

Summary of JBC Meeting Minutes Sunday 6 June 2005

(Submitted by A. Sood)

*Attendance:

| | |
|--------------------|-----------------------|
| Russ Mosteller | LANL |
| Bill Charlton | TAMU |
| Steve Baker | Transware Enterprises |
| Avneet Sood | LANL |
| Jose Duo | ANL/PSU |
| Michael A. Smith | ANL |
| Thomas Jordan | EMPC |
| Nam Zin Cho | KAIST |
| Ralph DeMeglio | Y-12 |
| Michael J. Plaster | Y-12 |
| Richard Amato | Bechtel Bettis |
| Pran Paul | Y-12 |
| Mark DeHart | ORNL |
| Scott Palmtag | Studsvik |
| Richard McKnight | ANL |
| Ron Pevey | UT-Knoxville |
| Richard Sanchez | CEA, Saclay |
| Y.A. Chao | Westinghouse |
| Bernie Kirk | ORNL |

Mosteller

- * No full quorum present -- not enough official members to take action
- * Committee members review (R. Mosteller)
 - RPSD -- H. Hunter resigned -- vacancy exists for RPSD
 - Participation in JBC is open to all, but only members vote
- * Reactor Physics given by Russ Mosteller
 - The development of Calvert Cliffs isotopic benchmark continues
 - Work also continues on a Doppler effect computational benchmark which is being performed by a summer student at LANL
 - The Tom Jordan commented about a possible benchmark ideas w.r.t. CAD representation of discrete ordinates code geometries
 - He was encouraged to write up proposal for discussion at next JBC
 - He was also directed to go through their division co-chairs with the proposals to be reviewed by division JBC members
- * Benchmark of the Year award

- In progress. Committee needs to submit formal criteria to JBC
- * General discussion: (conducted by R. Mosteller)
 - Does this committee serve any real purpose?
 - Biggest issue is attendance -- generally poor, especially with RPSD
 - Lack of participation -- only one benchmark has been passed so far
 - >Main difficulty is lack of funded benchmark experiments
 - >Need to help improve relevance/stature of JBC, especially in participation and review of other benchmarking efforts
 - >Reactor physics has an experimental benchmark effort – an OECD project funded by participating countries
 - >Space nuclear power is expected to have lots of benchmark activities
 - At next meeting, we must further discuss the purpose of JBC
 - Analytic keff (by A. Sood) should be submitted for JBC
 - >formatting for JBC submission
- *MCD Topical
 - Avignon Sept 2005 (R. Sanchez)
 - MC Topical has invited benchmark sessions - 10 papers/25 min sessions
 - MC Topical has poster sessions -- lots of benchmarking efforts
 - Possible benchmarks are neutronics/thermal hydraulics

-- Possible benchmarks are in shielding in treatment areas with accelerators

Efforts are beginning but no calculations yet

- Comparisons with other codes -- similar to QUADOS effort
- Will post any benchmarks to RSICC website as available

Adjournment at 1210

JBC Meeting Report from the Washington Winter ANS Meeting 2005

Call to Order

Chairman Richard Amato (Bechtel Bettis) called the meeting to order at approximately 11AM on November 13, 2005. The current JBC Executive Committee is included as **Attachment A**. In attendance were the following ANS members:

| | |
|----------------|------------|
| D. Cokinos | P. Angelo |
| B. Ganapol | S. Dulla |
| R. Mosteller | J. Breen |
| C. de Oliveira | R. Amato |
| P. Ravetto | F. Rahnema |

M. DeHart N. Gheorghu
R. Singleterry W. Charlton
G. Sjoden T. Jordan
A. Sood

The meeting minutes of the previous meeting held in June in San Diego were read and approved.

The next order of business was to hear a report from the member divisions.

News from the Member Divisions

MCD: Report by B. Ganapol

1) BWR Benchmark

Farzad Rahnema again proposed a 2D BWR benchmark. This is to be a 7 and 47 group characterization using ENDF/B-VI. Quarter core geometry is assumed following a previous Kord Smith benchmark. Farzad will supply the data to anyone interested in this benchmark. An MCNP5 reference case has already been completed. Also a 1D/2 group version has been completed for a highly heterogeneous core. The next phase will consider a small core expanded into 122 bundles in the 7 group approximation. He expects the

Participating in the activity should contact Matt Gandy.

Piero Ravetto presented an update on the Molten Salt Reactor (MSRE) concept for an Accelerated Driven Systems (ADS) benchmark that is being conducted by the European Commission. Currently, there is an ongoing code comparison to experiments. Piero envisions that he will eventually submit this benchmark to be considered by the JBC. He also announced that even though MSRE has been initiated by the EC, US participation is encouraged at a meeting to be held in Minsk next month (December). Piero is still considering organizing a special session on the MSRE at a future ANS meeting. The JBC members present encouraged Piero to continue his efforts in bringing this benchmark to completion.

3) The TIEL Analytical Benchmark

The review of the **TIEL** analytical transport benchmark continues. Unfortunately, Barry Ganapol was not able to present the final version of this, the first analytical benchmark, at this meeting. Barry suggested that the full presentation of this benchmark be postponed in order to include a more

comprehensive benchmark suite. This suggestion was not well received by the JBC as it was generally felt that, as a committee, we need to regularly produce benchmarks. Since this one is nearly complete, we should go ahead as is. Barry agreed and will send the **TIEL** benchmark to the JBC members seeking approval before the Reno meeting. Approval will require at least half of the 12 JBC members and at least $\frac{3}{4}$ of the members who vote.

4) Space Shielding Benchmark

Robert Singleterry gave a brief presentation on the necessity for galactic cosmic ray (GCR) benchmarks, which are required for radiation shielding in space habitats. Robert sees the JBC as fulfilling a role as a repository and reviewing body for NASA thus providing guidance with regard to the development of effective GCR codes. This effort would be closely aligned with the effort currently headed by Larry Townsend (UTK) which is investigating crew exploration vehicles. Apparently, this is a difficult problem since many different kinds of particles (179) need to be tracked and high-energy neutron/proton cross sections are required. Hopefully, Robert will take the lead in developing the GCR benchmark and meshing it with NASA's current needs. This could be a niche area for the JBC.

RP&SD

1) SINBAD Update

Dick Amato provided an overview of the status of SINBAD (Shielding Integral Benchmark Archive Database) as requested by Enrico Sartori who could not attend. In general, the JBC members felt that this database is really not relevant to the JBC activity. The decision regarding the legitimacy of SINBAD for inclusion by JBC will be finalized at the next ANS Annual Meeting.

2) CSEWG '05 Meeting

Dick went on to report on shielding topics presented at the latest CSEWG meeting. This included testing the performance the ENDF/B-VII $\beta 1$ library with respect to 4 shielding experimental benchmarks using MCNP-4C3 calculations. Three of the benchmarks used 14 MeV neutron sources and the other used Cf-252. The Neutron and Photon predictions showed typical C/E's ranging between 0.75 and 1.25. However, there were large discrepancies for some shield materials which need to be resolved in

conjunction with understanding the uncertainties (cross-section covariance data) in the applied nuclear data.

RPD: Russ Mosteller

1) Function of the JBC?

Russ used his report to discuss concerns he has about the direction of the JBC. He posed the question --What is actually being accomplished by our committee? He indicated that there has never been a quorum in the 5 years the JBC has existed and feels that the enthusiastic interest that was initially shown exists no longer. Has the JBC devolved just into a benchmark activity clearinghouse? Russ also indicated that the reality is we are entirely a volunteer organization and for that reason it is difficult to accomplish timely goals. The discussion then centered on what the JBC could do to better fulfill its original purpose "to evaluate, publish and submit benchmarks in a form useful to the experimental and computational communities". It was suggested that perhaps we should focus, at least initially, on computational benchmarks because they can be created without the level of effort/or funding required for experimental benchmarks. It was also suggested that we serve an archival role in addition to developing benchmarks, making past benchmarks, in particular, the ANL Benchmark Book, available as well as current benchmarks on the RISIC web page.

a NEPI proposal. Obviously, this is a topic for further discussion as it goes

New Benchmarking efforts:

1. Criticality Excursions

Peter Angelo indicated interest in benchmarks involving criticality excursions. In particular OECD/NEA have a keen interest. Russ said for a serious effort, funding is required which is difficult to get. Peter was quite enthusiastic and persuasive in generating support for such benchmarks.

2. Medical Physics Working Group

Bernadette Kirk informed the JBC that there still is a strong interest in developing benchmarks for medical physics application. There was a workshop at ORNL to identify specific problem and software that could be used to initiate a medical physics benchmarking activity. Both Monte Carlo and deterministic benchmarks were considered. There will obviously be an

emphasis on nuclear data. The JBC agreed to provide technical reviews and consultation on evaluations to be issued, when needed.