Expert Group on Reactor Physics and Advanced Nuclear Systems

Chair:	Mr. Kevin Hesketh	(United Kingdom)
Members:	All NEA member countries	
Regular Observers (Non-members):	European Commission *Under the NEA Statute*	
	Russian Federation	
Observer (International Organisation):	International Atomic Energy Agency (IAEA) *By agreement*	
Date of creation:	30th June 2010	
Duration:	30th June 2012	

Mandate:

Agreed at the 22nd meeting of the Nuclear Science Committee in June 2011 [NEA/SEN/NSC(2011)3]

"**Scope**

Under the guidance of the Working Party on Scientific Issues of Reactor Systems (WPRS) the Expert Group will perform specific tasks associated with reactor physics aspects of present and future nuclear power systems. Reactor types considered include, but are not limited to the following:

- Present generation LWRs and HWRs with advanced and innovative fuels, evolutionary and innovative LWRs and HWRs
- High temperature gas reactors (HTRs)
- Fast spectrum systems and other novel systems including all six of the systems being developed under Gen IV
- Accelerator driven (sub-critical) and critical systems for waste transmutation.

Objectives

To provide expert advice to the WPRS and the nuclear community on the development needs (data and methods, validation experiments, scenario studies) for different reactor systems.

To provide specific technical information regarding:

- Core reactivity characteristics, including fuel depletion effects
- Core power/flux distributions
- Core dynamics and reactivity control.

This technical information will generally be derived from a combination of direct experimental evidence and/or the results of theoretical benchmark analyses using accurate,

validated modelling methods. In either case the availability of suitable experimental data is a fundamental requirement. A key objective of the group will therefore be to help identify, evaluate and preserve this type of experimental data. In this context the Expert Group will monitor, steer and support the continued development of the International Reactor Physics Experiments Evaluation database (IRPhE).

Where required, the Expert Group will provide safety scenario studies for advanced systems and fuels. In this context it will liaise closely with the Working Party on Scientific Issues of the Fuel Cycle (WPFC).

Deliverables

- State-of-the-art report on Minor Actinide Burning in Thermal Reactors – June 2011
- Report on HTGR Fuel Element Depletion Benchmarks (Phase 1) – End 2011
- IRPhE evaluations for VENUS 7, 9 cores – 2012
- State-of-the-art report on past and recent studies performed in the framework of the sodium fast reactors – 2012
- Benchmark analysis of sodium fast reactor feedback and transient response studies (SFR-FT) – Mid 2012
- Specification of Benchmark for studies on Advanced LWR Designs – Early 2012
- Summary report on current status of International Reactor Physics Experiments (IRPhE) database, including priority 'wish-list' for future evaluations and review of requirements for database tools – Mid 2012.

Meeting frequency

Once per year for full Experts Group with additional meetings in support of particular activities (e.g. IRPhE)."