

TERRA INNOVATUM

SOLO

A man and a child are standing in a field of tall, golden grass, looking towards three large, grey, rectangular containers. Each container has the word "SOLO" printed on its side and a glowing blue horizontal line across its middle. The background is a dramatic sky with orange and blue clouds, suggesting a sunset or sunrise.

**SOLO™ Pre-FOAK Test Plan
Topical Report
NRC Pre-Submittal Meeting**
July 29-30th 2025 | USNRC HQ

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Meeting Outline

- Purpose and Review Request
- Topical Report Outline
- Topical Report Key Elements
- NRC Review Request
- Q&A

Purpose and Review Request

- To provide to NRC staff details on the Topical Report covering the pre-FOAK test plan for the SOLO Microreactor
 - Provide an overview of the SOLO pre-FOAK rationale
 - Provide an overview of the SOLO pre-FOAK test plan Topical Report for which Terra Innovatum (TINN) is requesting NRC approval
 - Provide NRC staff with TINN's review requests
- **TINN is requesting NRC review and approval on the SOLO pre-FOAK test plan for the SOLO Micro Modular Reactor FOAK Project**
 - **Test Plan**
 - **Completeness of the identified tests**



SOLO Pre-FOAK Test Plan

Pre-FOAK Test Plan Topical Report Outline

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The Validation-related test plan is within the scope of this TR
 (to support SOLO PSAR Chapter 13)

Chapter 1 - Introduction

- Purpose & Scope
 - Topical report documents the Pre-FOAK test plan
 - Tests executed to address computer code (CFD) validation and accuracy quantification
 - Terra Innovatum is submitting this topical report for NRC review and approval in support of the future licensing application (Construction Permit Application) for the SOLO MMR
- Applicable Regulations and Regulatory Guidance
 - NUREG-1537, *Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors*
 - Similar aspects can be found in International Guidance
 - IAEA SSG-2 Rev1 “*Deterministic Safety Analysis for Nuclear Power Plants*”
 - IAEA Safety Reports Series No. 23 “*Accident Analysis for Nuclear Power Plant*”

Chapter 2 - Pre-FOAK Validation Test Plan

- Introduction
 - To present the aspects where support from experimental activities have been identified
- Rationale
 - Test Identification considering SOLO features and expected phenomena
 - Phenomena derived from the Preliminary SOLO PIRT under development
- Thermal and Fluid Dynamic Test Plan
 - Focus on coverage of expected phenomena
 - Tests executed in two rigs
 - *Single Rod Test Facility (SRTF)*
 - *Assembly Test Facility (ASTF)*

Chapter 2 - PRE-FOAK Validation test plan

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Chapter 2 - PRE-FOAK Validation test plan

[[List of Phenomena and important aspects expected in the Thermal Tests

Chapter 2 - PRE-FOAK Validation test plan

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Chapter 2 - PRE-FOAK Validation test plan

List of Phenomena and important aspects expected in the He Flow Tests

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Chapter 3 – Test Matrix

- Shakedown and repeatability addressed
- Use of SETF and ASTF
- Gather data in conditions close to SOLO characteristics
- 10 Tests identified, grouped in three groups
 - Few tests including several cases (e.g. varying one parameter over a pre-identified range)

Chapter 3 – Test Matrix

Topical Report Submittal Schedule

- SOLO-TR-2025-7, Revision 0, “SOLO™ Pre-FOAK Test Plan” Topical Report will be submitted upon concurrence it is a suitable TR
- TINN requests Safety Evaluation (SE) within six calendar months from topical report submittal



Questions

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Thank You!

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