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~~WITHHOLD PER 10 C.F.R. § 2.390 AND JULY 1, 2009 PROTECTIVE ORDER~~

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD PANEL

In the Matter of
South Texas Project Nuclear Operating Co.
Application for the South Texas Project
Units 3 and 4
Combined Operating License

Docket Nos. 52-012, 52-013

INTERVENORS' CONSOLIDATED RESPONSE TO THE ANSWERS OF APPLICANT AND NRC STAFF TO THE INTERVENORS' CONTENTIONS REGARDING APPLICANT'S SUBMITTAL UNDER 10 C.F.R. § 52.80 AND 10 C.F.R. § 50.54(hh)(2)

The Intervenors hereby submit the following Consolidated Response to the Answers of Applicant and NRC Staff to the Intervenors' Contentions Regarding Applicant's Submittal Under 10 C.F.R. 52.80 and 10 C.F.R. 50.54(hh)(2) (also referenced as fire and explosions contentions). Nothing herein should be considered a waiver of any factual statement or legal argument advanced in the Intervenor's fire and explosion contentions.

Introduction

The burden is on the Applicant to establish that its mitigative strategies are adequate to the task of dealing with fires and explosions of the magnitude that could reasonably be expected as a result of the impacts of large commercial airliners into nuclear plants.[1]

[1] South Texas Project, is conducting exercises that assume as many as four aircraft target the reactors and two actually impact the plant. NRC Public Meeting , June 3, 2009, Bay City, TX discussing the NRC's assessment of STP's safety performance in 2008. NRC Dockets 52-034 and 52-035, Comanche Peak Oral Argument Tr. pp.304-306. Video of entire meeting available at http://vimeo.com/6595361 (Part 1) and http://vimeo.com/6599294 (Part 2)

The essential disagreement between Intervenors and Applicant and Staff is whether 10 C.F.R. 50.54(hh)(2) requires a showing that the proposed mitigative strategies are effective[2], i.e., adequate and proportionate to the magnitude of fires and explosions that could reasonably be anticipated from, for example, the impacts of large commercial aircraft into nuclear power plants. Applicant and Staff arguments imply that the mitigative measures may be developed in a vacuum unrelated to the full spectrum of damage states. Applicant and Staff maintain that there is no regulatory requirement to describe, quantitatively or qualitatively, what is meant by the term "loss of large areas of the plant due to explosions or fire" in section 50.54 (hh)(2). Nor do the Applicant and Staff accept that the mitigative measures adopted under section 50.54(hh)(2) have an inherent requirement to be demonstrably effective. 74 Fed. Reg. 13926, 13958 (March 29, 2009). Instead, the Applicant has offered mitigative strategies based on the guidance in NEI 06-12 without any underlying showing that such are either appropriately scaled to meet large magnitude fires and explosions or inherently effective under the full spectrum of anticipated damage states.

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This raises more questions than answers. For example, what is meant by "full spectrum of damage states"? Upon what basis do

[2] See 74 Fed. Reg. 13926, 13958: "Section 50.54(hh)(2) focuses on ensuring that the nuclear power plant's licensees will be able to implement effective mitigative measures for large fires and explosions including (but not explicitly limited to) those caused by the impacts of large commercial aircraft."(Emphasis added.)
[3] NEI 06-12, p.1.

the authors of the guidance document make the statement that the response measures they set forth in the report do not assure the successful outcome under the full spectrum of damage states? What plans should the Applicant be prepared to implement in the event that the response strategies it utilizes are unsuccessful because of the extreme damage state? None of these questions are resolved by either the Applicant's submittal or NEI 06-12.

The value of NEI 06-12 is that it recognizes that all the mitigative measures it specifies may not be adequate under extreme damage states. This admonition in NEI 06-12 is the "elephant in the living room" the significance of which neither the Applicant nor Staff acknowledge.

The procedural history of the fires and explosions regulations also undermines the Applicant's arguments. For example, on October 26, 2006 the Commission gave notice that it would require mitigative strategies for large scale fires and explosions. 71 Fed. Reg. 62,664 at 62,674. Nearly one year later on September 20, 2007, the COLA was submitted with the Applicant's Environmental Report. However, as noted in the original fires and explosions contention[4], Chapter 7 of the Environmental Report made no attempt to address how to maintain reactor integrity or restore core cooling and spent fuel pool cooling subsequent to the loss of large plant areas due to fires and explosions. Now, nearly three years after the announcement that the Applicant would be required to address the means to maintain essential functions subsequent large fires and explosions, the best the Applicant can offer is mitigative measures that bear no

[4] The model originally submitted in support of the COLA assumed fires that ranged in diameter from 1.6 to 13.1 ft.; and while this is clearly not comparable to fires caused by initiating events such as aircraft impacts, it does show that the model acknowledges fire size as a variable for analysis. Petition for Intervention and Request for Hearing, pp. 16-20.

stated relationship to any particular damage state let alone the full spectrum of potential damage states. This omission of information makes it impossible to determine whether the mitigative measures would be effective.

Intervenors' Responses to Applicant's Objections

Contention MS-1[5]

The Applicant's failure to describe the full spectrum of damage states that its mitigative strategies are intended to address is a fatal flaw in its submittal.

First, the Applicant assumes that the Intervenors have interchangeably used the terms "damage states" and "numbers and magnitude of fires and explosions." Applicant Answer p. 9, fn. 34. The two terms are not intended by the Intervenors to be used interchangeably. "Damage states" are caused by the "numbers and magnitude of fires and explosions." The two have functional differences and are not intended to be used interchangeably, notwithstanding the Applicant's assertion to the contrary.

Second, the Applicant incorrectly asserts that the Intervenors confuse the aircraft impact design rule, 10 CFR 50.150, with the fires and explosions rule, 10 CFR 50.54(hh)(2). Applicant Answer, p. 9. The Applicant misapprehends the Intervenors' purpose in discussing both rulemakings. The two rulemakings are intended to be complementary and are inextricably related; both are responses to the threat environment that recognize the need to evaluate nuclear plant vulnerabilities to attack. 74 Fed. Reg. at 13928. But they are distinct to the extent that the fires and explosions rulemaking under section 50.54(hh)(2) focuses on how the Applicant is to

[5] The Intervenors will reference the latest set of fires and explosions contentions by MS-1 –MS-7.

address the large loss of plant areas due to fires and explosions. The design impact rule under section 50.150 focuses on how the structural and functional aspects of the plant are designed to withstand the effects of initiating event(s).[6] Significantly, there is no attempt by the Applicant to take advantage of the description of damage footprints provided in the guidance for the impact rule, NEI 07-13, to describe how its mitigative strategies would deal with the damage footprints described therein.[7]

Third, the Applicant asserts that the "performance-based standards" are satisfied by the mitigative strategy guidance in NEI 06-12. Applicant Answer, p. 39. The term "performance-based" should be measured against the strategic objective(s) intended to be realized, i.e. maintain/restore containment integrity, core cooling and spent fuel pool (sfp) cooling under the full spectrum of damage states. The term "strategy" is defined as "the science and art employed in the armed strength of a belligerent to secure the objects of war, especially the large scale planning and directing of operations in adjustment to combat area, possible enemy action, political alignments, etc."[8] This dictionary definition of strategy is from the vernacular of military operations. Successful military operations require planning that is focused on the marshaling and deployment of adequate resources to achieve specified objectives. But it is unknown what the scale of operations is assumed and therefore, impossible to determine whether the mitigative measures are adequate. "Performance-based" standards are meaningless unless there is an understanding of what is to be achieved under the full spectrum of damage states. Just

[6] See 74 Fed. Reg. 28112: "The applicant is required to use realistic analyses to identify and incorporate design features and functional capabilities to show, with reduced use of operator actions, that either the reactor core remains cooled or the containment remains intact, and either spent fuel cooling or spent fuel pool integrity is maintained."
[7] NEI 07-13 does not specify whether the damage footprints described therein include the full spectrum of damage states that could occur from initiating events such as impacts of aircraft.
[8] Webster's New Collegiate Dictionary, 2nd ed.

as military operations are adjusted in relation to a "combat area" and possible enemy actions etc., operations to deal with fires and explosions must be adjusted to match the area involved and anticipate actions that will be required under the full spectrum of damage states. Performance-based standards must, in the final analysis, be "effective". 74 Fed. Reg. at 13958.

The Applicant and Staff maintain that there is no requirement to quantify or otherwise describe what is meant by "large areas of plant" assumed to be lost in large-scale fires and explosions. See eg. Applicant Answer, pp.9-11 and Staff Answer, pp.7-8. The Applicant's approach is to embrace a "flexible" response that relieves it of any necessity to describe with any particularity, for example, whether it would be necessary to suppress one , two or ten fires simultaneously. Nor does the Applicant and Staff consider whether the flexible responses could be compromised by damaged pipes and pumps required for fire suppression and makeup water to restore cooling functions. A flexible response is understandable; however, the range of flexibility must be adequate to meet the full spectrum of anticipated damage states. But neither the Applicant nor Staff make any attempt to describe the range of the "flexible responses." Anything less than a showing by a preponderance of the evidence that the mitigative measures are effective under the full spectrum of damage states fails to meet the objectives of 10 CFR 50.54 (hh)(2) and the Atomic Energy Act, 42 U.S.C. 2133(d). The public's health and safety cannot be assured unless there is some means by which to determine whether the mitigative strategies are adequate to meet the <u>full</u> spectrum of damage states.

Next, the Applicant argues that the plain language of sections 52.80(d) and 50.54(hh)(2) do not require specification of damage states. Applicant Answer p.10. The Applicant notes that

the facial requirements of the subject regulations do not call out a specific requirement to discuss the number or magnitude of fires and explosions to be addressed by the mitigative strategies. But this argument overlooks the Commission's stated expectation that the mitigative measures will be "effective." 74 Fed. Reg. at 13958. Intervenors contend that effectiveness of the mitigation measures is inherently related to the damage states to which they apply and the Applicant rejects this relationship.

Further, the Applicant ignores the plain language of 50.54(hh)(2) that uses the term "large" to describe the fires and explosions that the mitigative measures are intended to address. Conspicuously missing from NEI 06-12 and the Applicant's submittal is any description or definition what is meant by "large." Because there's no definition of what they mean by "large," there is no way to determine whether the mitigative measures will be "effective." 74 Fed. Reg. at 13958.

But what is more troubling is the Applicant's willingness to use a legalistic approach to avoid addressing an urgent problem that has been identified by the Commission as a high priority for resolution. 74 Fed. Reg. 13926, 13927-8. It seems unlikely that the Commission would have devoted the resources necessary to carry out the rulemaking that yielded the fires and explosions regulation just to have it diluted by an artificially restrictive approach to developing mitigative strategies. *Druid Hills Civic Association, Inc., v. Federal Highway Administration*, 772 F. 2nd 700, 709 11th Cir. (1985). The refusal to address the full spectrum of damage states in the context of mitigative strategies is an obvious oversight and acceptance of such by the Commission would be arbitrary and contrary to the requirements of the AEA, 42 U.S.C. 2133(d)

that requires that the health and safety of the public be paramount in determining whether a license to operate a nuclear plant should be issued. How can there be any assurance that the health and safety of the public is adequately protected by the applicant's mitigative strategies when there is no attempt whatsoever to describe what those strategies are expected to address? *Ohio River Valley Environmental Coalition,Inc.v. Kempthorne*, 473 F.3d 94,102 (4th Cir., 2006) (Administrative Procedure Act directs review of agency action to determine if decision is product of consideration of relevant factors and whether a clear error of judgment has occurred.)

Additionally, the Applicant goes to great lengths to point out a premise already acknowledged by the Intervenors that the initiating events may come from a variety of actions. Applicant Answer, p. 11. Initiating events are not limited to the impacts of large commercial airliners.[9] There is no dispute that the Applicant should plan for a variety of events that would effectively render the facility incapable of pumping water from either on-site sources or obtaining from off-site supplies for fire suppression and makeup water. The Applicant should anticipate that its capacity to pump water from on-site sources will be compromised due to the effects of fires and explosions and that radiological conditions or other damage effects preclude accessing off-site water supplies. However, it should not be left to the Intervenors to project and describe potential damage states that the Applicant's proposed nuclear plants may experience as a result of large scale fires and explosions. The burden is on the Applicant to do so and to show that under those damage states its mitigative strategies will be adequate to protect the health and safety of the public. 42 U.S.C. 2133(d).

[9] As argued by the Intervenors in their original fires and explosions contention 1, planning for the initiating events should include both multiple air strikes along with coordinated ground attacks on a facility.

The Applicant next attempts to avoid describing the full spectrum of damage states by pointing to a single comment and response in the Federal Register notice that announced the adoption of the fires and explosions regulation. Applicant Answer, page 12. The comment cited by the Applicant does not support its argument. The subject comment sought to have the regulation describe the "types of fires and explosions" that should be anticipated and to "specify what areas of the plant are considered particularly susceptible to damage or distraction a fire or explosion." Applicant Answer p. 12, fn. 44. The Intervenors in the *instant* matter are not contending that the mitigative strategies are inadequate because they fail to specify the "types of fires or explosions." Irrespective of the types of fires or explosions involved, an understanding of the nature and extent of the damage that such cause is necessary to determine the adequacy and effectiveness of the mitigative measures. Therefore, the response to the subject comment is not determinative of whether the Applicant in this case has an obligation to describe the damage footprints and the full spectrum of damage states that its mitigative strategies are intended to address.

Next, the applicant makes the astonishing statement that "[N]one of the statements in the SOC suggests that an applicant must evaluate aircraft impacts and identify damage states." Applicant Answer, p. 14. This is flatly contradicted by the SOC at 74 Fed. Reg. 13958 that states "Section 50.54(hh)(2) focuses on ensuring that the nuclear power plant's licensees will be able to implement effective mitigative measures for large fires and explosions including (but not explicitly limited to) those caused by the impacts of large commercial aircraft."[10] This SOC directive requires considerations of both the magnitude of fires and explosions by using the

[10] See Intervenors' original Fire and Explosions Contentions, Petition to Intervene, p.7, fn 3.

adjective "large" and the full spectrum of damage states by requiring that the mitigative measures be "effective". 74 Fed. Reg. at 13598.

The next approach taken by the Applicant is to assert again that Intervenors have confused the requirements of the fires and explosions regulation with the aircraft impacts design regulation, 10 C.F.R. 50.150. Applicant Answer, pp. 14-16. The Intervenors are not confused about the two regulatory requirements, as noted *infra*. Furthermore, the Intervenors are not arguing that the fires and explosions regulation requires that there be specifications of aircraft size, fuel loading, speed, and angle of impact to be part of the underlying considerations of the mitigative strategies. These considerations are more relevant to the requirements of the design impact regulation, 10 C.F.R. 50.150. Rather, the Intervenors contend that the damage footprints and the full spectrum of damage states should be considered in the context of the fires and explosions regulatory requirements. It is the Applicant that is attempting to confuse the argument here. The Intervenors' citation to and reliance on the aircraft impact rule is simply to illustrate that the task of describing damage footprints related to aircraft impacts is not beyond the realm of possibility. The damage footprints described in NEI 07-13 are realistic and illustrative, though not necessarily exhaustive, of various damage states that should be anticipated in any effective mitigative strategy under 10 C.F.R. 50.54(hh)(2).

Accordingly, the Applicant's assertion that requiring a specification of the full spectrum of damage states related to the fires and explosions regulatory requirements would render the aircraft design rule unnecessary and redundant is mistaken. This is simply not the case. Section 50.150 does not merely require an assessment of aircraft impacts, but also requires that design

enhancements be made depending on the results of the assessment. Moreover, aircraft impact is but one of many possible initiators of LOLA events, and is not necessarily the most severe. Showing that the mitigative measures would be effective in the event of an aircraft attack is a necessary, but not sufficient, condition for the adequacy of the mitigative measures to meet the requirements of 50.54(hh)(2).

The Intervenors recognize the distinct purposes behind the two regulatory requirements. As noted above, the aircraft design rule is intended to call out the structures and functions of a plant that are intended to show that it can withstand the impact of an aircraft and still function effectively to prevent the loss of containment integrity, reactor coolant and spent fuel pool cooling. The function of the fires and explosions regulation is to establish how containment integrity, reactor cooling and spent fuel pool cooling can be maintained/restored if the design of the plant fails to effectively prevent the loss of these essential functions. Hence, the Applicant's assertion that the aircraft design rule would become superfluous by specification of the full spectrum of damage states is not supported by the distinct purposes the regulations are intended to accomplish.

The final argument that the Applicant makes related to the Intervenors' Contention MS-1 is that since the Commission has endorsed NEI 06-12[11] the Applicant may simply follow the prescriptive guidance therein and presumably, ignore the "high-level insights" related to the full spectrum of damage states that might render the mitigative strategies ineffective. Applicant Answer, p. 16. (b)(4)

[11] Interim Staff Guidance on section 50.54(hh)(2) is in the process of being developed (See 74 Fed. Reg. 13958) for release during September, 2009. Hence, whether the Applicant's submittal is consistent with the anticipated ISG is unknown.

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The NEI 06-12 authors presumably are aware of some definable damage state(s) that will render the mitigative measures ineffective. The Applicant wants the benefits of adopting the prescriptive measures in NEI 06-12 while rejecting its explicit limitations expressed in the disclaimers. The Intervenors contend that whether the prescriptive measures adopted by the Applicant are effective is tied to the full spectrum of damage states caused by large scale fires and explosions. The Applicant is understandably reluctant to acknowledge this relationship because to do so would require its mitigative measures to be more robust than called for in NEI 06-12 in order to meet the full spectrum of damage states.

The Applicant argues in its response that Contention MS-1 should be dismissed because it is in part an attack on NEI 06-12, which it asserts the Commission has approved "as a method for satisfying Section 50.54(hh)(2)." Applicant Answer p. 16. The Applicant then selectively quotes from the Final Security Rule to support this assertion. Applicant Answer p. 17. However, the Applicant's quote fails to support its assertion because it clearly states that the Commission approved NEI-06-12 "as an acceptable method for *current* reactor licensees..." (Emphasis added.) In fact, the Commission apparently has not approved NEI-06-12 for COL applicants. Applicant tellingly fails to include the sentence immediately following the quotation that "The

Commission is currently developing a draft regulatory guide that consolidates this guidance and addresses new reactor designs." Final Security Rule at 13,958.

Thus, the Commission recognized that NEI-06-12, which was developed to codify the B.5.b requirements for operating plants, was not adequate to address issues that might arise with regard to new reactors. Specifically, the Commission said that new applicants "are required to develop and implement procedures that employ mitigative strategies similar to those employed by current licensees"—"similar" but not "identical." Presumably for this reason, the Commission has stated its intent to provide Interim Staff Guidance 16 (ISG-16) in September 2009 on 10 CFR 50.54(hh) compliance. (September 2, 2009 Generic DCWG Meeting Slide for Interim Staff Guidance as of August 2009, ADAMS accession number ML092450022).

Contrary to the argument of the Applicant, this Board is not bound by NEI 06-12. A Commission endorsement of NEI 06-12 is not conclusive on the question of whether it is an acceptable means to address the requirements of 10 C.F.R. 50.54(hh)(2). In *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit One) 28 NRC 275 (1988) the Commission discussed the limitations of such regulatory documents as follows:

> As we have often stressed, NUREG–0654 and similar documents are akin to "regulatory guides." That is, they provide guidance for the Staff's review, but set neither minimum nor maximum regulatory requirements. Philadelphia Electric Co. (Limerick Generating Station, Units 1 and 2), ALAB–819, 22 NRC 681, 709–10 (1985), aff'd in part and review otherwise declined, CLI–86–5,23 NRC 125 (1986); Consumers Power Co. (Big Rock Point Nuclear Plant), ALAB–725, 17 NRC 562, 568 n. 10 (1983). Where such guidance documents conflict or are inconsistent with a regulation, the latter of course must prevail. On the other hand, guidance consistent with the regulations and at least implicitly endorsed by the Commission is entitled to correspondingly special weight. See, e.g., Limerick, 22 NRC at 711 & n. 40. 28 NRC at 290.

The Petitioners contend that the failure to discuss the full spectrum of damages expected from large fires and explosions in NEI 06-12 is inconsistent with the requirement of 10 C.F.R 50.54(hh)(2) that specifies the mitigative strategies must be effective and consistent with the loss of large areas of a nuclear plant. Accordingly, NEI 06-12 should not be given any special weight. 28 NRC at 290.

Applicant's arguments also fail in other important respects. For instance, it argues that Section 50.54(hh)(2) does not apply to applicants for design certifications or design approvals and this somehow implies that the "rule does not require an applicant to provide design evaluations of fires and explosions." Applicant's Answer, pp. 7-8. It also argues that Section 50.54(hh)(2) does not require an evaluation of damage caused by aircraft impacts. Applicant's Answer, p. 9. Yet the excerpt in the SOC which the Intervenors have already cited clearly implies a linkage between (1) new reactor design and the 50.54(hh)(2) mitigative strategies, and (2) the aircraft impact assessment now required in 10 CFR 50.150 and the 50.54(hh)(2) mitigative strategies:

> The mitigative strategies employed by new reactors as required by this rule would also need to account for, as appropriate, the specific features of the plant design, or any design changes made as a result of an aircraft assessment that would be performed in accordance with the proposed Aircraft Impact Assessment rule. (72 Fed. Reg. 56287; October 3, 2007)

This statement makes clear that the mitigative strategies for new reactors do in fact depend on design features, and might have to be changed to accommodate changes to the design as a result of the aircraft impact assessment rule. The Intervenors maintain that it is simply not possible to modify the mitigative strategies to account for design changes made as a result of an aircraft impact assessment without understanding how the design changes would alter the effects of the aircraft impact.

Contention MS -2

The Intervenors contend that the assessments, evaluations, action plans and procedures required to implement the mitigative measures should be completed prior to issuance of a COL. Additionally, the assessments, etc. should be performed considering the full spectrum of damage states. Intervenors' fire and explosion contentions, p. 14-15. Intervenors incorporate by reference their arguments in response to the Applicant's objections to MS Contention-1 at pp.4-12 *supra.*

The Applicant contends that sections 52.80(d) and 50.54(hh)(2) do not require an evaluation of the full spectrum of damage states. Applicant Answer, p. 19. The Applicant attempts to downplay the importance of developing the subject assessments, etc. prior to the issuance of a COL. Applicant maintains it need only provide a "description of the strategies and procedures, and identification of plans for their implementation." Applicant Answer, p. 21. Assuming, *arguendo*, that only a "description" and "identification" is all that is required still leaves unanswered whether such must be completed in light of the full spectrum of damage states. Intervenors contend that to determine the effectiveness of the mitigative measures, and their component parts, requires assumptions about the spectrum of damage states. As noted herein, *passim.*

The Applicant also argues that the contention MS-2 should be rejected because it is contrary to the requirements of 10 CFR section 2.335 and that anticipates a rulemaking rather than a contention to dispute this aspect of the COLA. Applicant Answer, p. 21. However, this overlooks the specific requirement in section 50.54 (hh)(2) that requires mitigating strategies for

"large" scale fires and explosions. Accordingly, the Intervenors challenge is not to the regulation but the applicant's failure to meet the requirements thereof.

Finally, the applicant contends that there is inadequate factual support for the contention as required by 10 CFR 2.309(f)(1)(v). *Id.* This contention is one of omission and is therefore governed by the authorities specified by the Intervenors at page 6 of their fires and explosions contentions.

Contention MS-3

Intervenors incorporate by reference their arguments in response to the Applicant's objections to MS Contention-1 at pp.4-12 *supra.*

The Applicant contends that there is no need to determine dose projections sometime prior to fuel load. Applicant Answer, p. 22-23. Additionally, the Applicant sees no need to project doses under any particular damage state. Once again, the Applicant assumes a one-size-fits all approach. The requirements of 50.54(hh)(2) are intended to yield "effective" mitigative strategies. Consistent with this expectation is an assessment of dose projections. And it is difficult to see how the mitigative strategies can be "effective" unless the dose projections are tied to the full spectrum of damage states. The Applicant makes no attempt to do so in its submittal. Under the Applicant's reasoning therefore, it is of no consequence that the projected dose assessments be delayed until sometime prior to fuel load because section 50.54(hh)(2) doesn't explicitly call for any dose projections at all. Applicant Answer, p. 23.

This contention of omission is adequately supported. 10 C.F.R. 2.309(f)(1)(v) requires the Intervenors to provide a concise statement of the facts that support their position and upon which the petitioner intends to rely at the hearing. However, the requirements of 10 C.F.R. § 2.309(f)(1)(v), that generally call for a specification of facts or expert opinion supporting the issue raised, are not applicable to a contention of omission beyond identifying the information required under the regulation in question. North Anna, LBP-08-15, 68 NRC (slip op. at 27) (quoting Pa'ina Hawaii, LLC (Materials License Application), LBP-06-12, 63 NRC 403, 414 (2006)). Thus, for a contention of omission, the Intervenors' burden is only to show the facts necessary to establish that the application omits information that should have been included.

The Applicant also asks that this contention be rejected because this Panel might not be able to distinguish between the facts asserted by the contention and its underlying legal bases. Applicant's Answer, p. 23-4. In the context of the subject contention and considering the extensive briefing that the fires and explosions regulations have received it seems likely that this Panel would be able to distinguish between the factual assertions and the legal bases therein.

Contention MS-4

Intervenors incorporate by reference their arguments in response to the Applicant's objections to MS Contention-1 at pp.4-12 *supra*.

The Applicant contends that the basic premise of this contention, i.e. that mitigative strategies are tied to the number and magnitude of fires and explosions and resulting damage states, is faulty. Applicant Answer, p.24-25. The Applicant maintains that it is untenable to

require that the mitigative strategies be scaled appropriately to the number and magnitude of fires and explosions and the resulting damage states. *Id.*

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Id. But flexibility, by definition, has limits. Again, the Applicant fails to make any attempt to match its mitigative strategies to the full spectrum of damage states expected to occur as a result of large fires and explosions. This failure is inconsistent with the Atomic Energy Act, 42 U.S.C. 2133(d). This position also is inconsistent with the requirement to show the mitigation measures are "effective" when applied to fires and explosions that involve a "large" area of the plant.

The Applicant argues that the event guidelines need not be influenced by the numbers or magnitude of fires and explosions nor the resulting full spectrum of damage states caused thereby. Applicant Answer, p.26-27. [12] The Applicant uses the term "event" without any attempt to define what it means. This shortcoming has significant implications. For example, does an "event" correspond to a fire that is in one part or in many parts of the plant? Does the "event" anticipate one or multiple fires? How large are the parts of the plant involved in the fire(s)? Does the "event" correspond to explosions that have caused the loss of the containment integrity, reactor cooling capacity and sfp cooling capacity simultaneously? For the event guidelines in the MST to be meaningful and functional they must have a close relationship to the full spectrum of

[12] The Applicant states that it is not clear whether the Intervenors contend that these event guidelines should be developed before the issuance of the operating license. Applicant Answer, p.26. To clairify, the Intervenors contend that the event guidelines must be developed prior to the issuance of the operating license and that the event guidelines must be tied to the numbers and magnitude of fires and explosions expected to be caused by, for example, the impact of large commercial airliners or similar initiating events and take into account the full spectrum of damage states caused thereby.

damage states. Otherwise, the event guidelines will be inadequate to implement the mitigative strategies.

Contention MS-5

Intervenors incorporate by reference their arguments in response to the Applicant's objections to MS Contention-1 at pp.4-12 *supra*.

The premise of Contention MS-5 is that there is a contradiction between the expectation in NEI 06-12 that no heroic actions should be required under the mitigative strategies and the reality that the mitigative strategies may not be effective and compel heroic actions to stabilize a plant that has lost containment integrity, core coolant and/or spf cooling capacity. The Applicant contends this issue is an improper challenge of NEI 06-12. But the Intervenors are not challenging NEI 06-12, *per se*. It is not NEI 06-12 that is the problem; the Applicant's refusal to acknowledge that its mitigative measures will not be effective under all damage states is the problem.

The AEA, 42 U.S.C. 2133(d), makes this a material contention because there must be a showing that the mitigative measures are protective of the public health and safety. In the event that the mitigative measures are ineffective, as contemplated by the disclaimers in NEI 06-12, the need for heroic actions becomes more apparent. The only thing that may prevent adverse effects on the public health and safety in such a situation is heroic action. And to avoid the need for heroic actions the mitigative measures must be effective under the full spectrum of damage

states. In this case, the Appicant's reliance on NEI 06-12 is an admission that its mitigative measures may not be effective under the full spectrum of damage states.

The Intervenors maintain the mitigative strategies related to determining which emergency responders would be subjected to higher doses and training about such higher doses is linked to the requirement that the mitigative measures be effective. Attempting to train responders on these matters during the course of an event would not be an effective implementation of mitigative measures.

The contention is adequately supported. As a threshold matter, the contention is supported by the above-referenced disclaimer in NEI 06-12 that the responses specified therein may not be effective. That circumstance would require actions above and beyond what is called for by NEI 06-12, i.e. extraordinary actions. Dr. Lyman's support for the contention is based on the recognition in NEI 06-12 that under the full spectrum of damage states the response measures may not be adequate and require extraordinary actions.

To be effective and meet the objectives of 50.54(hh)(2) all the mitigative measures must be measured against the full spectrum of damage states. The fact that the full spectrum of damage states language is not in the text of the regulation is less important than whether the mitigative measures are effective under all damage states. Intervenors contend that the efficacy of Applicant's mitigative measures are unknown unless compared to the full spectrum of damage states.

Contention MS-6

Applicant argues that it need not make any modifications to its MST based on measures that would be required if an initiating event occurred during an outage. Applicant Answer, pp.31-34. First, the Applicant mischaracterizes Intervenor's application of NEI 06-12 to this contention. The mitigation strategy should consider circumstances that pertain to outages[13] in order to develop effective mitigation measures and the failure to do so is a material omission. Intervenors contend that this is required under 42 U.S.C. 2133(d) of the AEA and the expectations of the Commission as articulated at 74 Fed. Reg. 13926, 13958 that the measures be "effective."

Applicant incorrectly asserts that contention MS-6 is "simply a modified version" of Contention MS-1. Applicant Answer, p. 31. In fact, the two contentions are entirely distinct. Contention MS-1 refers to the full spectrum of "damage states," that is, characterizations of the physical damage resulting from LOLA events. Contention MS-6, on the other hand, highlights the deficiency of Applicant's LOLA mitigation strategy by only considering events when the reactor is at 100% power, and not taking into account the particular circumstances when the reactor is in an outage. The ability to mitigate a particular damage state will differ depending on the initial conditions. The periodic occurrences of reactor outages are definite and predictable events, with specific and well-defined characteristics.

[13] "During outages, the risk of core damage is typically significantly higher than when the reactor is at full power. Important safety systems may be out of service for maintenance. The containment hatch may be open. Or the entire core may be off-loaded in the spent fuel pool, significantly increasing the pool heat load. In addition, there may be a large number of temporary contractor personnel on-site, which could complicate emergency response and other mitigative strategies." Intervenors' fires and explosions contentions, p. 20

Sections 52.80(d) and 50.54(hh)(2) must be read as requiring that the "guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or fire" be applicable independent of the operating status of the reactor. However, the Applicant only evaluated strategies for reactors at 100% power. Given the considerably different circumstances during outages described by the Intervenors --- differences that clearly could affect the viability of mitigation strategies developed for reactors at power --- Applicant's Mitigative Strategies report is incomplete and hence simply does not demonstrate adequate compliance with the regulations. Intervenors' fires and explosions contentions, p. 20

Applicant also considers NEI 06-12 as an unassailable guidance because of its endorsement by the Commission. Applicant Answer, p.32. But this endorsement is not absolute. As pointed out in the Intervenor's response concerning Contention MS-1, the endorsement is for current reactors and additional guidance is being developed for applicants. *Supra*, p.4-12

Applicant argues Dr. Lyman's opinion is not sufficient support. However, it is noteworthy that Applicant does not dispute the specific factual assertions made in the contention concerning the increased vulnerability of a plant during an outage. Additionally, this is an omission contention and Dr. Lyman has articulated the reasons that the omitted information should be included in the mitigative measures.

The Applicant's assumption that "there is no need to consider the potential for equipment to be out of service for routine maintenance activities" only underscores the likely inadequacy of

Applicant's mitigation strategies for reactor outages. Applicant Answer, p.34. This is because during outages, there is typically more equipment out of service for routine maintenance than when the reactor is at power. Therefore, this assumption could have a far more significant effect on the adequacy of mitigation strategies for outages than for full-power operation.

(b)(4)

Thus they are basic assumptions underlying the entire document.

The Applicant asserts that in the event of a LOLA, there would be adequate makeup water for the spent fuel pool even if the normal makeup system were out of service for maintenance. However, given the significant potential differences in the spent fuel pool configuration during a reactor outage, the Intervenors maintain that it is not obviously correct *a priori,* and the burden is on the Applicant to demonstrate that it is correct.

(b)(4)

Nevertheless, The Applicant's description of the sources of makeup water assumes such will be available irrespective of the severity of the damage state but offers no proof

in support of this position. This is a factual dispute most appropriately resolved in an evidentiary hearing.

Contention MS-7

Intervenors incorporate by reference their arguments in response to the Applicant's objections to MS Contention-1 at pp.4-12 *supra*.

The supply of water to the fire suppression efforts and for makeup water is tied to the Applicant's evident assumption that the infrastructure of pipes and pumps remains intact and functional during an event. Under the full spectrum of damage states the availability of the pipes and pumps is problematic with existing plant infrastructure, even if augmented by "costly new hardware".[14] But the Applicant rejects the idea that its capacity to suppress fires and provide makeup water can be affected by the full spectrum of damage states. Instead the Applicant assumes "from an event perspective" that it will have an effective supply of water evidently irrespective of the severity of the damage state. Applicant Answer, pp. 30-1. Intervenors contend that whether the supply is adequate will matter little if the pipes and pumps required to move it are destroyed/compromised in an event that causes damage in the severe portion of the full spectrum of damage states.

Intervenors' Responses to Staff's Objections

Unless otherwise indicated, the Intervenors incorporate by reference all arguments and authorities in their responses to the Applicant's Answer herein.

(b)(4)

EXEMPTION 4 NRC

Contention MS-1

Staff argues that there is no legal basis to require a specification of the full spectrum of damage states to which the mitigative measures are intended to apply. Staff Answer p.6-7. However, the AEA, 42 U.S.C. 2133(d) that requires protection of the public health and safety and the requirement that the mitigative measures are "effective", 74 Fed. Reg. 13958, are both legal bases for the contention.

Additionally, the Staff implies that the classified information developed by the Commission related to the Power Reactor Security Requirements obviates the need for the Applicant to independently establish the effectiveness of the mitigative measures. Staff Answer, p. 7, 10-11. First, it is noteworthy that the Applicant neither cites to nor relies on the Commission's classified information to establish its compliance with 50.54(hh)(2). Second, this information's classified status (and therefore untested by the adversarial process) makes it a dubious basis to endorse the Applicant's mitigative measures in a COLA adjudication. If there is going to be a decision that is based on classified information, such information should be made available to the Intervenors, Applicant and the Panel. For Staff not to disclose such information that it infers is in its possession is an unjustified withholding of evidence. Third, the Staff implies that it speaks for the Commission when it asserts that the Commission has adequate information and experience to evaluate the Applicant's mitigative measures. Staff Answer, p. 7, 10-11. But if that is the case, why would the Commission require each applicant to develop plant specific mitigative measures? And if the Commission's insights gained during the studies were reassuring that the plants were robust enough to withstand severe initiating events such as impacts of aircraft, why require additional beyond design basis mitigation measures? Moreover, the SOC

for section 50.54(hh)(2) does not suggest that the Applicant can assume its mitigative measures are adequate based on the unknown results of classified research done by the Commission regarding effects of large-scale initiating events.

Contention MS-2

The Staff argues that the Applicant is not required to discuss the full spectrum of damage states because there is not a specific regulatory provision that specifies such. Staff Answer, p. 14. However, section 50.54(hh)(2) does specify that the mitigative measures consider the implications of the "large areas" of a plant lost to fires and explosions. Intervenors contend that such inherently requires a specification of mitigative measures that address the full spectrum of damage states.

The Staff also complains that the Contention is an improper attack on section 50.54(hh)(2). Staff Answer, p. 16. Intervenors do not attack the subject regulation; rather, the Intervenors contend that the Applicant has failed to meet its requirements. Staff sees no need for a showing that the mitigative measures are effective. *Id.* Intervenors contend this overlooks the inherent need that for the mitigative measures to be meaningful such must be effective. And this requirement is expected by the Commission. 74 Fed. Reg. 13926, 13958

Contention MS-3

Staff argues there is no need to consider the full spectrum of damage states because the NRC already recognizes that emergencies may require "actions that are necessary to protect workers and the public from radiation exposure, to perform lifesaving activities, to prevent or

limit the spread of radioactive contamination or the release of radioactive materials to the environment, and to preserve an adequate margin of safety." Staff Answer, p. 18, fn 14 citing 56 Fed Reg. 23,360,23,365 regarding 10 C.F.R. 20.1001. The regulation says nothing about whether does projections should be made under the full spectrum of damage states. In fact, the Staff's argument supports such projections because emergency operations are anticipated to create situations where accomplishing high-priority tasks may in fact require higher than expected doses received during normal operations. Accordingly, the mitigative measures, in order to be effective from the radiological protection standpoint, must make does projections that pertain to emergency operations and consider the full spectrum of damage states.

This contention of omission is adequately supported. 10 C.F.R. 2.309(f)(1)(v) requires the Intervenors to provide a concise statement of the facts that support their position and upon which the petitioner intends to rely at the hearing. However, the requirements of 10 C.F.R. § 2.309(f)(1)(v), that generally call for a specification of facts or expert opinion supporting the issue raised, are not applicable to a contention of omission beyond identifying the information required under the regulation in question. *North Anna*, LBP-08-15, 68 NRC (slip op. at 27) (quoting *Pa'ina Hawaii, LLC* (Materials License Application), LBP-06-12, 63 NRC 403, 414 (2006)). Thus, for a contention of omission, the Intervenors' burden is only to show the facts necessary to establish that the application omits information that should have been included.

Contention MS-4

Staff argues there is no legal basis to require that the "events" referenced in the mitigative measures consider the full spectrum of damage states. Staff Answer, p. 20. Intervenors contend

such specification is required under 42 U.S.C. 2133(d) of the AEA and the expectations of the Commission as articulated at 74 Fed. Reg. 13926, 13958 that the measures be "effective".

Contention MS-5

Again, Staff argues there is no legal basis to require that the "events" referenced in the mitigative measures consider the full spectrum of damage states. Staff Answer, p. 23. And again, Intervenors contend such specification is required under 42 U.S.C. 2133(d) of the AEA and the expectations of the Commission as articulated at 74 Fed. Reg. 13926, 13958 that the measures be "effective".

Additionally, the Staff cites to the "high-level insights" of NEI 06-12 but does not dispute that under the full spectrum of damage states the mitigative measures do not necessarily mean that the objectives of section 50.54(hh)(2) will be realized. Staff Answer, p. 24.

Contention MS-6

The Staff rejects the premise of Contention MS-6 that during an outage the capacity to achieve the objectives of section 50.54(hh)(2) will be compromised. The omitted discussion related thereto is the basis for a contention of omission.

Additionally, the contention raises a question of law as to whether section 50.54(hh)(2), the AEA, 42 U.S.C. 2133(d) and 74 Fed. Reg. 13926, 13958 require that plant vulnerabilities during an outage be covered by the mitigative measures. Intervenors contend there is an inherent

requirement to do so in order to demonstrate that the mitigative measures are effective and protective of the public health and safety.

Contention MS-7

Staff argues there is no legal basis to require that the Applicant's pumping capacity, referenced in the mitigative measures, consider the full spectrum of damage states. Staff Answer, p. 29. Intervenors contend such specification is required under 42 U.S.C. 2133(d) of the AEA and the expectations of the Commission as articulated at 74 Fed. Reg. 13926, 13958 that the measures be "effective."

(b)(4)

Nor does the Applicant make any attempt to determine whether its mitigative fire fighting Phase 1 measures would be effective if its infrastructure of pipes and pumps is rendered inoperable under an extreme damage state. Staff evidently views such a requirement as unnecessary irrespective of the admonition in NEI 06-12 that mitigative measures may be ineffective under the full spectrum of damage states.

Intervenors 4 South Texas

Conclusion

For the above and foregoing reasons Intervenors contend their Contentions MS-1-MS-7 should be admitted to this adjudication.

Respectfully submitted,

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September 15, 2009

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD PANEL

In the Matter of
South Texas Project Nuclear Operating Co.
Application for the South Texas Project Units 3 and 4
Combined Operating License

Docket Nos. 52-012, 52-013

CERTIFICATE OF SERVICE

I hereby certify that on September 15, 2009 a copy of "Intervenors' Consolidated Response to the Answers of Applicant and NRC Staff to the Intervenors' Contentions Regarding Applicant's Submittal Under 10 C.F.R. § 52.80 and 10 C.F.R. § 50.54(hh)(2)" was served by the Electronic Information Exchange on the following recipients:

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