May 11, 2022

TP-LIC-LET-0019
Project Number 99902100

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Document Control Desk

Subject: TerraPower Testing Program and Methodology Presentation Material

This letter provides the TerraPower, LLC presentation material for the upcoming "Testing Program and Methodology" pre-application engagement meeting (Enclosures 2, 3, and 4). The presentation material contains proprietary information and as such, it is requested that Enclosure 4 be withheld from public disclosure in accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding." An affidavit certifying the basis for the request to withhold Enclosure 4 from public disclosure is included as Enclosure 1. The proprietary material has been redacted from the presentation material in Enclosure 3.

This letter and enclosures make no new or revised regulatory commitments.

If you have any questions regarding this submittal, please contact Ryan Sprengel at rsprengel@terrapower.com or (425) 324-2888.

Sincerely,

Ryan Sprengel
License Application Development Manager
TerraPower, LLC

Enclosures:
1. TerraPower, LLC Affidavit and Request for Withholding from Public Disclosure (10 CFR 2.390(a)(4))
2. "Testing Program and Methodology" Presentation Material – Open Meeting – Non-Proprietary (Public)
3. "Testing Program and Methodology" Presentation Material – Closed Meeting – Non-Proprietary (Public)
4. "Testing Program and Methodology" Presentation Material – Closed Meeting – Proprietary (Non-Public)

cc: William (Duke) Kennedy, NRC
Mallecia Sutton, NRC

ENCLOSURE 1

TerraPower, LLC Affidavit and Request for Withholding from Public Disclosure (10 CFR 2.390(a)(4))

Enclosure 1
TerraPower, LLC Affidavit and Request for Withholding from Public Disclosure
(10 CFR 2.390(a)(4))

I, George Wilson, hereby state:

1. I am the Director of Regulatory Affairs and I have been authorized by TerraPower, LLC (TerraPower) to review information sought to be withheld from public disclosure in connection with the development, testing, licensing, and deployment of the Natrium™ reactor and its associated fuel, structures, systems, and components, and to apply for its withholding from public disclosure on behalf of TerraPower.

2. The information sought to be withheld, in its entirety, is contained in Enclosure 4, which accompanies this Affidavit.

3. I am making this request for withholding, and executing this Affidavit as required by 10 CFR 2.390(b)(1).

4. I have personal knowledge of the criteria and procedures utilized by TerraPower in designating information as a trade secret, privileged, or as confidential commercial or financial information that would be protected from public disclosure under 10 CFR 2.390(a)(4).

5. The information contained in Enclosure 4 accompanying this Affidavit contains non-public details of the TerraPower regulatory and developmental strategies intended to support NRC staff review.

6. Pursuant to 10 CFR 2.390(b)(4), the following is furnished for consideration by the Commission in determining whether the information in Enclosure 4 should be withheld:

   a. The information has been held in confidence by TerraPower.

   b. The information is of a type customarily held in confidence by TerraPower and not customarily disclosed to the public. TerraPower has a rational basis for determining the types of information that it customarily holds in confidence and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application and substance of that system constitute TerraPower policy and provide the rational basis required.

   c. The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR 2.390, it is received in confidence by the Commission.

   d. This information is not available in public sources.

   e. TerraPower asserts that public disclosure of this non-public information is likely to cause substantial harm to the competitive position of TerraPower, because it would enhance the ability of competitors to provide similar products and services by reducing their expenditure of resources using similar project methods, equipment, testing approach, contractors, or licensing approaches.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on: May 11, 2022

George Wilson

George Wilson
Director of Regulatory Affairs
TerraPower, LLC

ENCLOSURE 2

“Testing Program and Methodology” Presentation Material – Open Meeting

Non-Proprietary (Public)

TerraPower

NATRIUM

Testing Program and Methodology

a TerraPower & GE-Hitachi technology

NATD-LIC-PRSNT-0020

Objectives

The Natrium™ testing program will meet the requirements of 10 CFR 50.43(e) by:

1. Demonstrating the performance of each safety feature of the design through analysis, test programs, experience, or a combination.
2. Demonstrating that the interdependent effects among the safety features of the design are acceptable. This will be done through analysis, test programs, experience, or a combination.
3. Showing that data exists on the safety features of the design to assess the analytical tools used for safety analyses over the range of normal operating conditions, transient conditions, and accident sequences, including equilibrium core conditions.

This will ensure that the capabilities and reliability of SSCs are demonstrated using the right combination of testing, operating experience, and operational programs.

Test data used to support the qualification of safety-related SSCs meets 10 CFR 50 Appendix B.

Determining Overall Testing Needs

- Overall testing needs are identified and defined using the 19-step process detailed in the NRC's "A Regulatory Review Roadmap For Non-Light Water Reactors."
  – SECY-91-074, "Prototype Decisions for Advanced Reactor Designs," dated March 19, 1991, Enclosure 2, as annotated

- The test objectives will be identified separately for each performance or safety claim in order to select the appropriate type of test. A PIRT process will be used to address nuclear technology and nuclear analysis issues this will assist in developing testing to ensure that the regulatory requirements are met.

- The selected objectives and subordinate objectives will define the results needed from the testing process.

Determining Component Testing Requirements

- Ongoing evaluation of the testing required for component performance, reliability, feasibility, and availability.
  - The need for the component tests or separate effects tests is part of this evaluation.

- Ongoing evaluation of the component design with respect to plant performance and ability to mitigate events. The intent is to evaluate component reliability and performance and identify additional testing, if needed.

- Since many of the components in the design are already used in LWR nuclear plants (e.g., motor-operated valves, check valves, breakers, and relays), reliability and performance data exists. Additional testing will be required if the performance of individual components is not sufficient for the Natrium reliability requirements.

- The testing program will demonstrate that the performance of the component fulfills the safety claims directly related to the component's performance. This program will include testing for environmental qualification, seismic qualification, and quality class, as needed.

- The key inputs into this evaluation are finalizing the design and specifying the associated tests. This process will be discussed later in the presentation.

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TerraPower NATRIUM

Determining Human Interface Testing Requirements

- Testing requirements for human machine interface, instrumentation information transfer, plant automation, and operator actions are being evaluated.
  - This evaluation will include the need for simulator or mockup tests.

- Performing an analysis on the need for overall human performance element in the design.
  - Specifically, evaluation of plant automation features that have not been confirmed by existing reactor experience or by testing and the ability of operators' interactions to control the plant.

- To date, no credited operator actions have been identified.

Determining System Reliability Testing Requirements

- Ongoing evaluation of the testing required to demonstrate the feasibility, performance, reliability, and availability of the safety systems.
  - These evaluations will determine the associated system test or integral loop test requirements.

- In the Natrium design, the passive cooling system relies on natural circulation of air and sodium coolant.
  - These systems depart from the design philosophy of LWR plants due to their low pressures and large margin to coolant boiling.
  - The design allows for these highly reliable passive features to accomplish the same functions traditionally accomplished by active, redundant, and diverse systems in LWRs.

- Testing will account for all DBAs that require the reliable operation of these systems and their contribution to overall safety and reliability of the plant.

- Key inputs into this evaluation are finalization of the overall design, validation methods, and testing. These will be discussed in detail later in the presentation.

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Determining Nuclear Performance Testing Requirements

- Ongoing evaluation of the testing required to demonstrate nuclear performance, physics coefficients, reactivity control, and stability.
  - Based on previous testing that is already completed and the associated data from those tests, there is not a need for a critical testing facility at this time. Extensive data and information exists for SFR core physics and performance characteristics that are relevant to the Natrium design.

- This evaluation includes consideration of the basic characteristics of the core design, including its stability and control margins for reactivity, and the stability of any neutronic and thermal-hydraulic interactions, as they may affect the stability and control margins of the reactor.

- Tests will demonstrate that the core performance is predictable and exhibits a favorable (i.e., negative) overall reactivity coefficient, including the combination of void, temperature, moderator, doppler, pressure, and power, in normal and off-normal operating conditions.

- A key input into this evaluation is V&V. This will be discussed in more detail later in the presentation.

Determining System Interaction Testing Requirements

- Ongoing evaluation of the testing required for systems interactions, interdependencies, overall feasibility, integrated system performance, and reliability.
  - The need for partial or full-scale tests will be part of this evaluation.

- Multiple system tests will be performed based on the degree of interdependency of systems in the design.

- Tests will account for:
  - redundancy and diversity of the systems that may reduce the consequences of individual system failures,
  - possibility of synergistic effects from the interactions of various phenomena or systems, and
  - susceptibility of the design to failures that propagate through one or more systems.

- A key input into this portion is the TMP. This will be discussed in more detail later in the presentation.

Historical Testing and Data

- Historical testing and data will be used when possible.
- TerraPower has a process for qualifying and using data from testing performed at other sodium sites, and from other designs in the US and abroad.
- This process will review applicability, previous NRC questions and comments, and evaluate how the information can be used in the Natrium design.
- The testing program will be modified as needed based upon results and reviews.

Determining Successful Testing

- The final step is to verify that the results meet the objectives.
- If the results do not meet the objectives, the tests will be redefined (or the plant redesigned) to ensure the plant's safety case is demonstrated.

Questions?

Acronym List

DBA – Design Basis Accident
CFR – Code of Federal Regulations
LWR – Light-Water Reactor
PIRT – Phenomena Identification and Ranking Table
SFR – Sodium Fast Reactor
SSC – Structure, system, and component
V&V – Verification and Validation
TMP – Technology Maturation Plan

ENCLOSURE 3

“Testing Program and Methodology” Presentation Material – Closed Meeting

Non-Proprietary (Public)

TerraPower

NATRIUM

Testing Program and Methodology

a TerraPower & GE-Hitachi technology

NATD-LIC-PRSNT-0021

SUBJECT TO DOE COOPERATIVE AGREEMENT NO. DE-NE0009054

Portions of this presentation are considered proprietary and TerraPower, LLC requests it be withheld from public disclosure under the provisions of 10 CFR 2.390(a)(4).

Nonproprietary versions of this presentation indicate the redaction of such information using [[ ]](a)(4).

TerraPower NATRIUM

Objectives

- High-level overview of TerraPower's roadmap for testing programs
- Technology Maturation Plans
- Safety Basis Methodology Testing
- Core Mechanical V&V Testing
- Thermal Hydraulic V&V Testing
- Test Facilities

Testing Derivation from Design Process

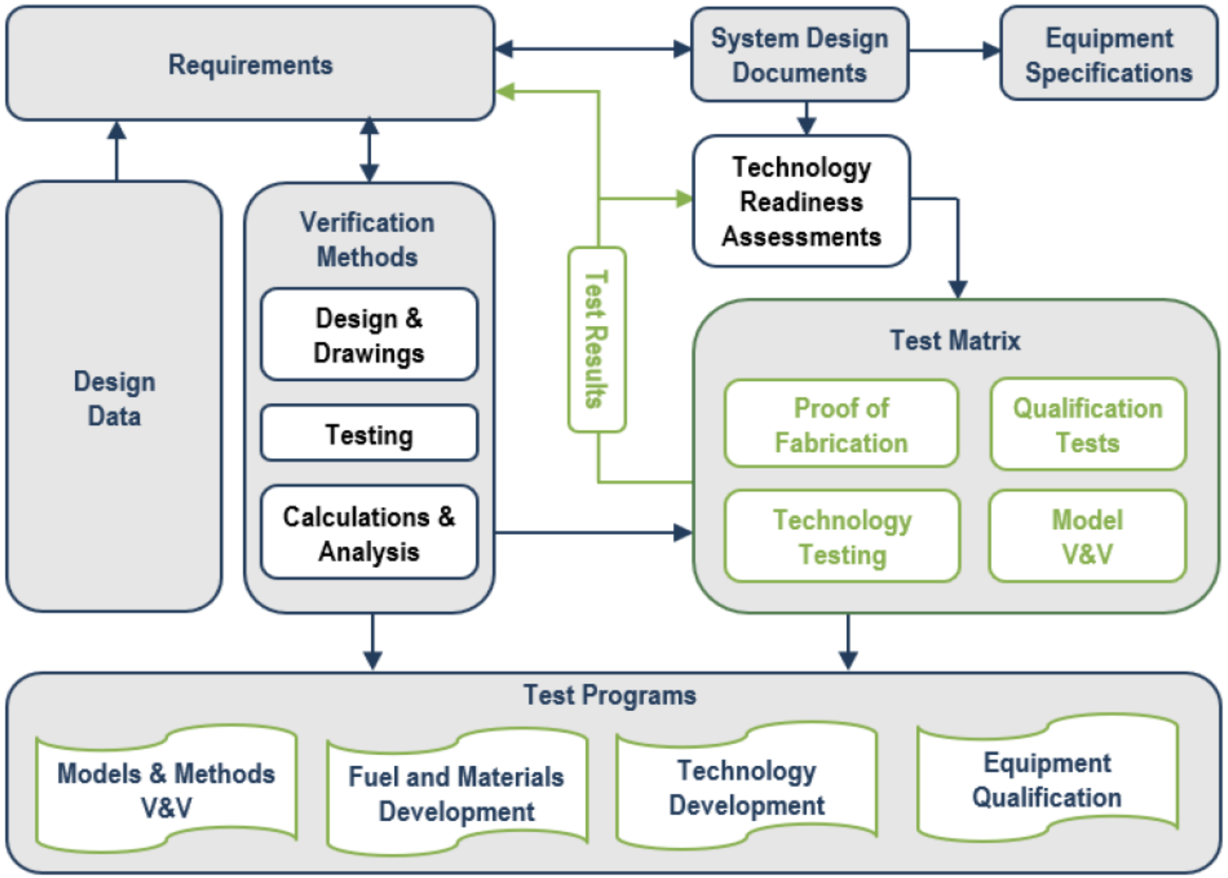
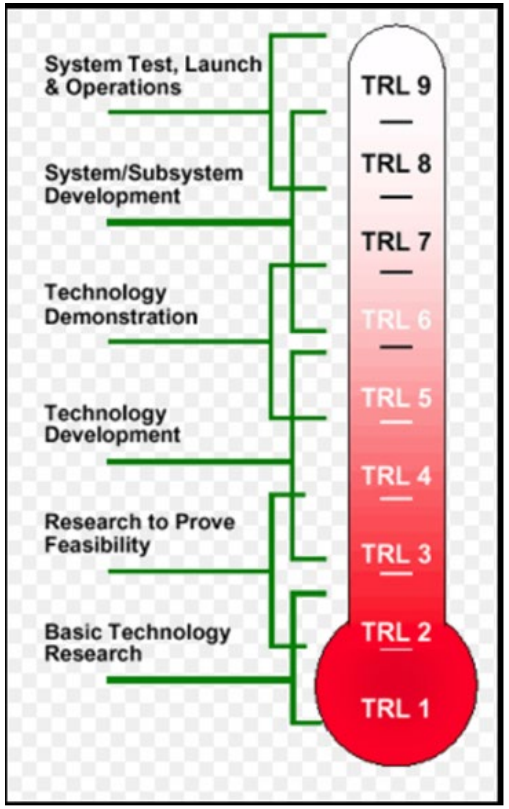


Figure 19. Integration of Testing Program in the Design Process

- **Technology Maturation Plan (TMP)**
  - TRL advancement
  - Equipment Qualification
  - Acceptance testing
- **Safety**
  - Methodology and Performance
- **V&V roadmaps**
  - Core Mechanical
  - Thermal Hydraulic

Technology Project Risks are managed by a TRA process

- TRAs evaluate program concepts, technology requirements, and demonstrated technology capabilities.
- TRAs are based on a series of TRLs that range on a scale of 1 to 9.
- The use of TRLs enable consistent and uniform evaluations of technology maturity across many and different types of technologies.
- TRAs have been used across many agencies and industries.
- TRAs are providing a common understanding of technology status and maturity, risk management, decision-making concerning technology funding, and transition of technologies.



NASA Technology Readiness Levels

TMP derivation

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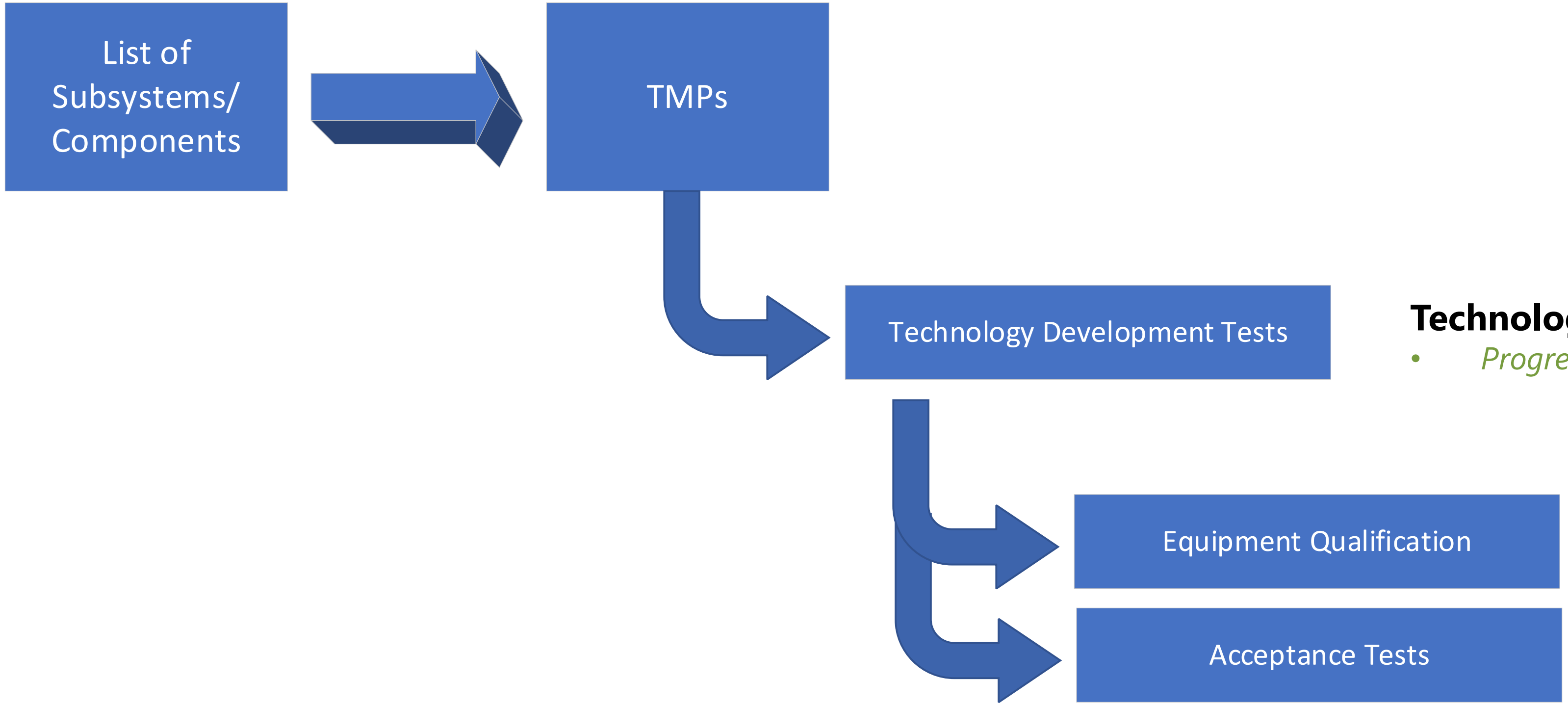

Technology Maturation Roadmap

- *Progressing technology through TRLs*

Equipment Qualification Program

- *Proof of Concept, Reliability, Environmental, Electrical, Mechanical, Seismic, etc.*

Post-Construction Inspection, Testing, and Analysis Program

- *Part of procurement process*
- *Installation process*
- *Shakedown*

Subsystem/component list defines granularity for TMPs

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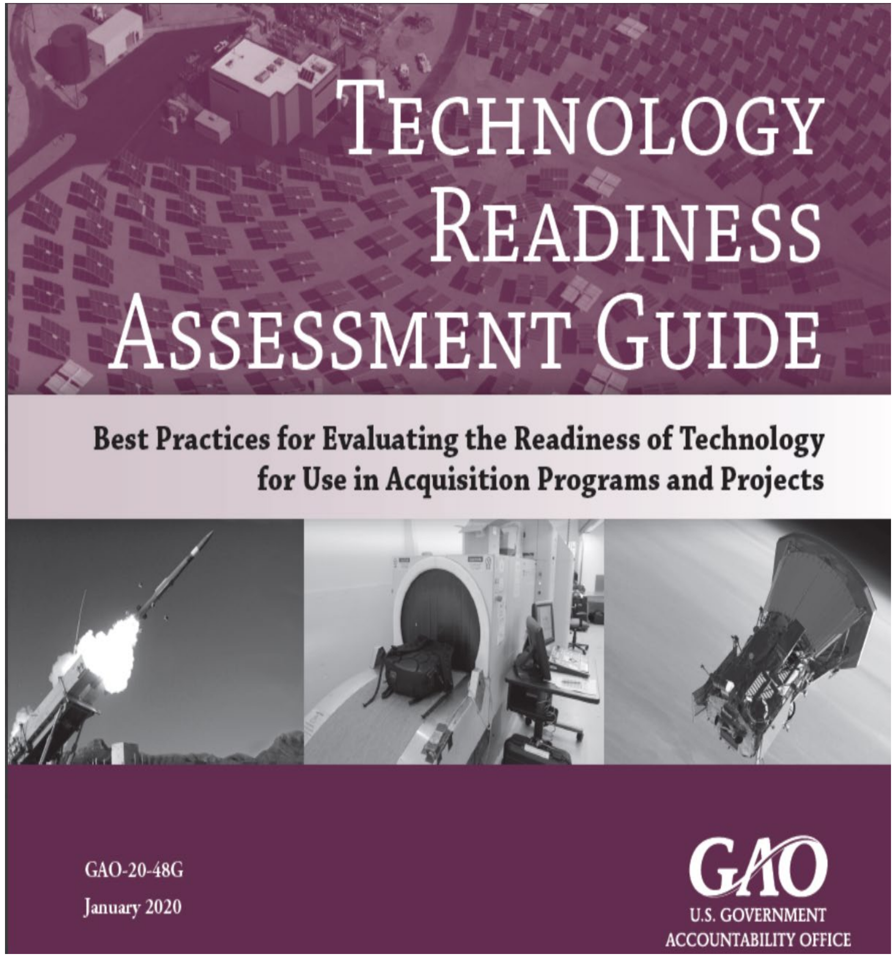
TMP

The purpose is to provide high-level guidance to generate an initial roadmap for the maturation on critical technology components and/or processes through their corresponding TRLs.

3 Major Sections

1. Past TRAs and the most current TRLs
2. A plan to mature technologies
3. A plan to mature the integration of CTs and technology elements that constitute the system



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Section 1: Technology Assessments of the Project

Reviews past technical assessments and any previous assessments that have contributed to the need for the TMP, including previous technology development activities that brought the technology to its current state of readiness. A list of the current TRLs for each CT is also included in this section.

- Summary of previous independent technical reviews
- Summary of previous technical readiness assessments
- Technology heritage
- Current project activities and technology maturation

Section 1 Template

CTE list - A list of the CTE's, Critical Characteristics and current TRL levels	
CTE#1: Description	CTE#2: Description
TRL# - determined from TRA Form	TRL# - determined from TRA Form

• Description of the technology element.
• Short description of Justifications for TRL level
  • Previous testing
  • TRA evaluation
  • Industry utilization
  • etc.
	• Description of the technology element.
	• Short description of Justifications for TRL level
	  • Previous testing
	  • TRA evaluation
	  • Industry utilization
	  • etc.

Critical Characteristic A - Define briefly each characteristic of the element that is critical to performance	Critical Characteristic A - Define briefly each characteristic of the element that is critical to performance
Critical Characteristic B	Critical Characteristic B
Critical Characteristic C	Critical Characteristic C
Critical Characteristic D	Critical Characteristic D
Critical Characteristic E	Critical Characteristic E
Critical Characteristic F - Characteristics can be added or removed as needed by the Element	Critical Characteristic F - Characteristics can be added or removed as needed by the Element

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Section 2: TMP

Describes the approach, steps, and activities for maturing technologies, including the consideration of alternative technologies.

- the criticality of the system to mission success or safety
- the probability or likelihood that the technology will be successful
- the cost, schedule, and performance penalty incurred if an alternate solution is used (agencies generally include this as part of their risk assessments and document them in the project Risk Register)
- the high-level cost estimate of the development strategy
- the effects of the strategy on other technical portions of the project

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Section 2 Template

Individual Technology Element development		
CTE#1: Grapple FIngers/Actuation	TRL# - Comes from the TRA process in Section 1	
Technology gaps and Technical Assumptions	Identify technology gaps and technical assumptions that require resolution or validation. overall technology.	
Objectives and approach of the technology development	• Describe the objectives for the CTE advancement • Describe the approach to the maturation of the TRL for the Element	
Scope to get to :	TRL 5	TRL 6
Tasks to be undertaken	Describe any technical tasks required to reach this TRL level: • Examples of types of tasks: ◦ testing ◦ analysis/calculations ◦ design ◦ manufacturing ◦ trade studies ◦ etc. ◦ Quality level evaluation is required for every task	Describe any technical tasks required to reach this TRL level: • Examples of types of tasks: ◦ testing ◦ analysis/calculations ◦ design ◦ manufacturing ◦ trade studies ◦ etc. ◦ Quality level evaluation is required for every task
Results required for advancement	• Define the success criteria for each critical characteristic to pass the next TRL level • These results are intended to complete tasks that will verify design or promote to the next TRL level	• Define the success criteria for each critical characteristic to pass the next TRL level • These results are intended to complete tasks that will verify design or promote to the next TRL level
Risks associated with acquiring the required results	• Identify any risks associated with the required results above ◦ schedule ◦ quality level ◦ cost ◦ Identify risks based on the confidence level for achieving the required results (this can tie into alternatives below)	• Identify any risks associated with the required results above ◦ schedule ◦ quality level ◦ cost ◦ Identify risks based on the confidence level for achieving the required results (this can tie into alternatives below)

Environment	Describe the environmental conditions of any testing • Temperature • Medium (argon or sodium for example) • Pressure • etc.	Describe the environmental conditions of any testing • Temperature • Medium (argon or sodium for example) • Pressure • etc.
Scaling of Test	Describe the expected scaling with the approximate sizing. • actual dimensions or "half-scale" • these are ROM estimates so better to be conservative • this information will be used for test planning	Describe the expected scaling with the approximate sizing. • actual dimensions or "half-scale" • these are ROM estimates so better to be conservative • this information will be used for test planning
Cost ROM estimates	Estimated conservative cost for each item in the "Tasks to be undertaken" section if possible • For design hours can be estimated • For testing, the test equipment and hours can be estimated • For procurement equipment costs can be estimated	Estimated conservative cost for each item in the "Tasks to be undertaken" section if possible • For design hours can be estimated • For testing, the test equipment and hours can be estimated • For procurement equipment costs can be estimated
Technology alternatives	Describe technology alternatives that could still fulfill the critical characteristics of the CTE. Describe if possible any alternate developmental paths that may be needed if the current plan does not have success. This is a risk management evaluation.	Describe technology alternatives that could still fulfill the critical characteristics of the CTE. Describe if possible any alternate developmental paths that may be needed if the current plan does not have success. This is a risk management evaluation.
Critical scheduling and planning	Describe any conditional restraints on maturation. If any precursors are required to fulfill the objectives for TRL advancement they are to be captured here. This section is intended to identify any schedule risks. An example of this may be a completed and procured piece of equipment from the previous TRL maturity level.	Describe any conditional restraints on maturation. If any precursors are required to fulfill the objectives for TRL advancement they are to be captured here. This section is intended to identify any schedule risks. An example of this may be a completed and procured piece of equipment from the previous TRL maturity level.

TerraPower NATRIUM

Section 3: Technology Maturity Schedule, and Summary Technology Maturity Budget

- Describes the plan to mature the technologies with the integration of the CTs, including an analysis of the maturity gaps.
- This section should include a high-level schedule and budget, including the total maturation costs for the major development activities for each CT.
- Major decision points, such as proceeding with or abandoning the current technology or selecting a backup technology, should be identified in this section.

Section 3 Template

Life-Cycle Benefits

CTE Specific TMRs

- For each Critical Technology Element 1 to N summarizes the following items (use template XXXX)
  - Description of Element function
  - State the objective of the element
  - Describe the current state of the Element including TRL level
  - Describe the approach to sufficiently address gaps to mature the technology to the next TRL level For each TRL level up to 7
  - List the key steps to be taken to advance each TRL level up to 7

ROM Technology Maturity Schedule

Include a conservative rough order of magnitude schedule. It may be in the form of a Gantt chart, bulletized list of milestones, or any other concise, clear format

ROM Technolgy Maturity Budget

As much possible cost estimates for equipment and test development shall be evaluated. The costs can be based on previous purchases, vendor estimates, or engineering judgment.

Testing Derivation from Design Process

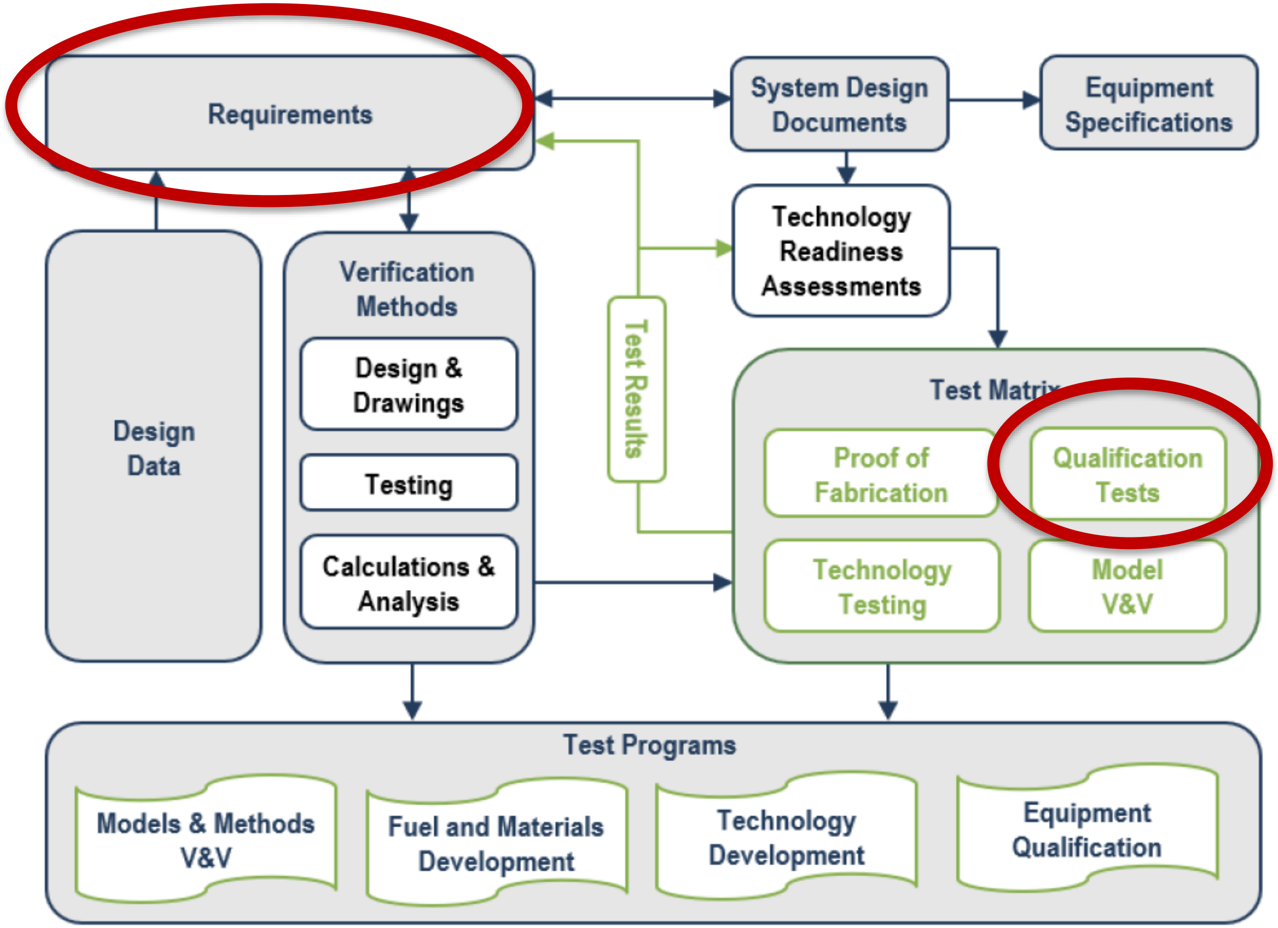

Figure 19. Integration of Testing Program in the Design Process

- **TMP**
  - TRL advancement
  - Equipment Qualification
  - Acceptance testing
- **Safety**
  - Methodology and Performance
- **V&V roadmaps**
  - Core Mechanical
  - Thermal Hydraulic

Traceability of Requirements for Equipment Qualification

ATOM is our Configuration Management Platform

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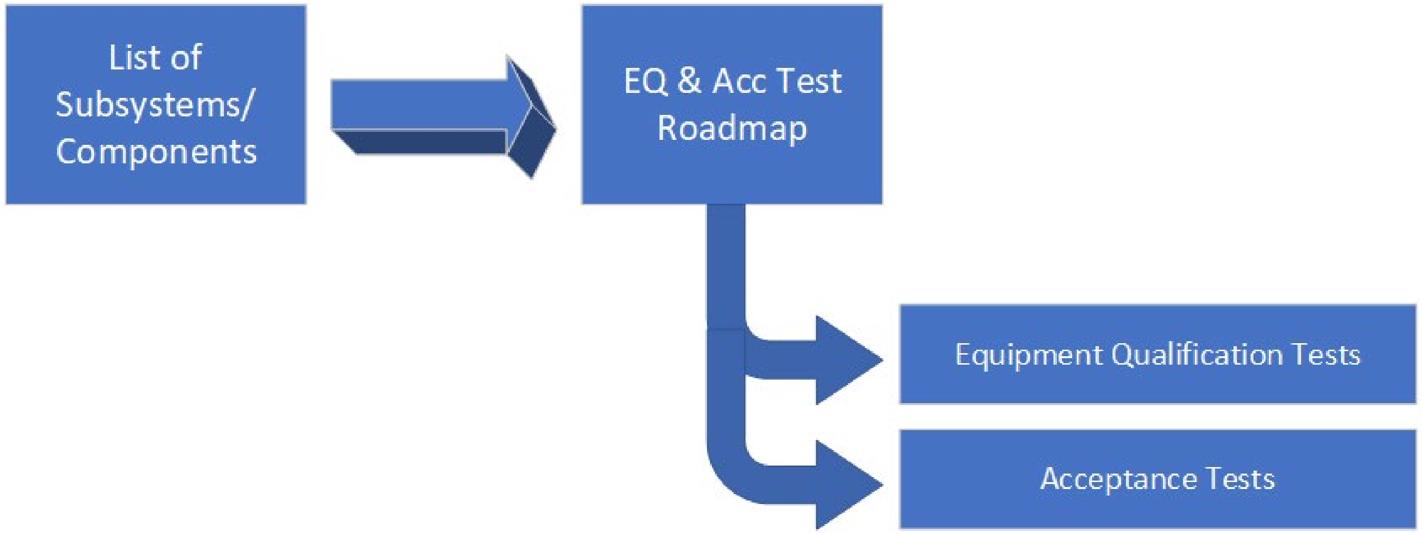
High TRL Subsystems and Components



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- High TRL subsystems/components do not need full TMP development.
- Equipment qualification and acceptance testing will be derived in the component design and purchase specifications.

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Equipment Qualification

Regulatory Guide 1.100

ASME QME-1-2017

- Code Case QME-007

IEEE Std. 344-2013

Equipment Qualification Specification

- This specification will apply to all equipment qualification used for equipment critical to safety and with special designation mechanical and electrical equipment, including:
  - Proof of concept
  - Reliability
  - Seismic
  - Environmental
  - Dynamic
  - Functional qualification
  - Electromagnetic compatibility

Equipment Qualification Program

- Electrical equipment consists of all electrical power and I&C equipment, which includes:
  - all analog and digital I&C components, inclusive of computer based I&C equipment which will be considered a subset of digital I&C components

- Special designation mechanical and electrical equipment includes:
  - equipment associated with emergency reactor shutdown
  - (functional) containment isolation
  - reactor core cooling
  - containment/reactor heat removal
  - systems essential in preventing a significant release of radioactive material to the environment

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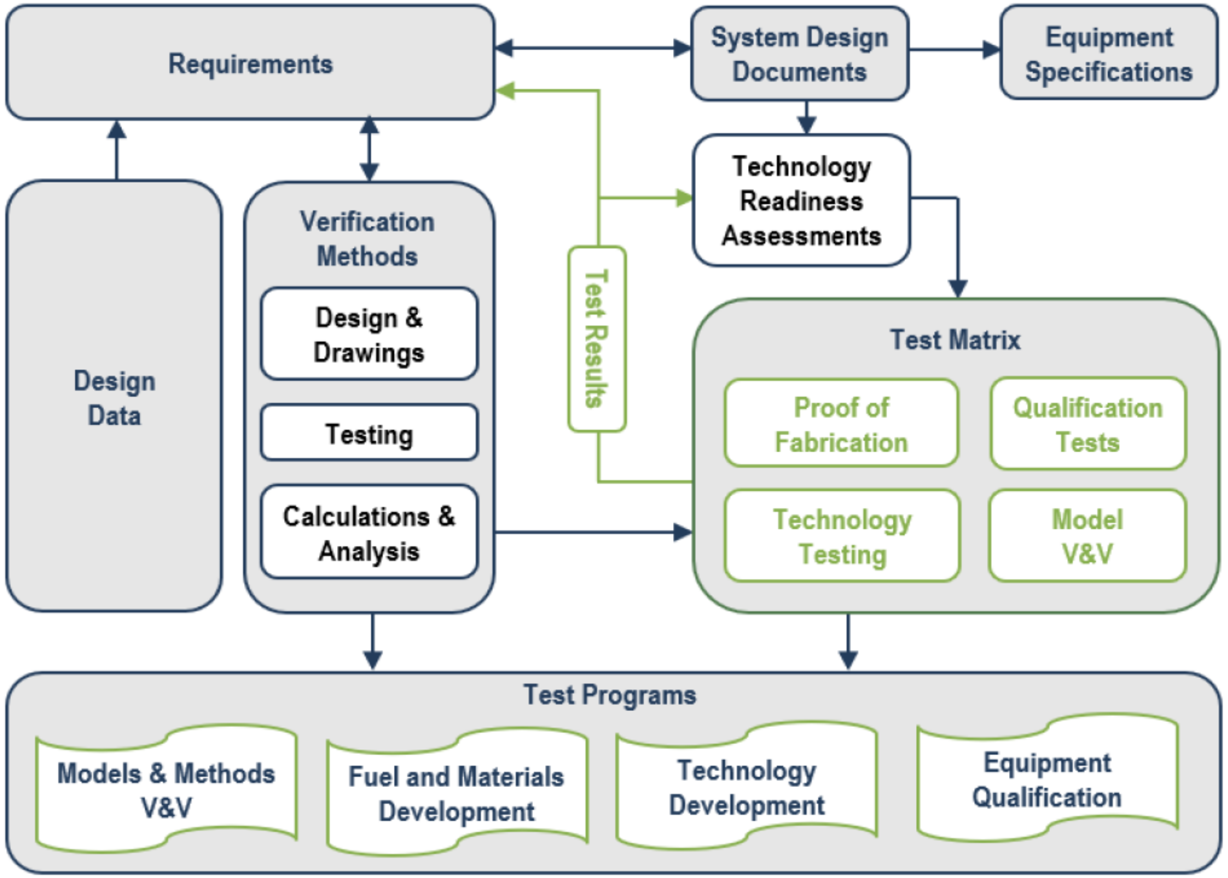
Equipment Qualification Specification

- The specification will describe the requirements used to ensure that industry standards and federal regulations meet the testing requirements for the licensing, approval, or certification of a standard plant design for advanced reactors.

- The specification ensures that SSCs are validated through analytical and physical testing with a combination of component, separate effects, integral effects, startup and preoperational tests.

Testing Derivation from Design Process



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Post-Construction Inspection, Testing and Analysis Program (PITAP)

- Includes:
  - Construction testing requirements
  - System turnover process
  - Initial Test Programs

PITAP

PITAP ensures that SSCs meet:

- Performance requirements
- Test objectives
- Design criteria established in the Safety Analysis Report

Initial Plant Startup Test Program

Initial Test Programs are comprised of:

- Pre-operational tests (including component, system, and pre-core Hot Functional Testing)
- Initial fuel loading
- Post-core Hot Functional Testing
- Initial criticality
- Low-power physics tests
- Power-ascension tests

Testing Derivation from Design Process

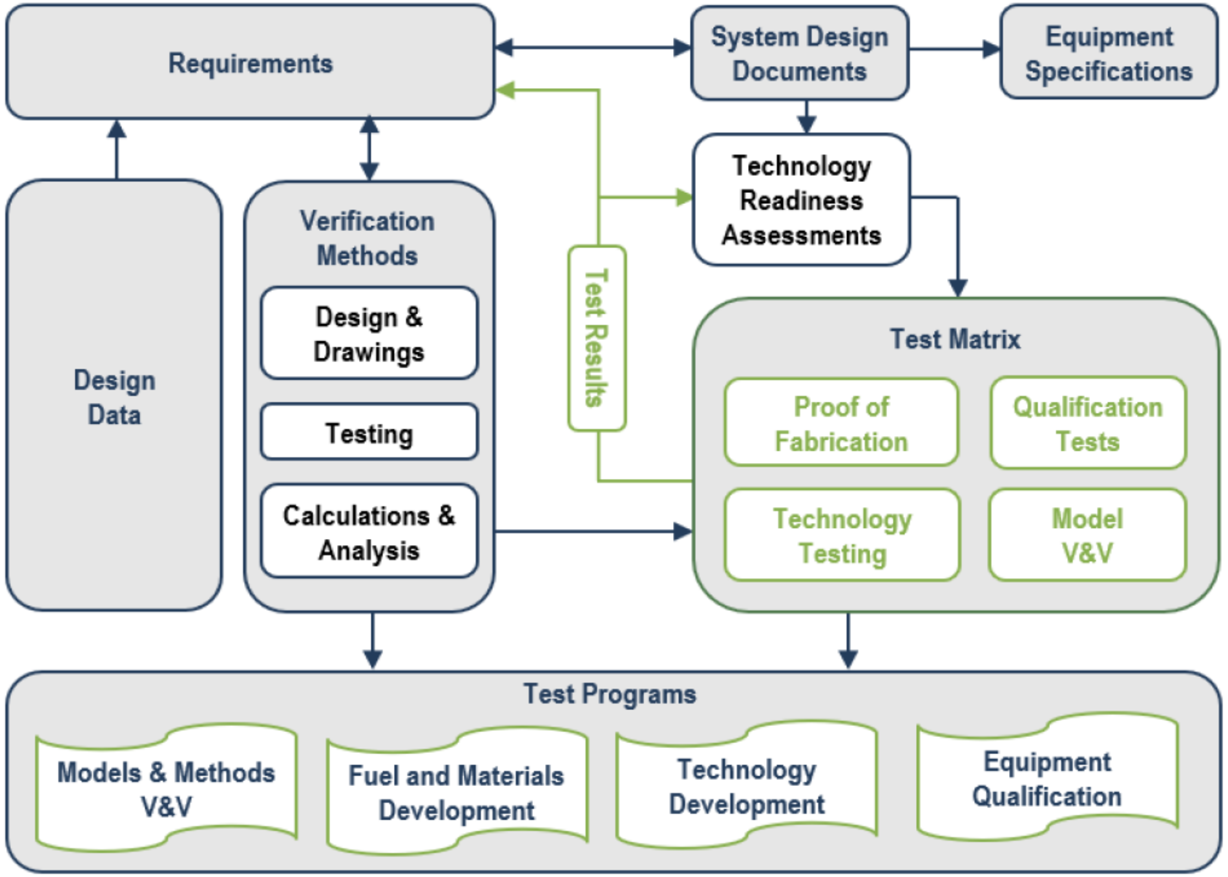

Figure 19. Integration of Testing Program in the Design Process

- ***TMP EXAMPLE***
  - TRL advancement
  - Equipment Qualification
  - Acceptance testing
- **Safety**
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- **V&V roadmaps**
  - Core Mechanical
  - Thermal Hydraulic

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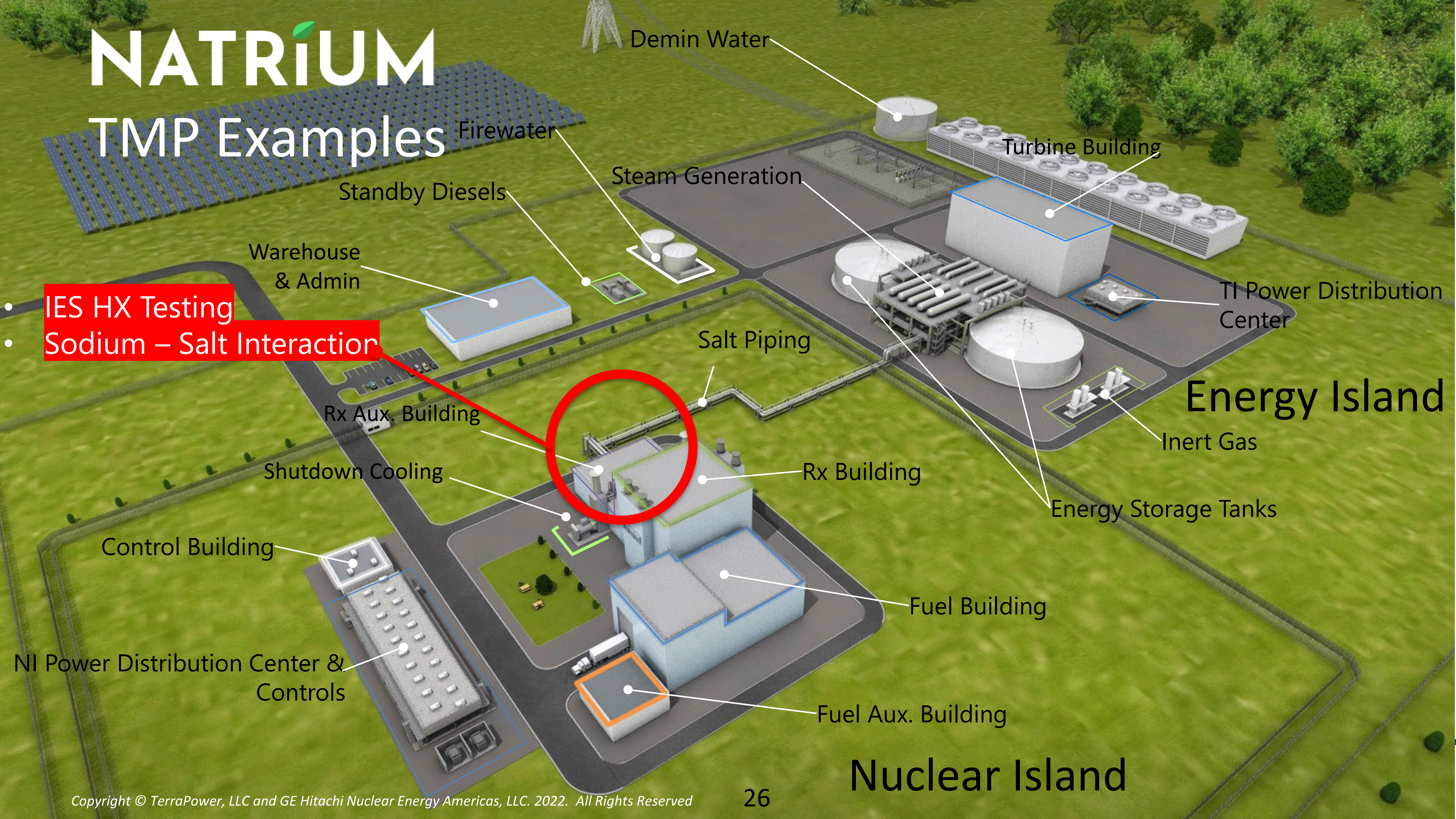
TerraPower NATRIUM

NATRIUM

TMP Examples

- IES HX Testing
- Sodium – Salt Interaction



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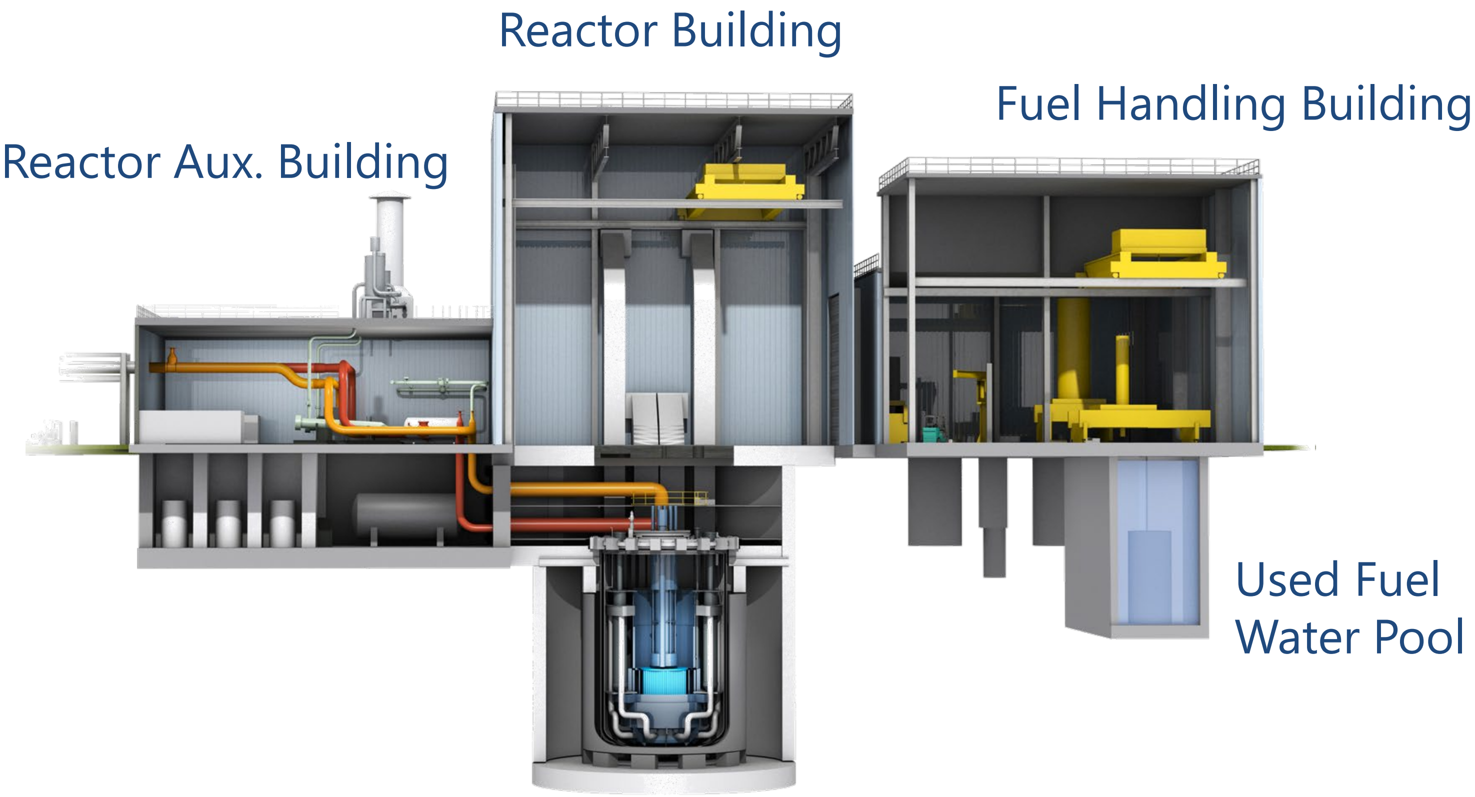
Reactor Building
Fuel Handling Building
Reactor Aux. Building
Used Fuel
Water Pool

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Quantification of the sodium – salt interaction is essential to the new plant architecture

Natrium™ design reduces inherent risk by eliminating:

- sodium–water/steam interaction
- hydrogen generation
- high-pressure reaction with sodium – self propagating

Use of a sodium-to-salt HX replaces these high-level risks with a lower set of risks from the potential sodium-salt interaction.

Better quantitative confirmation of these new risks is required.

Test Strategy of the Sodium–Salt Interaction

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Initial Salt Injection into Sodium Pool Results

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Salt Injection Loop

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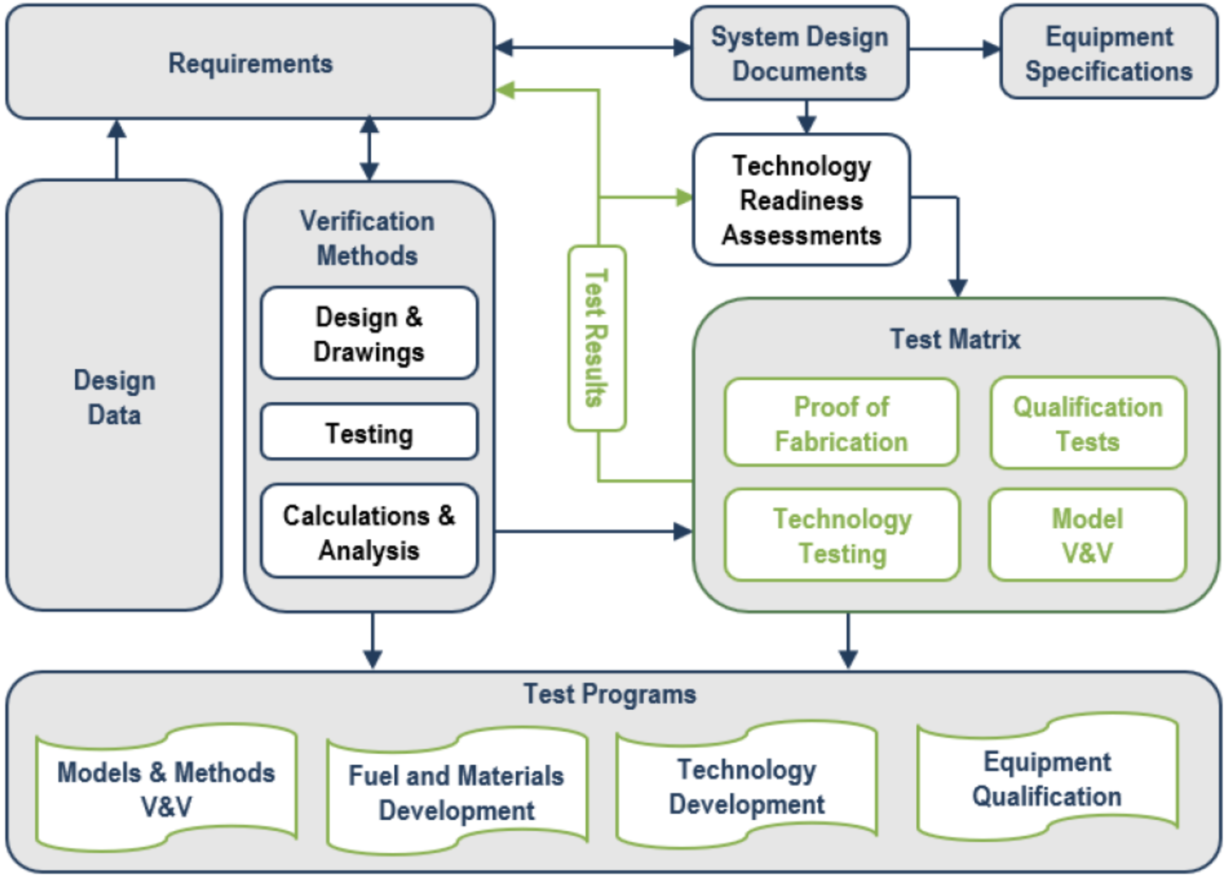
Testing Derivation from Design Process



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Methodologies V&V Test Plan

- Designing and licensing the Natrium reactor requires the determination of the plant and SSC performance under normal operating and off-normal conditions to ensure the safety of the public.

- Analyses to support these determinations require the definition of methodologies, where a sequence of one or more engineering computer programs are used with special models and design information to evaluate the design against its requirements and regulatory limits.

Methodologies V&V Test Plan

- The testing required to satisfy the verification of codes is responsible for ensuring that the numerical algorithms are correctly implemented, whereas validation ensures that encoded mathematical models are representative of the physical problems that are being analyzed.

- This document provides a narrative of the testing needs for each of key disciplines (e.g., safety, thermal hydraulics, fuel performance, mechanical, and neutronics/shielding) to provide a development basis for the Natrium Testing Programs.

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Methodologies V&V Test Plan

Methodology Narratives

[[ ]](a)(4)

- *Safety Analysis*
- *Fuel and Absorber Pin Performance*
- *Core Mechanical*
- *Neutronics and Shielding*
- *Thermal Hydraulic*

Safety Analysis Methodologies

- Events Without Fuel Failure
- Events With Fuel Failure
- Source Term
- Partial Flow Blockage
- Emergency Planning Zone
- Reactor Stability

EXAMPLE: *Events Without Fuel Failure Methodology*

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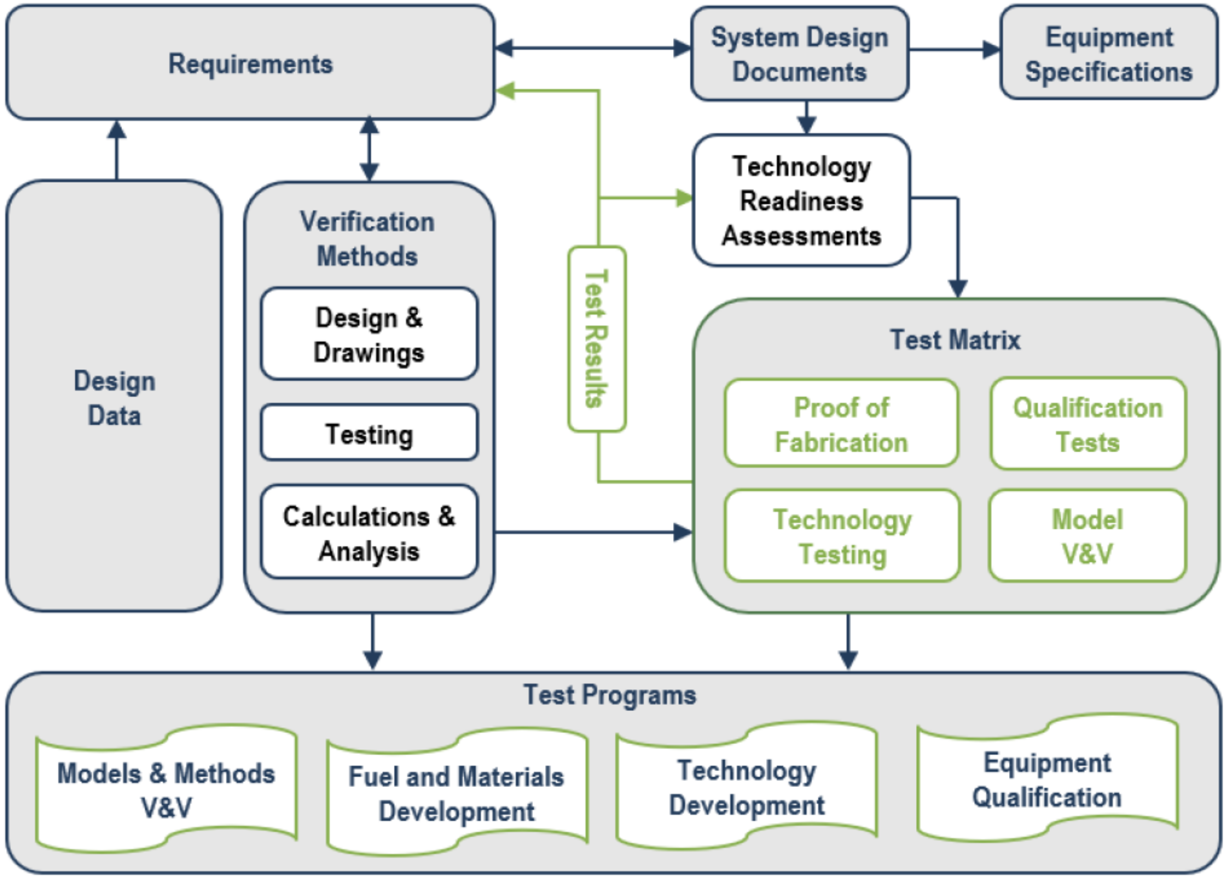
Testing Derivation from Design Process



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Core Mechanical V&V Testing Examples

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Core Mechanical Example: Static load deflection tests - SFA

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Static load deflection tests - SFA

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Static load deflection tests - SFA

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Testing Derivation from Design Process

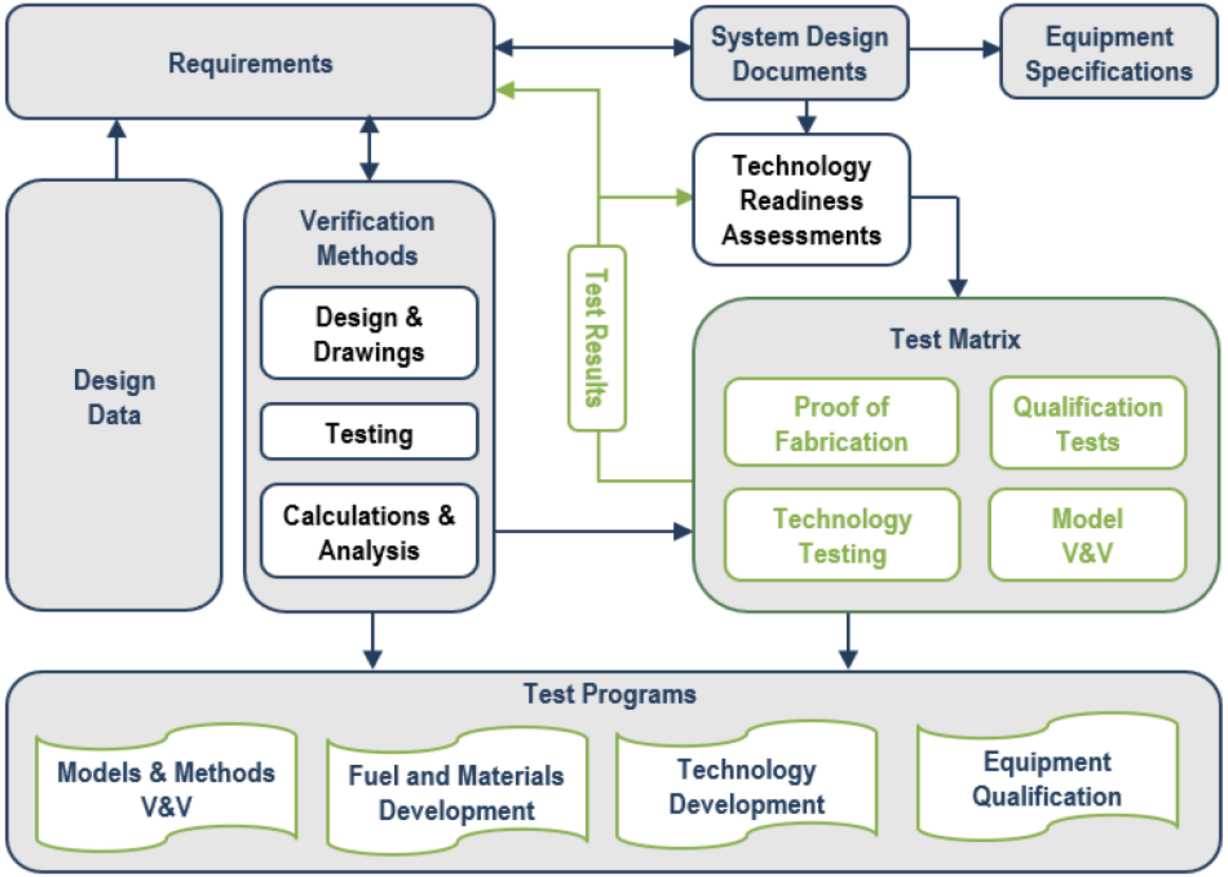

Figure 19. Integration of Testing Program in the Design Process

- **TMP**
  - TRL advancement
  - Equipment Qualification
  - Acceptance testing
- **Safety**
  - Methodology and Performance
- **V&V roadmaps**
  - Core Mechanical
  - Thermal Hydraulic

Thermal Hydraulic Testing Roadmap

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Thermal Hydraulic Roadmap

This roadmap discusses testing needs under six categories:

1) pre-operational,

2) initial startup,

3) post-construction inspections, testing and analysis,

4) integral effects,

5) separate effects, and

6) prototype tests.

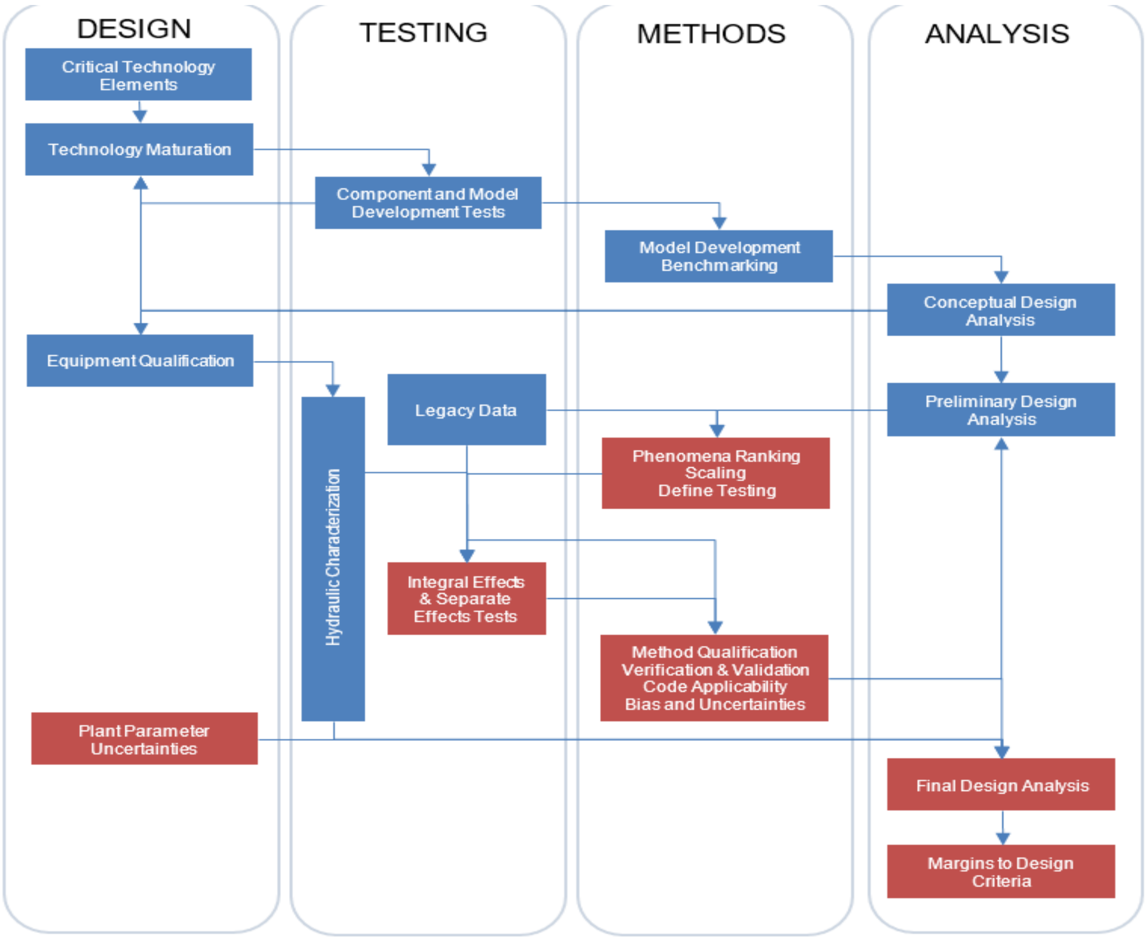

Figure 4 Design, Testing, Methods, and Analysis Roadmap

Thermal Hydraulic Roadmap – Key Section Examples

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Thermal Hydraulic Roadmap – Test Example

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Test Labs and Research Partners

TerraPower is currently, or will be, performing testing with various Universities and National Labs. Such as :

- Argonne National Lab
- Idaho National Lab
- Oregon State University
- University of Wisconsin - Madison

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Bellevue Engineering Lab

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Everett Lab

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What is the TFF?

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Sodium Pumps

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Control Rod Drive Assemblies

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In-Vessel Transfer Machine

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Questions?

Acronym List

ACLP – Above Core Load Pad
ASME – American Society of Mechanical Engineers
CT – Critical Technology
CTE – Critical Technology Element
EM – Electromagnetic
GPM – gallons per minute
HX – Heat Exchanger
I&C – Instrumentation and Control
IEEE – Institute of Electrical and Electronics Engineers
IES – Integrated Energy System
IHX – Intermediate Heat Exchanger
LVDT – Linear Variable Differential Transformer
NI – Nuclear Island
NSRST – Non-Safety-Related with Special Treatment
PITAP - Post-Construction Inspection, Testing and Analysis Program
QL – Quality Level
RAC – Reactor Air Cooling
ROM – Rough Order of Magnitude
SFA – Single Fuel Assembly
SFR – Sodium-cooled Fast Reactor
SSC – Structure, System, and Component
SR – Safety-Related
TFF- Testing and Fill Facility
TLP – Top Load Pad
TMP – Technology Maturation Plan
TMR – Technology Maturation Roadmap
TRA – Technology Readiness Assessment
TRL – Technology Readiness Level
V&V – Verification and Validation

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BACKUP SLIDES

Backup Slide: Static load deflection tests – Graded Approach

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Single Assembly Mechanical Deflection Instrumentation

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ENCLOSURE 4

“Testing Program and Methodology” Presentation Material – Closed Meeting

Proprietary (Non-Public)