

STAKEHOLDER COMMENTS

Item No.	Comment	Position	Commentary/Resolution
Westinghouse Owners Group Comments			
1.	<p>The guide is “applicable to new evaluation models or changes to existing evaluation models proposed by operating reactor licensees that the NRC staff undertakes to review.” Only those changes that fail to meet the criteria of 10 CFR 50.59 would be submitted for NRC review and approval. In addition, GL 83-11, Supplement 1 provides “Guidelines for Qualifying Licensees to Use Generically Approved Analysis Methods.” The Regulatory Guide and SRP should include a clarification of the relationship between generic approval and the plant-specific application by a utility using the guidelines specified in GL 83 - 11.</p>	Clarification	<p>Point 1: The quoted statement, which is now located in the Implementation section of the regulatory guide, reads as follows: “applicable to new evaluation models or changes to existing evaluation models proposed by vendors or operating reactor licensees that, in accordance with 10 CFR 50.59, require NRC staff review and approval.”</p> <p>Point 2: The following sentence has been added to Section 4 of the Regulatory Position:… These reviews, which are limited in terms of the applications and parameter ranges considered, establish the technical foundation for justifying the applicability of the codes in plant- or event-specific analyses conducted by licensees. Taken within the context of the paragraph on general purpose codes, this sentence explains the relationship between generic approval and the plant-specific application by a utility.</p>
2.	<p>The consequences of the higher expectations embodied in DG-1120 and the draft SRP is significantly more regulatory review cost that will stifle code and methodology advancement. Organizations are likely to avoid code development, and the area of Transient Analysis will stagnate and de-staff technically. Many utilities will find the new requirements daunting and will not invoke this process voluntarily. Utilities will stick to previously approved methodologies to avoid this new process, unless no other options are available. Improvements in codes and methodologies will be halted.</p>	Objection	<p>DG-1120 does not call for development or assessment efforts which are far departures from that which licensees currently perform and submit to the NRC for review. The objective of this document is to standardize the development and assessment efforts, not increase them. While the steps may appear numerous, they are logical and comprehensive, and when warranted, a graded approach can be taken.</p>

<p>3.</p>	<p>The DRG provides a discussion (Section 5, page 30) of a graded approach to applying the EMDAP process. As described, this process is vague and dependent on the experience level of the NRC reviewer. As such, this process adds a degree of uncertainty to the overall licensing process. This uncertainty will add to a utility's reluctance to develop new or improved codes under this process. DG-1120 is not specific on the applicability of code revisions and could create a significant burden to code vendors. There are two levels of revisions involved. A discussion of code revisions and their relationship to DG-1120 would be helpful.</p>	<p>Clarification</p>	<p>Point 1: The example in Appendix B has been added for clarity.</p> <p>Point 2: As stated in the Implementation section: "This guide would be applicable to new evaluation models or changes to existing evaluation models proposed by vendors or operating reactor licensees that, in accordance with 10 CFR 50.59, require NRC staff review and approval." Regardless of the level of concern, the EMDAP should be used when a transient or accident analysis method is developed or modified.</p>
<p>4.</p>	<p>To avoid the problems outlined in paragraphs 2 and 3 [questions 2 and 3], the WOG suggests that the NRC restrict applicability of the Regulatory Guide to methodologies such as general purpose computer programs and best-estimate evaluation models, where it would be appropriate to use the full EMDAP Process as described in DG-1120. Alternatively, the NRC should provide detailed examples, in the form of Appendices, of the application of the graded approach to non-LOCA safety analyses. It would be appropriate to complete a number of pilot submittals using the graded approach to review non-LOCA analyses before the requirements of the Regulatory Guide are finalized.</p>	<p>Clarification</p>	<p>Appendix B has been added.</p>
<p>5.</p>	<p>A "clear, concise, crisp, and specific" statement should be included in DG-1120 stating that source code does not need to be included in the documentation package to the NRC. Transmitting source code to the NRC could result in a significant burden to code vendors, additional cost to the utility and misunderstanding on the part of the NRC due to improper or inadequate training in the use and application of the code. NRC can request source code information should it turn out to be beneficial to the review process. However, it should not be a requirement for each and every methodology submittal.</p>	<p>Clarification</p>	<p>DG-1120 does not mandate the inclusion of source code as a part of the EM documentation, and the staff does not wish to emphasize this point further. As stated in the comment, the "NRC can [will] request source code information should it turn out to be beneficial to the review process."</p>

<p>6.</p>	<p>Page 1, Introduction: this section should include a discussion of the graded approach that is discussed in Section 5 of DG-1120 and how it relates to the complexity, novelty, and degree of conservatism inherent in the analysis.</p> <p>^{b)} In addition, the Introduction should address in more detail the applicability of the DG-1120. In general, Chapter 15 non-LOCA safety analysis is performed in a highly conservative manner such that the data, assumptions, and choice of accident sequence will mask any shortcomings or simplifications in the evaluation models. The overall level of conservatism has been established in many ways including multiple layers of regulatory review. For this type of safety analysis, it is not appropriate or necessary to perform the type of in-depth assessment described in the draft Regulatory Guide. The Guide needs to distinguish between the Chapter 15 transient analysis methodology and best-estimate accident analysis models.</p>	<p>Clarification</p>	<p>Point 1: The following statement has been added to the Implementation section: “ ... a graded application of the principles of this regulatory guide can be undertaken. When this graded approach is...”</p> <p>In addition, the following change has been made in the Discussion: “For simpler events or incremental changes to an existing evaluation model, a graded approach to the EMDAP can be undertaken. In a graded approach, many of the steps...”</p> <p>b) It is stated several times throughout the introduction that DG-1120 applies to the assessment of NUREG-0800, Chapter 15 transient and accident analysis methods. As for distinguishing between Chapter 15 transient analysis methodology and best-estimate accident analysis models, no distinction is warranted. The thrust of DG-1120, the EMDAP, is to provide baseline guidance from which all evaluation model development and assessments proceed. Depending on the subject or purpose of the analysis, a graded approach can be undertaken, or the full EMDAP can be applied. Regulator Guide 1.157 “Best-Estimate Calculations of ECCS Performance” is an effectual appendix to DG-1120, providing specific guidance on ECCS model development and assessment along with mandated uncertainty characterization.</p>
<p>7.</p>	<p>Page 3, line 9: page 27 should read page 34.</p>	<p>No Objection</p>	

8.	<p>Page 3, Evaluation Model Concept, Item 1: the basis for selecting a design input may be considered as part of the evaluation model. However, changes to the numerical values that constitute plant configuration values should be treated as design inputs. A change to the design input values should not require a reevaluation of the model itself. For example, replacing a plant instrument with a corresponding change in uncertainties may change the analytical value for modeling that instrument, but should not constitute a change to the evaluation model itself. This type of change can be made under the 50.59 evaluation process without requiring a re-submittal. DG-1120 needs to clarify this.</p>	Clarification	<p>DG-1120 makes no recommendation on the type or extent of evaluation model changes that require an NRC license amendment. It gives guidance on the development and assessment of evaluation models, regardless of the path to authorization. DG-1120 establishes the NRC's posture on evaluation models its staff undertakes for review, but the conditions for required NRC submittal rest outside of the scope of DG-1120 and solely with 10CFR50.59.</p>
9.	<p>Page 5, Item 4 "Assess the adequacy of the evaluation model": this section discusses the ability of the evaluation model to predict appropriate experimental behavior. WOG suggests the need to have some leeway with bench marking the evaluation model with approved analytical models. WOG suggests that this should be mentioned in an appropriate location in the Regulatory Guide.</p>	Clarification	<p>Item 4, as addressed in the comment, appears in the discussion portion of the document and is a general overview of one of the basic principles. This basic principle is explained in detail in steps 13 through 20 of the EMDAP. Throughout these steps, no source of assessment data is ruled out or deemed unacceptable.</p>
10.	<p>Page 8, top of page: there should be a fifth aspect to be addressed, namely, Graded Approach to Applying the EMDAP Process.</p>	No Objection	
11.	<p>Page 11: The Phenomena Identification and Ranking Table (PIRT) process is unnecessarily cumbersome and lacks applicability criteria. Any or all models submitted in the past have significant discussion on the major aspects of the program and less discussion on the less significant items. Generating a PIRT table listing the phenomena by their level of importance creates significant discussion on the table itself and relative importance of the various items and detracts from the review of the evaluation model itself. The only value of a PIRT process is if there are classes of sub-models, those that significantly impact the code results and those that do not (i.e., a straightforward yes/no test).</p>	Clarification	<p>DG-1120 gives general guidance on the PIRT process, with the main point being that some form of a phenomena identification and ranking process should be conducted and documented, and that the results of the process should be used as the guide for the development and assessment of the evaluation model. Notwithstanding any possible NRC review subjectivity, a PIRT would show the licensees rationale for taking certain courses of action or making certain justifications throughout the EMDAP.</p>

12.	<p>Page 12, Item 3.e, Uncertainty Analysis: differentiation should be made between the application of uncertainties related to previously licensed codes and plant input uncertainties. Most of the codes used by utilities have been licensed “generically.” The codes are applicable to many plants, and have, or will be, implemented in accordance with GL 83-11, Supplement 1. If code uncertainties have been addressed generically under the generic code licensing process, they should not have to be re-licensed. Code modifications are addressed via 10CFR50.59 evaluation. Each plant, however, would be expected to have different uncertainties, and uncertainty methodologies, for modeling plant inputs.</p>	Objection	<p>Generically approved codes are not re-licensed, additional reviews are needed for plant specific applications that fall outside of the scope of the generic review.</p>
13.	<p>Page 23, Step 20, Determine Evaluation Model Biases and Uncertainties: the hybrid methodology presented here is very shallow, while other parts of the process are described in depth and are relatively prescriptive. Also, it would help if some references were cited for examples of bounding and probabilistic treatments of parameters.</p>	Objection	<p>The staff thought it best not to elaborate further on this step.</p>
13.	<p>Page 25, Section 3 Documentation: there has not been any discussion of the User Manuals and User Guidelines thus far. With utilities performing the reloads, this becomes an integral part of code development and its use. More guidance should be provided on this topic. In fact, this should be one of the key principles that the code developers/maintainers should be asked to uphold.</p>	Objection	<p>Section 3.4 of the Regulatory Position discusses the Users Manual and User Guidelines</p>
14.	<p>Page 25, Section 3, Documentation: errors in the code/Users Manual etc. are not addressed. While there may be mechanisms such as Part 21 etc., that may capture errors originating at the vendor, DG-1120 should address this in a global sense.</p>	Clarification	<p>Guidance on informing vendors or code developers of any problems or errors discovered while using their codes, methods, or procedures is outside the scope of DG-1120. Such guidance, as stated in GL 83 - 11, Supplement 1, in accordance with 10CFR50 Appendix B, should be a provision of the licensee’s QA program.</p>
15.	<p>Page 30, Graded Approach to Applying the EMDAP Process: WOG suggests that detailed examples of the application of the graded approach should be developed and included as appendices</p>	No Objection	<p>Appendix B</p>
16.	<p>Page 41, References, Item 20: not a valid web address, the document appears to have been moved.</p>	Clarification	<p>J. Spore et al., “TRAC-M/FORTRAN 90,v.3, Theory Manual,” NUREG/CR-6724, July 2001.</p>

17.	<p>Page 43, Section A.3: this is a good discussion on the use of the PIRT process in which relative importance is given to the process uncertainty in safety analysis. Though this discussion applies only to the ECCS Analysis, PIRT may be a useful tool in other analyses too. Therefore, NRC should consider putting the PIRT option in SRP 15.0.2, p.5, Sec. 5.</p>		To be addressed by NRR
FRAMATOME ANP			
1.	<p>Requirements are Excessive: This draft guide appears to be modeled on guidance established for the development and validation of LOCA methods. While it could be argued that such detailed guidance is appropriate for LOCA analysis because of the potential consequences of a LOCA event, such detail is clearly not appropriate for non-LOCA events whose consequences range from much less serious than a LOCA, to insignificant.</p> <p>Even if these draft requirements could be met, the increase in NRC review time would be large and could not be justified by any reasonable cost-benefit analysis. In addition, attempting to meet these requirements would place a huge burden on organizations developing or revising these methods, a burden that violates the NRC's principle of burden reduction in situations in which little or no safety benefit would accrue....</p>	Clarification	Depending on the subject or purpose of the analysis, a graded approach to the EMDAP can be undertaken. Appendix B gives an example of using a graded approach for non-LOCA evaluation model changes.
2.	<p>Range of Applicability not Pertinent: The requirements that relate to the ranges of applicability are not pertinent to non-LOCA methods. Typically, parameter ranges are defined by the theoretical and numerical bases of the code. The only instance where the concept of range of applicability is relevant is in the use of correlations. Otherwise, the physics of models are very well understood and are only limited by our understanding of the pertinent phenomena. Since correlations are not addressed in the draft guide, the entire text on range of applicability should be removed because it has no meaning in this context.</p>	Objection	<p>Requirements that relate to ranges of applicability can be pertinent to non-LOCA methods. Certain defining conditions of the analysis, such as the purpose or the extent of the change to the accepted method, make ranges of applicability relevant.</p> <p>Correlations are addressed in Step 12 and Section 3.3 of DG-1120.</p>

<p>3.</p>	<p>Simplicity of Non-LOCA Models Obviates Need for Requirements: The features of codes and methods used to analyze non-LOCA events are typically very simple, especially compared to a LOCA model. Framatome ANP does not understand why any guidance is believed to be appropriate for these methods, which have been accepted by users and the NRC for decades. Even the steam line break model, which is the most extensive model used, relies on simple physical phenomena, including well understood heat transfer modes. The development work anticipated in the draft guide bears no relationship to any possible benefit in code performance or assurance of safety.</p>	<p>Objection</p>	<p>DG-1120 does not call for development or assessment efforts which are far departures from that which licensees currently perform and submit to the NRC for review. The objective of this document is to standardize the development and assessment efforts, not increase them. While the steps may appear numerous, they are logical and comprehensive, and when warranted, a graded approach can be taken.</p>
<p>4.</p>	<p>Fuel Type and Core Loading are Irrelevant: The draft guide addresses system codes and methods. These system methods are almost completely independent of fuel type and core loading. The primary effect these two items have is on criteria such as DNB and centerline fuel melt, which are evaluated by codes and methods not even addressed in the draft guide. This part of the guide should be deleted.</p>	<p>Objection</p>	<p>The purpose of DG-1120 is to give guidance on the development and assessment of evaluation models, regardless of the application. It is especially relevant for ECCS evaluation model modifications that become necessary as a result of a change in fuel design.</p>
<p>5.</p>	<p>Model-Specific Quality Assurance Plan Unnecessary: Companies that develop system codes and methods are required to have a quality assurance plan that meets the requirements of 10 CFR 50, Appendix B; these plans are reviewed and approved by the NRC. These QA plans are applicable to many activities, including the development of codes and methods used to perform safety analyses. It is inappropriate and unnecessary to develop or approve a special QA program for the specific purpose of code development. Such a process would not be a prudent investment of time for either the company or the NRC, and this requirement should be deleted.</p>	<p>Clarification</p>	<p>The objective of this document is to provide guidance to licensees so that the level of code validation performed is commensurate with the licensing application for the analytical code and consistent with the intentions of Generic Letter 83-11.</p>

6.	<p>Uncertainties Not Applicable to Deterministic Methods: This draft guide standard review plan appears to require the establishment of code uncertainties for deterministic methods. If that is the intent, such a requirement is not justified or appropriate for deterministic methods. Uncertainties are relevant only to best estimate models that can be benchmarked against experiments. Deterministic methods are demonstrated to be conservative, and there is no basis for the development of uncertainties. The concept of developing uncertainties for deterministic methods is not suitable and should not be included.</p>	Clarification	To be addressed by NRR.
7.	<p>Field Equations Not Derived: The draft review plan asserts that field equations used in safety analysis methods are rigorously derived equations. This is an overstatement of the process generally used in establishing models. In those limited number of cases where field equations are used, the developer typically assumes simplified forms of the governing equations and successively testes these formulations against appropriate experiments until a suitable approximations is established. No attempt is made to rigorously drive the equations used.</p>	Clarification	To be addressed by NRR.
8.	<p>Concept of Scaling Inappropriately Applied: The concept of scaling is not well defined in the draft review plan. Since only a limited attempt is made to compare non-LOCA methods to experiments (since there are few, typically), the idea of scaling has no application to these methods. Therefore, there is no scaling evaluation that could be done; nor is there a need to do so for these types of methods.</p>	Clarification	To be addressed by NRR.

9.	<p>Plant Changes not Applicable: The idea of reviewing plant-specific changes does not apply to the review of methods and codes. No specific plant parameters or changes are identified in a topical report on methods, and therefore there is nothing to review this area. This section should be deleted.</p>	Clarification	To be addressed by NRR.
NEI			
1.	<p>The scope of application is too broad: ...Design bases for nuclear plants include numerous supporting analyses that demonstrate that SSC design functions will be accomplished as credited in the accident analyses. Calculations as simple as those performed to conservatively support value closure times would presumably fall within the scope defined by the guidance. The scope would also include a number of events beyond Chapter 15 that a nuclear facility is required to withstand such as turbine missiles, fires, floods, earthquakes, station blackout and ATWS. Without clear and explicit guidance on scope of application there is a strong potential for misdirected application of the proposed guidance.</p> <p>The regulatory guide and SRP section should clearly and explicitly identify the design basis events and evaluation models for which the guidance applies.</p>	Objection	As stated several times in the Introduction, DG-1120 is intended to provide guidance on evaluation model development for accident and transient analysis. Moreover, it is to provide baseline guidance from which all evaluation model development and assessments proceed.
2.	<p>Threshold for Application: ...Current regulations allow changes that have minimal safety impact to be made without prior NRC approval. The guidance should clearly identify that existing thresholds used to define when changes require prior review and approval by the NRC (e.g., 10CFR50.59, NEI 96-07 Rev. 1) are applicable for use in determining when regulatory guidance is to be applied.</p>	Clarification	The following statement has been added to the Implementation section: "The question as to whether or not the changes require a licensing amendment is beyond the scope of this regulatory guide. That question is addressed in 10 CFR 50.59, and its answer has no bearing on the evaluation model development process."

<p>3.</p>	<p>Additional Application Guidance is Needed: [There are four attributes of the EM that should be considered when determining the extent to which the full EMDAP may be reduced for a specific application.] While consideration of these attributes in determining the degree to which the guidance is applied is appropriate, there remains a high degree of subjectivity in their application. Aside from a few descriptive examples, the guidance associated with each of the four attributes is not specific and provides little assistance to either model developer or NRC reviewer. Non-subjective guidance, appropriate to specific types and classes of events, should be developed and included in the guidance prior to its completion.</p> <p>The regulatory guide (page 2) identifies that appendices will be developed for specific classes of events to address phenomena, assessment, uncertainty analyses, and other factors important or unique to a particular class of events. An appendix specific to ECCS analyses is included in current draft. These appendices should be further developed and included in the regulatory guide prior to its release for use by model developers.</p>	<p>Clarification</p>	<p>Appendix B has been added for clarity.</p>
<p>4.</p>	<p>Treatment of Mathematical Tools Mathematical analysis tools such as MathCAD, Mathematica, and spreadsheets are considered “calculational devices” per the guidance and subject to the same development and assessment steps as complex computer models (DG-1120, page 4). The guidance should clearly identify that evaluation model development and assessment steps do not apply to mathematical analysis tools in cases where it can be demonstrated that use is limited to data manipulation.</p>	<p>Clarification</p>	<p>In such cases, perusal of all of the steps in the EMDAP would result in a graded application of the process, where several, if not most, of the steps would require no action.</p> <p>Thresholds on the application of the process are not given, no matter how small the changes, because the EM in its entirety should always be considered.</p>
<p>Westinghouse</p>			
<p>1.</p>	<p>The points raised by Dr. Powers in Reference 1 focus on thermal -hydraulic computer codes used to demonstrate the safety of nuclear power plants....However, many of the points noted in Reference 1 have nothing to do with demonstrating “safety” or re-assuring the general public safety, but rather focus on commercial issues. If vendors do not account for many of the points noted by Dr. Powers, then it is not a question of safety or health and the well being of the public, but a commercial impact to the vendor.</p>	<p>Objection</p>	

<p>2.</p>	<p>...Both DG-1120 and draft SRP 15.0.2 address the "Evaluation Model" (EM) and describe the EM as a calculational framework for evaluating the behavior of the reactor system during a postulated transient or design basis accident. It is agreed that this is a valid definition of the EM and the corresponding input data associated with both the plant configuration and the assumed plant states at transient initiation have a key impact on results. However, using this aspect to expand the scope of regulatory review of an EM to include other codes that have been previously reviewed by the NRC will result in additional review fees with no safety benefits. This adds no additional safety margin to the review and will actually discourage future code enhancements....The relevant question is "have the data inputs and associated uncertainties been properly addressed with the EM and are the output results consistent with the expected phenomenological behavior based on the inputs".</p>	<p>Clarification</p>	<p>How an EM is defined in the Reg. Guide does not, in effect, expand the review process, and it does not call for duplicate code reviews. The intent of the definition is to identify all relevant areas of concern, thereby making EM development and assessment more scrutable and simplifying the review process.</p>
<p>3.</p>	<p>...Recent NRC requests for "Source Code" to conduct reviews does not enhance safety because it would only allow the reviewers to follow through line-by-line of the coding and the code logic to determine if the code is doing what is expected...</p>	<p>Clarification</p>	<p>DG-1120 does not mandate the inclusion of source code as a part of the EM documentation, and the staff does not wish to emphasize this point further. As stated in the comment, the "NRC can [will] request source code information should it turn out to be beneficial to the review process."</p>
<p>4.</p>	<p>The last comment is associated with documentation. While it is agreed that the documentation of how the code works, with respect to topical reports, should be all inclusive, straightforward, and concise; expending NRC resources to review Code Manuals and User Manuals has little value. The only aspect relative to documentation is that it should capture the boundary requirements for using the code, such that the code is not used beyond its license framework. Thorough code and user manuals is a commercial issue associated with technical transfer of computer codes to end users (i.e., licensees that may purchase codes and conduct their own analyses). In these situations, the NRC has a regulatory vehicle in place to ensure the proper use of codes (Generic Letter 83-11, Supplement 1). Thus, it is inappropriate to add the Code and User Manuals to an NRC review. This is a commercial, training, and Quality Assurance issue, and does not ensure the safety, health and well being of the public.</p>	<p>Objection</p>	<p>The Users Manual and User Guidelines section of DG-1120 generically addresses code and users manuals to describe the basic, fundamental information necessary to ensure a scrutable EM. Prior to generic approval of the code or EM by the NRC and the subsequent plant specific evaluation in accordance with GL 83-11, the corresponding user and code manuals should, at a minimum, contain the information described in DG-1120.</p>

5.	<p>On page 3 of DG-1120, Section B (Discussion), Sub-section of Evaluation Model Concept: The extent of a review should be explicitly defined and clarified with respect to an Evaluation Model (EM). The discussion in the section leaves it open for a reviewer to request all "supporting" codes to be provided. This is in excess of what would be needed to conduct a review. Refer to Item 2 under the "General Comment" section. This same comment applies to draft SRP 15.0.2, page 2, Item 2 (Evaluation Model).</p>	Objection	<p>DG-1120 does not call for development or assessment efforts which are far departures from that which licensees currently perform and submit to the NRC for review. The objective of this document is to standardize the development and assessment efforts, not increase them. While the steps may appear numerous, they are logical and comprehensive, and when warranted, a graded approach can be taken.</p>
6.	<p>Section 3.3 of DG-1120 should be revised to address the comments made in Item 2 under the "General Comment" section (i.e., code input that may be calculated by a previously licensed code - that code should not be re-reviewed; however, the input data range of applicability should be ensured that it meets the EM requirements).</p>	Clarification	<p>Codes that have been reviewed previously by the NRC are not re-reviewed as if no prior evaluation exists. All available information will be considered. Appendix B should clarify this issue.</p>
7.	<p>On Page 25 of DG-1120, Section 3.0, Items 3 & 4 should be deleted. Refer to Item 4 in the "General Comment" section.</p>	Objection	<p>Item 4 in the "General Comment" section was refuted.</p>