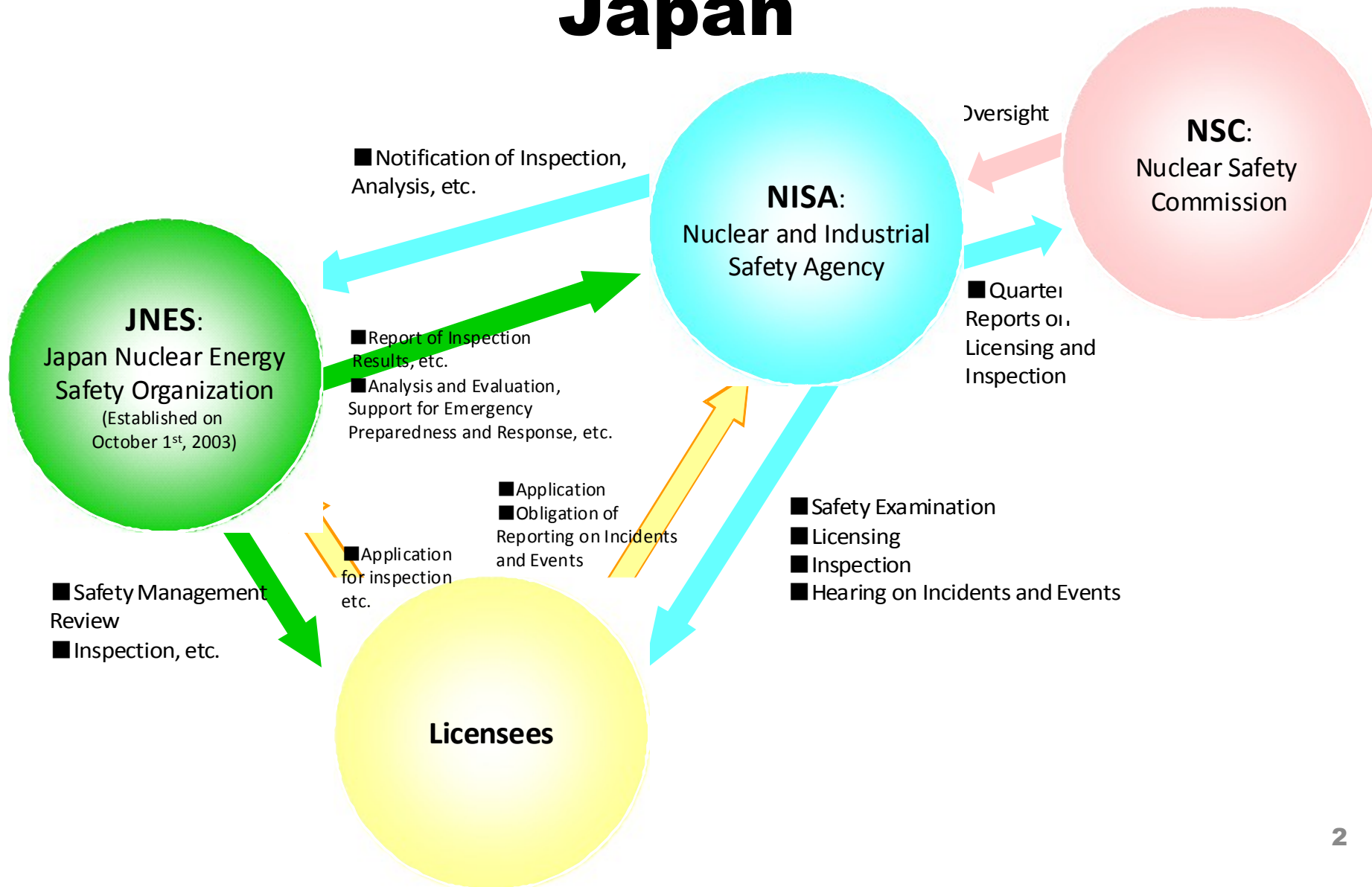


JNES ACTIVITIES: SPENT FUEL INTERIM STORAGE AND GEOLOGICAL DISPOSAL

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Safety Regulation System in Japan



Major Programs of JNES (1)

- **Inspection of nuclear power plants and nuclear facilities**
- **Analysis and evaluation of safety on nuclear power plants and nuclear facilities**
- **Activities for nuclear emergency preparedness and response**

Major Programs of JNES (2)

- **Investigation, tests and research to ensure nuclear safety in the framework of utilizing energy**
- **Collection, compilation and supply of information to ensure safety in the framework of utilizing energy**

Management of Spent Fuel in Japan

- **Spent fuel is reprocessed. HLW disposed of at geological disposal site. Spent fuel interim storage situation:**
 - **Spent fuel generation from NPPs: 13,500 tU in 10 years**
 - **Rokkasho reprocessing capacity: 800 tU/year**
 - **Additional storage requirement: 7,100 tU**

Spent Fuel Interim Storage Facility in Japan (1)

- **Mutsu Interim Spent Fuel Storage Facility (Recyclable-Fuel Storage Center)**
 - **Metal cask**
 - **Capability: 3,000tU initially; increasing to 5,000tU**
 - **Approval of License application: May 13, 2010**
 - **Groundbreaking: July 2010 (business plan)**

Spent Fuel Interim Storage Facility in Japan (2)

- **Mutsu facility (continued)**
 - **Operation starts: July 2012 (business plan)**
 - **Storage period: 50 yrs (business plan)**
- **Regulator safety review confirmed that licensee selected a reliable material that meets safety performance requirements against material degradation for the design basis storage period.**

Research on Cask Safety, Spent Fuel Integrity During Storage (1)

JNES examinations show that metal cask material and spent fuel do not become depleted affecting safety for 40 – 60 years:

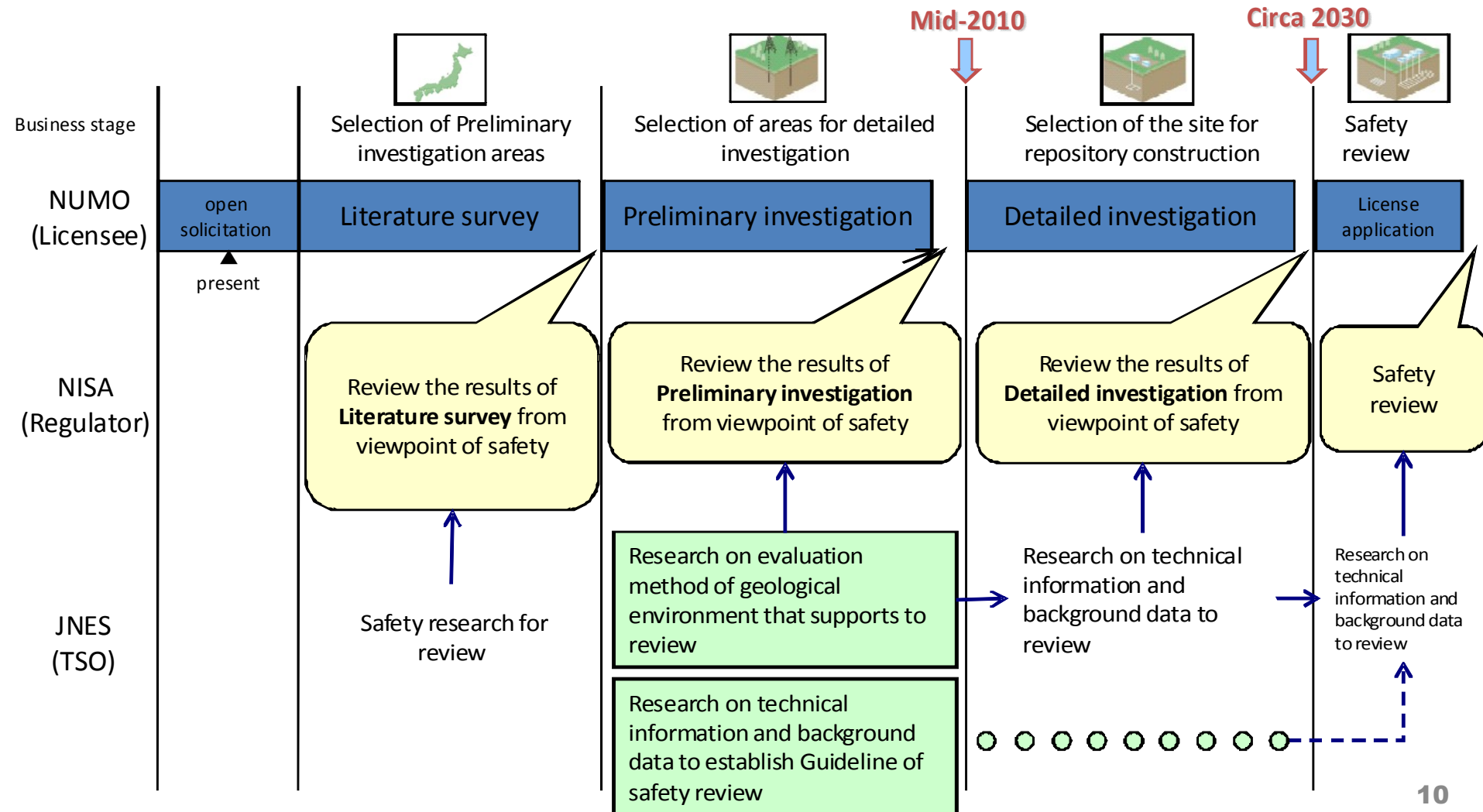
- **Neutron shielding materials for Epoxy resin & Silicon resin**
- **Material property metal gasket for lid Confinement**
- **9m drop tests for lid containment behavior and seal performance**

Cask, Spent Fuel Integrity Research (2)

JNES examinations (continued):

- **Thermal tests for lid
containment behavior and seal
performance**
- **Fuel integrity tests**
 - **Thermal creep**
 - **Hydride reorientation**
 - **Irradiation hardening recovery**

Regulator Oversight – Geological Disposal Program



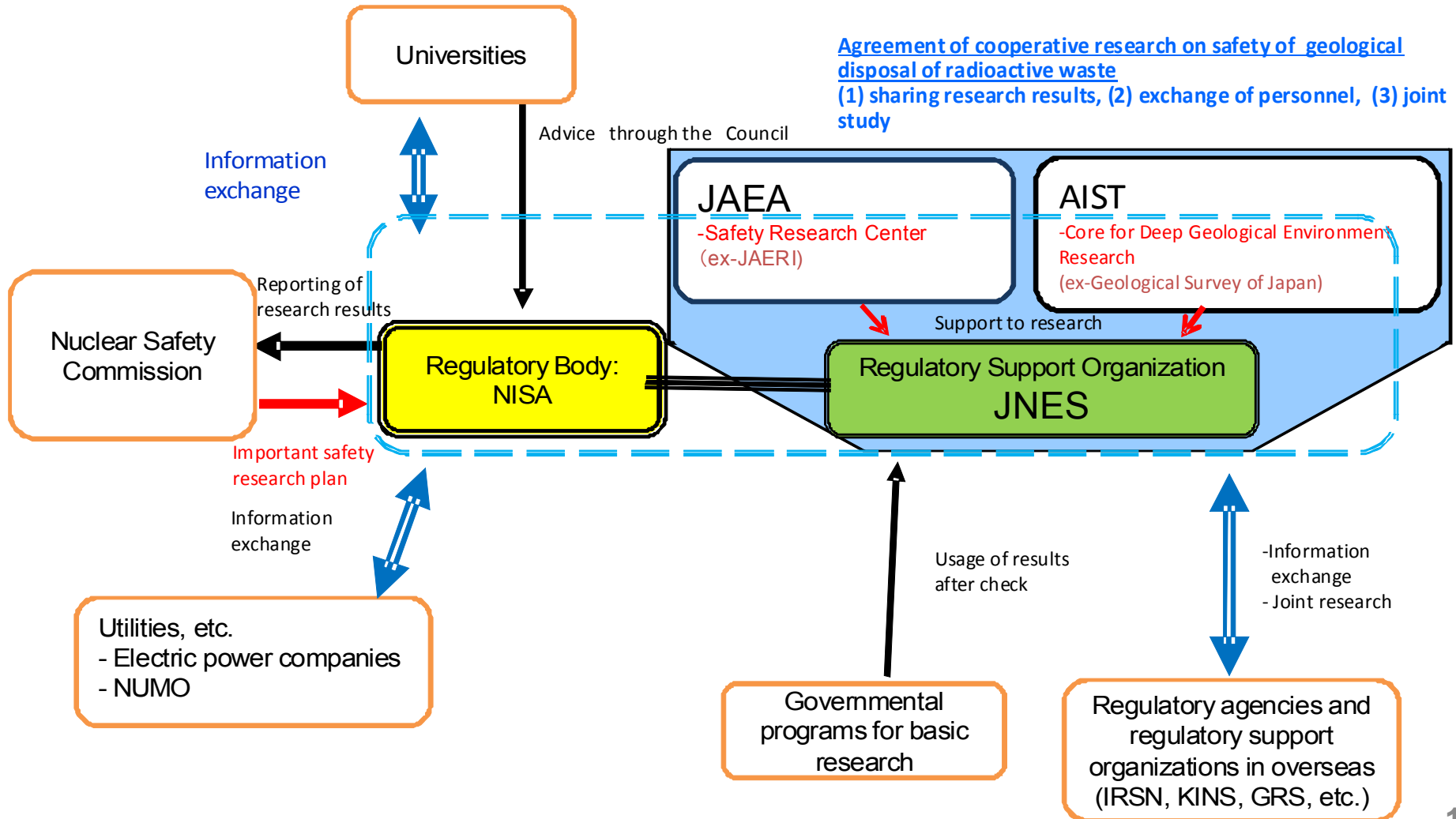
Regulatory Supporting Research in Geological Disposal (1)

- **Research on evaluation method of geological environment that supports to review the results of preliminary investigation from viewpoint of safety**
 - **Natural Events (faulting, volcanic/magmatic activities, etc.)**
 - **Geological environment (geology, hydrology, etc.)**

Regulatory Supporting Research in Geological Disposal (2)

- **Research on technical information and background data to establish Guideline of safety review**
 - **Evaluation method of geological environment and behavior of natural barrier and engineered barrier system**
 - **Evaluation method of safety assessment**

Organizational Framework: Geological Disposal Safety Research



For the Future ...

- **We hope to have a cooperative safety research agreement in the field of radioactive waste management with NRC under the NRC-NISA framework agreement.**
- **In particular, we hope to exchange information on long-term safety.**

Acronyms

- **AIST** **National Institute of Advanced Industrial Science and Technology**
- **GRS** **Gesellschaft für Anlagen- und Reaktorsicherheit**
- **IRSN** **Institut de Radioprotection et de Sûreté Nucléaire**
- **JAEA** **Japan Atomic Energy Agency**
- **JNES** **Japan Nuclear Energy Safety Organization**
- **KINS** **Korea Institute of Nuclear Safety**
- **NISA** **Nuclear and Industrial Safety Agency**
- **NSC** **Nuclear Safety Commission**
- **NUMO** **Nuclear Waste Management Organization of Japan**
- **TSO** **Technical support organization**