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May 29, 1987

Distribution: Chang

(Return to WM, 623-SS)

Mr. K. C. Chang
Mail Stop 623-SS
US Nuclear Regulatory Commission
Washington DC 20555

87 JUN -1 P2:14

Dear Kien:

SUMMARY OF EFFORT, MAY 24 - MAY 29, 1987

This letter describes the tasks which have been addressed during the time period indicated.

1. The status of the PC version of the Methodology Demonstration Model is as follows:

- The routines for constructing the time-diffusivity-temperature data base are completed and operational. The data base is a lattice of temperature values corresponding to 10 values of diffusivity and 16 values of time. This 3-D "sheet" of temperatures is referred to as the Thermal Response Surface.

- The routines for interpolation between the lattice values of the TRS are operational.

- The random number generator, based on a subtractive method due to D. Knuth, is operational. It is presently limited to the generation of uniform deviates; other distributions (Gaussian, Poisson, etc.) can be developed but the Demo. Model uses only the uniform distribution.

- The decay heat profile is taken from the four-rate fit from Zaremba by way of ORIGEN2. This is included in the operational TRS code.

- The uniform corrosion models (BWIP/Brookhaven) are currently being debugged.

- The run-times appear to be acceptable; each simulation after the first takes about 3 seconds. The first run takes approximately two minutes; this involves the generation and interpolation of the first and second derivatives, wrt time and diffusivity, which are required for temperature interpolation. The construction of the TRS data base takes a few minutes but this will be done off-line and stored as data. The total time for operator inputs, in response to queries from the terminal, is one to four minutes, depending on the extent of the desired parameter changes.

2. A refined and corrected version of the transport model TRANS3 was provided to Ken Stephens for inclusion in the finalized Methodology Demonstration Report.

Enclosed is a Voucher for Professional Services for this time period.

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The tasks planned for the next period are:

1. Work towards completion and inclusion of the uniform corrosion models.

2. Begin coding the pitting corrosion model.

If you have any questions, please call me.

Very Truly Yours,

Gary

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