

Don Carlson
x 3307

From: "Calvin M. Hopper" <hoppercm@ornl.gov>
To: Tim Harris <TEH@nrc.gov>
Date: Wed, Jan 3, 2001 11:01 AM
Subject: Re: Russian Info

Tim,

I hope and expect you had a grand time with your family in the snow up north and many fun stories from the experience.

Yes, the Russian experiments with SiO₂ and HEU or Pu are published. They are in the September 2000 Edition compact disc, document number NEA/NSC/DOC(95)03, International Handbook of Evaluated Criticality Safety Benchmark Experiments (IHECSBE) that NRC should have. Those published benchmark experiments do not have KENO models. The Russians used their own codes for calculating the benchmarks. Karla has modeled the SiO₂ and HEU benchmarks with KENO-V.a but the models have not been verified. KENO-VI would be easier to use for modeling but we could not perform the sensitivity/uncertainty analyses that we wanted to do. We can share the KENO-V.a models with Meraj but we need assurances that Meraj will verify the models adequacy before he uses them and that he give proper credit to Karla and ORNL for the tedious modeling of the experiments that was funded by the IHECSBE Project.

The models are rather substantial but they could easily be e-mailed to Meraj.

Calvin

P.S. Karla's KENO-V.a results using the 238-Group ENDFB/V library look like the following:

bfs79 (E) case	Calculated (C) C/E keff	Experimental calculated keff	Experimental reported ratio	EALF	EALF
1	0.9988 ± 0.0009	1.0007	0.9981	42.9	51.5
2	1.0042 ± 0.0009	1.0011	1.0031	11.4	10.6
3	0.9976 ± 0.0008	1.0012	0.9964	1.71	1.48
4	1.0057 ± 0.0009	1.0016	1.0041	178.	206.
5	0.9949 ± 0.0009	1.0005	0.9944	5240.	5150.

Not shabby at all. Initially there were substantial biases (e.g., as much as 1.5%) when we had to make and assume larger approximations to the models whereas these latest models are very nearly realistically detailed.

Case 5 was the least moderated of the bunch whereas case 1 was the most moderated of the bunch.

At 07:45 AM 1/3/01 -0500, you wrote:
 >Calvin,

B/13