ENCLOSURE 2

Non-Proprietary Version

MFN 07-445 Supplement 3

Replacement Pages for GEH Topical Report NEDE-32906P, Supplement 3, *Migration to TRACG04/PANAC11 from TRACG02/PANAC10 for TRACG AOO and ATWS Overpressure Transients*

IMPORTANT NOTICE

This is a non-proprietary version of Enclosure 1 to MFN 07-445 Supplement 3, from which the proprietary information removed. Portions of the enclosure that have been removed are indicated by open and closed double square brackets as shown here [[ ]]

7.0 COMBINATION OF UNCERTAINTIES

The change in code streams from PANAC10 / TRACG02 to PANAC11 / TRACG04 does not affect the existing statistical methodology. As a result, the method for statistical combination of uncertainties remains unchanged from that presented in [1].

7.1 Statistical Analysis for Qualification Events

Because the data presented in Section 7.6 of [1] was produced using PANAC10 / TRACG02, a new comparison with the Peach Bottom turbine trip tests using PANAC11 / TRACG04 will be presented here to demonstrate the relative effect of the new code versions on this data comparison.

7.1.1 Peach Bottom Turbine Trip Comparison

The "TRACG Nominal - Rev. 2" data from [1] has changed slightly [[

]]. These same inputs are reflected in both the TRACG02 and TRACG04 calculated results that are presented here in order to provide an equivalent basis for comparing the two codes. Note that the TRACG04 results are also the same as those contained in [11]. The 2-sigma error bands from the earlier TRACG02 calculations in [1] are shown here superimposed on the updated TRACG02 results to provide some indication of the level of significance for the differences in the TRACG02 and TRACG04 calculated results. See Figure 7-1 through Figure 7-6 for the results comparisons for each of the three Peach Bottom tests.

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Figure 7-1: PB TT Test 1 Power Response

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Figure 7-2: PB TT Test 1 Pressure Response

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Figure 7-3: PB TT Test 2 Power Response

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Figure 7-4: PB TT Test 2 Pressure Response

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Figure 7-5: PB TT Test 3 Power Response

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Figure 7-6: PB TT Test 3 Pressure Response

The pressure responses are quite similar between TRACG02 and TRACG04. Both codes tend to slightly under predict the longer term pressure responses for the lower power TT1 and TT2 tests. With respect to the power results, both codes conservatively over predict the response for the lowest power TT1 test but do an excellent job of predicting the measured power for the higher power TT2 and TT3 tests. The results show that TRACG04 is capable of accurately modeling the Peach Bottom turbine trip test data. For these comparisons to test data, the TRACG04 code produces essentially the same calculated results as TRACG02.

10.0 REFERENCES

[1] J. G. M. Andersen, et. al., *TRACG Application for Anticipated Operation Occurrences Transient Analysis*, NEDE-32906P, Revision 2, February 2006.

[2] *TRACG Application for Anticipated Transient Without SCRAM Overpressure Transient Analyses*, NEDE-32906P, Supplement 1, September 2002.

[3] MFN-115, Letter from G. B. Stramback (GE) to M. B. Fields (USNRC), *Transient CPR Calculation for TRACG (TRACG Application for Anticipated Operational Occurrences Transient Analyses, NEDE-32906P, Supplement 2, October 2004)*, November 3, 2004.

[4] J. G. M. Andersen, et. al., *TRACG Model Description*, NEDE-32176P, Rev. 3, April 2006.

[5] Letter from S. A. Richards (NRC) to G. A. Watford (GE), *Amendment 26 to GE Licensing Topical Report NEDE-24011-P-A, "GESTAR II" – Implementing Improved GE Steady-State Methods (TAC No. MA6481)*, FLN-1999-011, November 10, 1999.

[6] *American National Standard for Decay Heat Power in Light Water Reactors*, ANSI/ANS-5.1-1979.

[7] *American National Standard for Decay Heat Power in Light Water Reactors*, ANSI/ANS-5.1-1994.

[8] R. W. Shumway, *TRAC-BWR Heat Transfer: Assessment of Tmin*, EGG-RST-6781, October 1984.

[9] J. V. Cathcart and R. E. Pawel, *Zirconium Metal-Water Oxidation Kinetics: IV. Reaction Rate Studies*, ORNL/NUREG-17, August 1977.

[10] F. T. Bolger and M. A. Holmes, *TRACG Application for Anticipated Transients without Scram Overpressure Transient Analyses*, NEDE-32906P, Supplement 1 -A, November 2003.

[11] J. G. M. Andersen, et al., *TRACG Qualification*, NEDE-32177P, Rev. 3, August 2007.