Working Party on Scientific Issues of the Fuel Cycle

First Meeting of the Expert Group on Innovative Fuels

SUMMARY RECORD

10 October 2008
Mito, Japan

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Summary Record

Welcome and introduction of participants

1. Y-J. Choi (NEA), the Secretary of the Expert Group, welcomed the participants. Apologies for absence were received from C. Stanek (USA) and H. MacLean (USA). C. Fazio (Germany) replaces W. Maschek (Germany) and J-W. Jang (Korea) replaced C-B. Lee (Korea). A list of participants is provided as Appendix 1.

Adoption of the agenda

2. The agenda was adopted without any modification. It is provided as Appendix 2.

Introduction to the work of Nuclear Science Committee and WPFC

3. Y-J. Choi introduced the NEA Nuclear Science Committee (NSC) as well as the WPFC and its Expert Groups. The NSC is one of seven standing technical committees of the NEA. There are currently five Working Parties and one standalone Expert Group in the NSC. The WPFC, which has replaced the Working Party on Partitioning and Transmutation (WPPT) since 2004, comprises three Expert Groups on chemical partitioning, on heavy liquid metal technology and on transition scenario studies. The WPFC also organises an information exchange meeting on actinide and fission product partitioning and transmutation and workshop on technology and components of the accelerator driven systems.

4. The Expert Group on Innovative Fuel had been endorsed by both WPFC and NSC with a two-year mandate (until June 2010), which is extendible.

Election of the Expert Group Chair

5. Y. J. Choi called for the election of a Chair. K. Pasamehmetoglu, from Idaho National Laboratory, USA, was elected as Chair of the Expert Group.

Review of the proposed mandate

6. The Expert Group reviewed the draft mandate, which was originally written by K. Pasamehmetoglu. The Expert Group decided to exclude thorium contained fuels from what was initially suggested. The scope of the Expert Group will cover any fuels including minor actinide for any type of reactor and targets: homogenous and heterogeneous fuels; ADS fuels and oxide metal; nitride and carbide fuels; and the cladding material for these fuels.
7. The final version of the mandate is provided as Appendix 2. It will be submitted at the forthcoming WPFC meeting for approval.

Working plan

8. The Expert Group will establish a database on minor actinide bearing fuels, and this may be contributed to the NEA Data Bank. The details will be discussed at next meeting. The Expert Group will also collect information on fuel qualification methodologies.

9. The two deliverables suggested are as follows: a state-of-the-art report on development of innovative fuels and Benchmark studies on fuel performance codes and experiments. K. Pasamehmetoglu will provide "Technical Maturity" by the next meeting so that a table of contents and chapter leaders can be discussed. Possible items for the benchmark study will also be discussed at the next meeting.

Report to the WPFC

10. K. Pasamehmetoglu, the Chair of the Expert Group, will report at the upcoming WPFC meeting on 25 February 2009.

Date and place of next meeting

11. The next meeting will take place on 26-27 February 2009 at NEA offices.

Any other business

12. The Russian Federation and Italy will nominate members by the next meeting. Y-J. Choi will contact Canada, the Netherlands, Switzerland, the UK and Spain about nominating members. The webpage for the Expert Group will also be prepared by Y-J. Choi.
Appendix I

List of Participants

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Appendix 2

OECD/NEA Nuclear Science Committee
Working Party on Scientific Issues of the Fuel Cycle (WPFC)

The First Meeting of the Expert Group on Innovative Fuels (EGIF)

10 October 2008

Agenda

1. Welcome and introduction of participants (Y. J. Choi)
2. Adoption of the agenda
3. Introduction to the work of Nuclear Science Committee and WPFC (Y-J. Choi)
4. Election of Expert Group Chair
5. Review of the proposed mandate
6. Working plan
7. Report to the WPFC
8. Date and place of next meeting
9. Any other business
Appendix 3

Mandate of the

WPFC Expert Group on Innovative Fuel (EGIF)

Chair: K. Pasamehmentoglu (INL, USA)
Members: All NEA member countries
Date of Creation: June 2008
Mandate Expires: June 2010

Objective

Under the guidance of the Nuclear Science Committee (NSC) and the mandate of the Working Party on Scientific Issues of the Fuel Cycle (WPFC), the objective of the Expert Group on Innovative Fuels (EGIF) is to conduct joint and comparative studies to support the development of innovative fuels (including innovative clad materials) that can be implemented in advanced nuclear fuel cycles.

Scope

The scope of the Expert Group covers the technical issues associated with the development of innovative fuels (homogeneous and heterogeneous fuels, ADS fuels, and oxide, metal, nitride and carbide fuels) and clad materials targeted for use in advanced fuel cycles. The fuel types of interest for EGIF are those that contain minor actinides (MA) as opposed to standard fuels (i.e. uranium or uranium-plutonium fuels that are currently being used in the fuel cycle). The following technical issues associated with innovative fuel development are covered by the Expert Group:

- Innovative fuel fabrication techniques;
- Irradiation performance of innovative fuels (including advanced clad materials);
- Characterisation and post-irradiation examination methods;
- Predictive models/codes for the innovative fuel fabrication and performance;
- Phenomenological experiments in support of model development or validation.

Pertinent to these topics, EGIF will carry out:

- Compile an experimental database;
- Qualification methodologies;
- Develop a process to the technology readiness level for various technologies;
- Perform code-to-code, code-to-experiment benchmark studies;
- Generate status reports on various fuel technologies;
- Define and propose standard benchmark cases for fuel performance and fabrication codes;
- Define experimental benchmarks as well as phenomenological tests to compare characterisation and PIE techniques and results.

Deliverables

- State-of-the-art report on development of innovative fuels;
- Benchmark studies on fuel performance codes and experiments.