for evac, all now 30 miles then</i> <i>check for the early phase</i> <i>calc of release time includes designee separator, notify - at home -</i>	Need staff review

Fuller Sullivan Reference 44 may study

analysis before no longer, evaluation done for this probability

Next sentence clarify the point

08/10/2010

added that is to the next sentence to indicate this to the reader -

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No.	Name	Document	Location	Comment	Supporting Basis	Status
S287	Siu	Summary	5.3, page 51, 2nd para, last sentence	Text refers to a "single seismic analysis" for the "most severe accident." The study treats two classes of seismic events for both Surry and Peach Bottom. Recommend clarifying whether, for the purposes of offsite consequence analysis, the worst earthquake (the 1g PGA event?) was used to represent both classes of events.	<i>Accepted - will clarify</i>	Need staff review
S288	Siu	Summary	5.3, page 51, 3rd para, 1st sentence	Recommend discussing what "high-level" implies, i.e., what is included, what isn't.	<i>need to discuss in the area of E&E</i>	Need staff review
S407	Schaperow	Summary	5.3.1 and 5.3.2	Use an example (e.g., Peach Bottom LTSBO) to clarify and illustrate how the evacuation parameters were quantified within the EPZ and in the 10-20 mile zone.	This would make the analysis more scrutable.	Need staff review
S38	Mitchell	Summary	5.3.1 baseline analyses 4th para	leaves out important issues	add discussion of road network multipliers, precip multiplier, and distance that evacuees travel for dose purposes <i>accepted - will do</i>	?? Need Staff Review
S290	Schaperow	Summary	5.3.1, 1st paragraph	Provide the basis for the 20% shadow evacuation.	No basis is provided. <i>a reference would be available.</i>	Need staff review
S291	Schaperow	Summary	5.3.1, 2nd paragraph	Explain what is meant by a "non-evacuating cohort." State when the non-evacuating cohort is assumed to eventually leave. State the basis for this assumed leaving time.	<i>Accepted - will define - will clarify that if the doses are above rels - will rework & revise remain the whole early phase</i>	Need staff review
S292	Tinkler	Summary	5.3.1, 2nd paragraph	Expand the paragraph to clarify that the assumption that the scenario occurs during school hours is a <u>conservative assumption</u> .	We should where practical clarify where we have purposely assumed conservative boundary conditions.	Need staff review
S293	Schaperow	Summary	5.3.1, 3rd paragraph, last 3 sentences	These sentences, which discuss evacuation beyond 10 miles, should be moved to Section 5.3.2.	Section 5.3.2 is the section that discusses cases with evacuation beyond 10 miles, not Section 5.3.1. Having this information in Section 5.3.1 implies that evacuating areas beyond 10 miles is a base case assumption.	Need staff review
S295	Siu	Summary	5.3.1, page 53, 1st para	See Comment 46 above. Recommend putting the discussion of cohort direction changes in the context of the treatment of plume movement.	<i>clarify that even though we need to be consistent regarding plume direction - that is always done in some direction -</i>	Need staff review

Sullivan
how appropriate to add some of these?
Sullivan

assuming that the scenario takes place during a shift hours is more demanding by the response of the organization

that more sections of the response plan must be executed. this assumption is not evaluated to result in additional doses to children exposed with an assumption that they are members of the general public.

8/10/2010 should get somewhere - perhaps not here - but when?

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S297	Siu	Summary	5.3.2	Recommend providing some bases for the choices of the different cases (16 miles, 30 minutes).	probably was rather arbitrary	Need staff review
S298	Siu	Summary	5.3.2	Either here or elsewhere, recommend documenting any assumptions regarding the fraction of population that chooses not to follow directions	the low + non-accident scenarios are not following methods - should show others -	Need staff review
S299	Schaperow	Summary	5.3.2, 3rd bullet	State the reason for assuming that cohorts take 30 minutes longer to start the implementation of protective actions. Describe the conservatism associated with this assumption.	No reason is given for this assumption. unknown - the reason it was suggested as a sensitivity is that it was	Need staff review
S302	Schaperow	Summary	5.4	: Table 2 shows estimated deposition velocities for 10 aerosol-size bins. Explain how MACCS uses this bin structure to calculate inhalation dose. <i>This bin structure is not realistic</i>	accepted - already planned to add - But note that the change in dose is not accounted for	Need staff review
S303	Tinkler	Summary	5.4 and Section 5.5	Discussion should be expanded to give a more general discussion of comparisons with past studies such as NUREG-1150	NOT accepted - 5.4 vs 5.5. Context is lacking in the current discussion. 50 manipulations not from comparisons!	Need staff review
S41	Mitchell	Summary	5.4 st eval from melcor to maccs 4th para	add that the MELCOR analysis provides the amount of each chemical element group in each aerosol bin for each plume segment	accepted - left-out information	?? Need Staff Review
S304	Tinkler	Summary	5.4, 2nd paragraph, last sentence	The sentence starting , The inventory...." Should be revised to give more guidance on the extent of the conservatism.	may be hard to come up with a value - The sentence is unnecessarily vague and does not help the reader reach a quantitative sense of the conservatism. can take out this sentence	Need staff review
S305	Tinkler	Summary	5.4, 4th paragraph	This discussion of deposition velocities could be expanded to summarily address differences with past treatment.(siting study, NuREG-1150)	This was a fairly big difference from past studies and deserves more attention.	Need staff review
S306	Tinkler	Summary	5.4, 4th paragraph	can we only put one value in? Justification for the typical surface roughness cited should be provided.	Typical value for surface roughness is cited but basis for surface roughness value is not provide, given the prevalence of forests in the vicinity of the Peach bottom plant.	Need staff review
S307	Schaperow	Summary	5.5	Justify the 1-week length of the Emergency Phase.	enough time to get things done - This information is not provided. to start the highest of the risk -	Need staff review
S308	Schaperow	Summary	5.5	Justify the 50-year length for the Long-Term Phase.	This information is not provided.	Need staff review

assumes a fast not in accident!

pull out

also a MELCOR decay heat is also a problem

The calc is considering only those persons who are in the vicinity of the reactor at the time of the accident - they are of all ages - 57 years is too young for the accident - for a lot of people -

OK for P&D is warranted SDP but only a type series of... 10 of 16

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S309	Schaperow	Summary	5.5	Justify using 4 rem over 5 years for the long-term habitability criterion, instead of using 2 rem in the 1st year and 500 mrem per year in subsequent years.	This information is not provided.	Need staff review
S310	Tinkler	Summary	5.5	The discussion of shielding factors needs to be revised to justify the use of NUREG-1150 shielding factors and the departure from NUREG-1150.	add the word "they" Departure from NURG-1150 is alluded to, but not quantified, presumes reader knows. The only change was to change The ms. in front of the factor -	Need staff review
S313	Schaperow	Summary	5.5, 6th paragraph and Section 5.6, 9th paragraph	Quantify the effect of land values (over a reasonable range) on the predicted long-term health consequences. Include both LNT and threshold cases.	No quantitative basis is given to support the statement that "the land values did have an effect on the predicted long-term health consequences." The ms. in front of the factor - on the time of hours/days we did not need that.	Need staff review
S314	Siu	Summary	5.5, page 55, 4th para.	Recommend indicating what 1150 assumed	check with the agencies -	Need staff review
S315	Schaperow	Summary	5.6	Assess the benefit of KI for each of the SOARCA scenarios.	This information is not provided in the report.	Why?
S316	Schaperow	Summary	5.6	State the assumed mortality rate (10%) from thyroid cancer. Compare this with the actual mortality rate (4%) from thyroid cancer. Perform sensitivity analysis to show that this does not affect the MACCS predictions for SOARCA.	check with Keith Schermeron we used BEIR V results - perhaps could change to let's look values and into Need staff review and improvement	Why?
S318	Schaperow	Summary	5.6, 3rd paragraph	State the basis for the assumptions that 50% of the population in the EPZ takes KI and none of the population outside of the EPZ takes KI. State the basis for assuming the KI is 70% effective.	This information is not provided.	Need staff review
S319	Tinkler	Summary	5.6, 3rd paragraph	Revise the discussion to note the recent news item at Surry regarding KI tablets.	Recent news suggested KI tablets had expired and were not being replaced. where is this report?	Need staff review
S320	Schaperow	Summary	5.6, 6th paragraph	The justification for changing the Peach Bottom normal relocation criterion from the PAG (i.e., 1 rem) to 0.5 rem in 7 days in not clear. Also, it is unclear why a similar change was not made for Surry.	not used for Surry because the Surry habitability The PA speaker habitability criterion	Need staff review
S321	Tinkler	Summary	5.6, 6th paragraph	The last sentence needs to be revised to clarify when relocation is assumed to take place.	was added to the scenarios Text currently is unnecessarily vague. dependent	Need staff review
S322	Schaperow	Summary	5.6, 7th paragraph	Provide the basis for using dose to the pancreas as a surrogate for dose to soft tissue to estimate residual cancers.	need a reference - compare with S324	Need staff review

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values needed to answer the why - almost certainly need to be included in the EPZ A Quantitative Summary

modelled in MACCS - when the values were originally chosen it was expected that the risk of radiomaterials is 2E Res in the first year would be about 2500 mrem for most would be below

KY

SOARCA STAFF COMMENTS - Summary (sorted by location) requiring additional review as of August 10, 2010

No.	Name	Document	Location	Comment	Supporting Basis	Status
S324	Schaperow	Summary	5.6, 8th paragraph	Make Reference 51 an addendum to the SOARCA report.	Reference 51 is not publicly available.	Need staff review
S326	Siu	Summary	5.6, page 56, 3rd para	Recommend providing basis for KI ingestion and timing assumptions		Need staff review
S327	Siu	Summary	5.6, page 57, 1st para	Recommend providing tables summarizing assumed timing of hot spot and normal relocation	→ how the in the appendices seems unclear	Need staff review dependent
S333	Tinkler	Summary	5.7, 1st paragraph	Revise first sentence to focus on latent cancer fatality risk – not risk for some organs.	Current language is not consistent with following language in paragraph and distinction is not clear. the rest of sentence	Need staff review
S334	Tinkler	Summary	5.7, 1st paragraph	Discussion of WHO estimate of Chernobyl should be supplemented by other estimates that have been made. Are we sure about the wording used here? "will be" Alternatively, we should delete. WHO is only on example - this is not really an uncertainty decision of change	The text in this section talks at length about the uncertainty and difficulty in assessing LCF risk but in this instance we are citing a WHO estimate which reflects no range and no uncertainty?	Need staff review
S335	Siu	Summary	5.7, page 58, 2nd para	Recommend defining "linear-quadratic dose-response"	Accepted -	Need staff review
S336	Siu	Summary	5.7, page 58, last para	Recommend clarifying if stated doses are whole body doses	Accepted -	Need staff review
S337	Siu	Summary	5.7, page 61, 2nd para	See Comment 15 above. Text refers to an "initial phase" of SOARCA. Recommend revising as appropriate to reflect current plans. If the current expectation is that this is indeed an initial phase, recommend revising Section 1.1 to state this explicitly.	Accepted -	Need staff review
S338	Tinkler	Summary	5.7, pg 60 4th paragraph	Delete the last sentence.	The statement is not complete and reflects a bias or judgement between the HPS and the ICRP and IAEA.	Need staff review
S339	Tinkler	Summary	5.7, pg 60, 3rd paragraph	The last sentence, "Although there is no scientific basis....", should be deleted.	The text is unclear, and goes beyond the ICRP and IAEA statements.	Need staff review we can delete this.
S346	Tinkler	Summary	6	The results and conclusion section should provide more insights and conclusions from the offsite consequence analyses which has received only a little close examination for notable insights. This would involve new work.	The offsite consequence analyses is a significant part of the effort and more could be mined from the existing analyses.	Discuss with Snr. Management
S347	Schaperow	Summary	6.0, 1st paragraph	Add that, for internal events scenarios, non-B.5.b mitigation also was not credited.	This information is not provided.	Why?

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not accepted - EOPs + SAMGs some used -

SOARCA STAFF COMMENTS - Summary (sorted by location) requiring additional review as of August 10, 2010

No.	Name	Document	Location	Comment	Supporting Basis	Status
S350	Siu	Summary	6.1	Recommend providing specific comparisons supporting general statement of slower accident progression. Include previous study results as well as SOARCA results.		Need staff review
S351	Nosek	Summary	6.1	Tables 4 through 9	I propose we use tables like those I am providing instead of the current ones.	Why? (Consider)
S50	Mitchell	Summary	6.1 accident progression and radionuclide release, throughout	comparisons are made to the sst1 releases. While this is the sequence that most often is quoted by critics, the insight in the sss is that the "most likely" sequence from the sss is faster than our calculation, but the release magnitude is comparable to soarca or even smaller. Our small source terms are driven by the change in our perception of containment performance. we don't spend enough time pointing this out to the reader. indeed, the insight that source terms (and consequences) are small if the containment hangs together can readily be found in the reactor safety study by inspection of the table of release fractions in the main report	we focus too much on those factors that lead to small consequences without pointing out the factors that drive those results, too little space is given to those things that turned out to be non-conservative in past studies.	Thanks - MELCOR Staffs to Consider
S89	Sullivan	Summary	6.1 pg 61 and page 67 first para	PB pointed out that a reactor building can not be flooded, the last sentence of first para, needs to be changed to say something else, like spraying and flooding	Factual error	?? Need Staff Review
S363	Nosek	Summary	6.1, page 63	Even in the case of the most rapid events (i.e., the unmitigated short-term SBO where core damage may begin in 1 to 3 hours), reactor vessel failure is delayed for roughly 8 hours allowing time for restoration of cooling and preventing vessel failure. In these cases, containment failure and radiological release is delayed for 8 hours (BWR) or 24 hours (PWR).	Actually, the most rapid event we analyzed is the TI-SGTR (that in addition has core damage at the same time as the STSBO), has a release which starts at 3.5 hours. I propose we remove the current language which says the STSBO is the fastest scenario and instead say TI-SGTR. I also propose we state at what time release starts. See provided tables.	Need staff review

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No.	Name	Document	Location	Comment	Supporting Basis	Status
S364	Nosek	Summary	6.1, page 63	The SOARCA analyses showed that ample time is available for operators to take corrective action and for input from plant technical support centers even if initial efforts are assumed unsuccessful.	Our analyses show operators do not prevent core damage in about half of the mitigated scenarios (and release occurs in 2 of the 3 CD events). I propose we delete the current language saying that operators have "ample time to take corrective actions". (Even moreso for the "unmitigated scenarios", as the current statement claims). In the mitigated scenarios, there is core damage in PB-STSB0, Surry-STSB0, Surry TISGTR, including a release 2 of them. (See provided tables). In addition, the plant fact checks have put into question assumptions about PB-LTSBO.	Need staff review
S367	Nosek	Summary	6.1, page 63	Some releases of important radionuclides such as iodine and cesium are predicted to be about 10 percent, but are more generally in the range of 0.5 to 2 percent.	I propose we add the word "volatile" here, and say "as large as" about 10 percent.	Need staff review
S368	Siu	Summary	6.1, page 63, 1st para	Recommend providing additional information (regarding the time and resources required to perform corrective actions) supporting the descriptor "ample."		Need staff review
S369	Siu	Summary	6.1, page 63, last para	See Comment 61 above. Reference to "past studies" is too general without further detail to substantiate.		Need staff review
S370	Nosek	Summary	6.1, page 66	Sequences involving large early releases have influenced the results of past PRAs and consequence studies.	How have they influenced them? I propose we say: "Large early release scenarios have had the largest early fatality consequences in previous studies."	Need staff review
S371	Siu	Summary	6.1, page 66, 1st para	See Comment 61 above. Readers should not equate the siting study and "past PRAs." Recommend strengthening comparisons with 1150.		Need staff review
S376	Schaperow	Summary	6.2	Discuss the Peach Bottom STSB0 barium issue.	This information is not provided.	Need staff review
S377	Siu	Summary	6.2	If more than one MELCOR run was used to characterize a specific scenario/sequence group, the report needs to indicate how the results of the runs were weighted in developing the results shown in Tables 6 and 7.		Need staff review

SOARCA STAFF COMMENTS - Summary (sorted by location) requiring additional review as of August 10, 2010

No.	Name	Document	Location	Comment	Supporting Basis	Status
S378	Siu	Summary	6.2	The report needs additional discussion emphasizing that the results are based on a limited set of MELCOR runs representing the full range of possibilities implied by the scenarios/sequence group definitions, and commenting on potential sources of conservatism/non-conservatism associated with this approximation.		Need staff review
S53	Mitchell	Summary	6.2 offste rad conseq last para	states that the soarca offsite consequence estimates are smaller that reported in earlier studies	the early fatality estimates are smaller, but the lcfs are only smaller than either the sss or NUREG-1150 if the larger dose truncations are applied or the distance is truncated. The non-conservatisms present in the previous site models counteract the smaller source terms for two of our 4 dose truncations and for shorter distances. for nureg-1150, the comparison that purports to show lower values for soarca includes adding in a value from backup documents that the authors did not include. the discussion of nureg-1150 in the soarca text does not allow the reader to obtain that insight	Comment is not clear ?? Need Staff Review
S394	Siu	Summary	6.2, Tables 6-9	Recommend replacing "absolute" with "unconditional" to eliminate potential overgeneralization of results by readers		Need staff review
S396	Nosek	Summary	6.3	Conclusions - I propose we use the conclusions from Jocelyn's ACRS presentation instead.		Need staff review
S54	Mitchell	Summary	6.3 conclusions 1st para	there is no mention that the conclusions are based on the sequences studied. There is no discussion of in what way the soarca results represent a major change from the way people perceive severe reactor accidents and their likelihoods and consequences What people? Everybody? Only some? All consequences? Are there any limitations on that statement?	broad brush conclusion that does not answer questions	?? Need Staff Review Appears okay excpet for the term "likelihood"
S399	Nosek	Summary	6.3, page 69	"o For the Surry STSBO with mitigation there was no containment failure within 48 hrs.o For the Surry TI-SGTR, the predicted individual latent cancer risk for the EPZ was small, 1x10-10 per reactor-yr, assuming LNT."	I propose we add the mitigated PB-STSBO (RCIC blackstart) to this listSee provided tables.	Why?

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No.	Name	Document	Location	Comment	Supporting Basis	Status
S70	Schaperow	Summary	General	Add a comparison of SOARCA results to the Sample Problem A source term, to provide perspective on the changes in source term since NUREG-1150.	The report only compares results with the SST1 source term, even though it is an update to the consequence estimates in NUREG-1150 as well.	?? Need Staff Review
S408	Siu	Summary	Tables 6-9	Recommend adding "point estimate" in titles to remind reader that in several cases of variability (e.g., when in the cycle, when during the day, the accident occurs) single point values were used. Also recommend explicitly adding "seismically induced" before "Long-term" and "Short-term" SBO.		Need staff review