

SUNSI Review Complete
 Template = ADM-013
 E-RIDS=ADM-03
 ADD= Mark Notich, Jennivine
 Rankin

As of: 10/29/18 10:00 AM Received: October 28, 2018 Status: Pending_Post Tracking No. 1k2-968q-2r01 Comments Due: October 29, 2018 Submission Type: Web
--

PUBLIC SUBMISSION

COMMENT (2)
 PUBLICATION DATE:
 9/28/2018
 CITATION # 83 FR 49132

Docket: NRC-2018-0176

Proposed Revisions to Standard Review Plan Section 2.4.6, Tsunami Hazards; Section 2.4.9, Channel Migration or Diversion; and Section 2.3.3, Onsite Meteorological Measurements Program

Comment On: NRC-2018-0176-0001

Proposed Revisions to Standard Review Plan Section 2.4.6, Tsunami Hazards; Section 2.4.9, Channel Migration or Diversion; and Section 2.3.3, Onsite Meteorological Measurements Program

Document: NRC-2018-0176-DRAFT-0002

Comment on FR Doc # 2018-21140

Submitter Information

Name: Brian Magnuson

Address:

121 North Cross Street, Unit 318
 Wheaton, IL, 60187

Email: magnuson28@msn.com

General Comment

October 28, 2018

SRP 2.4.9 Draft Rev. 4 Public Comments by Brian Magnuson

Docket ID NRC-2018-0176

Please see attachment for my public comments.

In general, Draft Revision 4 changes the intent of the current SRP (Revision 3) and, in doing so, it may evade or circumvent current rules, regulations and guidance --to such an extent that I believe an open public legal review should be performed to ensure the revisions are lawful and otherwise acceptable, before it is implemented.

For questions regarding my comments, please contact me by email.

Sincerely,
 Brian Magnuson

Operations Shift Manager -Senior Reactor Operator License Holder (inactive)
magnuson28@msn.com

Attachments

SRP 2.4.9 Draft Rev. 4 -Magnuson Public Comments

October 28, 2018

SRP 2.4.9 Draft Rev. 4 Public Comments by Brian Magnuson

Docket ID NRC-2018-0176

NUREG-0800 Introduction

The Standard Review Plan (SRP) is prepared for the guidance of staff reviewers in performing safety reviews of applications to construct or operate nuclear power plants. The principal purpose of the SRP is to ensure the quality and uniformity of staff reviews and to present a well-defined base from which to evaluate proposed changes in the scope and requirements of reviews. It is also a purpose of the SRP to make information about regulatory matters widely available and to improve communication and understanding of the staff review process by interested members of the public and the nuclear power industry.

The safety review is primarily based on the information provided by an applicant in a Safety Analysis Report (SAR).

The SAR must be sufficiently detailed to permit the staff to determine whether the plant can be built and operated without undue risk to the health and safety of the public. Prior to submission of an SAR, an applicant should have designed and analyzed the plant in sufficient detail to conclude that it can be built and operated safely. The SAR is the principal document in which the applicant provides the information needed to understand the basis upon which this conclusion has been reached.

Rev. 4 DRAFT 2.4.9 CHANNEL MIGRATION OR DIVERSION

Rev. 4 DRAFT Page 1

In this section the site characteristic flood elevation is evaluated by staff taking into account the potential flooding effects due to the migration or diversion of some type of channel of flowing water, such as a stream or river, to ensure that SSCs important to safety can perform their intended safety functions. As used in this SRP, "channel migration" generally refers to the geomorphological process where a natural river channel laterally migrates across its floodplain. By contrast, "channel diversion" is the process in which the position of a natural river channel has been altered or diverted artificially by man. That safety function includes ensuring that the plant and its safety-related water supply systems will not be adversely affected by this particular flood-causing mechanism.

Comments:

Section 2.4.9 Channel Diversion and its intent are well established. This section describes how the NRC performs safety reviews of nuclear power plants' design basis specific to channel diversions. Rev. 2 to this SRP included "the potential for high or low water levels caused by upstream or downstream diversion. Rev. 3 "includes stream channel diversions away from the site (which may lead to loss of safety related water) and stream channel diversions towards the site (which may lead to flooding)." [emphasis added]

Comments Continued:

The proposed Rev. 4 draft appears to limit its scope to flooding while disregarding the potential safety consequences of channel diversions that may obstruct or block water sources to safety related (essential) cooling water systems (loss of the Ultimate Heat Sink). This is contrary to current rules, regulations and guidance. The loss of safety related water is a significant threat to nuclear safety. The potential loss of water to safety related cooling systems caused by channel diversions --away from a nuclear plant-- should not be disregarded in any revision to SRP Section 2.4.9.

NUREG-0800:

“The Standard Review Plan is written so as to cover a variety of site conditions and plant designs. Each section is written to provide the complete procedure and all acceptance criteria for all of the areas of review pertinent to that section”. [emphasis added]

Channel diversions away from the site which may lead to loss of safety related water are obviously pertinent to SRP 2.4.9 Channel Diversions. The draft Rev. 4 proposal to remove this review would undermine the purpose of the Standard Review Plan NUREG-0800.

The proposed Rev. 4 draft intends to redefine the common terms “channel migration” and “channel diversion--“as used in this SRP”.” Because these terms are used in many industry documents (e.g., Regulatory Guides, NUREGs, UFSARs) and have been for many years, redefining them now would be confusing and not practical; narrowly defining these terms in this SRP section without making the same revisions to all other applicable industry documents would be extremely problematic --particularly in this context of regulatory interpretation and compliance.

Defining “channel diversion,” as purposed in the draft Rev. 4, is contrary to the intent of prior revisions that used the phrase “natural stream channel diversion.” Rev. 3 (2007) of this SRP removed the word “natural,” -apparently in order to avoid limiting channel diversion to natural causes. Currently industry documents, including those in response to the NRC’s March 12, 2012, 10 CFR 50.54(f) letter, use the term “channel diversion” in referring to both natural and people induced occurrences.

Furthermore, Rev. 3 Acceptance Criteria includes “Historical Channels Diversions” caused by natural phenomena and “Human-Induced Causes of Channel Diversions.”

It would now be imprudent to redefine “channel diversion” as “the process in which the position of a natural river channel has been altered or diverted artificially by man.”

Additionally, Rev. 3 states, “in such an event [as channel diversion], the applicant needs to show that alternate water supplies are available to safety-related equipment. This important element is notably missing in the draft Rev. 4, but should be included. NRC orders in response to the Fukushima accident have required nuclear plants to verify or install alternate water supplies because the loss of the Ultimate Heat Sink, by any mechanism, would severely threaten nuclear safety in beyond design basis accidents. It would be remiss not to include the same Rev. 3 design basis alternate water supplies in Rev. 4.

Comments Continued:

NUREG-0800:

“The Standard Review Plan is written so as to cover a variety of site conditions and plant designs. Each section is written to provide the complete procedure and all acceptance criteria for all of the areas of review pertinent to that section.” [emphasis added]

Rev. 4 DRAFT Page 2

General Design Criterion (GDC) 2 of Appendix A (“General Design Criteria for Nuclear Power Plants”) to 10 CFR Part 50 (“Domestic Licensing of Production And Utilization Facilities”) requires that nuclear power plant SSCs important to safety be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunamis, and seiches without loss of capability to perform their intended safety functions. The Commission’s reactor siting criteria at §100.20(c)(3) also call for the estimation of the “... maximum probable flood ... using historical data” Floods (or flooding), as represented by the maximum probable flood (PMF), is thus one of the site characteristics to be evaluated in the context of GDC 2. The key parameters in estimating the PMF at a nuclear power plant are the calculation of a water surface elevation that would occur across the footprint of the power plant site in relation to SSCs important to safety, duration of the flooding event, and associated effects. The scope of this SRP section involves the review of an applicant’s estimate of the site characteristic flood at a power plant site due to channel migration or diversion. [emphasis added]

Comments:

The scope of all prior revisions SRP 2.4.9 Channel Diversion have included stream channel diversions away from the site --which may lead to loss of safety related water (low water level). Why would this particular channel diversion be excluded from the proposed draft Rev. 4 reviews? Channel diversions away from the site are also a natural phenomenon that is governed by GDC 2. It is imprudent to exclude it from this section.

The scope of this SRP is to review the applicant’s safety analysis report (SAR) to ensure the plant and essential water supplies will not be adversely affected by channel diversions. Changing the scope of this SRP, as proposed in the draft Rev. 4, would misalign it with the applicants’ corresponding SAR. This misalignment may create gaps in NRC safety reviews. This change appears averse to quality and safety.

Rev. 4 DRAFT Page 2

In examining the site characteristic flood, staff’s review approach should be hierarchical. The staff would first review the applicant’s determination, based on geographic considerations, of whether there is the potential for channel migration or diversion at the power plant site. If this flood-causing mechanism is considered to be physically possible, then the staff would review the applicant’s determination of whether channel or diversion could result in consequential flooding of the site. If consequential flooding is determined to be possible, then the staff would review the applicant’s flood inundation map depicting

the extent and elevation of flooding across the powerblock due to the effects of channel migration or diversion. In addition to a flood inundation map, the staff would review applicant's calculation of the duration of the flooding event as well as any associated effects. These three elements define the magnitude and extent of the PMF that might occur at a power plant site due to channel migration or diversion; the staff should review these elements consistent with the review criteria described elsewhere in this SRP.

Comments:

"Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" is the title and purpose of NUREG-0800.

The draft Rev. 4 use of "determination" in this paragraph is too generic, and therefore inappropriate, because it may mislead the NRC staff or others into believing the review of some "determination" could substitute for the review of the applicant's safety analysis report (SAR).

Here again, the draft Rev. 4 focuses on flooding but excludes reviews of channel diversions away from the site --which may lead to loss of safety related water (low water level). As previously stated, this would misalign the SRP with the applicant's SAR. This is because each site is required to analyze all stream channel diversions in their SAR.

Is it the intent of draft Rev. 4 to relax the existing SAR requirements or otherwise grant immunity to those plants that are not in compliance?

Rev. 4 DRAFT Page 2

If it is determined that channel migration or diversion cannot occur at the nuclear power plant site (i.e., this flood-causing mechanism is found to be inconsequential), then the staff would review the applicant's statement to that effect along with its supporting evidence against the review criteria described in Section II of this SRP. [emphasis added]

Comments:

Refer to prior comments/concerns that the draft Rev. 4 excludes channel diversions away from the site --which may lead to loss of safety related water (low water level).

The draft Rev. 4 use of "statement" in this paragraph is too generic, and therefore inappropriate, because it may mislead the NRC staff or others into believing the review of some "statement" could substitute for the staff's review of the applicant's safety analysis report (SAR).

Refer to prior comments/concerns regarding the use of the word "determination."

Section II of the draft Rev. 4 SRP is titled "ACCEPTANCE CRITERIA. Use of the words "review criteria" should not be substituted for "acceptance criteria."

The scope of the staff's review activities should include the following areas, as applicable, to confirm whether channel migration or diversion is a flood-causing mechanism at a power reactor site.

Comments:

The current Rev. 3 SRP indicates the staff will review items 1-7. The use of the word "should" implies the reviews are not mandatory. Is this the intent of draft Rev. 4?

NUREG-0800:

"The Standard Review Plan is written so as to cover a variety of site conditions and plant designs. Each section is written to provide the complete procedure and all acceptance criteria for all of the areas of review pertinent to that section." [emphasis added]

The draft Rev. 4 seems to narrowly focus on flood-causing channel diversions at the risk of losing objectivity.

Channel diversions away from the site which may lead to the loss of essential cooling water is a well-known vulnerability. Natural channel flow characteristics have caused the formation of sandbars (silt) in front of the intake structures at many nuclear plants. The formation of these sandbars has the potential to diverge water away from the intake structure and restrict or block the supply of essential cooling water to the nuclear plant. Many nuclear plants are vulnerable to this natural phenomenon and are must regularly dredge their intake area because of it.

Given that many sites are normally susceptible to these sandbars in front of their intake structures, it is even more imperative to ensure they are designed as required by GDC 2, such that a single, more severe, natural event does not diverge water away from their intake structure and disable their essential cooling water systems.

The importance of the safety functions performed by the essential (safety related) cooling water systems must be understood and considered as required by GDC 2. These systems are required for normal and emergency core cooling, primary containment cooling, fuel pool cooling, emergency diesel generators and other critical components. Probability Risk Assessments (PRA) indicate the loss of these systems would increase Core Damage Frequency and Large Early Release Frequency (of radiation) to unacceptable limits.

1. Historical Accounts of Channel Migration or diversion:

Historical reports of channel migration or diversion phenomena at or near the reactor site including evidence of cutoffs, subsidence, or tectonic uplift. In addition to historical accounts, sedimentological evidence, botanical evidence, planimetric surveys and as appropriate terrestrial photogrammetry data will be reviewed.

Comments:

Reference prior comments regarding the draft Rev. 4 proposal to redefine "Channel Diversion."

2. Regional Topographic and Geologic Evidence of Channel Migration:

Regional topographic evidence or geologic features which suggests that channel migration or diversion may occur in the future (based on past geologic/geomorphic evidence expressed in geologic and/or topographic maps). Geomorphological evidence obtained from current and previous geomorphological studies and other floodplain studies will be reviewed.

Comments:

Reference prior comments regarding the draft Rev. 4 proposal to redefine "Channel Diversion."

3. Impact of Ice-induced Channel Migration or Diversion:

Thermal causes of channel migration or diversion due to ice jams or ice dams, will be reviewed. These diversions may result from downstream ice blockages that may lead to flooding due to backwater effects, or they can be upstream ice blockages that can divert the channel away from the location of the service water intake structure. The review is to be coordinated with SRP Section 2.4.7 "Ice Effects."

Comments:

Here, draft Rev. 4 acknowledges channel diversions can divert water away from intake structures. Why are these channel diversions not previously addressed in this draft Rev. 4?

Given these diversions are not flood-causing are their safety reviews outside the stated scope of draft Rev. 4?

4. Evidence of Human-Induced Channel Diversion:

The potential for channel diversion due to human-induced (anthropogenic) factors such including but not limited to land-use changes, diking, channelization, river bank armoring, or potential failure of water impoundment structures will be reviewed. [emphasis added]

Comments:

Draft Rev. 4 inserted ". . .or potential failure of water impoundment structures will be reviewed" in item 4. "Water impoundment structures" is too generic and is, therefore, inappropriate. It should be replaced with the Ultimate Heat Sink (UHS), which has specific regulatory requirements. A review of the UHS under this SRP should be compared to the applicant's SAR 9.2.5, "Ultimate Heat Sink."

If, based on an evaluation of review items (1) through (4), it is found that this flood-causing mechanism is consequential at the site, the scope of the staff's review activities should be expanded to include the following areas. [emphasis added]

Comments:

Items 1-7 are all included as the Acceptance Criteria for the current SRP and draft Rev. 4. Failure to satisfy any one would be unacceptable by definition. This draft Rev. 4 proposal to screen out items 5-7 is imprudent. It is contrary to the express intent and purpose of NUREG-0800.

Short-cutting nuclear safety (reviews) is not a Lesson Learned from the Fukushima accident.

The NRC staff is expected to perform all safety reviews (items 1-7).

5. Flooding of Site Due to Channel Migration or Diversion:

Inundation maps illustrating projected flooding levels in relation to the reactor powerblock and other structures, including those SSCs important to safety such as the service water intake structure, will be reviewed. Associated flooding effects on SSCs important to safety or blockage of water supply sources resulting from channel migration- or channel diversion-induced flooding (flooding not addressed by hydro-meteorological induced flooding scenarios in other SRP sections). The review performed should be consistent with the type of review performed in SRP Section 2.4.3 "Streams and Rivers."

Comments:

As the title and prior revisions indicate, the specific intent of this item is limited flooding. Why is "blockage of water supply sources resulting from channel migration" now included in this particular draft Rev. 4 item purposed description? This appears misleading.

As previously stated, blockage of essential cooling water supply sources resulting from channel migration is a concern that requires safety reviews; however, it is not appropriate in this particular item.

This item should not be screened out as proposed by draft Rev. 4. As previously stated, the NRC staff is expected to perform all safety reviews (items 1-7).

The current SRP (Rev. 3) item description should be referenced and retained to ensure an appropriate safety reviews are performed and not bypassed.

6. Alternate Water Supply Sources:

Alternate water supply sources and associated operating procedures.

Comments:

Please include "coordinate review with that of SAR Section 2.4.11 Low Water Considerations" to ensure that both safety reviews are consistent.

This item should not be screened out as proposed by draft Rev. 4. As previously stated, the NRC staff is expected to perform all safety reviews (items 1-7).

7. Consideration of Other Site-Related Evaluation Criteria:

The potential effects of seismic and non-seismic information on the postulated the worst-case channel migration or diversion scenario for the proposed site.

Comments:

This item should not be screened out as proposed by draft Rev. 4. As previously stated, the NRC staff is expected to perform all safety reviews (items 1-7).

8. Additional Information for 10 CFR Part 52 Applications:

Additional information may be presented dependent on the type of NRC application. For a COL application, the additional information is dependent on whether the application references an ESP, a DC, both, or neither. Information requirements are prescribed within the "Contents of Application" sections of the applicable Subparts to 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

DRAFT Rev. 4 Page 4

Review Interfaces

Other SRP sections interface with scope of the review addressed in this SRP section, as noted below:

1. The identification of those SSCs important to safety that should be protected against the effects of flooding due to channel migration or diversion is performed under SRP Section 3.4.1, "Flood Protection."

Comments:

SRP Section 3.4.1 and the current SRP 2.4.9 (Rev. 3) use "safety related" instead of "important to safety." Safety related SSCs are important to safety; however, SSCs important to safety are not necessarily safety related. Additionally, "important to safety" often implies an SSC is not safety related. It is important to recognize and understand the distinctions because safety related SSCs are subject to more rigid regulatory requirements, including plant technical specifications; whereas, non-safety related SSCs (that are still) important to safety have less rigid regulatory requirements. Therefore, "safety related" and "important to safety" are not interchangeable, particularly in regulatory required safety reviews.

"Important to safety" should never be substituted for "safety related" in this SRP or any other regulatory environment.

2. The review of the design of seismic Category I structures to design for the effects of flooding, including that which could result from channel migration or diversion, is performed under SRP Section 3.4.2, "Analysis Procedures."

3. The review to ensure that adverse environmental conditions, including freezing, will not preclude the safety function of the ultimate heat sink source is performed under SRP Section 9.2.5, "Ultimate Heat Sink."

4. The staff is responsible for providing the site characteristics and other hydrogeologic parameters related to channel migration or diversion at or near the site to the cognizant NRC organization responsible for review of those SSCs important to safety to ascertain whether the appropriate flooding effects are properly considered in the hydraulic, mechanical, or structural design basis for the plant.

Comments:

The current SRP (Rev. 3) states: ". . . the SSCs potentially affected by the channel diversion to ascertain whether these effects are properly considered in the mechanical or structural design basis for the plant."

With "important to safety" inserted here in draft Rev. 4, the concern is it may confuse the reviewer or otherwise limit the scope of this review from SSCs potentially affected to just non-safety related SSCs important to safety. Please reference prior comments on this subject.

Inserting "appropriate flooding effects" here in draft Rev. 4 could exclude other effects such as channel diversions away from the site which may starve essential cooling water systems of water. Is this the intent? Please refer to prior concerns with this particular issue.

The specific acceptance criteria and review procedures are contained in the referenced SRP sections.

DRAFT Rev. 4 Page 5

II. ACCEPTANCE CRITERIA

Regulatory Requirements

The acceptance criteria described in this SRP section are based on addressing the following Commission regulations:

- 1. 10 CFR Part 100, "Reactor Site Criteria," as it relates to identifying and evaluating hydrological features of the site. The requirements to consider physical site characteristics in site evaluations are specified in 10 CFR 100.10(c) for applications before January 10, 1997, and in 10 CFR 100.20(c) for applications on or after January 10, 1997.*
- 2. 10 CFR 100.23(d) sets forth the criteria to determine the siting factors for plant design bases with respect to seismically-induced floods and other impulsive water waves the site.*
- 3. 10 CFR 52.17(a)(1)(vi), for ESP applications, and 10 CFR 52.79(a)(1)(iii), for COL applications, as they relate to identifying hydrologic site characteristics with appropriate consideration of the most severe of the natural phenomena that have been historically reported and/or instrumentally-recorded for the site and surrounding area and with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated.*

4. 10 CFR Part 50, Appendix A, GDC 2, "Design Bases for Protection Against Natural Phenomena," as it relates to: (1) appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena, and (3) importance of the safety functions to be performed.

5. 10 CFR Part 50, Appendix A, GDC 44, "Cooling Water," as it relates to providing an ultimate heat sink for normal operating and accident conditions.

Regulatory Guides

Regulatory Guides (RGs) are issued to describe and make available to the public methods acceptable to the NRC staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission.

Comments:

Here draft Rev. 4 substitutes SRP Acceptance Criteria with a description of regulatory guides. This is fundamentally unacceptable.

Under the heading "SRP Acceptance Criteria," the current SRP (Rev. 3) states:

Specific SRP acceptance criteria acceptable to meet the relevant requirements of the NRC's regulations identified above are as follows for the review described in this SRP section. The SRP is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide acceptable methods of compliance with the NRC regulations. [emphasis added]

This current SRP acceptance criteria requirement is an integral element of the Standard Review Plan. It should not be removed or altered in any SRP revision.

Draft Rev. 4 Page 5 Continued

SRP Acceptance Criteria

Specific SRP acceptance criteria acceptable to meet NRC's regulations and consistent with the scope of the review addressed in this SRP section are listed below. The following RGs should be consulted, as applicable, in connection with the review of this particular flood-causing mechanism:

Comments:

Please refer to prior comments regarding SRP Acceptance Criteria.

This SRP is not and should not be limited to a particular "flood-causing_mechanism." Please refer to prior comments/concerns that the draft Rev. 4 excludes or attempts to excluded channel diversions away from the site --which may lead to loss of safety related water (low water level).

Draft Rev. 4 Page 6

- *RG 1.27, "Ultimate Heat Sink for Nuclear Power Plants," describes the applicable ultimate heat sink capabilities.*
- *RG 1.29, "Seismic Design Classification," identifies the seismic design bases for SSCs important to safety.*
- *RG 1.59, "Flood Design Basis for Nuclear Power Plants," as supplemented by best current practices, provides guidance for developing the hydro-meteorological design bases.*
- *RG 1.102, "Flood Protection for Nuclear Power Plants," describes acceptable flood protection measures intended to prevent the safety-related facilities from being adversely affected.*

These acceptance criteria should be addressed to the extent this flood-causing mechanism is found to be consequential at the power reactor site:

Comment:

This SRP is not and should not be limited to a particular "flood-causing_mechanism." Please refer to prior comments/concerns that the draft Rev. 4 excludes or attempts to exclude reviews of channel diversions away from the site --which may lead to loss of safety related water (low water level).

1. Historical Accounts of Channel Migration: To meet the requirements of GDC 2, GDC 44, 10 CFR 52.17, "Contents of applications; technical information," and 10 CFR 52.79, "Contents of applications; technical information in final safety analysis report," and 10 CFR Part 100, a complete history of channel migration or diversion at and in the vicinity of the site is needed. A thorough review and identification of the types of natural processes and other destructive phenomena (landslides, channel erosion, breached dikes, etc.), locations and durations of these events, and descriptions of hydrogeological/geomorphic characteristics accompanying these events (both currently and in the past) should be included. This description should

be sufficient to establish the potential for channel migration or diversion in the vicinity of the site. This review includes the reactor site and adjacent watersheds displaying similar hydraulic characteristics.

2. Regional Topographic and Geologic Evidence of Channel Migration or Diversion: To meet the requirements of GDC 2, GDC 44, 10 CFR 52.17 and 52.79, and 10 CFR Part 100, a description of regional topographic evidence as it relates to the potential for channel migration or diversion is needed. This description should be accompanied by data where possible and should be sufficient to make an assessment of the possibility of channel migration or diversion near the site that may affect SSCs important to safety.

3. Impact of Ice Effects on Channel Migration or Diversion: To meet the requirements of GDC 2, GDC 44, 10 CFR 52.17 and 52.79, and 10 CFR Part 100, estimates of the most severe ice-induced flooding effects due to channel migration or diversion are needed. These estimates should be consistent with the estimates by the applicant and associated with staff's review associated with SRP Section 2.4.7 "Ice Effects."

Comments:

By inserting "flooding effects" in item 3., draft Rev. 4 again exclude reviews of channel diversions away from the site --which may lead to loss of safety related water (low water level). Please refer to prior comments/concerns of this issue.

These estimates should be consistent with the estimates in the applicant's SAR Section 2.4.7 (Ice Effects), as stated in the current SRP (Rev. 3). Data, calculation and other information used in one section of the applicant's SAR is often used to support conclusion in another related section. Because of this, it is important that information shared is consistent. This is a quality check which should be retained.

4. Evidence of Human-Induced Channel Diversion: To meet the requirements of GDC 2, GDC 44, 10 CFR 52.17 and 10 CFR 52.79, and 10 CFR Part 100, an assessment of the potential for human-induced channel diversion, in the vicinity of the site (e.g., land-use changes, diking, channelization, river bank armoring or failure of such structures) is needed. An assessment of high- and low-water levels during in response to channel diversion should be provided. These assessments should be consistent with staff's review associated with SRP Sections 2.4.3 "Streams and Rivers" and 2.4.11 "Low Water Considerations."

Comments:

The last sentence should read, as follows, to more clearly capture the intent of a quality check:

These reviews should be consistent with the applicants associated SAR Sections 2.4.3 "Streams and Rivers", 2.4.11 "Low Water Considerations" and **"Ultimate Heat Sink, 9.2.5.**

Any SRP reviews of "low water level" should include references to the Ultimate Heat Sink.

5. Flooding of Site Due to Channel Migration or Diversion: If channel migration or diversion is found to be consequential to defining the plant's design basis flood elevation, an assessment of that flood level is needed to meet the requirements of GDC 2, GDC 44, 10 CFR 52.17 and 10 CFR 52.79, and 10 CFR Part 100. If this flood-causing mechanism is found to be consequential, then, the material to be reviewed should be consistent with that described in SRP Section 2.4.3 "Streams and Rivers." This information can be represented through the use of inundation maps of the reactor site. The water surface estimates should be sufficient to demonstrate that the SSCs important to safety can withstand these forces without loss of their ability to perform their intended safety functions. A description of mitigation measures to address the effects of flooding due to channel migration or diversion should be provided, and it should be demonstrated that these measures are consistent with the Commission's regulations regarding performance of SSCs important to safety.

Comments:

Flood level assessments do not satisfy the regulatory requirements. "To meet the requirements of GDC 2, GDC 44, 10 CFR 52.17, and 10 CFR Part 100, estimates of the most severe channel diversion induced forces on SSC important to safety are needed," as stated in the current SRP (Rev.3). Furthermore, it may be unlawful or otherwise inappropriate to bypass or screen out federal regulations and other regulatory requirements by predicated their applicability, as draft Rev. 4 appears to do here.

Any actions or proposals to screen out or otherwise bypass regulatory requirements should be carefully and openly reviewed to ensure it is lawful and not otherwise inappropriate; and, these reviews should be made available to the public.

Please retain the current SRP (Rev. 3) description of this item.

Draft Rev. 4, as a whole, should not be implemented without legal review.

6. Alternate Water Supply Sources: To meet the requirements of GDC 2, GDC 44, 10 CFR 52.17 and 10 CFR 52.79, and 10 CFR Part 100, assessments of alternate safety-related water supply sources and operating procedures are needed. These assessments should be consistent with staff's review associated with SRP Section 2.4.11 "Low Water Considerations" and with SRP Section 2.4.14 "Technical Specifications and Emergency Operation Requirements."

Comments:

The draft Rev. 4 insertion of "safety-related" is not recommended, because it inappropriately limits the required assessments meant to include all alternate water supply sources.

The current SRP (Rev. 3) states: "These assessments should be consistent with SAR Section 2.4.11 (Low Water Considerations) and with SAR Section 2.4.14 (Technical Specifications and Emergency Operation Requirements)." The draft Rev. 4 change to this section removes the

Comments Continued:

intent of a quality check. The substitution of SAR with SRP is not appropriate because it changes the meaning. These substitutions should be challenged accordingly.

7. Consideration of Other Site-Related Evaluation Criteria: To meet the requirements of GDC 1, GDC 2, 10 CFR 52.17 and 52.79, and 10 CFR Part 100, a description of the potential effects of site-related proximity, seismic, and non-seismic information on the postulated worst-case channel migration or diversion scenario for the proposed plant site is needed. This description should be sufficient to demonstrate that the applicant's design bases appropriately account for these effects.

Technical Rationale

The technical rationale for application of these acceptance criteria to the areas of review addressed by this SRP section is discussed in the following paragraphs:

1. Compliance with GDC 2 requires that nuclear power plant SSCs important to safety be designed to withstand the effects of natural phenomena such as earthquake, tornado, hurricane, flood, tsunami, and seiche without loss of capability to perform their safety functions. The GDC further specifies that the design bases for these SSCs shall reflect the following:

A. Appropriate consideration of the most severe of the natural phenomena that have been historically-reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and time period in which the historical data have been accumulated;

B. Appropriate combinations of the effects of normal and accident conditions with those of the natural phenomena; and

C. The importance of the safety functions to be performed.

Channel migration and/or river diversion has the potential for causing flooding or low water elevations at certain sites, thus adversely affecting sources of surface water required for safety-related cooling the proposed plant. Accordingly, GDC 2 requirements are imposed to ensure that components and structures associated with the ultimate heat sink will continue to function, thereby keeping the plant in a safe shutdown condition.

Comments:

Evaluation and staff reviews of low-water level in this SRP are obvious regulatory requirements. Please refer to prior comments/concerns that draft Rev. 4 excludes or attempts to exclude safety reviews of channel diversions away from the site --which may lead to loss of safety related water (low water level).

The draft Rev. 4 insertion of "safety-related" is not recommended, because it inappropriately limits the required assessments.

Comments Continued:

GDC 2 requirements are imposed to keep the plant in a safe condition -at all times under all conditions. The draft Rev. 4 insertion of “shutdown” appears to imply GDC 2 requirements are only impose to keep the plant in a safe shutdown condition. This implication is misleading and inappropriate.

For applications pursuant to 10 CFR Part 52, meeting the applicable requirements of 10 CFR 52.17 and 10 CFR 52.79 that correspond to GDC 2 provides a level of assurance that the most severe hydrologic site characteristics have been identified; whether GDC 2 is met with respect to the adequacy of the associated design bases will be evaluated pursuant to other SRP sections.

2. Compliance with GDC 44 requires that a system be provided to transfer heat from SSCs important to safety. The system is to function under normal and accident conditions, assuming a single failure.

GDC 44 applies to SRP Section 2.4.9 because the ultimate heat sink for the power plant can consist of complex water supply sources, including necessary retaining structures (e.g., ponds or rivers with dams) and the associated canals and conduits connecting these sources with the reactor site. Any earthwork intended as part of the water conveyance system, consisting of dams and canals, for example, should be constructed in a manner that ensures the integrity of the system and its intended safety function. In addition, it should be shown that the potential diversion, migration, or realignment of natural waterways caused by severe natural phenomena cannot cause loss of the heat sink or result in flooding at the site in excess of the design basis water surface elevation. [emphasis added]

Meeting these requirements provide a level of assurance that, given the most severe natural phenomena capable of causing the potential diversion, migration, or realignment of natural waterways, an adequate and dependable source of cooling water can be maintained.

Comments:

The draft Rev. 4 insertions, substitutions and additions in this item appear misguided.

“Water surface elevation,” inserted in draft Rev. 4, may unnecessarily or inappropriately qualify design basis. If it is a newly defined term, its definition should be reviewed to ensure it does not change the intent of this SRP.

Current SRP (Rev. 3):

“The earthwork, consisting of dams and canals, should be constructed in a manner that ensures the integrity of the cooling water system and its safety function. In addition, it should be shown that channel diversion caused by severe natural phenomena cannot cause loss of the heat sink or result in flooding in excess of the design basis.” [emphasis added]

The purpose of this SRP is to verify the construction of the earthwork will maintain the integrity of the essential cooling water systems. This purpose is integral to the safety review because any

Comments Continued:

deficiencies identified with the construction of the earthwork do not end with their evaluation. The review must extend to evaluate the effects on the cooling water systems to ensure their integrity.

3 Sections 100.10(c) and 100.20(c) of 10 CFR Part 100 require that physical characteristics of a site (including seismology, meteorology, geology, and hydrology) be taken into account to determine the acceptability of a site for a nuclear power reactor.

The diversion, migration, or realignment of natural waterways posing the potential for flooding or adversely affecting the integrity of the cooling water supply for the plant, is one of the many natural phenomena specified in 10 CFR 100.10(c) and 10 CFR 100.20(c) that should be considered in designing the plant to accommodate the characteristics of a proposed site.

Meeting this requirement provides a level of assurance that the plant site is not vulnerable to flooding or to loss of cooling water that could be caused by the diversion, migration, or realignment of natural waterways resulting from severe natural phenomena.

Comments:

Please note the inclusion of “loss of cooling water” and reference prior related comments and concerns.

Summary

For practical purposes, my public comments on Draft Rev. 4 to SRP 2.4.9 “Channel Migration or Diversion” end here; however, my review did not. Because of this, I request the remainder of Draft Rev. 4 and supporting documents be reviewed with consideration of my comments thus far.

In general, Draft Revision 4 changes the intent of the current SRP (Revision 3) and, in doing so, it may evade or circumvent current rules, regulations and guidance --to such an extent that I believe an open public legal review should be performed to ensure the revisions are lawful and otherwise acceptable, before it is implemented.

Please let me know if there are any questions regarding my comments.

Sincerely,

Brian Magnuson

Operations Shift Manager -Senior Reactor Operator License Holder (inactive)

magnuson28@msn.com