SIGNIFICANT HAZARDS CONSIDERATION ASSESSMENT

FOR

WNP-2 POWER UPRATE WITH ELLL

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Assessment Against 10CFR50.92 Criteria

For this significant hazards consideration assessment, the criteria of 10CFR50.92 were applied to power uprate with ELLL. The proposed Technical Specification (TS) changes are consistent with and justified by the safety analyses performed. The safety analyses show that the results are acceptable and within regulatory limits. The conclusions are based on the safety evaluations described in the licensing report (NEDC-32141P), and are summarized as appropriate for the following safety considerations in accordance with 10CFR50.92.

(1) Will the change involve a significant increase in the probability or consequences of an accident previously evaluated?

- *OL C.(1), TS 1.35* — Increase in Rated Thermal Power to 3486 MWt.

The changes in the operating license (OL) and TS were evaluated, and it was determined that the probability (frequency) of a DBA or other licensing event occurring is not a significant function of the power level because the design and regulatory criteria originally established for plant equipment (ASME code, IEEE standards, NEMA standards, Regulatory Guide criteria, etc.) are still imposed for the uprated power level. Scram setpoints are established such that there will be no significant increase in scram frequency due to power uprate.

The consequences of power dependent (hypothetical) accidents are directly proportional to the power level assumed in the safety analysis. The current accident analyses are based on about 104.4% of original rated power. The accident analyses for power uprate are based on 1.02 x 104.9% (107%) of original rated power. Thus, power uprate increases the consequences of an accident by less than 3%, and the calculated doses remain well within the 10CFR100 guidelines. Therefore, the increased consequences resulting from uprated power are insignificant. A spectrum of hypothetical accidents and transients has been investigated for power uprate with ELLL conditions and the bounding events meet the same regulatory criteria to which WNP-2 is currently licensed. In the area of core design, for example, the fuel operating limits such as Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) and Operating Limit Minimum Criteria Power Ratio (OLMCPR) are still met at the uprated power level.

The analysis of all limiting events and cycle specific reload analyses have and will show plant transients meet the criteria accepted by the NRC. Challenges to ECCS performance have been evaluated and shown to still meet the criteria of 10CFR.50.46 using the NRC approved SAFER/GESTR-LOCA methodology in accordance with 10CFR50 Appendix K. Challenges to the containment have been evaluated for uprated power with ELLL and still meet 10CFR50 Appendix A Criterion 38, Long Term Cooling and Criterion 50, Containment. Plus, the radiological release events have been evaluated, and shown to remain below the 10CFR100 guidelines.

The results of these analyses demonstrate that operation of the power uprate level does not significantly increase the probability or consequences of any accident previously evaluated.

- *TS Table 2.2.1-1* — Reactor Protection System (RPS) Instrument Setpoints

The analytical limits for the revised Flow Biased Simulated Thermal Power scram equations and clamps were used in the safety analyses for power uprate with ELLL. All the uprated power safety analyses, where operating in the ELLL domain may be limiting, include power uprate within the ELLL domain. To allow for operation within the uprate with ELLL domain the flow biased APRM and RBM scram and rod block equations in the TS are revised to be consistent with the uprated safety analyses. Thus, these TS changes ensure the validity of the safety analyses. ELLL has a negligible effect on plant loads, and has no effect on the radiological analyses. Therefore, the power uprate with ELLL cannot significantly increase the probability or consequences of any accident previously evaluated.

The increases in steam dome high pressure scram instrument setpoint and allowable values are made to ensure that there is no significant increase in the frequency of scrams due to operation at the higher pressure. The analytical limit for the high pressure scram setpoint is increased by the same amount as the increase in the planned operating pressure. Currently approved setpoint methodology was used to determine the allowable values and trip setpoints. This maintains the same level of trip avoidance for scram as originally provided. The high pressure scram is used as a backup to other scram signals, and will continue to mitigate and provide protection against pressurization event. It has been shown that this role is still adequate for uprated operation with the revised setpoints (e.g., vessel overpressure protection), and the probability of a pressurization event is not increased. This scram function is not needed or used to mitigate the consequences of any accident. Since the protection functions and the current margins to trip avoidance are maintained with the revised setpoints, there is no significant increase in the probability or consequences of an accident previously evaluated.

- *TS 3.2.2* — Adjustments in APRM flow biased scram and rod block setpoint and allowable value equations.

The scram equations are the same as those in TS Table 2.2.1-1, and the evaluation for these equations is provided above. The power uprate with ELLL safety analyses take no credit for the APRM rod blocks, and thus, changes in the rod block equations cannot increase the consequence of any accident. The APRM rod blocks aid the operators in preventing high neutron flux scrams, and thus, help prevent unnecessary challenges to plant equipment. The current margin (9%) between the scram line and rod block line is maintained for power uprate with ELLL. Therefore, the adjustments in APRM flow biased scram and rod block setpoint and allowable value equations cannot increase the probability or consequences of an accident previously evaluated.

- *TS 3/4.2.6, Figures 3.2.6-1, 3.2.7-1, 3.2.8-1 & 3.4.1.1-1* — The TS LCO power limit and the power limits in the figures are revised to reflect the new definition of rated thermal power in terms of megawatts thermal.

This change is made to be consistent with the new definition of rated thermal power. The current restrictions on operation within the restricted power/flow zone are unchanged. The basis for this change is described in Section 3.2 of (NRC approved LTRs) NEDC-31984P and NEDO-31984 (LTR2). There is no change in the previously evaluated potential for initiation of core thermal-hydraulic instability. The parameters being changed do not affect any accident analysis. Therefore, this TS change ensures that power uprate with ELLL operation will not cause an increase in the probability or consequences of an accident previously evaluated.

- *TS Bases 3/4.2.6, 3/4.2.7 & 3/4.2.8* - Clarification of 80% rod line.

The core thermal-hydraulic instability TS are based on limiting power to below the 80% rod line until core flow reaches 45%. For power uprate, the absolute power range (in MWt) of the restricted power/flow zone does not change. Therefore, to be consistent with the above proposed TS changes, references to the 80% rod line should be clarified to reflect that they are based on original rated thermal power (3323 MWt).

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot result in a significant increase in the probability or consequences of an accident previously evaluated.

- *TS Table 3.3.1-1 Action 6 & Notation (i), and Table 3.3.4.2-1 footnote (b)* - Clarification of the power level (30% of rated power) at which RPS and EOC-RPT trips may be bypassed (i.e., not needed).

The specific setpoints for the bypass of RPS T/G trip scram and EOC-RPT at 30% of rated power are deleted to be consistent with the power uprate with ELLL range of conditions. As shown in Table 5-1 of the licensing report, the 30% power basis for these bypasses does not change. As shown in Table 1-2 of the licensing report, WNP-2 can be operated over a range of feedwater temperatures which affects the amount of subcooling in the core. The setpoint is removed from the TS since the turbine first stage pressure is highly dependent on the amount of subcooling in the core. Therefore, having a turbine first stage pressure setpoint value in the TS is not appropriate, and a more accurate approach is to adjust the setpoint through plant procedures while maintaining the 30% of rated power safety basis. These changes reflect the redefinition of rated conditions. They are consistent with the approach discussed in Section F.4.2(c) of (NRC approved LTRs) NEDC-31897P-1 and NEDO-31897 (LTR1). There is no significant impact on the transient safety analysis which establishes core thermal operating limits since T/G trips at this partial power value are not limiting. Therefore, there is no increase in the probability or consequences of an accident previously evaluated.

- *TS Bases 3/4.3.1 & 3/4.3.4* Explanation of 30% rated power bases for RPS and EOC-RPT bypasses.

To assure that the safety bases for the RPS and EOC-RPT bypasses (described above) are adequately addressed in the TS Bases, additional inputs are provided.

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot result in a significant increase in the probability or consequences of an accident previously evaluated.

- *TS Table 3.3.1-1 Notation (d), Table 3.3.2-1 Notation *, and Table 4.3.2.1-1 footnote* * - Increase in the reactor steam pressure value.

This value is based on the pressure used for the Reactor High Steam Dome Pressure Scram trip setpoint in TS Table 2.2.1-1. As the trip setpoint is being increased for power uprate, the pressure value is being equally increased. As the basis for the pressure value is unchanged, the change in the pressure value does not significantly increase the probability or consequences of an accident previously evaluated.

- *TS Table 3.3.2-2 Item 1.C.3* — Increase in main steamline high flow isolation differential pressure setpoint and allowable value.

The main steamline high flow trip TS changes reflect the redefinition of rated steam flow during uprated power operation and the application of current (NRC approved) setpoint methodology. The current analytical basis of 140% of rated steam flow is maintained for uprated operation to ensure that an adequate trip avoidance margin is maintained (e.g., for disturbances caused by full closure testing of MSIVs or turbine inlet valves). This approach is documented in Section

F.4.2.e of LTR1, and has been generically approved for BWR power uprates. The revised setpoints ensure that there is no effect on the probability of inadvertent isolation, and they have no effect on the probability of occurrence of a main steamline break. The same isolation initiation function for the main steam line break accident is maintained (see Section 5.1.2.6 of the licensing report). Therefore, the setpoint and allowable value changes do not significantly increase the probability or consequences of an accident previously evaluated.

- *TS Table 3.3.6-2 Items 1a and 2a* — Adjustments in Rod Block Monitor (RBM) and APRM flow biased rod block setpoint and allowable value equations.

The APRM rod block equations are the same as those in TS 3.2.2, which are addressed above. The current delta power between the APRM and RBM equations is maintained for power uprate with ELLL. The RBM rod blocks are used to limit localized power excursions due to any potential Rod Withdrawal Error (RWE). The limiting condition at power uprate with ELLL is no more severe than at the original power level, because the same power distributions are attainable at either power level, and control rod reactivity worths would then be equivalent. The response of the RBM system is also not affected by power uprate or ELLL, because its response is normalized to the initial conditions before the rod withdrawal. Therefore, the changes to the APRM and RBM flow biased rod block setpoint and allowable value equations cannot significantly increase the probability or consequences of an accident previously evaluated.

- *TS 3.4.2* — Increase of spring setpoints for the two lowest set SRVs and increase in the maximum setpoint tolerance from 1% to 3%.

The two lowest SRV setpoints are increased to accommodate the change in operating pressure after power uprate. This increase in the SRV setpoints ensures that approximately the same difference is maintained between the RPV pressure and the lowest SRV setpoint such that there is no increase in the number of unnecessary SRV actuations. The increase in the spring setpoints by the same amount as the increase planned for normal operation also maintains acceptable simmer margin for the SRVs. The SRVs are capable of operating at uprated temperatures and pressures as evaluated generically in Section 4.6 of LTR2. As described in Sections 3.2 and 9.1 of the licensing report and the SRV Setpoint Tolerance and Out-Of-Service Analysis report (GE-NE-187-24-0992, Rev.2), a higher RPV peak pressure results due to uprate conditions but it is maintained well within the ASME Code allowable peak pressure of 1375 psig. All the power uprate with ELLL safety analyses that take credit for the SRV's spring safety function conservatively assume that the SRVs actuate at 3% above their nominal lift settings. Therefore, no significant increase in the probability or consequences of an accident previously evaluated is caused by this change.

- *TS 3/4.4.6 & Figure 3.4.6.1* — Revised Minimum Reactor Vessel Metal Temperature vs. Reactor Vessel Pressure limits.

Power uprate increases the average neutron flux in the core, which could increase the integrated neutron fluence on the reactor pressure vessel (RPV) wall. ELLL has negligible or no effect on RPV fracture toughness. To account for the higher fluence, a RPV fracture toughness analysis was performed for power uprate. This analysis results in revised TS pressure vs. temperature curves, that maintain the current level of protection for the RPV. Therefore, power uprate will not result in a significant increase in the probability or consequences of an accident previously evaluated.

- *TS Bases 3/4.4.6, Table B 3/4.4.6-1 & Figure 3/4.4.6-1* - Revising pressure/temperature limits bases.

The pressure vs. temperature limits are revised for power uprate, and thus, the TS Bases should be revised to be consistent with the analysis for power uprate. Therefore, the TS figure numbers change, the neutron fluences basis (109.2% of original rated power) is updated, and the analysis results in Table B 3/4.4.6-1 are revised.

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot result in a significant increase in the probability or consequences of an accident previously evaluated.

- *TS 3.4.6.2 and TS.4.4.6.2* — Increase in the maximum allowable reactor steam dome operating pressure limit.

The operating pressure limit is increased by the same amount as the nominal operating pressure increase for power uprate. ELLL does not affect this TS limit. This change to the dome operating pressure limit is consistent with and meets the current design criteria used for evaluation of steady state operating conditions and for the most limiting event, i.e., vessel overpressure protection. The power uprate overpressure protection analysis results show the peak RPV pressure will remain below the ASME Code limit, and thus, the probability of a pressurization event causing an accident will not be significantly increased. This value change does not affect any accident radiological analysis. Therefore, there is no significant increase in the probability or consequences of an accident previously evaluated.

- *TS 3.5.1 Action e* - Increase in the allowable number of ADS valves that can be out-of-service (OOS) to two valves.

For power uprate with ELLL, the ECCS-LOCA analysis was conservatively performed based on one and two Automatic Depressurization System (ADS) valves out-of-service (OOS) and on 110% of original rated steam flow power plus a 2% uncertainty factor (3702 MWt). The analysis with one ADS valve OOS is documented in NEDC-32115P, Rev. 2. The (more conservative) analysis with two ADS valves OOS is documented in Section 5.3.4 of NEDC-32115P, Rev. 2 and Section 4.3.2 of GE-NE 187-24-0992, Rev. 2. Increasing the number of ADS valves OOS increases (by 178°F) the calculated (10CFR50 App. K) PCT to 1269°F. This result and all other ECCS-LOCA analysis results remain well below the 2200°F regulatory limit. The LOCA radiological analyses do not take credit for ADS, and thus, these analyses are not affected by this TS change. The number of available ADS valves does not affect the probability of any accident. Therefore, the increase in the allowable number of ADS valves that can be OOS will not involve a significant increase the probability or consequences of an accident previously evaluated.

- *TS Bases 3/4.5.1 and 3/4.5.2* - Revise ECCS bases for power uprate conditions and safety analysis.

Reactor pressure is increased for power uprate, which increases the pressure range at which the HPCS must be capable of operating. Therefore, the TS Bases are revised to show the uprated HPCS operating range.

As discussed above, an ECCS-LOCA analysis for power uprate assumed that two of the seven ADS valves are OOS, and the TS are modified based this analysis. Therefore the TS Bases are revised to show the safety analysis takes credit for only five ADS valves and two ADS valves are permitted OOS.

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot result in a significant increase in the probability or consequences of an accident previously evaluated.

- *New TS 1.31a, TS 4.6.1.1, TS 3.6.1.2, TS 4.6.1.2, TS 3.6.1.3, TS 4.6.1.3, TS Table 3.6.3-1 Note (f), and TS 4.6.6.1* — Add a new definition for Pa which gives the specific value of Pa, and simplify the TS by deleting the specific value of Pa and 1.10 Pa from the other locations in the TS.

The value of Pa is based on the peak calculated containment pressure from any design basis accident (LOCA), and is used in the TS containment leak rate testing per 10CFR50 App. J. The LOCA radiological analysis assumes that the containment will leak no more than allowed in the TS. Thus, to maintain the validity of the radiological analysis the containment leak rate testing must be based on a pressure $\geq$ the peak calculated containment pressure. For power uprate with ELLL and using the nominal value for the initial containment pressure, peak calculated containment pressure is 35.1 psig (an increase of < 1 psi), and it remains well below the 45 psig containment design pressure. Pa is revised to 38 psig, which increases the conservatism in the TS containment leak rate testing. Adding the new definition for Pa and deleting its specific value in numerous locations in the TS is proposed to simplify the TS, and thus, make TS compliance easier. Therefore, the Pa related TS changes will not cause a significant increase in the probability or consequences of an accident previously evaluated.

- *TS Bases 3/4.6.1.2, 3/4.6.1.5, 3/4.6.1.6 & 3/4.6.2* - Clarification of Primary Containment and Depressurization Systems Bases.

As discussed above, the containment was analyzed for power uprate with ELLL, a new definition for Pa is added, and the specific value of Pa is revised. The TS Bases are revised to be consistent with the analysis and TS changes.

For a LOCA from uprated conditions, the containment analysis shows that the reactor depressurizes from a higher pressure and the resulting suppression pool temperature after initial blowdown is slightly higher (but remains within the design limit). To be consistent with the uprated containment analysis, these values are revised in the TS Bases.

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot result in a significant increase in the probability or consequences of an accident previously evaluated.

- *TS 4.7.3b* — Increase in RCIC Surveillance Test Pressure.

The increase in the RCIC surveillance test pressure requires system testing at the higher operating pressure with power uprate. The RCIC system has been evaluated and demonstrated to be capable of injecting its design flow rate at the higher reactor pressure associated with power uprate. This evaluation is described in Section 3.8 of the licensing report. No credit for the RCIC system is taken in any accident analysis. Therefore, this TS change ensures that power uprate operation will not cause a significant increase in the probability or consequences of an accident previously evaluated.

(2) **Will the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

- *OL. C(1), TS 1.35* - Increase in Rated Thermal Power to 3486 MWt.

Equipment that could be impacted by power uprate or ELLL has been evaluated. No new operating mode, equipment lineup, accident scenario, or equipment failure mode has been identified. The full spectrum of accident considerations defined in Regulatory Guide 1.70 has been reviewed and no new or different kind of accident has been identified. Power uprate with ELLL uses already developed technology and applies it within the capabilities of existing plant equipment in accordance with presently existing regulatory criteria including NRC-approved codes, standards, and methods. GE has designed to higher power levels than the uprated power of WNP-2, and no new power dependent accidents have been identified. In addition, WNP-2 was originally designed to the proposed uprated steam flow (105%), and all of the original accident analyses with postulated radiological consequences were performed at that condition. The plant systems have been assessed and have been verified to be adequately designed and capable of performing their design intent at uprated operating conditions. Only minor changes to plant systems are required to implement uprated power with ELLL operation. Also, methods of plant operation at uprated power are virtually the same as before power uprate. Since there are no significant changes to the plant equipment or methods and consequences of operation, no new failure modes or accident scenarios are created. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The TS changes required to implement power uprate with ELLL require only minor changes to the configuration of the plant, and all the TS changes have been evaluated and are acceptable.

The Operating License (OL) and TS changes (all listed in Table 11-1 of the licensing report) will not create the possibility of a new or different kind of accident from any accident previously evaluated. The only TS change where there is the potential for creating the possibility of a new or different kind of accident is addressed below.

- *TS 3/4.4.6 & Figure 3.4.6.1* — Revised Minimum Reactor Vessel Metal Temperature vs. Reactor Vessel Pressure limits.

Power uprate increases the average neutron flux in the core, which could increase the integrated neutron fluence on the reactor pressure vessel (RPV) wall. ELLL has a negligible or no effect on RPV fracture toughness. To account for the higher fluence, a RPV fracture toughness analysis was performed for power uprate. This analysis results in revised TS pressure vs. temperature curves, that maintain the current level of protection for the RPV. Therefore, power uprate will not result in any new failure mode for the RPV, and thus, does not create the possibility of a new or different kind of accident from any accident previously evaluated.

- *TS Bases 3/4.4.6, Table B 3/4.4.6-1 & Figure 3/4.4.6-1* - Revising pressure/temperature limits bases.

The pressure vs. temperature limits are revised for power uprate, and thus, the TS Bases should be revised to be consistent with the analysis for power uprate. Therefore, the TS figure numbers change, the neutron fluences basis (109.2% of original rated power) is updated, and the analysis results in Table B 3/4.4.6-1 are revised.

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) Will the change involve a significant reduction in a margin of safety?

As discussed below, power uprate with ELLL will not involve a significant reduction in a margin of safety.

The plant was originally designed for operation at 105% of rated steam flow. As previously discussed, no change is required in fuel design or safety limits. The MAPLHGR limits remain the same. Due to power uprate, the Operating Limit MCPR (OLMCPR) is expected to increase slightly (~0.02), to ensure that the margin to the Safety Limit MCPR (SLMCPR) is maintained. The OLMCPR and SLMCPR will be confirmed for each operating fuel cycle in the cycle specific reload analysis. Only minor changes to plant equipment are required to accommodate power uprate with ELLL, and the methods and sequences of operation are essentially unchanged. The entire plant design has been reviewed to ensure that plant equipment will perform properly, and will still meet original design and licensing criteria. Although, as discussed herein, some analyses produce results somewhat closer to the related acceptance criteria, results remain within those criteria. The safety margins prescribed by the Code of Federal Regulations have been maintained by meeting the appropriate regulatory criteria. Similarly, the margins provided by the application of the ASME design acceptance criteria have been maintained where applicable, as well as other margin-assuring acceptance criteria used to judge the acceptability of the plant. Several accident and transient analyses have been re-performed at greater than uprated power (based on 110% of original rated steam flow plus a 2% power uncertainty factor where appropriate) with ELLL (as applicable) plant operating conditions consistent with the requested TS changes.

The TS changes ensure that plant and system performance parameters are maintained within the values assumed in the uprated safety analyses. That is, the TS parameters (i.e., setpoints, allowable values, operating limits, etc.) are selected such that the actual equipment is maintained equal to or conservative with respect to the assumptions used in the safety analyses. Proper account is taken of inaccuracies introduced by instrument drift, instrument accuracy, and calibration accuracy (consistent with Regulatory Guide 1.105). This ensures that the actual plant responses will not exceed those represented by the safety analyses. Similarly, the TS address equipment operability and put limits on equipment out-of-service (not available for use) times such that the actual plant can be expected to have at least the complement of equipment available to mitigate with plant transients assumed in the safety analyses. Since the power uprate with ELLL safety analyses show that the results are acceptable within regulatory limits, the plant would be expected to produce milder responses to transients and accidents than the calculated results in the uprated safety analyses, to thereby assure the public health and safety. TS changes consistent with the uprated power level and ELLL are made in accordance with methodology already approved for the plant and continue to provide a comparable level of protection as TS previously issued by the NRC for WNP-2.

For power uprate with ELLL, the ECCS-LOCA analysis was conservatively performed based on two Automatic Depressurization System (ADS) valves out-of-service (OOS) and the power level corresponding to 110% of original rated steam flow plus a 2% power uncertainty factor (3702 MWt). The analysis results remain well below the 2200°F regulatory limit, and thus, there is no decrease in margin of safety with respect to ECCS performance. Based on this analysis, the TS are revised to allow for up to two ADS valves OOS.

For power uprate with ELLL, the overpressurization and containment analyses were re-performed based on 3702 MWt, using the increased operating dome pressure and safety relief valve setpoints. At uprated conditions, a slightly higher peak reactor vessel pressure results, but remains below the 1375 psig ASME code limit and below the 1325 psig dome pressure TS safety limit. Therefore, there is no decrease in margin of safety with respect to overpressurization. From the containment analysis, the peak containment pressure increases from 34.7 psig to 35.1 psig, remains well below the 45 psig containment design pressure, and thus, the margin of safety is not affected. The TS value of Pa is used for 10CFR50 App. J testing, and must be ≥ the peak calculated containment pressure. For power uprate with ELLL, the value of Pa is conservatively chosen to be 38 psig.

The radiological doses of several design basis accidents including the DBA/LOCA accident were recalculated at 3486 MWt plus 2% uncertainty factor added for conservatism. When compared on a consistent basis, power uprate would result in an increased dose of about 2%, due to the additional 2% uncertainty factor. The recalculated doses are not directly comparable on a consistent basis to previous calculations since the uprated analyses use updated input variables. However, it has been demonstrated that the recalculated doses remain well within the acceptance criteria of 10CFR100. This 2% increase in calculated dose does not constitute a significant reduction in the margin of safety.

As previously discussed, in each case the relevant acceptance criteria is met which preserves the margin of safety provided by these criteria. It is therefore concluded that the requested changes do not involve a significant reduction in any margin of safety.

- *OL. C(1), TS 1.35* - Increase in Rated Thermal Power to 3486 MWt.

Power uprate will not involve a significant reduction in a margin of safety, since the licensing evaluations were performed either at plant conditions higher than the proposed uprate conditions, or used approved methodologies which incorporate appropriate allowances for uncertainties. As discussed throughout the licensing report and in Section 5 of LTR1, the safety margins prescribed by the Code of Federal Regulations have been maintained by meeting the appropriate regulatory criteria. Similarly, the margins provided by the application of the American Society of Mechanical Engineers (ASME) design acceptance criteria where applicable have been maintained (e.g., see Section 3.2 of the licensing report). Other margin-assuring acceptance criteria have also been maintained.

- *TS Table 2.2.1-1* — Reactor Protection System (RPS) Instrument Setpoints

The analytical limits for the revised Flow Biased Simulated Thermal Power scram equations and clamps were used in the transient safety analysis for power uprate with ELLL. This analysis determines the effects of power uprate with ELLL on the plant OLMCPR. As discussed above, the transient analysis shows that power uprate with ELLL will have only a small effect on CPR, and the margin of safety to the SLMCPR will be maintained.

The increases in steam dome high pressure scram instrument setpoint and allowable values are made to ensure that there is no significant increase in the frequency of scrams due to operation at the higher pressure. The analytical limit for the high pressure scram setpoint is increased by the same amount as the increase in the planned operating pressure. Currently approved setpoint methodology was used to determine the allowable values and trip setpoints. This maintains the same level of protection and scram trip avoidance as originally provided, and thus, these TS changes will not reduce the margin of safety.

- *TS 3.2.2* — Adjustments in APRM flow biased scram and rod block setpoint and allowable value equations.

The scram equations are the same as those in TS Table 2.2.1-1, and the evaluation for these equations is described above. The power uprate with ELLL transient safety analysis take no credit for the APRM rod blocks, and thus, changes in the rod block equations cannot reduce the margin of safety with respect to plant transients. The current margin (9%) between the scram line and rod block line is maintained for power uprate with ELLL. Therefore, the adjustments in APRM flow biased scram and rod block setpoint and allowable value equations cannot significantly reduce the margin of safety.

- *TS 3/4.2.6, Figures 3.2.6-1, 3.2.7-1, 3.2.8-1 & 3.4.1.1-1* — The TS LCO power limit and the power limits in the figures are revised to reflect the new definition of rated thermal power in terms of megawatts thermal.

To maintain the same level of protection against a potential thermal-hydraulic instability, the TS percent power values and power ranges are reduced by a factor equal to the power increase (1/1.049). Therefore, there is no change in the previously evaluated potential for initiation of core thermal-hydraulic instability. The parameters being changed do not affect any accident analysis. Therefore, these TS changes cannot reduce the margin of safety.

- *TS Bases 3/4.2.6, 3/4.2.7 & 3/4.2.8* - Clarification of 80% rod line.

The core thermal-hydraulic instability TS are based on limiting power to below the 80% rod line until core flow reaches 45%. For power uprate, the absolute power range (in MWt) of the restricted power/flow zone does not change. Therefore, to be consistent with the above proposed TS changes, references to the 80% rod line should be clarified to reflect that they are based on original rated thermal power (3323 MWt).

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot result in a significant reduction in margin of safety.

- *TS Table 3.3.1-1 Action 6 & Notation (i), and Table 3.3.4.2-1 footnote (b)* - Clarification of the power level (30% of rated power) at which RPS and EOC-RPT trips may be bypassed (i.e., not needed).

The specific setpoint based on turbine first stage pressure for the bypass of RPS T/G trip scram and EOC-RPT at 30% of rated power are deleted to be consistent with power uprate with ELLL range of conditions. As discussed in Question (1), having a turbine first stage pressure setpoint value in the TS is not appropriate, and a more accurate approach is to adjust the setpoint through plant procedures while maintaining the 30% of rated power safety basis. Therefore, these TS changes will not significantly reduce the margin of safety.

- *TS Bases 3/4.3.1 & 3/4.3.4* Explanation of 30% rated power bases for RPS and EOC-RPT bypasses.

To assure that the safety bases for the RPS and EOC-RPT bypasses (described above) are adequately addressed in the TS Bases, additional inputs are provided.

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot result in a significant reduction in margin of safety.

- *TS Table 3.3.1-1 Notation (d), Table 3.3.2-1 *, and Table 4.3.2.1-1 footnote ** - Increase in the reactor steam pressure value.

This value is based on the pressure used for the Reactor High Steam Dome Pressure Scram trip setpoint in TS Table 2.2.1-1. As the trip setpoint is being increased for power uprate, the pressure value is being equally increased. As the basis for the pressure value is unchanged, the change in the pressure value does not significantly reduce the margin of safety.

- *TS Table 3.3.2-2 Item 1.C.3* — Increase in main steamline high flow isolation differential pressure setpoint and allowable value.

The main steamline high flow trip TS changes reflect the redefinition of rated steam flow during uprated power operation and the application of current setpoint methodology. The current analytical basis of 140% of rated steam flow is maintained for uprated operation to ensure that an adequate trip avoidance margin is maintained (e.g., for disturbances caused by full closure testing of MSIVs or turbine inlet valves). As the safety basis for the revised setpoint and allowable value does not change, these TS changes will not significantly reduce the margin of safety.

- *TS Table 3.3.6-2 Items 1a and 1b* — Adjustments in Rod Block Monitor (RBM) and APRM flow biased rod block setpoint and allowable value equations.

The APRM rod block equations are the same as those in TS 3.2.2, which are addressed above. The safety implications of these changes are addressed in Question 1, and are negligible. Plus, the current delta power between the APRM and RBM equations is maintained for power uprate with ELLL. Therefore, the changes to the APRM and RBM flow biased rod block setpoint and allowable value equations will not significantly reduce the margin of safety.

- *TS 3.4.2* — Increase of spring setpoints for the two lowest set SRVs and increase in the maximum setpoint tolerance from 1% to 3%.

The two low set SRV setpoints are increased to accommodate the change in operating pressure after power uprate. This increase in the SRV setpoints ensures that approximately the same difference is maintained between the RPV pressure and the lowest SRV setpoint such that there is no increase in the number of unnecessary SRV actuations. The increase in the spring setpoints by the same amount as the increase planned for normal operation also maintains acceptable simmer margin for the SRVs. All the power uprate with ELLL safety analyses that take credit for the SRV's spring safety function conservatively assume that the SRVs actuate at 3% above their nominal lift settings. The safety analyses demonstrate that current safety criteria will continue to be met, and therefore, the margin of safety will not be significantly reduced.

- *TS 3/4.4.6 & Figure 3.4.6.1* — Revised Minimum Reactor Vessel Metal Temperature vs. Reactor Vessel Pressure limits.

Power uprate increases the average neutron flux in the core, which could increase the integrated neutron fluence on the reactor pressure vessel (RPV) wall. ELLL has a negligible or no effect on RPV fracture toughness. To account for the higher fluence, a RPV fracture toughness analysis was performed for power uprate. This analysis results in revised TS pressure vs. temperature curves, that maintain the current level of protection for the RPV. Therefore, power uprate will not significantly reduce the margin of safety.

- *TS Bases 3/4.4.6, Table B 3/4.4.6-1 & Figure 3/4.4.6-1* - Revising pressure/temperature limits bases.

The pressure vs. temperature limits are revised for power uprate, and thus, the TS Bases should be revised to be consistent with the analysis for power uprate. Therefore, the TS figure numbers change, the neutron fluences basis (109.2% of original rated power) is updated, and the analysis results in Table B 3/4.4.6-1 are revised.

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot significantly reduce the margin of safety.

- *TS 3.4.6.2 and TS.4.4.6.2* — Increase in the maximum allowable reactor steam dome operating pressure limit.

The operating pressure limit is increased by the same amount as the nominal operating pressure increase for power uprate. This pressure LCO is based on the initial reactor pressure assumed in the overpressure protection analysis. As discussed above, the power uprate overpressure protection analysis results show the peak RPV pressure will remain below the ASME Code limit, and thus, the margin of safety will not be significantly reduced.

- *TS 3.5.1 Action e* - Increase in the allowable number of ADS valves that can be out-of-service (OOS) to two valves.

As described above, a power uprate with ELLL ECCS-LOCA analysis was conservatively performed based on two Automatic Depressurization System (ADS) valves (OOS). This analysis is documented in Section 5.3.4 of NEDC-32115P, Rev. 2 and Section 4.3.2 of GE-NE 187-24-0992, Rev. 2. The margin of safety is based on the peak clad temperature (PCT) being below the 2200°F regulatory limit. As the calculated PCT from the power uprate with ECCS-LOCA analysis is well below this regulatory limit, the margin of safety is not reduced.

- *TS Bases 3/4.5.1 and 3/4.5.2* - Revise ECCS bases for power uprate conditions and safety analysis.

Reactor pressure is increased for power uprate, which increases the pressure range at which the HPCS must be capable of operating. Therefore, the TS Bases are revised to show the uprated HPCS operating range.

As discussed above, an ECCS-LOCA analysis for power uprate assumed that two of the seven ADS valves are OOS, and the TS are modified based on this analysis. Therefore the TS Bases are revised to show the safety analysis takes credit for only five ADS valves and two ADS valves are permitted OOS.

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot significantly reduce the margin of safety.

- *New TS 1.31a, TS 4.6.1.1, TS 3.6.1.2, TS 4.6.1.2, TS 3.6.1.3, TS 4.6.1.3, TS Table 3.6.3-1 Note (f), and TS 4.6.6.1* — Add a new definition for Pa which gives the specific value of Pa, and simplify the TS by deleting the specific value of Pa and 1.10 Pa from the other locations in the TS.

The value of Pa is based on the peak calculated containment pressure from any design basis accident (LOCA), and is used in the TS containment leak rate testing per 10CFR50 App. J. The revised Pa for power uprate with ELLL increases the conservatism in the TS containment leak rate testing, and thus, does not involve a significant reduction in margin of safety.

- *TS Bases 3/4.6.1.2, 3/4.6.1.5, 3/4.6.1.6 & 3/4.6.2* - Clarification of Primary Containment and Depressurization Systems Bases.

As discussed above, the containment was analyzed for power uprate with ELLL, a new definition for Pa is added, and the specific value of Pa is revised. The TS Bases are revised to be consistent with the analysis and TS changes.

For a LOCA from uprated conditions, the containment analysis shows that the reactor depressurizes from a higher pressure and the resulting suppression pool temperature after initial blowdown is slightly higher (but remains within the design limit). To be consistent with the uprated containment analysis, these values are revised in the TS Bases.

As TS Bases are provided for information only and are not used in plant operations, a TS Bases change cannot significantly reduce the margin of safety.

- *TS 4.7.3b* — Increase in RCIC Surveillance Test Pressure.

The RCIC surveillance test pressure was increased to provide periodic demonstration of the ability of RCIC system to perform (as assumed in the safety analyses) at the higher operating pressure associated with power uprate conditions. An evaluation of the RCIC system confirmed its ability to operate at slightly higher turbine speed and provide its design flow rate at power uprate conditions. Therefore, the margin of safety provided by the RCIC system is not significantly decreased.

Conclusions

This assessment describes investigations made for a power uprate to 3486 MWt (equivalent to 105% of original rated steam flow) with a minimum allowable full power core flow (ELLL domain) of 88%. A 5% increase in steam flow was factored into the original design basis for WNP-2. Major analyses (i.e., overpressurization, transients, ECCS/LOCA, and the radiological consequences of the DBA/LOCA) were originally performed at about 104.3% of original rated power, and were previously approved by the NRC. Those analyses were re-performed at ≥ 3486 MWt + 2%, and remain well within regulatory limits. Having arrived at negative declarations with respect to these considerations of 10CFR50.92, this assessment concludes that uprated power (3486 MWt) with ELLL operation does not involve a significant hazards consideration for WNP-2.

ATTACHMENT 2

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