Readiness for Licensing of Advanced Reactor Fuels, Engagement, and Recent Licensing Activities

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What Is Advanced Reactor Fuel?

Light-Water Reactor (LWR) Fuel:

- Consists of uranium oxide fuel pellets enriched up to 5 weight percent uranium-235, within an array of zirconium-based cladding.

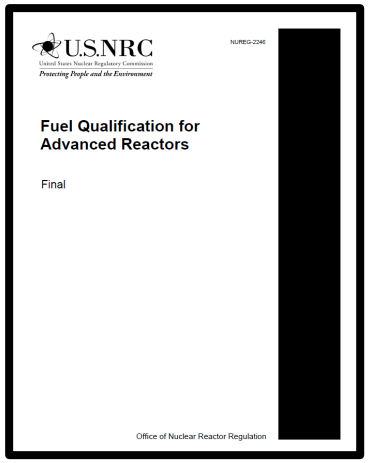
Advanced Reactor Fuel:

- Fuel for use in an advanced nuclear reactor or a research and test reactor, including fuel with a low uranium enrichment level of not greater than 20 percent.

Readiness for Review

Development of Guidance:

- NUREG-2246, “Fuel Qualification for Advanced Reactors”
- NUREG/CR-7299, “Fuel Qualification for Molten Salt Reactors”
- Generic TRISO Topical Report


U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

NUREG-2246

Fuel Qualification for Advanced Reactors

Final

Office of Nuclear Reactor Regulation

Development of Tools:

- Updated “Fuel Analysis under Steady-state and Transients” (FAST) Code

Engagement and Collaboration

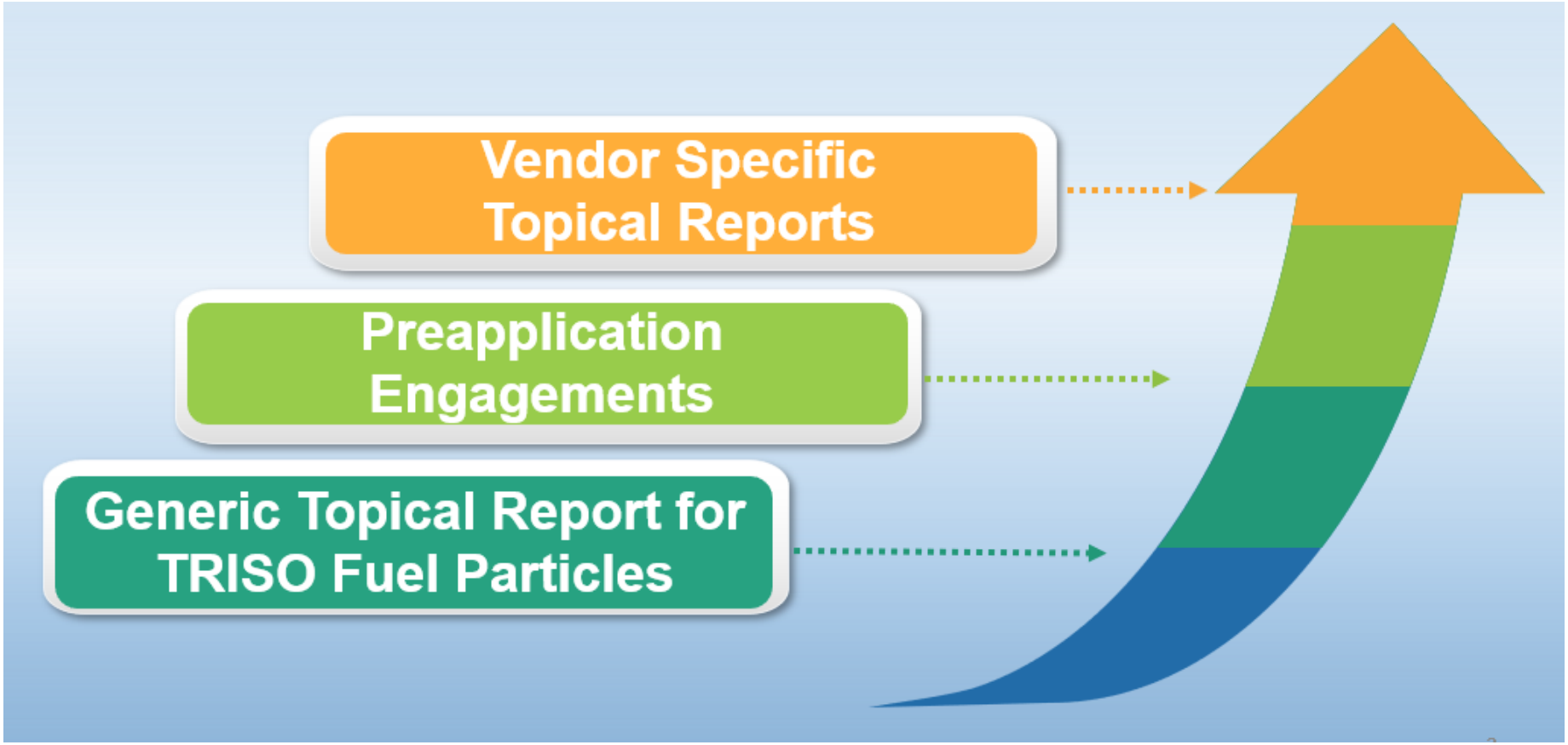
Domestic:

- Observe Industry/DOE Workshops
- National Laboratory Code Development

International:

- Canadian Nuclear Safety Commission (CNSC) Joint Position Paper on TRISO Fuel Qualification
- Nuclear Energy Agency (NEA) Report, “Regulatory Perspectives on Nuclear Fuel Qualification for Advanced Reactors”

Recent Licensing Activities—TRISO Fuel



Additional Information

Website:

- https://www.nrc.gov/reactors/new-reactors/advanced/rulemaking-and-guidance/fuel-qualification.html
- https://www.nrc.gov/reactors/new-reactors/advanced.html

References:

- NUREG-2246: "Fuel Qualification for Advanced Reactors," March 2022, Agencywide Documents Access and Management System Accession No. ML22063A131
- NUREG/CR-7299, "Fuel Qualification for Molten Salt Reactors," December 2022, ML22339A161
- EPRI-AR-1(NP)-A, "Uranium Oxycarbide (UCO) TRISO Coated Particle Fuel Performance, December 2020, ML20336A052
- CNSC Memorandum of Cooperation, "Interim Summary Joint Report Concerning TRISO Fuel Qualification," February 2022, ML22030A000
- CNSC Memorandum of Cooperation, "Interim Joint Report #2 Concerning TRISO Fuel Qualification," May 2022, ML22101A297
- NEA/CNRA/R(2020)1, "Regulatory Perspectives on Nuclear Fuel Qualification for Advanced Reactors (DRAFT)," Committee on Nuclear Regulatory Activities, December 2020, ML22018A099