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**Key messages of the
JAEA-IAEA International Workshop on
Prevention and Mitigation of Severe Accidents in Sodium-cooled Fast
Reactors**

In cooperation with the International Atomic Energy Agency (IAEA), the Japan Atomic Energy Agency (JAEA) held an International Workshop on Prevention and Mitigation of Severe Accidents in Sodium-cooled Fast Reactors (SFR) at the Wakasa Wan Energy Research Center in Tsuruga on 12th - 13th June, 2012.

About 100 experts from research institutions, regulatory organizations, electric power companies, industries, universities and governments from countries with SFRs programmes, and from the IAEA, discussed the safety goals of SFR and measures to maintain and improve the safety of SFRs, including research and development activities and safety regulations to provide SFRs with enhanced safety features.

The results of the workshop discussion are presented in the following key messages identified by developers, research organizations and operators:

- SFRs used in a closed fuel cycle can dramatically improve the sustainability of nuclear energy, when compared with the present Light Water Reactors in an open fuel cycle, through a better use of the natural resources (multiplication by a factor 50 to 100 of the energy produced by a given amount of uranium) and the minimization of the radiotoxicity, volume, and thermal load of the wastes.
- Deployment of SFR is a promising sustainable option to meet the increasing global energy demand, and the maturity and reliability of this technology is proven by an operating experience of more than 400 reactor-years accumulated in many countries (China, France, Germany, India, Japan, Russian Federation, UK, and USA).
- Even though the accident at the TEPCO's Fukushima Dai-ichi Nuclear

Power Station (Fukushima NPS) has raised concerns on severe accidents at nuclear installations, several countries are maintaining their effort in developing and deploying SFRs as a very promising option to meet the increasing global energy demand.

- In order to achieve the highest safety levels, it is of paramount importance to gather the operational experience accumulated by countries which have been operating SFRs over the last decades as well as to share the lessons learned from the Fukushima NPS accident. Further R&D has to be carried out starting from this operational experience and lessons learned.
- The safety approach and associated safety measures should be based on the favorable safety characteristics of the SFR, e.g. core reactivity feedbacks, low pressure coolant, large thermal inertia, high boiling point, air as an ultimate heat sink, natural circulation, etc.
- Safety design criteria should be harmonized at the international level in order to achieve concurrently the most advanced safety goals. A common effort has already started on this subject under the auspices of the Generation IV International Forum also in interaction with the IAEA.
- Safety-related research & development carried out at national and international level will contribute to enhance the safety level of SFR globally.
- In light of the Fukushima NPS accident, the meeting participants reconfirmed the crucial importance of incorporating into SFR designs innovative approaches for prevention and mitigation of severe accidents, as well as improvement of severe accident management.
- The design of the prototype fast breeder reactor Monju is already incorporating evaluations of, and measures against, severe accidents based on the safety characteristics of SFRs. The restart and operation of Monju will provide the international SFR community with very useful experience to pave the way towards 4th generation SFR.