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Committee Secretary
Joint Standing Committee on Treaties
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Joint Standing Committee on Treaties Inquiry on Generation IV Nuclear Energy – Accession.

SMR Nuclear Technology Pty Ltd welcomes the opportunity to provide comments for JSCOT's inquiry into Australia's accession to the *Framework Agreement for International Collaboration on Research and Development of Generation IV Nuclear Energy Systems as extended by the Agreement extending the Framework Agreement for International Collaboration on Research and Development of Generation IV Nuclear Energy Systems.*

SMR Nuclear Technology Pty Ltd is an independent Australian specialist consultancy established to advise on the siting, development and operation of safe nuclear power generation technologies, principally Small Modular Reactors (SMRs). Two of SMR-NT's directors were senior managers at ANSTO and have a good understanding of the facilities and capabilities of ANSTO.

The Generation IV International Forum (GIF) was founded in 2000 with 9 original charter members – USA, Argentina, Brazil, Canada, France, Japan, South Korea and the UK. Subsequently Switzerland, Euratom, China and Russia have joined. Australia became the 14th member of GIF on 22 June 2016.

The objective of GIF is to identify and carry out the research and development to enable Gen IV technologies to be deployed. Gen IV has the goals of enabling improvements to existing nuclear technologies in the areas of Safety and Reliability, Sustainability, Economics, and Proliferation Resistance and Physical Protection.

Each country has nominated their major nuclear R&D organisation as their *Implementing Agent.* The acceptance of Australia in this distinguished group is a clear recognition of the R&D facilities, expertise and capabilities in Australia and particularly at ANSTO as the nominated *Implementing Agent.*

Gen IV systems operate at higher temperatures than the current nuclear technologies. Higher temperatures lead to higher system efficiency and the possibility of providing process heat. One of the main challenges is developing materials to withstand the high temperatures, neutron irradiation and corrosive coolants. ANSTO is particularly strong in materials research.

Several of the GEN IV technologies will have the ability to consume used fuel from existing reactors and convert it into a form that does not require safe storage for the 120,000 years that direct disposal of typical used fuel requires. ANSTO has experience of high level radioactive waste management from their Synroc project.

ANSTO has world-class facilities including the OPAL research reactor and its neutron beam instruments. These instruments enable detailed examination of material properties. ANSTO also has ion beam analysis and accelerator mass spectrometry capabilities used for example for characterisation of materials, radiation damage studies and forensic science.

Areas where ANSTO has world class expertise are nuclear safety cases, radiation damage, effective fuel utilisation and detection of nuclear materials for nuclear safeguards.

There are many ways in which Australia would benefit from accession to the Framework Agreement:

1. Maintain Australia’s position as the most advanced nuclear technology country in the South-East Asia and Pacific region. This will help Australia retain its permanent seat on the IEAE Board of Governors. This permanent seat enables Australia to directly influence IAEA policy and direction.

2. Enable Australia to promote non-proliferation, safety and security issues in Gen IV development.
3. Provide opportunities for ANSTO to play an important international role in the development of Gen IV technologies.
4. Provide opportunities for Australian industry in advanced technology, including supply chain opportunities, partnerships and jobs.
5. Provide collaboration opportunities for Australian universities and organisations with overseas universities and organisations.
6. Help Australia and Australians keep up to date with nuclear developments worldwide.

SMR Nuclear Technology Pty Ltd most warmly supports Australia acceding to the *Framework Agreement for International Collaboration on Research and Development of Generation IV Nuclear Energy Systems as extended by the Agreement extending the Framework Agreement for International Collaboration on Research and Development of Generation IV Nuclear Energy Systems.*

If you would like to discuss this submission in greater detail please do not hesitate to contact the undersigned.

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