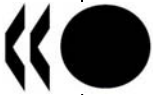


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NEA/NSC/DOC(2004)17



Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

10-Nov-2004

English - Or. English

**NUCLEAR ENERGY AGENCY
NUCLEAR SCIENCE COMMITTEE**

**NEA/NSC/DOC(2004)17
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INTERNATIONAL REACTOR PHYSICS BENCHMARK EXPERIMENTS (IRPhE) PROJECT

Summary of the First Meeting of the Technical Review Group

**27-28 October 2004
OECD Headquarters, Paris, France**

JT00173547

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English - Or. English

Nuclear Science Committee

**First International Reactor Physics Benchmark Experiments (IRPhE) Project
Technical Review Group Meeting**

OECD, Paris
27-28 October 2004

SUMMARY

The International Reactor Physics Benchmark Experiments Project (IRPhEP) Technical Review meeting was held in Paris, France, 27-28 October 2004, where the technical review group met for the first time. It was chaired by J. Blair Briggs, who was designated by the IRPhE Executive Group. A total of 18 participants from United States, Russian Federation, United Kingdom, France, Japan, Hungary, and Germany attended the meeting. Four evaluations considered to be nearing publication state were formally discussed at the meeting. Seven evaluations still requiring independent review were also discussed. The status of an additional twelve evaluations in progress was also reported, as well as the status for future evaluations (Preliminary Assessment of Existing Experimental Data for Validation of Reactor Physics Codes and Data for NGNP Design and Analysis; Measurement of isotopic compositions and gamma scans from VVER-440 and VVER-1000 spent fuel; Experiments to be considered in the HTR area).

The final meeting agenda (Annex 1) and a list of IRPhEP participants and those having attended the first review meeting are enclosed (Annex 2).

Proceedings of the October 2004 Meeting

- The group discussed the revised format guide, version 8.5. Blair Briggs will revise the guide and submit it to the group before the end of November. Participants will be asked to review the guide and report any additional changes to Blair Briggs. The identification of the updated version will be 8.6.
- The group was reminded that summaries to evaluations should be provided for each evaluation by evaluators. Summaries should be reviewed and approved by both internal and independent reviewers. Summaries will be linked, rather than included in the actual evaluation.
- The group agreed that data not being evaluated should still be mentioned in the appropriate sections for preservation purposes.
- When an evaluation is reviewed by two or more independent reviewers, the cover page will indicate which sections were reviewed by which reviewers.
- It should be noted on figures contained in the evaluations if they were drawn to scale or not to scale.
- The group agreed that the notation $100(C-E)/C$ would be the standard notation and these values should always appear in Section 4.
- Personal communications with experimenters should be documented as footnotes within evaluations.

- The group was reminded that for each section, where applicable, a conclusion of acceptability should be added.
- The preferred standard format for numbering tables and figures will be to number sequentially within sections (e.g., For Section 2.0 tables/figures, label as Table/Figure 2.1, 2.2, etc.). Tables/figures should be numbered consistently within each evaluation.
- The meaning of compilation and evaluation and what work needs to be carried out for approval at the review meetings was clarified. The different chapters for each experiment will contain:
 - Description
 - Evaluation (including sensitivity analysis of measured parameters described previously, but for which no uncertainty was measured or evaluated during the measurement campaign)
 - Benchmark specification
 - Sample results
 - An Appendix with the code input as example of the benchmark
 - Other information that is produced (e.g. comparison between different evaluators of code results not measured) should be provided in an additional appendices.

Each of the evaluation sections or chapters require conclusions. Conclusions should also be summarized in Sections 1.0 and 1.X.1

- Specific tasks to be carried out have been discussed again and agreed on relative to Quality Assurance. Each experiment evaluation must undergo a thorough internal review by the evaluator's organization. The internal reviewers must verify:
 - The accuracy of the descriptive information given in the evaluation by comparison with the original documentation (published and unpublished)
 - That the benchmark specification can be derived from the descriptive information given in the evaluation
 - The completeness of the benchmark specification
 - The results and conclusions
 - Adherence to format

In addition, each experiment must undergo an independent peer review by another working group member at a different facility. Starting with the evaluator's submittal in the appropriate format, the independent peer reviewers must verify:

- That the benchmark specification can be derived from the descriptive information given in the evaluation
- The completeness of the benchmark specification
- The results and conclusions
- Adherence to format

A third review by the Working Group verifies that the benchmark specification and the conclusions are adequately supported.

- The co-ordination with ICSBEP was addressed. This was found of particular importance because of the common interest in the critical configurations. It was unanimously agreed that
 - any activity leading to duplication of effort would be avoided because of cost in resources, and the need of coherence and consistency between the two projects.
 - the critical configuration description and evaluation, if included in ICSBEP, would be adopted as is for IRPhE, and made accessible by a hyperlink to the ICSBEP file copied

into the IRPhE database. Feedback from IRPhE must be reported to ICSBEP, reviewed by them and, if adopted, the corresponding file would be copied to IRPhE.

- The critical configuration and evaluation that is carried out as the first chapter of IRPhE if of interest to ICSBEP, and if found appropriate, would simply be copied as is with all the other chapters into ICSBEP, where it can be accessed via a hyperlink.
- It was agreed that an electronic IRPhE listserv or evaluator/reviewer forum be established at the NEA Data Bank to facilitate the communication between the different parties involved in the project and to keep an electronically ordered archive of the discussion. This should be established as soon as possible.
- The question was raised whether a subgroup would be established addressing experiments of particular relevance for GEN-IV concepts. The NEA Secretariat commented that this may be premature. Such a sub-group could be established if the IRPhE Executive Group found it appropriate and once the GIF agreement was signed. It had been agreed previously that IRPhE work priorities would be based on needs and preferences expressed by participating countries, as a large part of the work would be carried out with resources made available by them. The establishment of such a sub-group would be the result of such priorities expressed.
- It was agreed to hold the next technical review meeting in Paris on 24-25 October 2005 (may need to be extended depending on the number of evaluations that are ready to be reviewed by the working group), with the understanding that only evaluations that have undergone the first two reviews will be submitted.
- It was observed that, based on the experience of the ICSBEP, it takes some time at the beginning to get such a project into a well-established and well-understood path. The first meeting was found to be of great value to better understand how to proceed.
- The results of this first meeting will be reported to the IRPhE Executive group at its meeting scheduled for 29 November 2004.
- The INEEL can offer graphic arts assistance for anyone who would like assistance. All figures will normally need additional work by the INEEL graphic arts department in order to ensure compatibility.

Recommendations and instructions for evaluators / reviewers / next meeting

A summary of the evaluations discussed at the IRPhEP technical review meeting is enclosed as Annex 3. Action items are noted on this summary. Those who have been assigned an action item that they consider unclear may contact Lori Scott or J. Blair Briggs for clarification as soon as possible. *Action items for evaluations that were either “approved” or “approved pending completion of action items” at the meeting should be completed and verified by internal and external reviewers (and subgroup members if one was named) and an electronic copy of the revised evaluation should be submitted to Blair Briggs (bbb@inel.gov).*

When the IRPhEP technical review group meets next, it will have been approximately one year since the first meeting. This will be the only chance for the group to review and approve evaluations for publication (draft or formal). It is important that thorough internal and independent reviews be completed prior to the meeting, so the evaluations brought before the group can be approved with a minimal amount of rework.

In order to avoid an unmanageable number of independent reviews just prior to distribution for the next meeting, evaluators and internal reviewers should complete their work as soon as possible and send their evaluations to the INEEL (or directly to the independent reviewer if prior arrangements have been made) for independent review. The last possible date for which independent reviews can be initiated, with a reasonable chance for completion and resolution of comments in time for the second meeting, is 31 August 2005. Independent reviews will be performed on a first received first reviewed basis. If more evaluations are received on 31 August 2005 than can be thoroughly reviewed, the latter evaluations will be deferred until the next meeting. Evaluators are asked to please make every effort to complete their work in a timely manner and submit *only* evaluations that have successfully undergone *thorough internal review*.

The date and location of the next IRPhEP technical review meeting has been tentatively scheduled for the 24-25 October 2005 in Paris, France. (Note: The dates may need to be extended, depending on the number of evaluations that are ready for working group review.) Only evaluations that have undergone the first two reviews will be submitted. Details of the meeting will be provided later.

Annex 1

**International Reactor Physics Benchmark Experiments Project
Technical Review Meeting**

27-28 October 2004

OECD Headquarters

Final Agenda

Wednesday, 27 October 2004

SESSION I: GENERAL ISSUES

- Welcome [Briggs / Sartori]
- Introduction of Participants [All]
- Presentation of Format -- Introduction of Issues Coordination with ICSBEP [Briggs]
- Peer Review Process [Briggs]

SESSION II: REVIEW OF EVALUATIONS FOR PUBLICATION

1. DIMPLE-RESR-EXP-001 CRIT-BUCK-SPEC-RRATE (LEU-COMP-THERM-048)
Light Water Moderated and Reflected Low Enriched Uranium (3 wt.% ²³⁵U) Dioxide Rod Lattices
DIMPLE S01 [Hanlon/Perry/Gulliford/Newton]
2. DIMPLE-RESR-START-002 CRIT-BUCK-SPEC-RRATE (LEU-COMP-THERM-055)
Light Water Moderated and Reflected Low Enriched Uranium (3 wt.% ²³⁵U) Dioxide Rod Lattices
DIMPLE S06 [Hanlon /Rowlands]

SESSION III: REVIEW OF EVALUATIONS FOR PUBLICATION (CONTINUED)

3. ZR6-VVER-EXP-001 CRIT-BUCK-SPEC-REAC-COEF-RRATE
The VVER Experiments: Regular and Perturbed Hexagonal Lattices of Low-Enriched UO₂ Fuel Rods
in Light Water [Szatmáry]
4. PFACILITY-VVER-EXP-001 CRIT-RRATE (LEU-COMP-THERM-061)
VVER Physics Experiments: Hexagonal (1.27-v_m Pitch) Lattices of U(4.4 wt.% ²³⁵U)O₂ Fuel Rods In
Light Water, Perturbed by Boron, Hafnium, or Dysprosium Absorber Rods, or by Water Gap
With/Without Aluminium Tubes [Alexejev/Krainov/Kravchenko/Tcvetkov]

SESSION IV: EVALUATIONS REQUIRING INDEPENDENT REVIEW

1. KRITZ-RESR-EXP-001 CRIT-BUCK-REAC-RRATE
KRITZ-2:19 Experiment on Regular H₂O/Fuel Pin Lattices with Mixed Oxide Fuel at Temperatures
up to 245°C [Remec/Gehin/Ellis/Kodeli]
2. ZEBRA-LMFR-GCFR-EXP-001 CRIT-SPEC-REAC-RRATE
Fast Critical Experiments in Plate and Pin Geometry Form. The ZEBRA CADENZA Cores,
Assemblies 22, 23, 24 and 25. [Rowlands]

Thursday, 28 October 2004

SESSION V: EVALUATIONS REQUIRING INDEPENDENT REVIEW (CONTINUED)

3. CROCUS-RESR-EXP-001 CRIT-KIN
Kinetic Parameters and Reactivity Effect Experiments in CROCUS
[Kasemeyer/Früh/Paratte/Chawla/Sartori/ Gehin]
4. VENUS-PWR-EXP-001 CRIT-BUCK-RRATE-POWDIS
VENUS-2 PWR MOX Core Measurements [Na/Messaoudi]

SESSION VI: EVALUATIONS REQUIRING INDEPENDENT REVIEW (CONTINUED)

5. ZPPR-LMFR-EXP-001 CRIT-REAC-RRATE
JNC Large fast reactor experiment ZPPR-10A in JUPITER [Ishikawa]
6. JOYO-LMFR-EXP-001 CRIT-REAC-COEF
JNC Experimental Fast Reactor JOYO Mk-I core physics tests [Ishikawa]
7. DCA-HWR-EXP-001 CRIT-BUCKLING
JNC Heavy water core critical experiment, DCA [Ishikawa]

SESSION VII: FORMAT AND PUBLICATION ISSUES

- Discussion of Format Issues [All]
- Discussion of Publication Issues [All]

SESSION VIII: STATUS OF EVALUATIONS IN PROGRESS

1. IPEN/MB01-LWR-EXP-001 COEF
The Isothermal Experiment of the IPEN/MB-01 Reactor [Santos/Jerez/Yamaguchi/Fanaro/Silva/ Briggs]
2. VENUS-PWR-EXP-002 CRIT-BUCK-RRATE-POWDIS
VENUS-1 PWR UO₂ Core 2-Dimensional Benchmark Experiment [Moon /(B.C. Na)]
3. VENUS-PWR-EXP-003 CRIT-BUCK-RRATE-POWDIS
VENUS-3 PWR UO₂ Core 3-Dimensional Benchmark Experiment [Moon /(B.C. Na)]
4. VENUS-LWR-EXP-004 CRIT-BUCK-REAC-KIN-RRATE
Experimental Study of the VENUS Configuration No. 7
[Leenders/Mewissen/Ransbotyn/Rotter/(Wehmann)]
5. VENUS-LWR-EXP-005 CRIT-SPEC-POWDIS
Experimental Study of the VENUS Configuration No. 9
[Leenders/Coster/Mewissen/Ransbotyn/(Wehmann)]
6. VENUS-LWR-EXP-006 CRIT-BUCK-SPEC-REAC-POWDIS
Experimental Study of the VENUS Configuration No. 17 [Leenders et al./(Wehmann)]
7. ASTRA-HTGR-EXP-001 CRIT-REAC-RRATE
ASTRA Critical Facility Experiments [Reitsma / Naidoo/ (Sartori)]
8. VHTRC-GCR-EXP-001 CRIT-COEF
VHTRC Temperature Coefficient Benchmark Problem [S.H. Kim /(Sartori)]
9. TCA-LWR-EXP-001 CRIT-COEF
TER-2 in LWR UO₂ with Soluble Poisons [S.H. Kim/ (Sartori)]
10. STEK-LMFR-EXP-001 CRIT-SPEC-REAC-RRATE
Reactivity Worth Measurements and Other Experiments in the Critical Facility STEK [Wehmann]
11. SNEAK-LMFR-EXP-002 CRIT-SPEC-REAC-RRATE
SNEAK 9C Experimental Series of SNR 300 Specific Criticals [Tchistiakov]

12. B&WSSCR-PWR-EXP-001 CRIT-SPEC-REAC

B&W-SSCR, Spectral Shift Reactor Lattice Experiments [S.H. Kim / (Sartori.)]

SESSION IX: NEW EVALUATIONS FOR 2005

- Preliminary Assessment of Existing Experimental Data for Validation of Reactor Physics Codes and Data for NGNP Design and Analysis [Nigg (INEEL) / Taiwo (ANL)]
- Some Measurements of VVER Spent Fuel Nuclide Composition Available at the Russian Research Center "Kurchatov Institute" [Kravchenko / Krainov]
- Sample Reactivity Measurements in the RRR/SEG-5 [Dietze / (Sartori)]
- SNEAK-LMFR-EXP-001 CRIT-SPEC-REAC-RRATE
SNEAK-7A & 7B Critical Benchmarks [S.J. Kim /Kodeli / (Sartori)]
- Experiments to be considered in the area of HTR [Sartori]

SESSION X: ACTIONS / CONCLUSIONS

- Summary of Actions / Conclusions
- Report to the IRPhE Executive Group
- Date and place of the next meeting

Annex 2

INTERNATIONAL REACTOR PHYSICS EXPERIMENT EVALUATION PROJECT (IRPHEP)

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Annex 3

Summary of Evaluations Discussed at the IRPHEP Working Group Meeting

27-28 October 2004

Evaluation Id.	Action for	Description of Actions/ Status / Deadlines
DIMPLE-RESR-EXP-001 CRIT-BUCK-SPEC-RRATE	Hanlon	<p>ACTION – Hanlon: Determine if ‘REAC’ and/or ‘COEF’ should be added to the identifier. If data is included in Section 1.0, reference to this data should be included in the identifier. Data can be rejected later after evaluation.</p> <p>ACTION – Hanlon: Section 1.0, add conclusions.</p> <p>ACTION – Hanlon: Figure 8, note that the figure was not drawn to scale.</p> <p>ACTION – Hanlon: Table 3, clarify in the text that the cosine fit is over different ranges, Clarify that fitting does not include the full length.</p> <p>ACTION – Hanlon: 1st formula, Page 25, footnote stating that the data assumes that all values are independent.</p> <p>ACTION – Hanlon: Section 2.0 footnote, note the fact that these calculations did not show a significant difference.</p> <p>ACTION – Hanlon: Sentence prior to Table 4, move information referring to overall mean value to Section 2.0.</p> <p>ACTION – Hanlon: Expand discussion of measured gamma reactivity techniques used on certain thresholds.</p> <p>ACTION – Hanlon: Page 33, add discussion of PFT factor used in the United Kingdom.</p> <p>ACTION – Hanlon: Figures 12 and 13 labels, add the word ‘each’ to the ‘+guards (0.07mm)’ labels for clarity.</p> <p>ACTION – Hanlon: Expand the discussion of uncertainties and verify that they were adequately addressed.</p> <p>ACTION – Hanlon: Section 2.0, provide detailed analysis of uncertainties, including definitions. Make reference to this analysis in Section 1.0.</p> <p>ACTION – Hanlon: Section 1.5.1, last sentence, repeat results.</p>

	<p>ACTION – Hanlon: Section 1.5.2, add conclusions.</p> <p>ACTION – Hanlon: Section 1.5.1, 2nd paragraph, note the beta effective value used. In Section 2.0, address the uncertainties, since the value is referenced and not measured.</p> <p>ACTION - Hanlon: Table 12, note if uncertainties impact expected calculational values.</p> <p>ACTION – Hanlon: Section 1.9, add generic description to state that ‘no isotopic measurements were performed...’</p> <p>ACTION – Hanlon: Page 74, footnote, 3rd line, change ‘diffusion theory’ to ‘transport theory’. Also note that complete discussion is provide in the ICSBEP Handbook.</p> <p>ACTION – Hanlon: For each section, where applicable, add conclusion of acceptability.</p> <p>ACTION – Hanlon: Table 32, remove the ‘Δk_{eff}’ column and change the last column to read ‘Δ in Reaction Ratio’. Include experimental uncertainty in uncertainty analysis.</p> <p>ACTION – Hanlon: Discuss effects of uncertainties for fast fission ratio measurements.</p> <p>ACTION – Hanlon: Section 2.3.1.6, note which code was used.</p> <p>ACTION – Hanlon: Section 2.3, discuss results for reaction rate and error estimation.</p> <p>ACTION – Hanlon: Section 2.3.2.6, add a summary table or a brief discussion of overall uncertainties.</p> <p>ACTION – Hanlon: Clarify normalization used for relative vs. absolute values.</p> <p>ACTION – Hanlon: Sections 2.4 and 2.5, clearly state that the benchmarks are not acceptable.</p> <p>ACTION – Hanlon: Section 3.2.1, first include general description, and then add subsections for the pin model as needed (i.e., follow format guide).</p> <p>ACTION – Hanlon: Figure 26, provide labels (fuel, clad, gap, etc.).</p> <p>ACTION – Hanlon: Section 3.2.5, determine and clarify if the benchmark model developed additional uncertainties or</p>
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		<p>not. All effects should be incorporated into the benchmark model.</p> <p>ACTION – Hanlon: Include sample decks for all types of calculations.</p> <p>ACTION – Hanlon: Note where applicable, that the same model is used in the criticality section. Provide link to ICSBEP evaluation.</p> <p>ACTION – Hanlon: In sections where applicable, add generic statement about measurements not being performed.</p> <p>ACTION – Hanlon: Section A.2, add reference for MONK and KENO, as was done for WIMS.</p> <p>ACTION – Hanlon: Section 4.0, acknowledge in the text excessively high or low results.</p> <p>ACTION – Hanlon: Incorporate criticality sections by reference only. Full ICSBEP Evaluation will be included via a hyperlink.</p> <p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
<p>DIMPLE-RESR-START-002 CRIT-BUCK-SPEC-RRATE</p> <p>Note: Many comments on the DIMPLE evaluation noted above are generic and may apply to this evaluation.</p>	<p>Hanlon</p>	<p>ACTION – Hanlon: Verify evaluation identifier (i.e., remove ‘START’ add ‘EXP’.)</p> <p>ACTION – Hanlon: Figure 7, add ‘dimensions are in cm’.</p> <p>ACTION – Hanlon: Tables 19 and 20, and where appropriate, footnote normalization. Also add the word ‘normalized’ to table headers.</p> <p>ACTION – Hanlon: Page 54, specify normalized locations.</p> <p>ACTION – Hanlon: Add John Rowlands as independent reviewer.</p> <p>ACTION – Hanlon: Table 33.c, verify results from Poullet.</p> <p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p>

		<p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
<p>ZR6-VVER-EXP-001 CRIT-BUCK-SPEC-REAC-RRATE</p>	<p>Szatmáry</p>	<p>ACTION – Szatmáry: Title page, add independent reviewers, Dean and Taiwo.</p> <p>ACTION – Szatmáry: Incorporate criticality sections by reference only. Full ICSBEP Evaluation will be included via a hyperlink.</p> <p>ACTION – Szatmáry: Determine if atom %s vs. weight %s should be used for atom densities. Depending on the results, Kravchenko’s and/or Szatmáry’s evaluations may need to be revised.</p> <p>ACTION – Szatmáry: Section 1.2, 1st paragraph, and where appropriate, change ‘2.11.2’ to ‘2.10.2’.</p> <p>ACTION – Szatmáry: Figures 1.11 and 1.12, add dimensions.</p> <p>ACTION – Szatmáry: Page 47, last paragraph, move evaluation discussion to Section 2.0.</p> <p>ACTION – Szatmáry: Section 1.5.1, paragraph prior to Figure 13, briefly clarify the correction process for the ‘outlier’. Remove the word ‘easily’.</p> <p>ACTION – Szatmáry: Ensure proportional fonts are used, where applicable.</p> <p>ACTION – Szatmáry: State conclusions in each section, where appropriate.</p> <p>ACTION – Szatmáry: Sections 2.2 and 2.3, provide detailed uncertainty analysis for selected cases.</p> <p>ACTION – Szatmáry: Section 2.10, move to an appendix. Correct references to this section accordingly.</p> <p>ACTION – Szatmáry: Section 3.1, change title to read ‘subcritical’.</p> <p>ACTION – Szatmáry: Consider associated uncertainty apart from the measurement of the axial buckling.</p> <p>ACTION – Szatmáry: Section 3.2 and other sections as appropriate, follow format guide. Use standard headers and provide discussion accordingly.</p>

		<p>ACTION – Szatmáry: Section 3.3, verify the temperature and correct if needed.</p> <p>ACTION – Szatmáry: Sections 3.7.1 and 3.7.4, convert ‘.dat’ files to ascii text files and provide files to Blair/Lori. Files will be linked and included on the published CD.</p> <p>ACTION – Szatmáry: Table 3.7 footnotes, remove footnote ‘0’, reference to ‘Eu’. Review table and ensure that numbered references are clarified. Remove or explain extraneous footnotes (i.e., footnote ‘(b)’ etc. within the table).</p> <p>ACTION – Szatmáry: Remove any discussion of criticality information. Criticality information will be linked.</p> <p>ACTION – Szatmáry: Section 4.5, move linear expansion coefficients to Section 3.0.</p> <p>ACTION – Szatmáry: Section 3.0, benchmark model dimensions and densities should be included for each temperature.</p> <p>ACTION – Szatmáry: Table 48, provide 100(C-E)/E data.</p> <p>ACTION – Szatmáry: Appendix A, follow format guide for numbering. Expand heading to account for different input listings. Complete section.</p> <p>ACTION – Szatmáry: Section 4 tables, replace data with 100(C-E)/E data.</p> <p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
PFacility-VVER/EXP-001 CRIT-RRATE	Kravchenko	<p>ACTION – Kravchenko: Incorporate criticality sections by reference only. Full ICSBEP Evaluation will be included via a hyperlink.</p> <p>ACTION – Kravchenko: Include the axial range for gamma scans.</p> <p>ACTION – Kravchenko: Table 4, fuel rod position #11, verify the low standard deviation of the mean. Use periods (.), rather than commas (,) for decimals.</p>

		<p>ACTION – Kravchenko: Section 1.7, respond to independent reviewer comments from Virginia Dean.</p> <p>ACTION – Kravchenko: Section 2.7, provide uncertainty analysis.</p> <p>ACTION – Kravchenko: Make reference and link to ICSBEP data.</p> <p>ACTION – Kravchenko: Table 13.a, verify calculated results for Cases 9 and 10. Values differ from those provided in the ICSBEP evaluation. Determine and correct values.</p> <p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
KRITZ-RESR-EXP-001 CRIT-BUCK-REAC-RRATE	Gehin	<p>ACTION – Gehin: Currently there is no allowance for grain size (~25 microns) of plutonium. Evaluate and provide discussion. Grain size should be treated as a bias and reported in Section 3.0 as a simplification.</p> <p>ACTION – Gehin: Investigate the axial expansions.</p> <p>ACTION – Gehin: Change use of ‘PuO₂ rods’ to ‘MOX RODS’, noting the original nomenclature.</p> <p>ACTION – Gehin: Data regarding the location of the bent rods and how badly they were bent is unknown. Consider treating these rods as unacceptable data and rejecting them.</p> <p>ACTION – Gehin: Resolve extensive comments provided by Mosteller.</p> <p>ACTION – Gehin: Provide the measurement techniques in the water level in the boron concentration.</p> <p>ACTION – Gehin/Sartori/Mosteller: Attempt to identify an independent reviewer from STUDESVIK. Our group could formulate a set of questions for the reviewer.</p> <p>ACTION – Gehin: Section 1.71., address the additional systematic uncertainty due to neutron capture in uranium of 1.29 MeV.</p> <p>ACTION – Gehin: Section 2.2, remove 2nd paragraph.</p>

		<p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
<p>ZEBRA-LMFR-GCFR-EX-001 CRIT-SPEC-REAC-RRATE</p>	<p>Rowlands</p>	<p>ACTION – Rowlands: Ensure that the format guidelines are followed (i.e., section numbering/headings, descriptions of geometry material, etc.).</p> <p>ACTION – Rowlands: Table 2.3, determine how differences should be treated.</p> <p>ACTION – Rowlands: Section 3.0, provide concise description of benchmarks.</p> <p>ACTION – Rowlands: Provide additional files for linking to CD.</p> <p>ACTION – Rowlands: Title page, add name of internal reviewer.</p> <p>ACTION – Rowlands/Briggs/Sartori: Identify independent reviewer.</p> <p>ACTION – Rowlands: References should only be made to published data. Where applicable, move references to non-published data to footnotes.</p> <p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
<p>CROCUS-RESR-EXP-001 CRIT-KIN</p>	<p>Sartori</p>	<p>ACTION – Sartori: Section 1.0, describe all experimental data and descriptive information, in this section first, rather than referencing other sections.</p> <p>ACTION – Sartori: Ensure that the format guidelines are followed (i.e., section numbering/headings, descriptions of geometry material, etc.).</p> <p>ACTION – Sartori: Figure 9 and modeling information, move to Section 3.2.</p> <p>ACTION – Sartori: Section 2.0, additional evaluation and discussion should be provided.</p>

		<p>ACTION – Sartori: Section 3.0, provide concise statement of the model. Repeat figures from Section 1.0 in this section, removing extraneous information.</p> <p>ACTION – Sartori: Provide 100(C-E)/C data.</p> <p>ACTION – Sartori: Identify independent reviewer. Consider McKnight.</p> <p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
VENUS-PWR-EXP-001 CRIT-BUCK-RRATE- POWDIS	Na	<p>ACTION –Na: Ensure figures are viewable. INEEL will redraw figures.</p> <p>ACTION –Na: Table 1, clarify notation. Consider adding footnotes to table, taking text from Section 1.1.2.4.</p> <p>ACTION –Na: Table 1-3, for total impurities, it should be written ‘no more than 8ppm boron equivalent in uranium’.</p> <p>ACTION –Na: Section 2.0, provide uncertainty analysis and complete evaluation of experimental data. Negligible effects should be discussed where appropriate.</p> <p>ACTION –Na: Section 3.0, provide concise statement of the model. Repeat figures from Section 1.0 in this section, removing extraneous information.</p> <p>ACTION –Na: Attempt to use specified set of nuclear constants, when possible. Otherwise, clearly discuss what methods were used.</p> <p>ACTION –Na: Section 1.0 tables, ensure all results are provided.</p> <p>ACTION –Na: Section 4.0, move calculations that are not measured values to an appendix.</p> <p>ACTION –Na: Figures 4-1 and 4-3, remove dots and use only a histogram. Move figures to an appendix.</p> <p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND</p>

		SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005 .
ZPPR-LMFR-EXP-001 CRIT-REAC-RRATE	Ishikawa	<p>ACTION –Ishikawa: Ensure that the format guidelines are followed (i.e., section numbering/headings, descriptions of geometry material, etc.).</p> <p>ACTION –Ishikawa/Briggs/Sartori: Identify independent reviewer and an individual to assist in completing Section 2.0. McKnight and/or Schaefer will serve as independent reviewer(s).</p> <p>ACTION –Ishikawa: Move useful, but irrelevant, information to an appendix to avoid confusion.</p> <p>ACTION –Ishikawa: Add summary table (prior to sending evaluation to independent reviewer) for abbreviations.</p> <p>ACTION –Ishikawa: Figure 1.1-4, divide figure for better readability.</p> <p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
JOYO-LMFR-EXP-001 CRIT-REAC-COEF	Ishikawa	<p>ACTION –Ishikawa: Ensure that the format guidelines are followed (i.e., section numbering/headings, descriptions of geometry material, etc.).</p> <p>ACTION –Ishikawa/Briggs/Sartori: Identify independent reviewer. Consider McKnight and Schaefer.</p> <p>ACTION –Ishikawa: Section 3.0, provide concise statement of the model.</p> <p>ACTION –Ishikawa: Ensure discussions are noted in the correct sections. Some discussions should be moved to appropriate standard sections.</p> <p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
DCA-HWR-EXP-001 CRIT-BUCKLING	Ishikawa	<p>ACTION –Ishikawa: Buckling measurements will not be made. Evaluation will be submitted to ICSBEP for review and publication.</p>

		<p>STATUS: Complete all action items. Resolution will be verified by internal and independent reviewer(s).</p> <p>EVALUATION DUE DATE: ACTIONS RESOLVED, EVALUATION APPROVED BY REVIEWER(S) AND SUBGROUP (if applicable) AND FINAL VERSION RE-SUBMITTED BY JUNE 30, 2005.</p>
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