SUMMARY OF UK INTEGRAL BENCHMARK RESULTS FOR JEF 1993/94

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1. REPORTS

The results of the Integral Benchmarking Studies for 1992/93 in the Reactor Physics, Criticality and Shielding areas are available in the following JEF Documents:

1. Influence of Delayed Neutron Importance of Calculated K-eff for Thermal System. N T Gulliford.

2. Summary of an Assessment of JEF2.2 Nuclear Data Library for LWR Lattice Calculations. D Hanlon and N T Gulliford.

3. Assessment of JEF2.2 Nuclear Data Library for Fuel Transport Flask Criticality Calculations. D Hanlon.

4. Benchmarking of JEF2.2 with MONK. N R Smith, D Hanlon and A K Ziver.

5. JEF2.2 Benchmark Calculations for Thermal Reactor Pin Cells Using WIMS at Winfrith. R J Perry and C J Dean.

6. Summary of Calculations for the Intermediate Spectrum Cells of ZEBRA 8 Using the ECCO Code. D Hanlon and N T Gulliford.

7. Benchmark Testing of JEF2.2 Data for Shielding Applications: Analysis of Winfrith Iron 88 Benchmark Experiment. G Wright and M Grimstone.

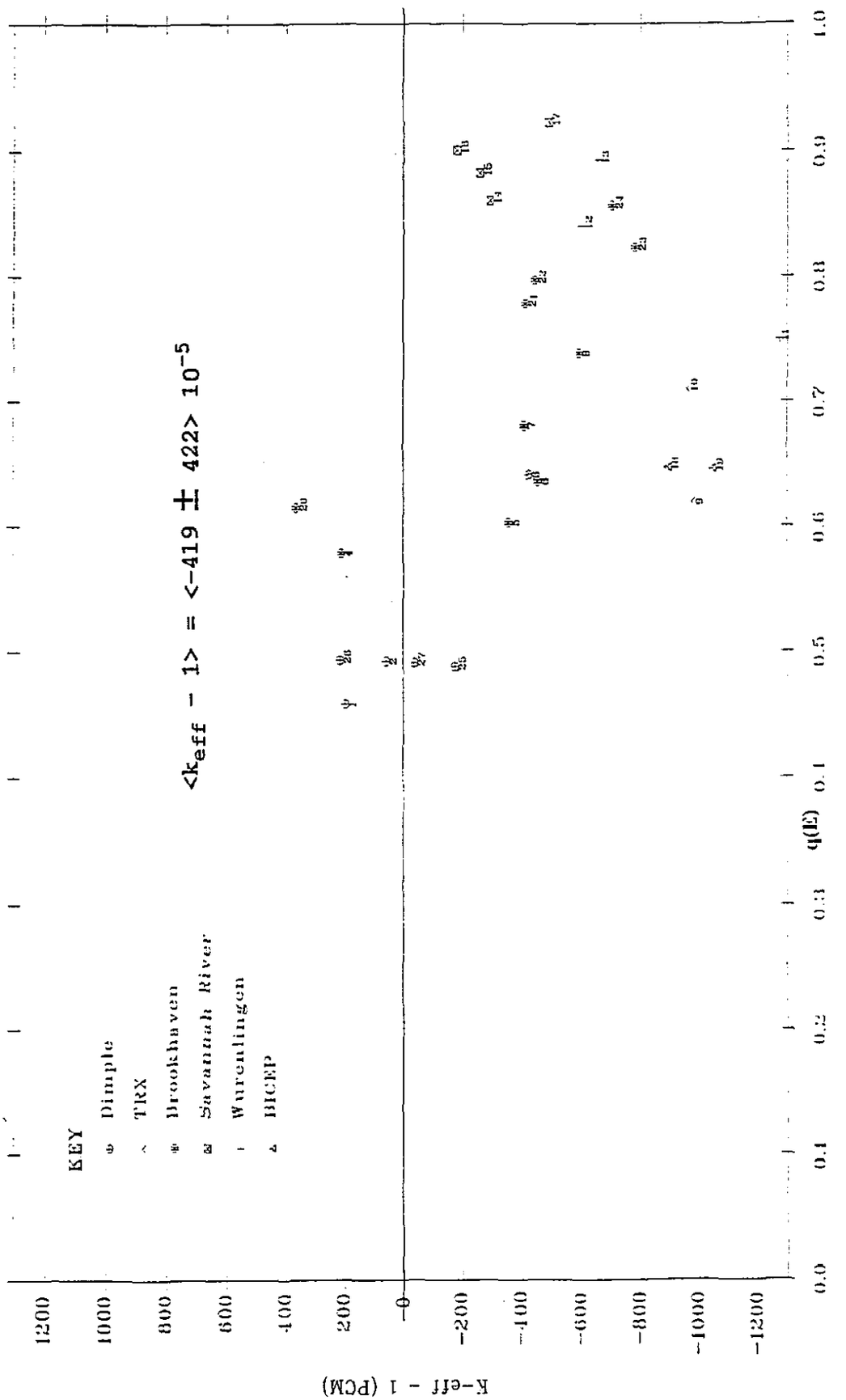
8. Benchmark Testing of JEF2.2 Data for Shielding Applications: Analysis of Winfrith Water Benchmark Experiment. H Locke and G Wright.

2.2 Fuel Transport Flask Experiments DIMPLE Cores S02 and S05 (Report No. 3)

Benchmark Experiment	Mean UKNDL $\frac{C-E}{E}$	Mean JEF2.2 $\frac{C-E}{E}$
S02A	0.007	0.007
S02B	-0.004	-0.007
S02C	-0.003	-0.006
S02D	-0.002	-0.006
S02E	0.002	-0.001
S02G	0.008	0.003
S02H	0.006	0.004
S02I	0.004	-0.002
S02J	0.013	0.014
S02K	0.021	0.018
S02N	-0.002	-0.006
S02O	0.011	0.010
S02R	0.009	0.009
S02S	0.008	0.007
S02T	-0.018	-0.020
S02V	-0.007	-0.008
S05A	0.009	0.007
S05B	0.006	0.008
Mean	0.004±0.009	0.002±0.009

2.3 MONK6 Benchmarks (Report No. 4)

Benchmark Experiment	Mean UKNDL $\frac{C-E}{E}$	Mean JEF2.2 $\frac{C-E}{E}$
Validation Case 1 2.35wt% enriched UO_2 lattice (Various absorbers)	0.0046	0.0004
Validation Case 2 4.742wt% enriched UO_2 lattices		
under moderation	0.0110	0.0071
optimum moderation	0.0097	0.0051
over moderation	0.0048	0.0028
Validation Case 3 4.31wt% enriched UO_2 lattice (Various absorbers)	0.0034	-0.0007
Validation Case 4 Homogeneous Pu(11.5wt% ^{240}Pu)O_2/polystyrene parallelopipeds with Plexiglas reflector	0.0186	0.0120
Validation Case 6 Homogeneous PuO_2/UO_2/polystyrene parallelopipeds with Plexiglas reflector (Various Pu enrichments)	0.0250	0.0323



2.5 ZEBRA 8 Experiments Using ECCO (Report No. 6)

Comparisons of $(\frac{C-E}{E})\%$ for k^{00}

Cell	ECCO 3D	MURAL 3D
A/2	-1.3±0.6	0.0±0.6
B	0.0±0.3	0.4±0.2
C/2	-1.4±0.4	-0.5±0.4
D	-0.3±0.4	0.3±0.4
E	-1.6±0.7	-0.4±0.7
F/2	-0.3±0.4	1.0±0.4
H	0.8±0.3	-0.5±0.3
RMS Value	1.0%±0.46%	0.52%±0.46%

Comparisons of $(\frac{C-E}{E})\%$ for $\frac{C8}{F9}$ Reaction-Rate Ratios

Cell	ECCO 3D	MURAL 3D
8A/2	3.1±2.3	-0.1±2.3
8B	0.4±2.1	-0.5±2.1
8C/2	0.8±1.2	-0.8±1.2
8D	1.8±1.8	1.0±1.8
8E	1.2±1.6	-0.2±1.6
8F/2	3.3±1.3	0.8±1.3
8H	1.5±1.5	3.7±1.5
RMS Value	2.0%±1.73%	1.5%±1.73%

Comparisons of $(\frac{C-E}{E})\%$ for $\frac{F8}{F9}$ Reaction-Rate Ratios

Cell	ECCO 3D	MURAL 3D
8/A	1.8±3.1	-0.4±3.1
8B	1.7±2.8	-1.7±2.8
8C/2	3.0±3.2	0.0±3.2
8D	4.5±3.5	3.5±3.5
8E	3.5±4.3	2.9±4.3
8F/2	-5.9±3.3	-6.6±3.3
8H	2.9±2.0	2.2±2.0
RMS Value	3.6%±3.2%	3.2%±3.2%