#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
1	Page 132 Section 9.1 Comment also applies to: Section 3.1.5.2	The neutronic methods used to simulate the reactor core response and that feed into the downstream safety analyses supporting operation at EPU/MELLLA+ will apply TGBLA06/PANAC11 or other NRC-approved neutronic method.	For future license applications, the neutronic methods used to simulate the actual reactor core response and that feed into the downstream safety analyses supporting operation at EPU/MELLLA+ will apply TGBLA06/PANAC11 or other NRC-approved neutronic method.	Representative core analysis in license applications issued after this SE is issued may be based on TGBLA04/PANAC10, but the actual core analysis performed for the actual EPU or MELLLA+ core will be based on TGBLA06/PANAC11. As written, the Limitation seems to allow the use of TGBLA04/PANAC10 since they are NRC approved.	Comment not incorporated. Section revised as: The neutronic methods used to simulate the reactor core response and that feed into the downstream safety analyses supporting operation at EPU/MELLLA+ will apply TGBLA06/PANAC11 or later NRC-approved version of neutronic method.
2	Page 132 Section 9.3 Comment also applies to: Sections 3.1.4.2, 3.1.5.1 multiple locations, and 3.1.5.2.	Plant-specific EPU and expanded operating domain applications will confirm that the power-to-flow ratio will not exceed 50 MWt/Mlbm/hr at any statepoint in the allowed operating domain. For plants that exceed the power-to-flow value of 50 MWt/Mlbm/hr, the application will provide power distribution assessment to establish that neutronic methods axial and nodal power distribution uncertainties have not increased.	Plant-specific EPU and expanded operating domain applications will confirm that the core thermal power to total core flow ratio will not exceed 50 MWt/Mlbm/hr at any statepoint in the allowed operating domain. For plants that exceed the power-to-flow value of 50 MWt/Mlbm/hr, the application will provide power distribution assessment to establish that neutronic methods axial and nodal power distribution uncertainties have not increased.	Clarification	Comment accepted for Section 9.3.

ATTACHMENT

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
3	Page 132 Section 9.7	For applications requesting implementation of EPU or MELLLA+, the small and large break ECCS-LOCA analysis will include top-peaked and mid-peaked power shape in establishing the MAPLHGR and determining the PCT. This limitation is applicable for both the licensing bases PCT and the upper bound PCT.	For applications requesting implementation of EPU or MELLLA+, the small and large break ECCS-LOCA analysis will include top-peaked and mid-peaked power shape in establishing the MAPLHGR and determining the PCT. ~~This limitation is applicable for both the licensing bases PCT and the upper bound PCT.~~ The plant specific EPU or MELLLA+ application will report the limiting large break and small break nominal and Appendix K PCT.	During discussions regarding the NRC review of NEDC-33006P, GE concurred with a verbal discussion of a similar limitation regarding ECCS-LOCA. The limitations in NEDC-33006P and 33173P should be consistent, or, preferably, listed in a single SE.	Part of comment accepted. Section 9.7 revised as follows: For applications requesting implementation of EPU or MELLLA+, the small and large break ECCS-LOCA analysis will include top-peaked and mid-peaked power shape in establishing the MAPLHGR and determining the PCT. This limitation is applicable for both the licensing bases PCT and the upper bound PCT. The plant-specific applications will report the limiting small and large break licensing basis and upper bound PCTs.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
4	Page 133 Section 9.8	The ECCS-LOCA will be performed for all the statepoints in the upper boundaries of the expanded operating domains (e.g., MELLLA+ 80 percent and 55 percent core flow statepoint). The plant-specific application will report the limiting ECCS-LOCA results as well as the rated power and flow results. The SRLR will include both the limiting statepoint ECCS-LOCA results and the rated conditions ECCS-LOCA results.	Replace limitation wording with: Plant-specific MELLLA+ application will include calculations for the Appendix K and Nominal PCT at rated power/rated core flow, rated power/MELLLA+ boundary and the low flow point on the MELLLA+ boundary at which the off-rated flow dependent LHGR or MAPLHGR setdown begins to apply. This point will be at or between the 55% core flow MELLLA+ boundary point and the rated power/MELLLA+ boundary. If the small break PCT is within 50ºF of limiting, the MELLLA+ plant submittals will include report of calculations for the limiting small break at rated power/rated core flow and rated power/MELLLA+ boundary. The Licensing Basis PCT, considering all calculated statepoint and power shapes, will be reported in the plant-specific EPU or MELLLA+ application and the Supplemental Reload Licensing Report	During discussions regarding the NRC review of NEDC-33006P, GE concurred with a verbal discussion of a similar limitation regarding ECCS-LOCA. The limitations in NEDC-33006p and 33173P should be consistent, or, preferably, listed in a single SE.	Comment not incorporated. Section 9.8 reworded as follows: The ECCS-LOCA will be performed for all statepoints in the upper boundary of the expanded operating domain, including the minimum core flow statepoints, the transition statepoint as defined in Reference 2 and the 55 percent core flow statepoint. The plant-specific application will report the limiting ECCS-LOCA results as well as the rated power and flow results. The SRLR will include both the limiting statepoint ECCS-LOCA results and the rated conditions ECCS-LOCA results.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
5	Page 133 Section 9.10 Comment also applies to: Page 48 Section 3.2. 6.5.1	Each EPU and MELLLA+ fuel reload will document in the SRLR the calculation results of the analyses demonstrating compliance to transient T-M acceptance criteria.	Delete	The SRLR is not provided to the NRC. However, the EPU and MELLLA+ license applications, which are submitted for NRC review, will report the calculations results Alternative, GE could provide a supplemental data sheet to the SRLR for each reload.	Section 9.10 reworded as follows: Each EPU and MELLLA+ fuel reload will document the calculation results of the analyses demonstrating compliance to transient T-M acceptance criteria. The plant T-M response will be provided with the SRLR or COLR, or it will be reported directly to the NRC as an attachment to the SRLR or COLR

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
6	Page 133 Section 9.11 Comment also applies to:	Unlike TRACG, nodal void reactivity bias with exposure cannot be incorporated into the ODYN 1D transient modal. To account for the impact of the void history bias, plant-specific EPU and MELLLA+ applications will demonstrate an equivalent to 10 percent margin to the fuel centerline melt and that the 1 percent cladding circumferential plastic strain acceptance criteria due to pellet-cladding mechanical interaction for all of limiting AOO transient events, including equipment out-of-service. Limiting transients in this case, refers to transients that will result in higher TOP and MOP. If the void history bias is incorporated into the transient model within the code, then the additional 10 percent TOP and MOP margin is no longer required. This holds for TRACG, which has the capability to incorporate void reactivity bias in the 3D nodal void reactivity response surface.	~~Unlike TRACG, nodal void reactivity bias with exposure cannot be incorporated into the ODYN 1D transient modal.~~ To account for the impact of the void history bias, plant-specific EPU and MELLLA+ applications will demonstrate an equivalent to 10 percent margin to the fuel centerline melt and that the 1 percent cladding circumferential plastic strain acceptance criteria due to pellet-cladding mechanical interaction for all of limiting AOO transient events, including equipment out-of-service. Limiting transients in this case, refers to limiting pressurization transients that will result in higher TOP and MOP. If the void history bias is incorporated into the transient model within the code, then the additional 10 percent margin to the fuel centerline melt and that the 1 percent cladding circumferential plastic strain is no longer required. ~~This holds for TRACG, which has the capability to incorporate void reactivity bias in the 3D nodal void reactivity response surface~~.	The uncertainties for ODYN may be increased to address the void bias and the Limitation should not exclude that potential. Clarification. The 10% margin is applied to the margin to the fuel centerline melt and that the 1 percent cladding circumferential plastic strain, not to the TOP and MOP. Clarifying that the context in all of this is for limiting pressurization transients	Comment incorporated. Section 9.11 reworded as follows: To account for the impact of the void history bias, plant-specific EPU and MELLLA+ applications using either TRACG or ODYN will demonstrate an equivalent to 10 percent margin to the fuel centerline melt and that the 1 percent cladding circumferential plastic strain acceptance criteria due to pellet-cladding mechanical interaction for all of limiting AOO transient events, including equipment out-of-service. Limiting transients in this case, refers to transients where the void reactivity coefficient plays a significant role (such as pressurization events). If the void history bias is incorporated into the transient model within the code, then the additional 10 percent margin to the fuel centerline melt and the 1 percent cladding circumferential plastic strain is no longer required.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
7	Page 134 Section 9.13	GENE will include the GSTR-M Part 21 report as an Appendix in the "-A" version of LTR NEDC-33173P.	Delete	This is not a restriction on the use of GE's analytical methods. GE will treat MFN 07-040 like an RAI response and include the letter in the '-A' version of NEDC-33173P	Comment incorporated. Section 9.13 deleted.
8	Page 134 Section 9.14	Any conclusions drawn from the NRC staff evaluation of the GENE's Part 21 report will be applicable to the GSTR-M thermal-mechanical assessment of this SE. GENE submitted the T-M Part 21 evaluation, which is currently under NRC staff review. Upon completion of its review, NRC staff will inform GENE of its conclusions.	Any conclusions drawn from the NRC staff evaluation of the GENE's Part 21 report will be applicable to the GSTR-M thermal-mechanical assessment of this SE for future license application. GENE submitted the T-M Part 21 evaluation, which is currently under NRC staff review. Upon completion of its review, NRC staff will inform GENE of its conclusions.	This Limitation is an unknown. Preferably, the Limitation should be deleted. The NRC can decide any additional action when its review of the report is completed. At a minimum, the Limitation should be clarified as indicated.	Any conclusions drawn from the NRC staff evaluation of the GE's Part 21 report will be applicable to the GSTRM T-M assessment of this SE for future license application. GE submitted the T M Part 21 evaluation, which is currently under NRC staff review. Upon completion of its review, NRC staff will inform GE of its conclusions.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
9	Page 134 Section 9.15	The conclusions of the plenum fission gas and fuel exposure gamma scans have been submitted for NRC staff review and approval, and revisions to the T-M methods will be included in the T-M licensing process. This revision will be accomplished through Amendment to GESTAR II or in T-M LTR review. Once the T-M LTR and its application are approved, future license applications for EPU and MELLLA+ referencing LTR NEDC-33173P must utilize these revised T-M methods.	Deletion	The Limitation is an unknown. The NRC review of the T-M methods is ongoing and the NRC should incorporate the required limitations applicable to EPU and M+ in the SE for the T-M methods.	Comment not incorporated. Renumbered as Section 9.12 and reworded as follows: In MFN 06-481, GE committed to submit plenum fission gas and fuel exposure gamma scans as part of the revision to the T-M licensing process. The conclusions of the plenum fission gas and fuel exposure gamma scans of GE 10x10 fuel designs as operated will be submitted for NRC staff review and approval. This revision will be accomplished through Amendment to GESTAR II or in a T-M licensing LTR. PRIME (a newly developed T-M code) has been submitted to the NRC staff for review (Reference 58). Once the PRIME LTR and its application are approved, future license applications for EPU and MELLLA+ referencing LTR NEDC-33173P must utilize the PRIME T-M methods.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
10	Page 134 Section 9.17 Comment also applies to: Page 129 Last paragraph of Section 8.4	A supplement to TRACG /PANAC11 for AOO is under NRC staff review (Reference 40). TRACG internally models the response surface for the void coefficient biases and uncertainties for known dependencies due to the relative moderator density and exposure on nodal basis. Therefore, the void history bias determined through the methods review can be incorporated into the response surface "known" bias or through changes in lattice physics/core simulator methods for establishing the instantaneous cross-sections. Including the bias in the calculations negates the need for ensuring that plant-specific applications showing sufficient margin. For application of TRACG to EPU and MELLLA+ applications, the TRACG methodology must incorporate the void history bias. The manner in which this void history bias is accounted for will be established by the NRC staff SE approving NEDE-32906P, Supplement 3, "Migration to TRACG04/PANAC11 from TRACG02/PANAC10," May 2006 (Reference 40). This limitation applies until the new TRACG/PANAC methodology is approved by the NRC staff.	Delete	This Limitation is an unknown. The NRC review of TRACG /PANAC11 for AOO is under NRC staff review (Reference 40) is ongoing and the NRC should incorporate the required limitations applicable to EPU and M+ in the SE for the TRACG /PANAC11 for AOO is under NRC staff review (Reference 40).	Comment not incorporated. Renumbered as Section 9.16. A supplement to TRACG /PANAC11 for AOO is under NRC staff review (Reference 40). TRACG internally models the response surface for the void coefficient biases and uncertainties for known dependencies due to the relative moderator density and exposure on nodal basis. Therefore, the void history bias determined through the methods review can be incorporated into the response surface "known" bias or through changes in lattice physics/core simulator methods for establishing the instantaneous cross-sections. Including the bias in the calculations negates the need for ensuring that plant-specific applications show sufficient margin (see limitation 11). For application of TRACG to EPU and MELLLA+ applications, the TRACG methodology must incorporate the void history bias. The manner in which this void history bias is accounted for will be established by the NRC staff SE approving NEDE-32906P, Supplement 3, "Migration to TRACG04/PANAC11 from TRACG02/PANAC10," May 2006 (Reference 40). This limitation applies until the new TRACG/PANAC methodology is approved by the NRC staff.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
11	Page 134 Section 9.18	For EPU and MELLLA+, the bypass voiding will be evaluated on a cycle-specific basis to guarantee that the void fraction remains below 5 percent at all LPRM levels when operating at steady-state conditions. The highest calculated bypass void will be included in the plant-specific SRLR.	For EPU and MELLLA+, the bypass voiding will be evaluated on a cycle-specific basis to guarantee that the void fraction remains below 5 percent at all LPRM levels when operating at steady-state rated power conditions. The highest calculated bypass void will be included in the plant-specific SRLR.	Clarification	Comment not incorporated. Section 9.18 reworded as follows: The NRC staff concludes that the presence bypass voiding at the low-flow conditions where instabilities are likely can result in calibration errors of less than 5 percent for OPRM cells and less than 2 percent for APRM signals. These calibration errors must be accounted for while determining the setpoints for any detect and suppress long term methodology. The calibration values for the different long-term solutions are specified in the associated sections of this SE, discussing the stability methodology.
12	Page 135 Section 9.20	For applications involving PANCEA/ODYN/ISCOR/TASC for operation at EPU and MELLLA+, an additional 0.01 will be added to the OLMCPR, until such time that GE expands the experimental database supporting the Findlay-Dix void-quality correlation to demonstrate the accuracy and performance of the void-quality correlation based on experimental data representative of the current fuel designs and operating conditions during steady-state, transient, and accident conditions.	For applications involving PANCEA/ODYN/ISCOR/TASC for operation at EPU and MELLLA+, an additional 0.01 will be added to the OLMCPR, until such time that GE expands the experimental database supporting the Findlay-Dix void-quality correlation to demonstrate the accuracy and performance of the void-quality correlation based on experimental data representative of the current fuel designs and operating conditions during steady-state, transient, ~~and accident~~ conditions.	Clarification. In MFN 06-435, GE provided the commitment to resolve the Limitation	Renumbered as Section 9.19. Comment not incorporated. Staff comment: The countercurrent flow model of the void quality correlation needs to be addressed. This model relates to the LOCA, which is an accident. The staff had issued RAIs related to this model in the follow-up guidance for the VQ.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
13	Page 136 Section 9.21	The NRC staff is currently reviewing Supplement 3 to NEDE-32906P, "Migration to TRACG04/PANAC11 from TRACG02/PANAC10," dated May 2006 (Reference 40). The adequacy of the TRACG interfacial shear model qualification for application to EPU and MELLLA+ will be addressed under this review. Any conclusions specified in the NRC staff SE approving Supplement 3 to LTR NEDC-32906P (Reference 40) will be applicable as approved.	Delete	This Limitation is an unknown. The NRC review of Supplement 3 to NEDE-32906P is under NRC staff review. The NRC should incorporate the required limitations applicable to EPU and M+ in the SE for the Supplement 3 to NEDE-32906P.	Comment not incorporated. Renumbered as Section 9.20.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
14	Page 136 Section 9.24	The fuel lattice geometry cannot deviate significantly from GE lattices; particularly the performance of TGBLA06 for expanded operating domains has not been demonstrated for fuel assemblies with water crosses, square internal water channels, Gd rods simultaneously adjacent to water and vanished rods, or 11x11 lattices. The acceptability of the modified epithermal slowing down models in TGBLA06 have not been demonstrated for application to these or other geometries for expanded operating domains. Significant changes in the Gd rod optical thickness will require an evaluation of the TGBLA06 radial flux and Gd depletion modeling before being applied. Increases in the lattice Gd loading that result in nodal reactivity biases beyond those previously established will require review before the GE methods may be applied. The NRC staff did not assess the TGBLA06 upgrade for use with 11x11 and higher lattices, water crosses, water boxes, or MOX fuels at EPU conditions. For any plant-specific applications of TGBLA06 with the above fuel types, or changes as described above, GENE needs to provide assessment data similar to that provided for the GE fuels.	The fuel lattice geometry cannot deviate significantly from GE lattices; particularly the performance of TGBLA06 for expanded operating domains has not been demonstrated for fuel assemblies with water crosses, square internal water channels, ~~Gd rods simultaneously adjacent to water and vanished rods~~, or 11x11 lattices. ~~The acceptability of the modified epithermal slowing down models in TGBLA06 have not been demonstrated for application to these or other geometries for expanded operating domains. Significant changes in the Gd rod optical thickness will require an evaluation of the TGBLA06 radial flux and Gd depletion modeling before being applied. Increases in the lattice Gd loading that result in nodal reactivity biases beyond those previously established will require review before the GE methods may be applied.~~ The NRC staff did not assess the TGBLA06 upgrade for use with 11x11 and higher lattices, water crosses, water boxes, or MOX fuels at EPU conditions. For any plant-specific applications of TGBLA06 with the above fuel types, or changes as described above, GENE needs to provide assessment data similar to that provided for the GE fuels.	Corrections. The second, third and fourth sentences do not bear on mixed vendor cores.	Comment not incorporated. Renumbered as to Section 9.22 and reworded as follows: For any plant-specific applications of TGBLA06 with fuel type characteristics not covered in this review, GE needs to provide assessment data similar to that provided for the GE fuels. The Interim Methods review is applicable to all GE lattices up to GE14. Fuel lattice designs, other than GE lattices up to GE14, with the following characteristics are not covered by this review: • square internal water channels water crosses • Gd rods simultaneously adjacent to water and vanished rods • 11x11 lattices • MOX fuel The acceptability of the modified epithermal slowing down models in TGBLA06 has not been demonstrated for application to these or other geometries for expanded operating domains. Significant changes in the Gd rod optical thickness will require an evaluation of the TGBLA06 radial flux and Gd depletion modeling before being applied. Increases in the lattice Gd loading that result in nodal reactivity biases beyond those previously established will require review before the GE methods may be applied.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
15	Page 136 Section 9.25 Comment also applies to: Page 129 Section 8.5, second paragraph	Provision of evaluation of the core-tracking data will provide the NRC staff with bases to establish if operation at the expanded operating domain indicates: (1) changes in the performance of nuclear methods outside the EPU experience base; (2) changes in the available thermal margins; (3) need for changes in the uncertainties and NRC-approved criterion used in the SLMCPR methodology; or (4) any anomaly that may require corrective actions.	Provision of evaluation of the core-tracking data will provide the NRC staff with bases to establish if operation at the expanded operating domain indicates: (1) changes in the performance of nuclear methods ~~outside the EPU experience base~~; (2) changes in the available thermal margins; (3) need for changes in the uncertainties and NRC-approved criterion used in the SLMCPR methodology; or (4) any anomaly that may require corrective actions.	Clarification. GE will provide the similar No assessment of the comparisons is planned.	Renumbered as Section 9.23. Comment not incorporated. <u>Staff Comments</u>: The staff will assess whether the data is outside the EPU experience base. The objective of the limitation is to compare the already compiled EPU database for all future EPU plants. Staff will use the comparisons in its plant-specific review.
16	Page 136 Section 9.26 Comment also applies to: Page 129 Section 8.5, second paragraph	The plant-specific applications will provide prediction of key parameters for cycle exposures for operation at EPU and MELLLA+. The plant-specific prediction of these key parameters will be compared against the EPU experience base and MELLLA+ operating experience, if available. For evaluation of the margins available in the fuel design limits, plant-specific applications will also provide quarter core map (assuming core symmetry) showing bundle power, bundle operating LHGR, and MCPR for BOC, MOC, and EOC. Since the minimum margins to specific limits may occur at exposures other than the traditional BOC, MOC, and EOC, the data will be provided at these exposures.	The plant-specific applications will provide prediction of key parameters for cycle exposures for operation at EPU and MELLLA+. ~~The plant-specific prediction of these key parameters will be compared against the EPU experience base and MELLLA+ operating experience, if available.~~ For evaluation of the margins available in the fuel design limits, plant-specific applications will also provide quarter core map (assuming core symmetry) showing bundle power, bundle operating LHGR, and MCPR for BOC, MOC, and EOC. Since the minimum margins to specific limits may occur at exposures other than the traditional BOC, MOC, and EOC, the data will be provided at these exposures.	Clarification. No assessment of the comparisons is planned.	Renumbered as Section 9.24. Comment not incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
17	Page 25 Section 3.1.9 1st paragraph	In RAI 28 of MFN 05-053 (Reference 6), GENE committed to perform gamma scan measurements to confirm that the assumptions used in the neutronic method are still appropriate. GENE also presented plans for gamma and plenum fission gas scans (Reference 31). The planned measurement data includes: 1. fission gas benchmarks for T-M models, 2. rod exposure benchmarks for lifetime integrated rod power, 3. rod-by-rod power-peaking benchmarks, 4. bundle power allocation benchmarks around instrument positions, and 5. core octant bundle-by-bundle nodal power benchmarks.	In response to RAI 9 in MFN 06-481, GE committed to submit plenum fission gas and fuel exposure gamma scans for NRC review as part of the T-M licensing review.	GE is committed to provide the required plenum fission gas and fuel exposure gammas to support the T-M licensing review. The development of scans specifics and submittal dates is expected to involve the cooperation of a utility partner. Reference 31 was present to the NRC for information only and did not contain GE commitments. Further, Reference 31 was not presented for the purposes of supporting the review of NEDC-33173P and should not be referenced by this SE.	Comment not incorporated. Staff comment: Reference 31 [Dec 2005 presentation] describes the benchmarking plan where RAI 9 does not describe any measurement plan. The revised RAI 28-1 excluded the fission gas and rod exposure benchmarking. Reference 31 [Dec 2005 presentation] is docketed and supports the SE.
18	Page 59 Section 3.2.6.5.9 Item 6 Comment also applies to: Page 50 Section 3.2.6.5.5 1st	Preliminary review of the T-M qualification data indicates that the current database does not extend to the current fuel designs and the currently licensed exposures. The experimental qualification database will be expanded to the current fuel designs and exposures as proposed in the December 2005 presentation (Reference 31) and the initial RAI 28 response (MFN-	Preliminary review of the T-M qualification data indicates that the current database does not extend to the current fuel designs and the currently licensed exposures. In response to RAI 9 in MFN 06-481, GE committed to submit plenum fission gas and fuel exposure gamma scans for NRC review as part of the T-M licensing review. ~~MFN-05-022 also states that "GE already~~	Reference 31 was present to the NRC for information only and did not contain GE commitments. Further, Reference 31 was not presented for the purposes of supporting the review of NEDC-33173P and should not be referenced by this SE	Comment not incorporated, see resolution to comment #17. Item 6 was reworded as follows: NRC staff evaluation of the T-M qualification data indicates that the current database does not extend to the current fuel designs and need to be expanded to the current fuel designs and exposures. GE intends to perform additional scans as presented to the

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
	paragraph Section 8.4 Page 129, 2nd paragraph	05-022, Reference 3). GE states that additional target spectral lines from other isotopes may be used for determination of plenum fission gas (85Kr) or fuel exposure (137Cs/144Pr). MFN-05-022 also states that "GE already intends to perform plenum fission gas gamma scan measurements to provide needed input to T-M methodology qualification and determination of fuel high exposure fuel designs. Additionally, GE will continue to perform hot-cell gamma scan (and pellet mass spectrometry) measurements on rod exposure for a limited number of rods." The NRC staff agreed with this proposal and the NRC staff approval of LTR NEDC-33173P (Reference 1) relies on the confirmations of the internal rod pressures and the exposure for the GE14 fuel up to the licensed exposure. The confirmation will also include extension of the fuel temperature to the current licensed exposures; and	~~intends to perform plenum fission gas gamma scan measurements to provide needed input to T-M methodology qualification and determination of fuel high exposure fuel designs. Additionally, GE will continue to perform hot-cell gamma scan (and pellet mass spectrometry) measurements on rod exposure for a limited number of rods."~~ The NRC staff agreed with this proposal and the NRC staff approval of LTR NEDC-33173P (Reference 1) relies on the confirmations of the internal rod pressures and the exposure for the GE14 fuel up to the licensed exposure. The confirmation will also include extension of the fuel temperature to the current licensed exposures; and	Further, the quotes from MFN 05-022 are taken out of context. Please note that MFN 05-022 further states, "GE cannot *a priori* commit to any gamma scan program without utility partners. Instead, the interim process proposes a conservative treatment of SLMCPR uncertainties." Based on subsequent discussions with the NRC, GE modified the response to RAI 28-2 in MFN 05-053. In that letter, GE stated efforts were underway to develop a gamma scan system and to obtain utility partner(s) for a gamma scan program. Specifics of a program were not provided at that time. MFN 06-434 defines the specific scans required to support removal of the added SLMCRP margins. Regarding scans to support the T-M licensing reviews, as stated in MFN 06-481,	NRC staff (Reference 31), as stated in the initial RAI 28-1 response (Reference 3) and as committed to in RAI 9 response (Reference 25). The NRC staff agreed with this proposal and the NRC staff approval of LTR NEDC-33173P (Reference 1) relies in the long-term on the confirmations of the internal rod pressures and the exposure for the GE14 fuel up to the licensed exposure. The confirmation will also include extension of the fuel temperature data to the current licensed exposures.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
				GE is committed to provide the required plenum fission gas and fuel exposure gammas. The development of scans specifics and submittal dates is expected to involve the cooperation of a utility partner.	
19	Page 58 Section 3.2.6.5.9 Item 1	The higher bundle powers during steady-state operation reduce the margins to the LHGR limit. In addition, the higher plant response during transients increases the fuel pellet overpower response.	Delete	LHGR limit is already an active constraint for regular cores. The plant is not operating with higher bundle power at EPU/M+.	Comment is no longer applicable in the Final SE.
20	Page 44 Section 3.2.6 1st paragraph on, 3rd sentence	The ratio of the steady-state operating peak nodal kW/ft over the steady-state LHGR limit is referred to as MLHGR.	The ratio of the steady-state operating peak nodal kW/ft over the steady-state LHGR limit is referred to as ~~MLHGR~~ MFLPD (Maximum Fraction of Linear Power Density)	Clarification	Comment incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
21	Page 46 3.2.6.5 3rd sentence Comment also applies to: Page 47 Section 3.2.6.5.1 4th paragraph 4th sentence	Therefore, the TOP and MOP responses during limiting AOO events are expected to be higher for operation at EPU and MELLLA+.	Delete	TOP and MOP responses during limiting AOO events are NOT expected to be higher for operation at EPU and MELLLA+	Comment not incorporated. Staff comment: GHNE comment is not supported by data showing that using same methods and codes the TOP and MOP response will not increase for EPU and MELLLA+ operation relative to pre-EPU conditions. Note that GE does not include plant-specific T-M over-power response in the SRLR or the COLR. Therefore, any assessment of pre- and post-EPU/MELLLA+ data cannot be performed by the NRC staff. Phenomenological assessments indicate that increases in the T-M over-power response are highly likely because the void coefficient is higher at the higher core-average void fractions expected at MELLLA+. Several GHNE comments in this document relate to this topic. The current limitations in the NRC staff SE require reporting of the T-M over-power response. Therefore, in the future, the staff will be able to assess changes in T-M over-power response. The SE was updated to clarify this topic.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
22	Page 47 3.2.6.5.1 4th paragraph 1st sentence	Although the transient LHGR limit is a SAFDL that ensures the fuel integrity limit will be met during an AOO, the current licensing process does not include the TOP and MOP screening criteria or the demonstration that the T-M fuel design limits will be met during an AOO on cycle-specific bases.	The LHGR limit is a way to ensure that SAFDL limit will be met during an AOO. The 1% strain and centerline melt are SAFDLs and these are confirmed for each fuel reload through the use of the MOP/TOP screening criteria or more detailed calculations.	LHGR is not SAFDL (see Table 1-1 of NEDC-33173P, and the SE for GESTAR, Amendment 10)	GHNE comment is no longer applicable in the Final SE.
23	3.2.6.5.4 3rd paragraph	In addition, it appears that GENE's licensed T-M methodology qualification data is limited to MFN-170-84 (Reference 45) and MFN-027-086 (Reference 46), which were approved in 1984 and 1986 respectively.	In addition, ~~it appears that~~ GENE's licensed T-M methodology qualification data is provided in MFN-170-84 (Reference 45) and MFN-027-086 (Reference 46), which were approved in 1984 and 1986 respectively. GENE has revised GSTRM material properties and performance models since its initial approval through following. MFN-036-85, MFN-082-85, MFN-056-87, MFN-037-98, MFN-031-99	MFNs provide the additional information.	Comment not incorporated. Staff comment: GHNE has not specified the NRC approved licensing document associated with the listed MFNs. These documents were not part of the review and cannot be approved by this SE. Paragraph revised to clarify issue.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
24	Section 3.2.6.5.5 5th paragraph last sentence Comment also applies to: Page 52, Section 3.2.6.5.6 6th paragraph First two sentences Page 52, Section 3.2.6.5.6 5th paragraph First two sentence	This scenario coupled with a 10 percent power penalty is judged to be more than adequate to accommodate any modeling uncertainty.	This scenario coupled with a 10 percent margin to the fuel centerline melt and that the 1 percent cladding circumferential plastic strain acceptance criteria is judged to be more than adequate to accommodate any modeling uncertainty.	Clarification of statement	Comment incorporated.
25	Page 51 Section 3.2.6.5.5 FRAPCON-GSTRM Internal Rod Pressure Comparison 4th paragraph last sentence	As an interim measure, the NRC staff accepts the current licensing bases as providing reasonable assurances in the short-term. The NRC staff agreed with GENE's proposal in MFN 05-022 (Reference 3). However subsequent revision of RAI 28 response (MFN 05-053, Reference 6) did not include the proposals to perform fission gas and exposure gamma scans. Moreover as of date, GENE had not submitted specific schedule outlining when the additional internal rod pressure and exposure accounting qualification	As an interim measure, the NRC staff accepts the current licensing bases as providing reasonable assurances in the short-term. The NRC staff agreed with GENE's proposal in MFN 06-481 (Reference 25) ~~05-022 (Reference 3). However subsequent revision of RAI 28 response (MFN 05-053, Reference 6) did not include the proposals to perform fission gas and exposure gamma scans. Moreover as of date, GENE had not submitted specific schedule outlining when the additional internal rod pressure and~~	IN MFN 06-481,GE agreed to address the need for scans as part of PRIME LTR licensing review (FLN 2007-001).	GHNE comment is no longer applicable in the Final SE.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
		data will be submitted to the Commission. Therefore, GENE's commitment is documented in this SE as limitation. The conclusions of the plenum fission gas and fuel exposure gamma scans will be submitted for NRC staff review and approval and inclusions in the T-M licensing process. This can be accomplished by submitting one of the following for review: a supplement to LTR NEDC-33173P (Reference 1), an Amendment to GESTAR II, or a separate T-M LTR. If neither of the commitments is fulfilled, the NRC staff has the option to increase the modeling uncertainties from 6 percent to 10 percent for the internal rod pressures.	~~exposure accounting qualification data will be submitted to the Commission. Therefore, GENE's commitment is documented in this SE as limitation.~~ ~~The conclusions of the plenum fission gas and fuel exposure gamma scans will be submitted for NRC staff review and approval and inclusions in the T-M licensing process. This can be accomplished by submitting one of the following for review: a supplement to LTR NEDC-33173P (Reference 1), an Amendment to GESTAR II, or a separate T-M LTR. If neither of the commitments is fulfilled, the NRC staff has the option to increase the modeling uncertainties from 6 percent to 10 percent for the internal rod pressures.~~		
26	Page 27 Section 3.2.2 Comment also applies to: Page 25 Section 3.2 Page 28 Section 3.2.2.2, 5th paragraph	Section 2.2.1 of MFN 05-005 (Reference 4) evaluates the SLMCPR calculational methodology and the impacts of potential increases in the power distribution uncertainties.	Section 2.2.1 of MFN 05-005 (Reference 4) evaluates the SLMCPR calculational methodology and the impacts of potential increases in the power distribution uncertainties. NEDC-33173P superseded MFN 05-005 and is the subject of the review of this SE	MFN 05-005 is superseded by NEDC-33173P	GHNE comment is no longer applicable in the Final SE.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
27	Page 37 Section 3.2.4.3 3rd paragraph Comment also applies to: Page 37 Section 3.2.4.3 3rd paragraph	It is feasible that the bases for the 40 percent depletion assumption could stem from the core average 40 percent void fraction for the historical operating strategies (OLTP at the 100 percent rod line). However, for the current operating strategies including EPUs and high density BWR/6 plants, the core averaged void fraction is 70 percent or greater.	It is feasible that the bases for the 40 percent depletion assumption could stem from the core average 40 percent void fraction for the historical operating strategies (OLTP at the 100 percent rod line). However, for the current operating strategies including EPUs and high density BWR/6 plants, the core averaged void fraction is 50 percent ~~or greater~~.	Inconsistent comparison. Core average exit voids are > 70% not the general core average.	Comment incorporated.
28	Page 38 Section 3.2.4.4 item 1 2nd paragraph last sentence	However, plant-specific application should confirm that the peak ASME overpressure vessel and TS dome pressures have adequate margin of at least 5 psig.	Delete	The conclusions of the NRC review in this regard were not discussed. GE has not had the opportunity to assess this conclusion. All codes have some uncertainties. Please clarify if this additional margin is applicable to all vendor's ASME calculations. What is the remedy to remove this additional margin. Is this penalty required for the application only or for each reload?	Comment not incorporated. Staff comment: There are no specific limitations in this SE that require any action related to the 5 psig ASME over-pressure margin. However, it is within the NRC staff's prerogative to state in this SE that if only 5 psig margin is available, the key input parameters and assumptions should be scrutinized in greater detail by the NRC staff reviewers.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
29	Page 60 Section 3.2.7 2nd paragraph	GENE had committed in the initial RAI 28 response (Reference 3) to perform both fission gas and exposure benchmarking. The NRC staff considers this benchmarking important, because a hot rod can accumulate higher exposure early in its core resident life and remain in the core. The NRC staff will track the RAI 28 commitment to ensure that the qualification data is submitted for NRC staff review and approval. The NRC staff requests that GE present this as an agenda item at their annual fuel design meeting.	~~GENE had committed in the initial RAI 28 response (Reference 3) to perform both fission gas and exposure benchmarking.~~ GE committed to provide benchmarking scans in MFN 06-481 as part of the review of the T-M LTR The NRC staff considers this benchmarking important, because a hot rod can accumulate higher exposure early in its core resident life and remain in the core. ~~The NRC staff will track the RAI 28 commitment to ensure that the qualification data is submitted for NRC staff review and approval. The NRC staff requests that GE present this as an agenda item at their annual fuel design meeting.~~.	See comment 19. The statement to track the submittal of the scans is unnecessary since the NRC review of the T-M licensing is underway. Further, requests for information at annual GE presentations is inappropriate in an SE.	Comment not incorporated. Staff comment: It is within the staff prerogative to provide guidance to the reviewers in a SE. There is no limitation or actions associated with this topic that requires GE actions.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
30	Page 62 Section 3.2.8.1 2nd paragraph	The accuracy in the prediction of the SDM, therefore, depends on the accuracy of the neutronics methods to predict the distributed criticality (corresponding to kB_{demo}) and local criticality (corresponding to kB_{sroB}). The distributed critical configuration is that with a uniform control blade insertion consistent with the all-rods-in configuration and is well represented by the in-sequence cold critical measurement. The local criticality consists of a configuration in which the core becomes critical with all-rods-in and adjacent control blades are removed. The local cold critical provides a demonstration of ability to predict the worth of the strongest-rod-out configuration.	The accuracy in the prediction of the SDM, therefore, depends on the accuracy of the neutronics methods to predict the distributed criticality (corresponding to kB_{demoB}) and local criticality (corresponding to kB_{sroB}). ~~The~~ A distributed critical configuration is represented by the in-sequence cold critical measurement, where control rods are pulled in a relatively uniform manner in all regions of the core. A local critical configuration is represented by a configuration in which the core becomes critical with a relatively small number of adjacent control blades removed. The local cold critical provides a better demonstration of ability to predict the worth of the strongest-rod-out configuration.	Clarification	Comment incorporated.
31	Page 126 Section 8, , 2nd paragraph, 1st sentence	NEDC-33173P (Reference 1) is applicable for operation at EPU and MELLLA+.	NEDC-33173P (Reference 1) is applicable ~~for operation at EPU and MELLLA+.~~ to expanded operating domains, greater than OLTP up to and including 120% OLTP with MELLLA+.	NEDC-33173P Expanded operating domains includes all domains greater than OLTP up to and including EPU and M+.	GHNE comment is no longer applicable in the Final SE.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
32	Section 8.4 1st and 2nd paragraph on page 129	The NRC staff compared the performance of TGBLA06AE4 against HELIOS with lattices with and without vanished rods, and Gd content from 6 percent to 7 percent. From the code-to-code comparisons, as well as the TGBLA06-CASMO4 comparisons provided, the NRC staff finds that the TGBLA06AE4 modifications, including the above Pu-240 modifications, are acceptable for production.	The NRC staff compared the performance of ~~TGBLA06AE4~~ TGBLA06AE5 against HELIOS with lattices with and without vanished rods, and Gd content from 6 percent to 7 percent. From the code-to-code comparisons, as well as the TGBLA06-CASMO4 comparisons provided, the NRC staff finds that the ~~TGBLA06AE4 modifications~~ TGBLA06AE5, including the above Pu-240 modifications, are acceptable for production.	Clarification	Comment incorporated.
33	Table 8-1	Uncertainties Not Assessed for Legacy Fuel	Remove Table 8-1	The P4B, TIP, PAL, Channel Bow, Gradient, & manufacturing uncertainties are all based on legacy fuel. The only thing not conducted was the analysis to support infinite lattice uncertainties with the procedure identified here.	Comment incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
34	Page 40 3.2.5.1 Item 6	6. The full spectrum base ECCS-LOCA analysis is performed during initial implementation of SAFER methodology, new fuel introduction, transition to GENE methodology and fuel, or if new operating conditions are implemented (e.g., MELLLA+).	6. The full spectrum base ECCS-LOCA analysis is performed during initial implementation of SAFER methodology, ~~new fuel introduction,~~ or transition to GENE methodology and fuel~~, or if new operating conditions are implemented (e.g., MELLLA+)~~. For new fuel introduction or if new operating conditions are implemented (e.g., MELLLA+), the limiting areas of the full spectrum base ECCS-LOCA analysis are reanalyzed to assure continued compliance with the 10CFR50.46 acceptance criteria for the new fuel or operating conditions.	The full spectrum base ECCS-LOA analysis is not repeated for new fuel introduction or operating condition changes.	Comment incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
35	Page 41 3.2.5.1.1 1st paragraph, 3rd sentence Comment also applies to: Section 3.2.5.1.2 p. 42 2nd paragraph	[ ] ~~For small breaks, recent sensitivity analyses based on the current fuel design shows that early dryout penetrates to the high power nodes for mid-peaked and toppeaked axial shapes. The top-peaked power shape can have a higher PCT than mid-peaked power shape for the limiting small~~. For small breaks, fuel typically remains in nucleate boiling until the time it is uncovered. Peak cladding temperature is driven by fuel heatup for the duration that the node is uncovered, until vessel level from ECCS actuation recovers the node elevation. Recent sensitivity analyses based on the current fuel design shows that the top-peaked power shapes can *result in* a higher PCT *for small breaks* than *comparable calculations assuming a* mid-peaked axial shape, *given that the nodes higher in the core remain uncovered longer.*	There is no early dryout or boiling transition for small break LOCAs. Nucleate boiling is maintained until the node uncovers.	Comment incorporated. [ ]

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
36	Page 41 3.2.5.1.1 1st paragraph	[ ]	[ ]	[ ]	Comment incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
37	Section 3.2.5.1.2 1st paragraph	For EPU and MELLLA+ application, the NRC staff will review the plant-specific ECCS-LOCA response and the available margins to the key parameters in the ECCS-LOCA requirements (e.g., PCT limit of 2200° F). The licensing application will include comparisons of the key parameters for each application against the experience (see Section 4.3 of NEDC-33173P (Reference X1X), "Plants Specific Application Process.") For those applications, in which the key parameters are outside the experience base in terms of the conditions of the high powered bundles and/or in those cases in which the margins to the PCT are deemed to have low margins, the NRC staff will audit and review the specific input parameters applied in the ECCS-LOCA analysis. In these cases, the NRC staff can request additional sensitivity analyses in order to obtain additional assurances that ECCS-LOCA assumptions and methodology are acceptable.	For EPU and MELLLA+ application, the NRC staff will review the plant-specific ECCS-LOCA response and the available margins to the key parameters in the ECCS-LOCA requirements (e.g., PCT limit of 2200° F). ~~The licensing application will include comparisons of the key parameters for each application against the experience (see Section 4.3 of NEDC-33173P (Reference X1X), "Plants Specific Application Process.") For those applications, in which the key parameters are outside the experience base in terms of the conditions of the high powered bundles and/or in~~ In those cases in which the margins to the PCT are deemed to have low margins, the NRC staff will audit and review the specific input parameters applied in the ECCS-LOCA analysis. In these cases, the NRC staff can request additional sensitivity analyses in order to obtain additional assurances that ECCS-LOCA assumptions and methodology are acceptable.	Section 4.3 of NEDC-33173P states "Each plant seeking to apply the Methods LTR must provide information supporting the application that demonstrates that the plant parameters are within the applicability definition in Section 4.2." Section 4.2 basically commits to staying within each GE technology code's associated "application statement" defining the application range. The application of these codes complies with the limitations, restrictions and conditions specified in the approving NRC SER for each code. Section 4.2 commits to "The plant specific application process will confirm that operations proposed by the plant specific license amendment meet the Applicability of GE	Comment not incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
				Methods to Expanded Operating Domains LTR applicability envelope requirements." Further, the basis of the request for the comparison is that maximum powered bundle increase relative to the pre-EPU conditions. Please see comment 30, 40, and 60.	
38	Page viii SE Summary Section 1.0 7th sentence	In addition, in some EPU core designs the power levels of the maximum powered bundle increase relative to the pre-EPU conditions.	~~In addition, in some EPU core designs the power levels of the maximum powered bundle increase relative to the pre-EPU conditions~~.	Misleading statement. As worded, this sentence implies that the power increase was directly caused by the change to EPU. However, the same increase in peak power could have been designed into a non-EPU reload core.	GHNE comment is no longer applicable in the Final SE.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
39	Page 2 Section 1 5th paragraph of Section 1	The NRC staff concludes that implementation of MELLLA+ will result in operation outside the current experience base. Specifically, for some applications, the hot bundle conditions may be outside the current operating experience base in terms of key parameters such as bundle power-to-flow ratio, exit void fractions, and bundle powers.	The NRC staff concludes that implementation of MELLLA+ will result in operation outside the current experience base. ~~Specifically, for some applications, the hot bundle conditions may be outside the current operating experience base in terms of key parameters such as bundle power-to-flow ratio, exit void fractions, and bundle powers.~~	Statement is incorrect since bundle power is limited by CPR constraint and it does not change with EPU or MELLLA+.	Comment not incorporated.
40	Page ix SE Summary Impact of Operation at High Void Conditions	4. Extension of the qualification data for the thermal-mechanical methodology to high exposures	Delete	Voids do not have impact on T-M methodology	Comment not incorporated. <u>Staff comment:</u> Bullet 4 does not refer to void fraction levels, but rather biases associated with the 40% depletion assumption at high exposures. However, the staff agrees that the SE section heading needs to be changed. Section heading changed to: "Impact on Methods Qualification Databases" First paragraph revised as follows: "The high void conditions and other characteristics of EPU and MELLLA+ conditions could affect the key assumptions in the analytical methods that impact the safety analyses supporting EPU and MELLLA+ operations or safety features. The methods review evaluates these effects and the adequacy of the qualification database supporting the analytical methods. The topics of review are as follows:"

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
41	Page xi SE Summary Section 3.0 Item 4a	The transient LHGR limit, although a specified acceptable fuel design limit (SAFDL), is …	The transient LHGR limit~~,~~ ~~although a specified acceptable fuel design limit (SAFDL),~~ is …	LHGR is not SAFDL (See Table 1-1 of NEDC-33173P)	Comment incorporated.
42	Page xi SE Summary Section 3.0 Item 4b	EPU and MELLLA+ operation will result in a higher overpower response during pressurization transients due to the higher initial steam flow (24 percent) for the fixed safety relief valve (SRV) capacity and the higher reactivity associated-with the core design. Plant-specific EPU and MELLLA+ applications will include discussion of the plant-specific thermal and mechanical overpower response.	~~EPU and MELLLA+ operation will result in a higher overpower response during pressurization transients due to the higher initial steam flow (24 percent) for the fixed safety relief valve (SRV) capacity and the higher reactivity associated with the core design.~~ Plant-specific ~~EPU and MELLLA+ applications~~ reload applications will include ~~discussion of the~~ a plant-specific thermal and mechanical overpower response.	Higher overpower response during pressurization transients is not cause by fixed SRV capacity.	GHNE comment is no longer applicable in the Final SE.
43	Page 3 Section 2.1 2nd paragraph First three sentences	There are no specific limits on the operating bundle powers, bundle operating power-to-flow ratio, or void fractions. Instead, the core design and the operating strategy employed are constrained by the thermal limits. The maximum powered bundles must meet the thermal limits during steady-state, transient, and accident conditions.	There are no direct ~~specific~~ limits on the operating bundle powers, bundle operating core thermal power-to-total core flow ratio, or void fractions. Instead, the core design and the operating strategy employed are constrained by the thermal limits. The maximum powered bundles must meet the respective thermal limits during steady-state operation so that tech spec safety limits or other absolute limits are not violated during transient or accident conditions.	Thermal limits are derived such that operation at steady-state will be protected in the event of a transient or accident. Thermal limits are expected to be exceeded in both transients and accidents though the SAFDLs (safety limits, PCT, or Tech. Spec limits are satisfied.	Comment not incorporated.
44	Page 17 Section 3.1.4.2. 4th paragraph 3rd sentence	The increased cycle energy was achieved by increasing the GE14 reload batch fraction from 188 to 128 and by increasing the average enrichment from 3.53 to 3.89 weight percent.	The increased cycle energy was achieved by increasing the GE14 reload batch fraction from 188 to 268 and by increasing the average enrichment from 3.53 to 3.89 weight percent.	Correction.	Comment incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
45	Section 3.1.5.2. Last two sentences on page 21	For future EPU/MELLLA+ application for plants with thermal TIPs, the NRC staff should evaluate the plant-specific TIP core-tracking data against compiled EPU Reference Plant core-tracking data. The objective is to determine if the power distribution uncertainties need to be increased for cores with thermal TIPs installed.	Delete	Neutron (thermal) TIPs do perform with wider variability, but this is an instrumentation accuracy limitation rather than methods problem.	Comment not incorporated.
46	Section 3.2.3	Figure 3-10 shows that both the SLMCPR value and the corresponding RIP value increase early in the bundle exposures and also increase after approximately 15 GWd/ST. Note that for the current Gd concentrations, the poison burnups after the first cycle (15 GWd/ST or once burned fuel). However, the increase is relatively modest compared to beginning of the bundle life whereby the increase could be as high as 0.008, which would round up to 0.01 significance threshold.	Delete	In regards to RIP, Figure 3-10 shows that the impact on RIP for the higher void profile is negative after 5 GWd/ST of bundle exposure and remains negative until 40 GWd/ST, well past the point where the bundles cease to contribute in the SL calculation. From this figure it is concluded that the RIPs and the resultant SL are not impacted by the R-factor differences seen for the 70% void profile - at least for the bundle shown in this figure	GHNE comment is no longer applicable in the Final SE.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
47	Page 32 Section3.2.4, 1st paragraph	(2) the OLMCPR is established by combining the change in the MCPR due to the transient overpower to the initial steady-state MCPR such that rod operating power is limited to preclude transition boiling.	(2) the OLMCPR is established ~~by combining the change in the MCPR due to the transient overpower to the initial steady-state MCPR~~ such that rod operating power is limited to preclude transition boiling	The current sentence implies some combining with the initial steady state MCPR, which is not true. Suggested wording is more accurate for ODYN and TRACG.	Comment not incorporated.
48	3.2.4.1, second paragraph	In terms of power distributions, top-peaked core power profile will reduce the scram reactivity early in the transient and the delayed scram time will increase the transient MCPR change.	In terms of power distributions, top-peaked core power profile will reduce the scram reactivity early in the transient and the reduced scram reactivity may increase the transient MCPR change.	The scram is not delayed but the scram reactivity rate is reduced.	Comment incorporated.
49	Page 33 Section 3.2.4.2, 2nd paragraph 3rd sentence	[ ]	[ ]	Control blade history is more commonly known for its affect on local bundle power distribution, not in the context of the axial average power shape.	Comment not incorporated.
50	Page 33 Section 3.2.4.2, 5th paragraph	[ ]	[ ]	[ ]	Comment incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
51	Page 36 Section 3.2.4.2.4 1st paragraph 2nd sentence	For operation at EPU and MELLLA+ conditions, where the CPR response will potentially be higher due to the fixed safety relief valve (SRV) relief capacity relative to the increase in the pressurization response, TRACG, which has the capability to simulate 3D core conditions, is expected to be more attractive to licensees.	For operation at EPU and MELLLA+ conditions, where additional CPR margin will be needed, TRACG… ~~where the CPR response will potentially be higher due to the fixed safety relief valve (SRV) relief capacity relative to the increase in the pressurization response, TRACG~~, which has the capability to simulate 3D core conditions, is expected to be more attractive to licensees.	Delete the use of SRVs in this context. The SRV capacity is not a factor in the CPR calculation.	GHNE comment is no longer applicable in the Final SE.
52	1st sentence on page 54	Most importantly, the 10 percent Gd rod fuel temperature shows that fuel centerline temperature may not be avoided with 10 percent Gd content. The 10 percent Gd calculation is based on non-barrier fuel and GENE states that the 10 percent Gd data was available only for non-barrier fuel.	Most importantly, the 10 percent Gd rod fuel temperature shows that fuel centerline melting temperature may not be avoided with 10 percent Gd content. The 10 percent Gd calculation is based on non-barrier fuel and is more conservative. ~~GENE states that the 10 percent Gd data was available only for non-barrier fuel.~~	Non barrier fuel is more conservative.	GHNE comment is no longer applicable in the Final SE.
53	Section 3.2.6.5.9 Staff Conclusion #1	The higher bundle powers during steady-state operation reduce the margins to the LHGR limit.		LHGR limit was already an active constraint for regular cores. The plant is not operating with higher bundle power at EPU/M+	GHNE comment is no longer applicable in the Final SE.
54	Section 5.0 4th paragraph 1st sentence	Table 5-1 shows the void fractions calculated using the different models (and their standard assumptions) for a high-power-density plant	Recommend adding the core thermal power (MWth) and core flow (Mlb/hr) assumed in the development of Table 5-1 since it appears to be an offrated case.	This result may look out of line if reader assumes it is at rated conditions.	Comment not incorporated. .

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
55	Section 5.4 3rd paragraph 3rd sentence page 87	In addition, the R-factor methodology is limited to GE12 fuel designs and do not include the current fuel designs and operating conditions.	In addition, the R-factor methodology is ~~limited to GE12~~ applicable to GE9x9 and 10x10 fuel designs. and do not include the current fuel designs and operating conditions.	Clarification. See FLN 2001-016	GHNE comment is no longer applicable in the Final SE.
56	Section 7.2.2 2nd paragraph page 102	GE has correlated this parameter to the GE database as a function of Reynolds number, fluid properties (pressure), and void fraction (the solution to the GE drift flux model is therefore iterative).	GE has correlated this parameter to the GE database as a function of Reynolds number, fluid properties (pressure), and void fraction ~~(the solution to the GE drift flux model is therefore iterative)~~.	Correction.	Comment incorporated.
57	Page 108 Section 7.2.4, 2nd paragraph	As shown in Table 7-1, the individual data ranges cover the expected parameter ranges reasonably well; however, some of the 10X10 bundle parameters are outside of the range of the database	As shown in Table 7-1, the individual data ranges cover the expected parameter ranges reasonably well~~; however, some of the 10X10 bundle parameters are outside of the range of the database~~.	Table 7-1 in the discussion has 2 of the 10x10 parameters outside the data ranges (Mass flux and axial power shape). The mass flux entry is discussed in the next item (Comment 67). The APS is understood to vary in the reactor and is not a practical constraint – if it were, no vendor could have a correlation.	Comment not incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
58	Page 114, Section 7.2.7 4th paragraph (or 2nd paragraph on page 114)	The NRC staff also finds that since the void fractions can be higher than [ ] at steady-state for the proposed MELLLA+, extrapolation of the void-quality correlation is not "momentary" during transients as characterized in NEDC-33173P (Reference 1).	Remove item.	Steady-state void fractions cannot be [ ]	Comment not incorporated.
59	Section 7.2.7 5th paragraph	The NRC staff also finds that for most of GE's analytical methods and codes, uncertainties are not applied to the void-quality correlation prediction, with the exception of ODYN. Implicitly, the safety analyses assume that the void-quality correlation is supported by applicable benchmarking data and that the uncertainties associated with it are small. Historically, the NRC staff had also never directly reviewed or approved the correlation and its supporting database.	The NRC staff also finds that for ~~most of~~ GE's analytical methods and codes, uncertainties are not applied to the void-quality correlation prediction~~, with the exception of ODYN~~.	The ODYN uncertainty analysis (referred to here) included void fraction. However, this was a supporting analysis and not the basis for setting margins. NRC reviewed as part of GE Amendment 11 and TACS LTR NEDC-32084P-A	Comment incorporated.

#	Location in Draft SE	Draft SE Text	GHNE Comment	GHNE Comment Basis	NRC Staff Resolution
60	Table 7-1 Page 119	Mass flux for a 10x10 BWR bundle = 4,001,350 kg/m2/s	Mass flux for a 10x10 BWR bundle = ~~4,001,350 kg/m2/s~~ [ ]	The given mass flux translates [ ]	Comment incorporated.