



Licensing Processes and Procedures Workshop

Feb. 3, 2010

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Wesley Held

Advanced Reactor Program

Office of New Reactors



Workshop/Webinar on Licensing Advanced Reactors

General Requirements

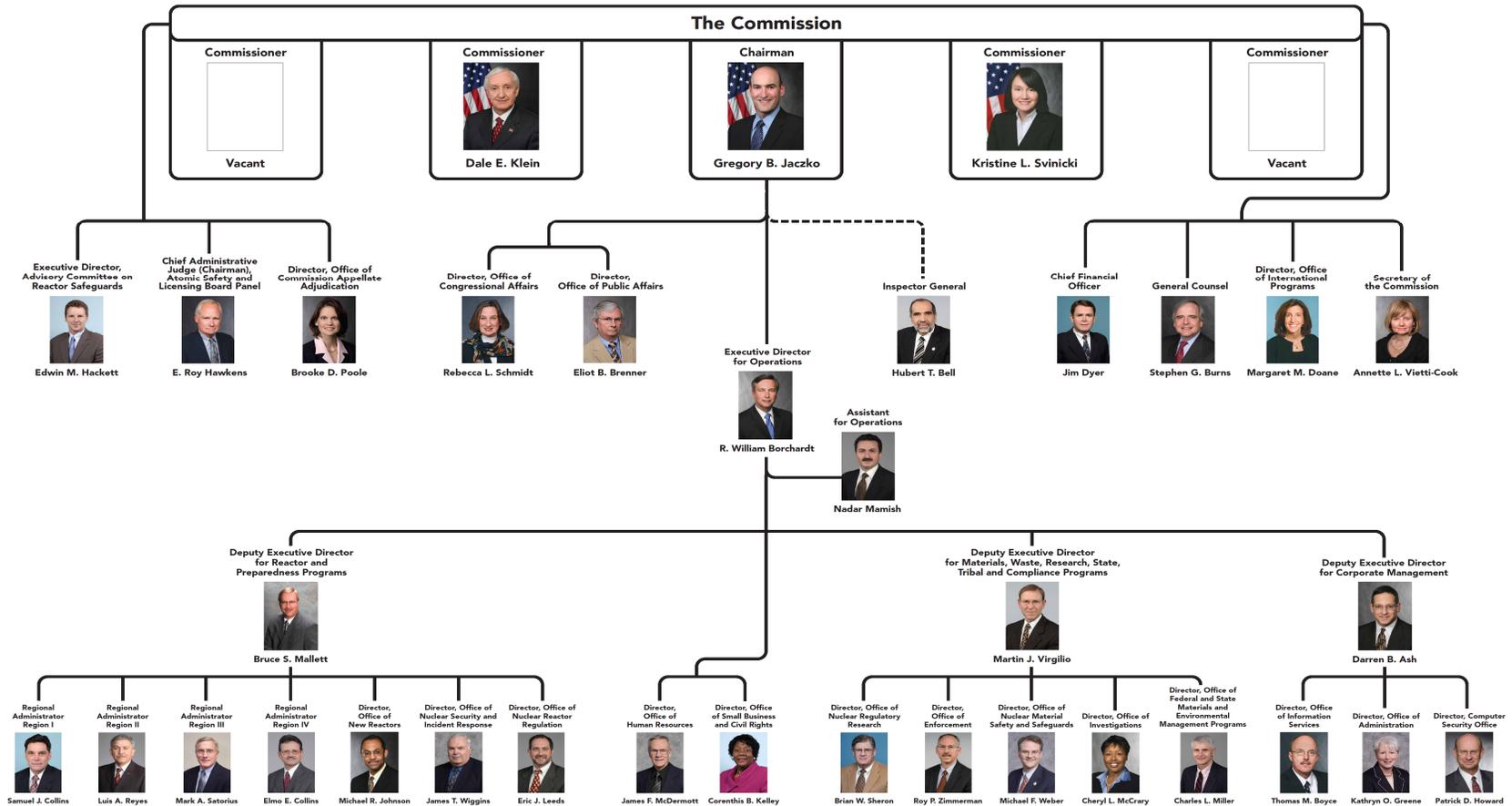
February 3, 2010

William Reckley
Advanced Reactor Program
Office of New Reactors



NRC Licenses and regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment.

U.S. Nuclear Regulatory Commission





~~Atomic Energy Act (1946, 1954)~~ **NRC – History & Legislation**

- Price-Anderson Act
- National Environmental Policy Act (NEPA)
- Energy Reorganization Act

NRC Regulations

- Title 10 of the Code of Federal Regulations (10 CFR) – Selected Parts
 - Part 2 – Rules of practice
 - Part 9 – Public records
 - Part 20 – Radiation protection standards
 - Part 21 – Reporting of defects and noncompliance
 - Part 30 – Byproduct Material
 - Part 40 – Source Material
 - Part 50 – Production and Utilization Facilities
 - Part 51 – Environmental Protection

NRC Regulations (continued)

- Title 10 of the Code of Federal Regulations (10 CFR) – Selected Parts
 - Part 52 – Licenses, Certifications and Approvals
 - Part 55 – Operator Licenses
 - Part 70 – Special Nuclear Material
 - Part 73 – Physical Protection
 - Part 100 – Reactor siting criteria
 - Part 110 – Export and Import
 - Part 140 – Financial Protection & Indemnity
 - Part 170, 171 – NRC fees



- ☐ Consists of Three Subprograms

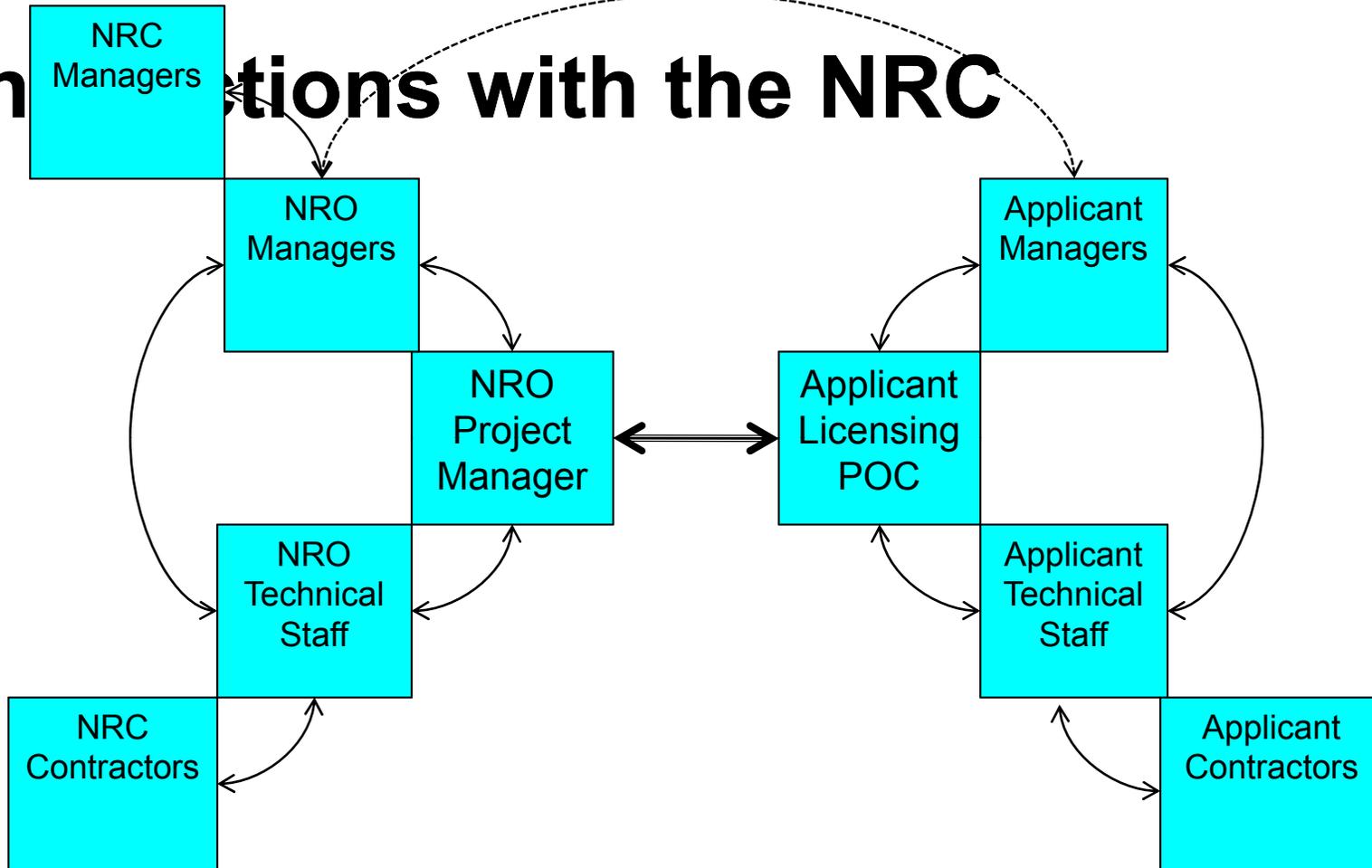
Office of New Reactors

- New Reactor Licensing
- Construction Inspection
- Advanced Reactors

- ☐ Organization:

- Division of New Reactor Licensing
- Division of Site and Environmental Reviews
- Division of Safety Systems and Risk Assessment
- Division of Engineering
- Division of Construction Inspection & Operational Programs
- Advanced Reactor Program

Interactions with the NRC



Correspondence

- Written communications (10 CFR 52.3)
 - Address to: ATTN: Document Control Desk
 - cc: Project Manager
- Electronic Submittals
- Sensitive Information (10 CFR 2.390)
- Completeness and Accuracy of Information (10 CFR 52.6)
- Oath or Affirmation (10 CFR 50.30(b), design approvals and licenses)



United States Nuclear Regulatory Commission

Protecting People and the Environment

Information on NRC website (nrc.gov)

The screenshot shows the NRC website homepage in a browser window. The address bar displays <http://www.nrc.gov/>. The page features a navigation menu with links for [Index](#), [Site Map](#), [FAQ](#), [Facility Info](#), [Help](#), [Glossary](#), and [Contact Us](#). A search bar is located in the top right corner. The main header includes the U.S. NRC logo and the tagline "Protecting People and the Environment". Below the header is a navigation bar with buttons for [About NRC](#), [Nuclear Reactors](#), [Nuclear Materials](#), [Radioactive Waste](#), [Nuclear Security](#), and [Public Meetings & Involvement](#).

The left sidebar contains several sections:

- Agency Status**
 - Employment NRC #1
 - Report a Safety Concern
 - Event Reports
 - News & Information
 - Electronic Reading Room
 - Business with NRC
- Radiation Protection**
- For the Record**
- 2008-2013 Strategic Plan**
- Budget &**

The main content area features a large photograph of Sen. Tom Carper (D-Del.) and NRC Chairman Gregory Jaczko touring a facility. Below the photo is a caption: "Sen. Tom Carper (D-Del.) (left) and NRC Chairman Gregory Jaczko (center) toured PSEG's new Energy and Environmental Resource Center near the Hope Creek and Salem Nuclear Generating Stations in Salem, N.J." Below the photo is a **Highlights** section for the **RIC 2010** (NRC Regulatory Information Conference) held in March 9-11, with the tagline "ANALYSIS FOR TODAY AND TOMORROW".

The right sidebar contains a **Key Topics** section with a list of links:

- DOE Application for Yucca Mountain
- Emergency Preparedness
- New Reactors
- VA Hospital Medical Events
- Reactor Decommissioning Funds
- The National Source Tracking System

Below the key topics is a link for [Previous Key Topics](#). At the bottom of the right sidebar are links for [for Students & Teachers](#) and [Photo and Video](#). The footer of the page includes a "Local intranet" link.



Questions?



An Overview

Jerry N. Wilson, PE
Office of New Reactors

Required Reviews For Licensing

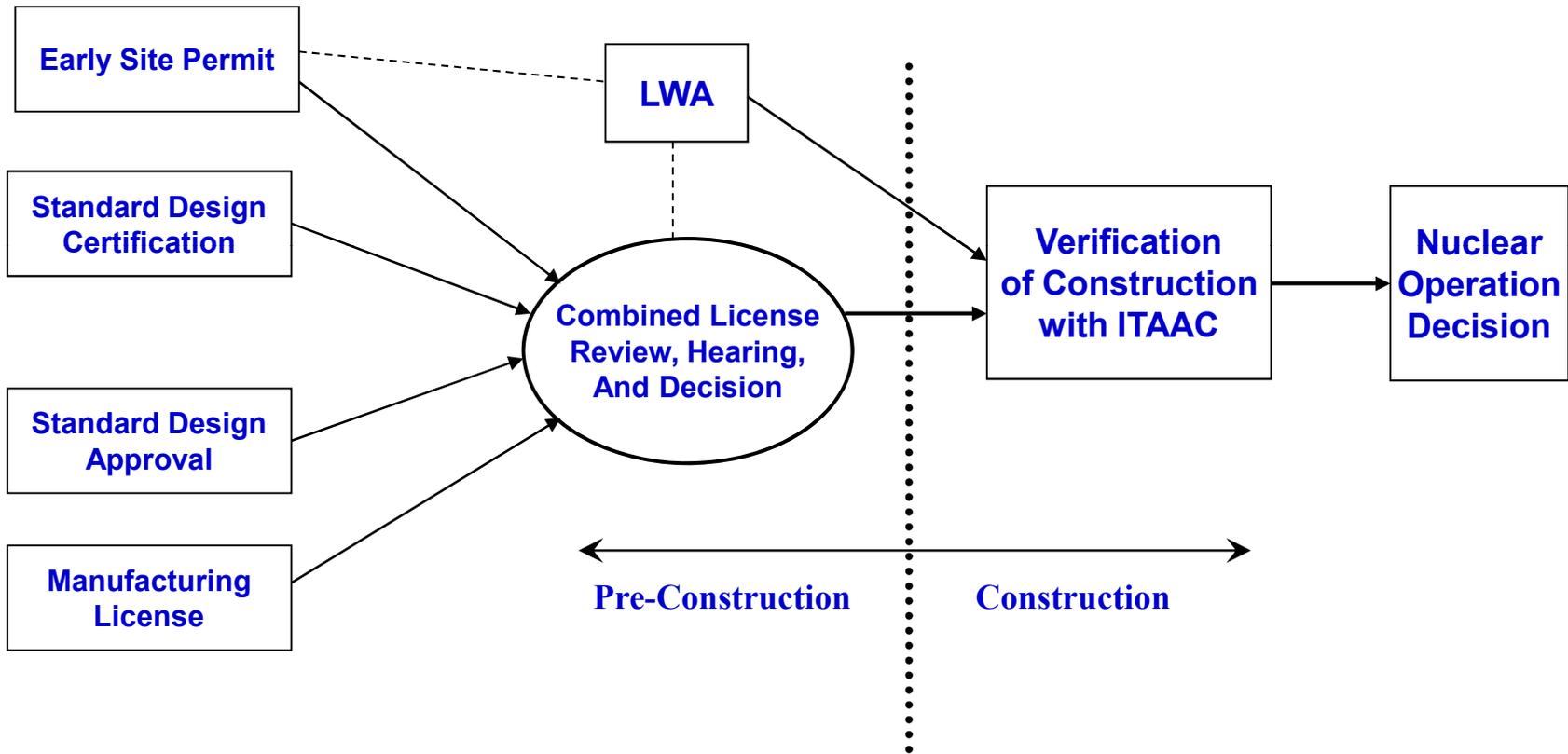
- Applicant Qualifications
- Design Acceptability
- Environmental Impacts
- Operational Programs
- Site Safety
- Verification with ITAAC

- Licensing Processes:
 - Early Site Permit (ESP)
 - Design Certification (DCR)
 - Combined License (COL)
 - Standard Design Approval
 - Manufacturing License (ML)
- Provide a more predictable licensing process
- Resolve safety and environmental issues before authorizing construction
- Provide for timely & meaningful public participation
- Encourage standardization of nuclear plant designs
- Reduce financial risk to nuclear plant licensees

Revisions to Part 52

- Reorganized subparts w/ common format & content
 - Clarified applicability of technical requirements to each licensing process, e.g. Part 21 and App. B to Part 50
 - Provided a process for amending design certifications
 - Required COLs to provide schedule for completing ITAACs and notify NRC of scheduled fuel load date
 - Required COLs to address operational programs
 - Required COLs to maintain & upgrade PRAs

Part 52 Licensing Process

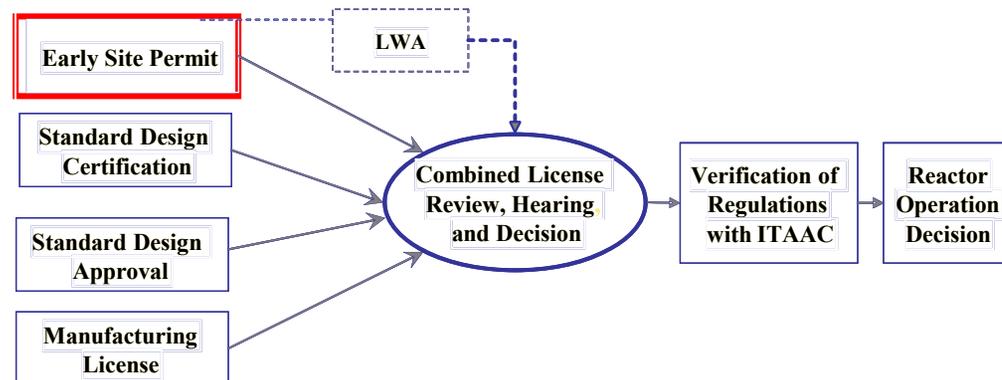




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Early Site Permits (Subpart A)

- Allows applicant to “bank” a site
- Are licenses (partial construction permits)
- Good for 10-20 yrs [52.27] + renewal
- Review Scope [52.18] :
 - Site Safety
 - What the environment can do to the design
 - Environmental Impact
 - What the design can do to the environment
 - Emergency Preparedness



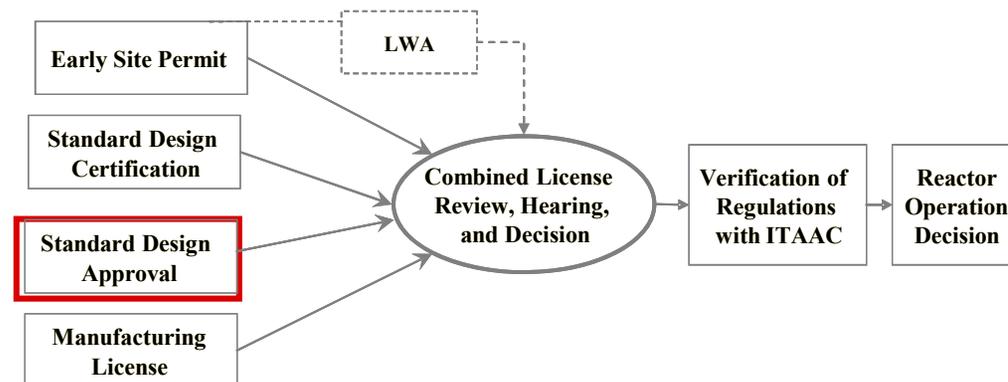


Design Certification via Rulemaking Part 52

- Appendix A – GE ABWR
- Appendix B – C-E System 80+
- Appendix C – Westinghouse AP-600
- Appendix D – Westinghouse AP-1000
- Appendix E - Next Design
- Appendix F - Future Design
- So on

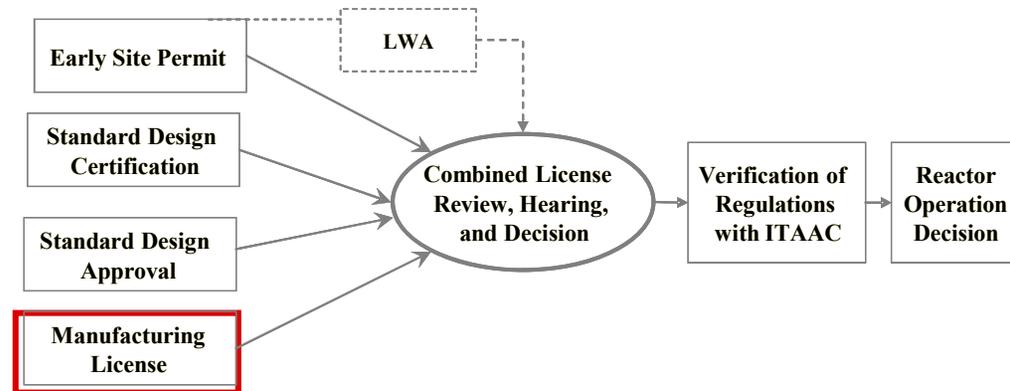
Standard Design Approvals (Subpart E)

- Supplier/applicant can request a final design approval [52.135]
- Can cover entire facility or major portion
- Can be referenced in a combined license, design certification, or manufacturing license
- No hearing/Commission review, but ACRS reviews/reports [52.141]
 - Design approval is staff-level review – not a rule [52.143]



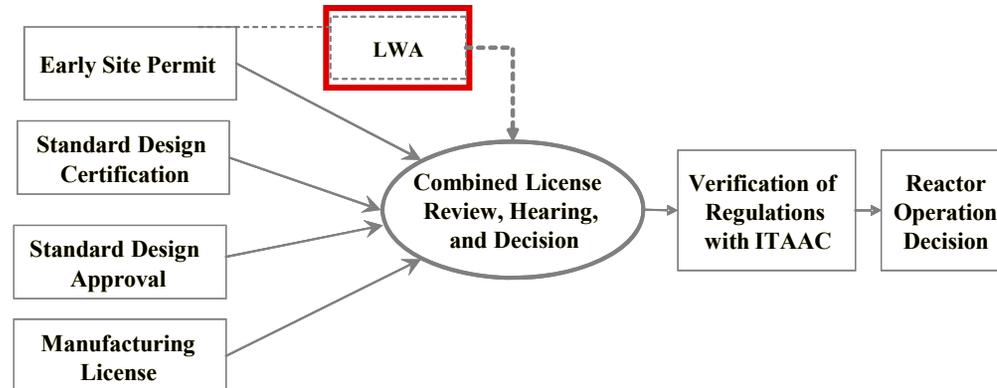
Manufacturing License (Subpart F)

- Licenses issued to manufacture nearly complete plant
- Sites for reactors not identified [52.151]
- License does not authorize transport & installation of the manufactured reactor [52.167]



Limited Work Authorization (LWA)

- May request LWA in advance of COL
- Safety review of requested activities
- EIS for requested activities
- Site Redress Plan
- Bifurcated hearing on LWA activities



LWA Activities

- Activities that may be authorized under an LWA:
 - Driving of piles
 - Subsurface preparation
 - Placement of backfill, concrete, or permanent retaining walls
 - Installation of foundation

Major Rule Changes

- New definition of “construction” consistent with NRC statutory authority
- What construction does not include is referred to as “preconstruction”
- Changes affect all new reactor applications

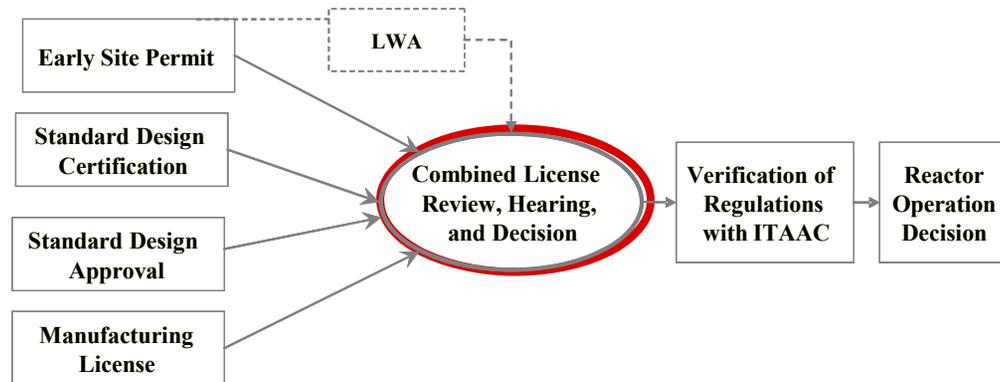


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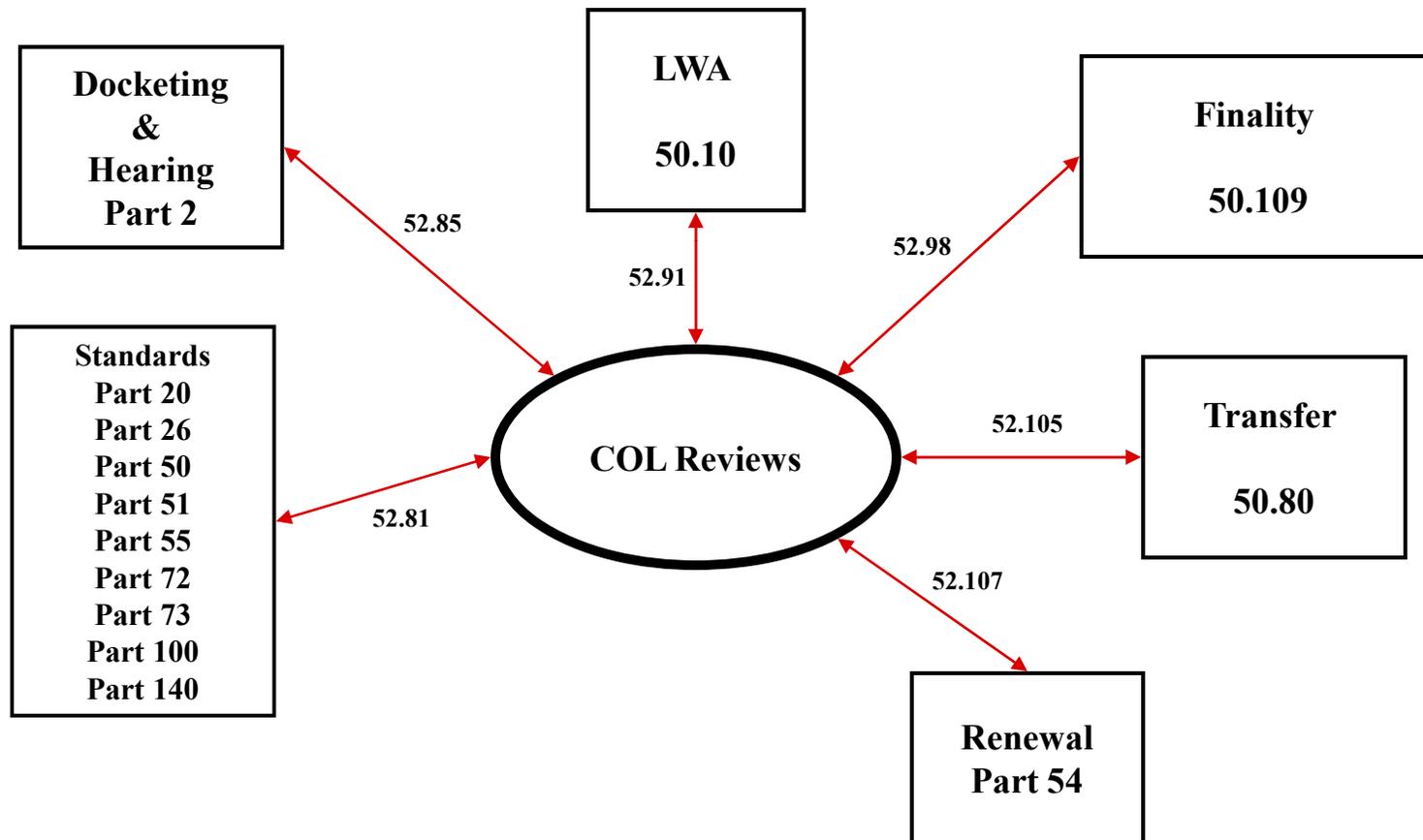
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Combined License (Subpart C)

- Combined construction permit and operating license with conditions [52.1(a)]
- Fundamental licensing process in Part 52 for reducing financial risk of applicants/licensees
- Can reference ESP, Certified Design, Design Approval, Manufacturing License, or none
- Lasts 40 yrs [52.104] + renewal



Part 52 Uses other Regulations



Key Terms in Part 52

- (a) *Early site permit* means a Commission approval, issued under subpart A of this part, for a site or sites for one or more nuclear power facilities.
- (b) *Standard design certification or design certification* means a Commission approval, issued under subpart B of this part, of a final standard design for a nuclear power facility. A design so approved may be referred to as a certified standard design.
- (c) *Combined license* means a combined construction permit and operating license with conditions for a nuclear power facility issued under subpart C of this part.

Key Terms in Part 52 (cont.)

(e) *Standard design approval or design approval* means an NRC staff approval, issued under subpart E of this part, of a final standard design for an entire nuclear power facility or a major portion thereof.

(f) *Manufacturing license* means a license, issued under subpart F of this part, authorizing the manufacture of nuclear power reactors but not their construction, installation, or operation at the sites on which the reactors are to be operated.

ITAAC – the inspections, tests, and analyses that the licensee shall perform, and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Act, and the Commission’s regulations.



Questions?



New Plant Licensing

Design Certification

Jerry N. Wilson, PE
Office of New Reactors

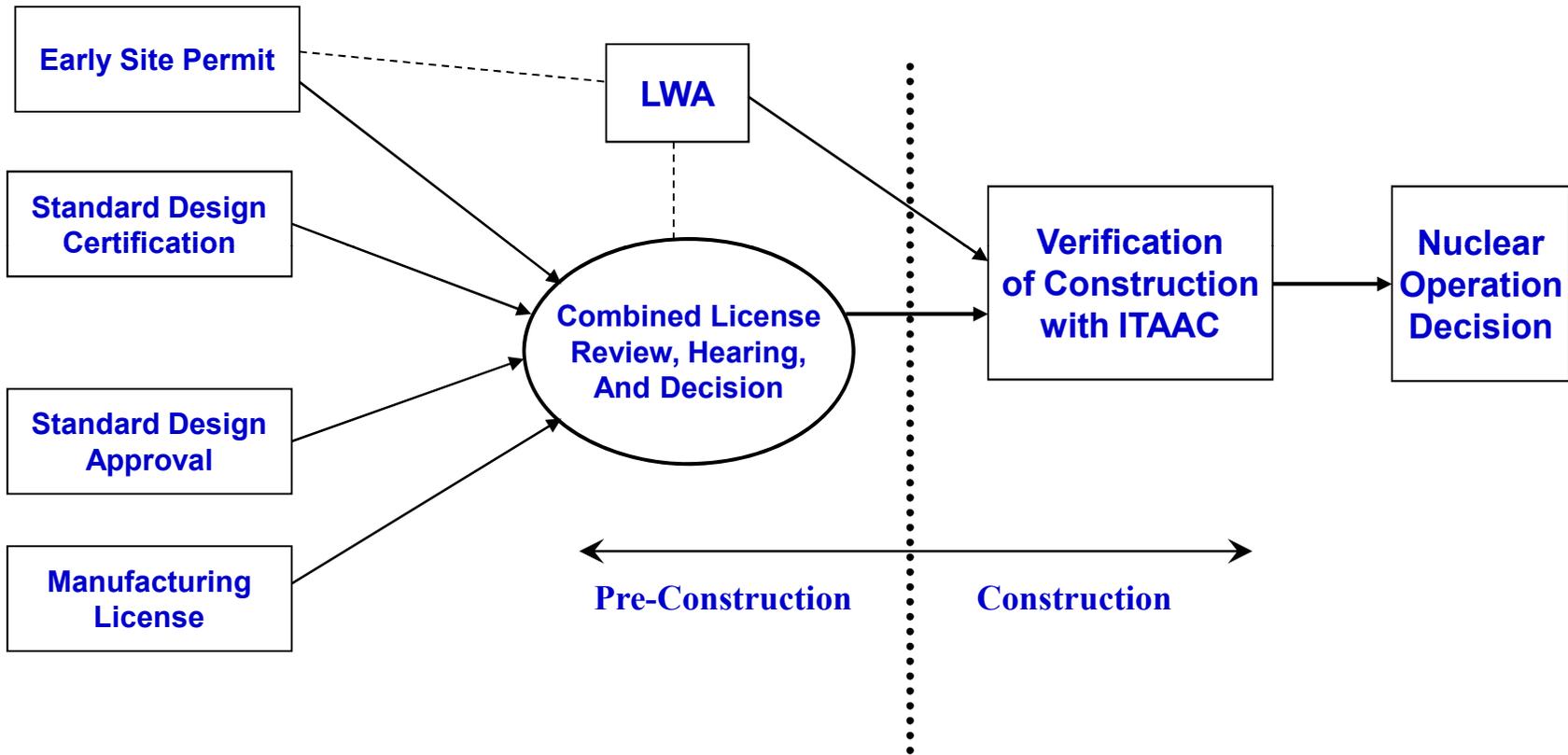


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Part 52 Licensing Process



Design Certification

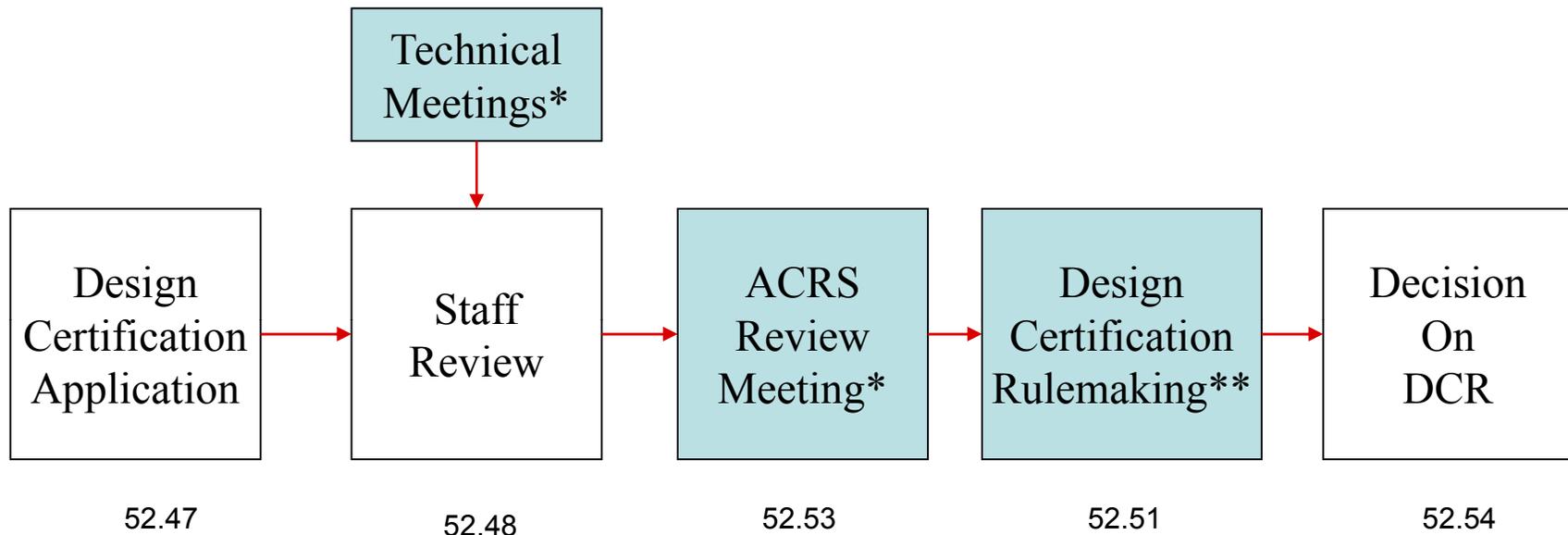
- Allows vendor/applicant to obtain pre-approval of an essentially complete nuclear plant design
- Achieves regulatory finality through rulemaking
- Facilitates standardization
- Reduces licensing uncertainty by resolving all design issues by Commission
- 15 yr. duration [52.55]



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Design Certification Review



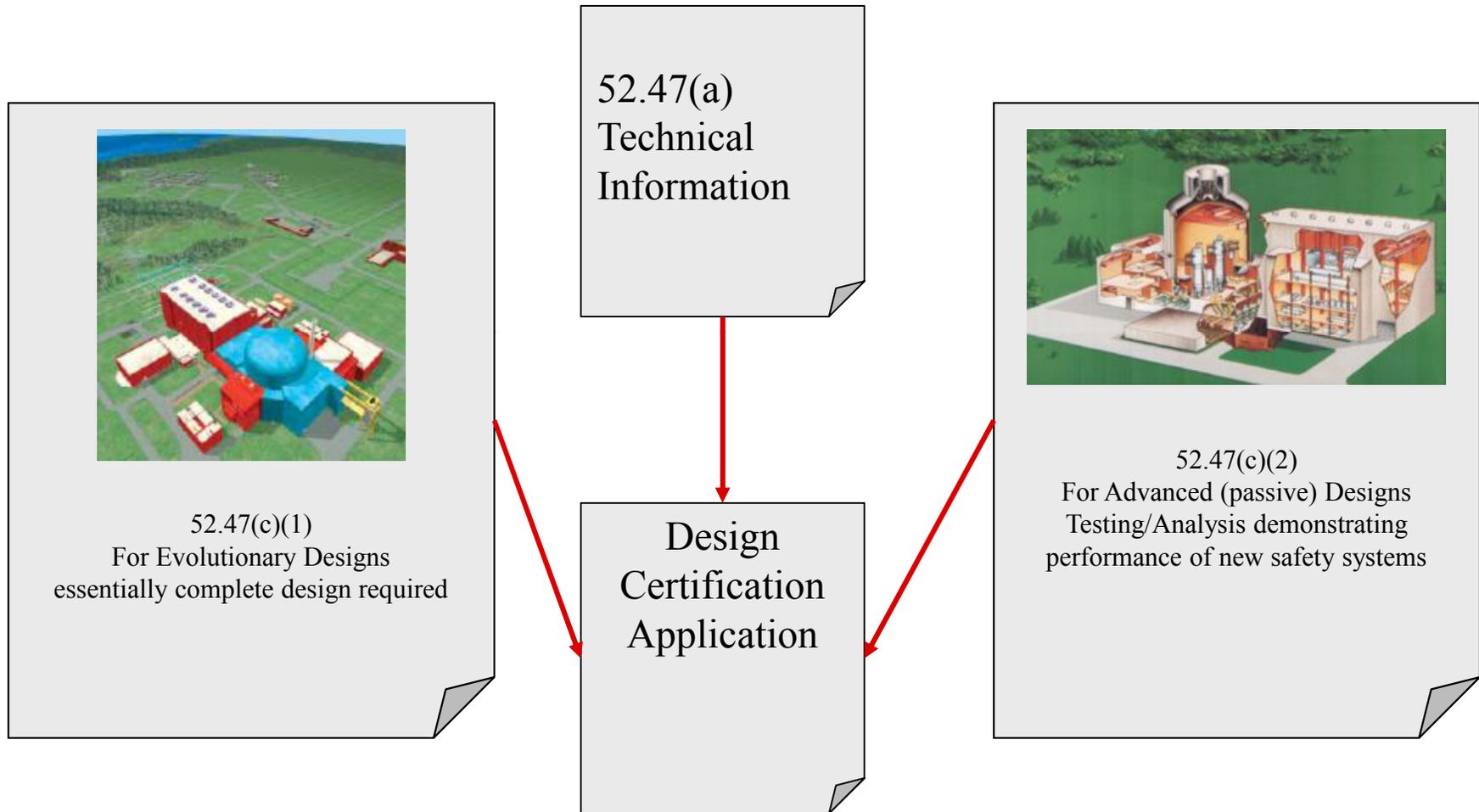
* Opportunity for Public Participation
** Notice and comment



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§ 52.47 Contents of Applications





What IS reviewed

- Final Design Information [52.47]
- Postulated Site Parameters [52.47(a)(1)]
- Interface Requirements [52.47(a)(25)]
- Proposed technical resolutions of unresolved safety issues [52.47(a)(21)]
- Resolution of Severe Accident Issues [52.47(a)(23)]
- Inspections, Tests, Analysis, and Acceptance Criteria (ITAAC) [52.47(b)(1)]
- Advanced Reactor Analysis and Testing Requirements [52.47(c)(2)]

Level of Detail

§ 52.47 Contents of applications

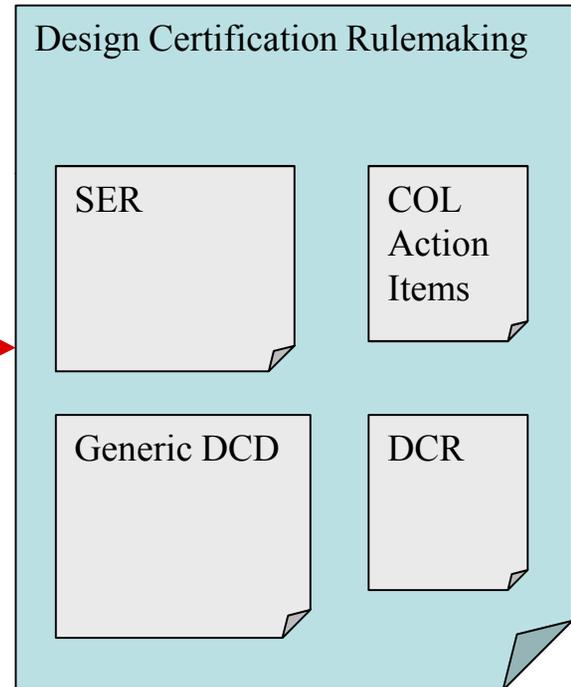
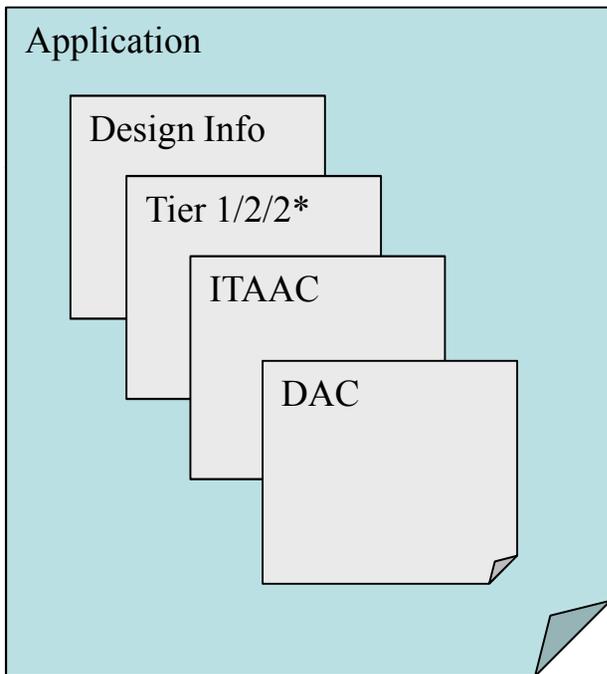
“The application must contain a level of design information sufficient to enable the Commission to judge the applicant's proposed means of assuring that construction conforms to the design and to *reach a final conclusion on all safety questions* associated with the design before the certification is granted ...” [emphasis added]

What is NOT reviewed

- Site safety
- Environmental impact
- Operational programs
- Site-specific design features
- Selected design details
 - Rapidly changing technology (e.g., digital I&C, human factors)
 - Design Acceptance Criteria (DAC) fills the void

NRC Staff Design Review

SRP (NUREG-0800)



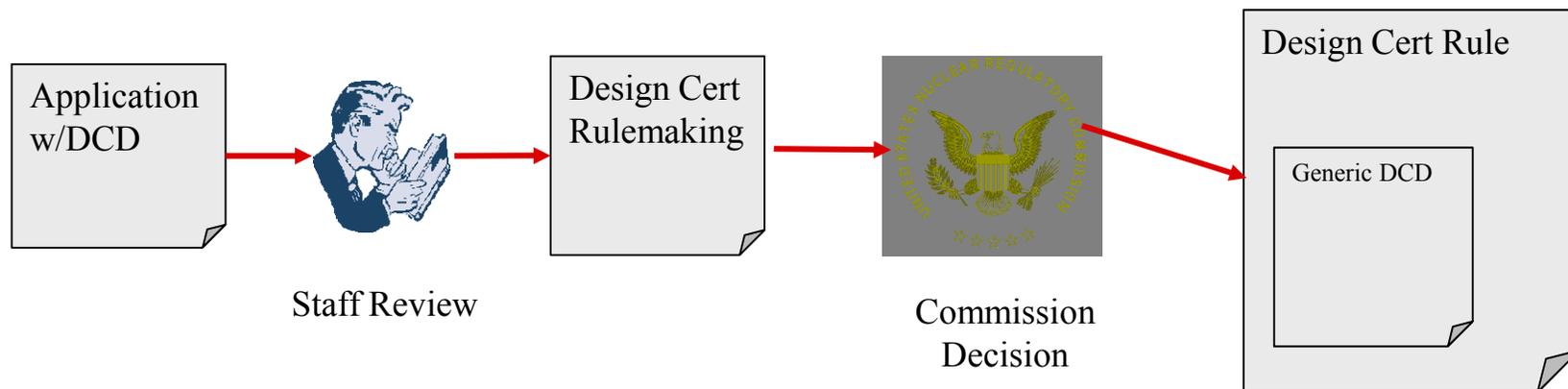


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Design Control Document (DCD)

- DCD is the application (FSAR level of information)
- When design is certified, DCD becomes the generic DCD referenced by the appendix containing the certification rule
- Definition:
 - “Generic design control document (generic DCD) means the document containing the Tier 1 and Tier 2 information and generic technical specifications that is incorporated by reference into this appendix.”





Design Control Document

- Tier 2 Information
 - Approved but NOT certified
 - FSAR-equivalent information
 - ITAAC support information
 - COL Action Items
 - Compliance is required, but information is changeable

Design Control Document

- Tier 1 Information
 - Approved and Certified
 - Compliance required
 - High-Level, difficult to change
 - Design Commitments
 - ITAAC
 - Significant Site Parameters
 - Significant Interface Requirements

Design Control Document

- Tier 2* Information
 - That portion of Tier 2 information subject to special change process in Section VIII.B.6 of a Design Certification Rule (DCR).
 - Some Tier 2* information remains so designated for the duration of the COL, requiring a license amendment for change. Examples:
 - Fuel rod burn-up
 - Fuel design requirements
 - Some Tier 2* reverts to Tier 2 status after full power is achieved, allowing for 50.59 changes. Examples:
 - Equipment seismic qualification methods
 - ASME Code commitments



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Design Certification Rules

- Appendices to Part 52
- Standard format
 - Introduction
 - Definitions
 - Scope and Contents
 - Additional Requirements and Restrictions
 - Applicable Regulations
 - Issue Resolution
 - Duration
 - Processes for Changes and Departures
 - ITAAC
 - Records and Reporting

Finality of Design Certifications

- Intended to promote standardization
- Changes are possible, however:
 - Amendments of DCRs via rulemaking
 - Process arduous and applies generically
- Provides stable basis for licensing
- Puts strong emphasis on the quality of initial review
 - Must get it right the first time

Finality of Design Certifications

- **§ 52.63 Finality of standard design certifications**
 - (a)(1) Amendment via rulemaking:
 - (i) Compliance exception
 - (ii) Adequate Protection Back-fit
 - (iii) Reduce unnecessary regulatory burden
 - (iv) Complete design acceptance criteria
 - (v) Correct material errors
 - (vi) Process similar to 50.109 back-fit
 - (vii) Contributes to increased standardization

- **§ 52.63 Finality of standard design certifications**

“(a)(3) Any modification the NRC imposes on a design certification rule under paragraph (a)(1) of this section will be applied to all plants referencing the certified design, ...”

“(a)(4) The Commission may not impose new requirements by plant-specific order on any part of the design of a specific plant referencing the design certification rule if that part was approved in the design certification while a design certification is in effect under § 52.55 or § 52.61, unless:

- compliance exceptions, or
- adequate protection, and
- special circumstances defined in 10 CFR 52.7

So How *Can* Change Be Made?

- Processes for Changes and Departures
 - Part of the certification rule itself (Section VIII)
 - Applies different standards to different Tiers of information

	Tier 1	Tier 2*	Tier 2
Generic Changes	Rulemaking VIII.A.1	Rulemaking VIII.B.1	Rulemaking VIII.B.1
Plant-Specific Changes	Exemptions Plant-Specific Order VIII.A.4 VIII.A.3	License Amendment Plant-Specific Order VIII.B.6 VIII.B.3	Plant-Specific Order Exemption 50.59-like Process VIII.B.3 VIII.B.4 VIII.B.5



Questions?



Combined Licenses

Division of New Reactor Licensing
Office of New Reactors



Learning Objectives

- Understand what a Combined License is
- Understand the COL review process
- Understand what ITAAC are and how they are verified
- Understand how COL interfaces with ESP and DC at point of application
- Understand the Construction Inspection Program approach

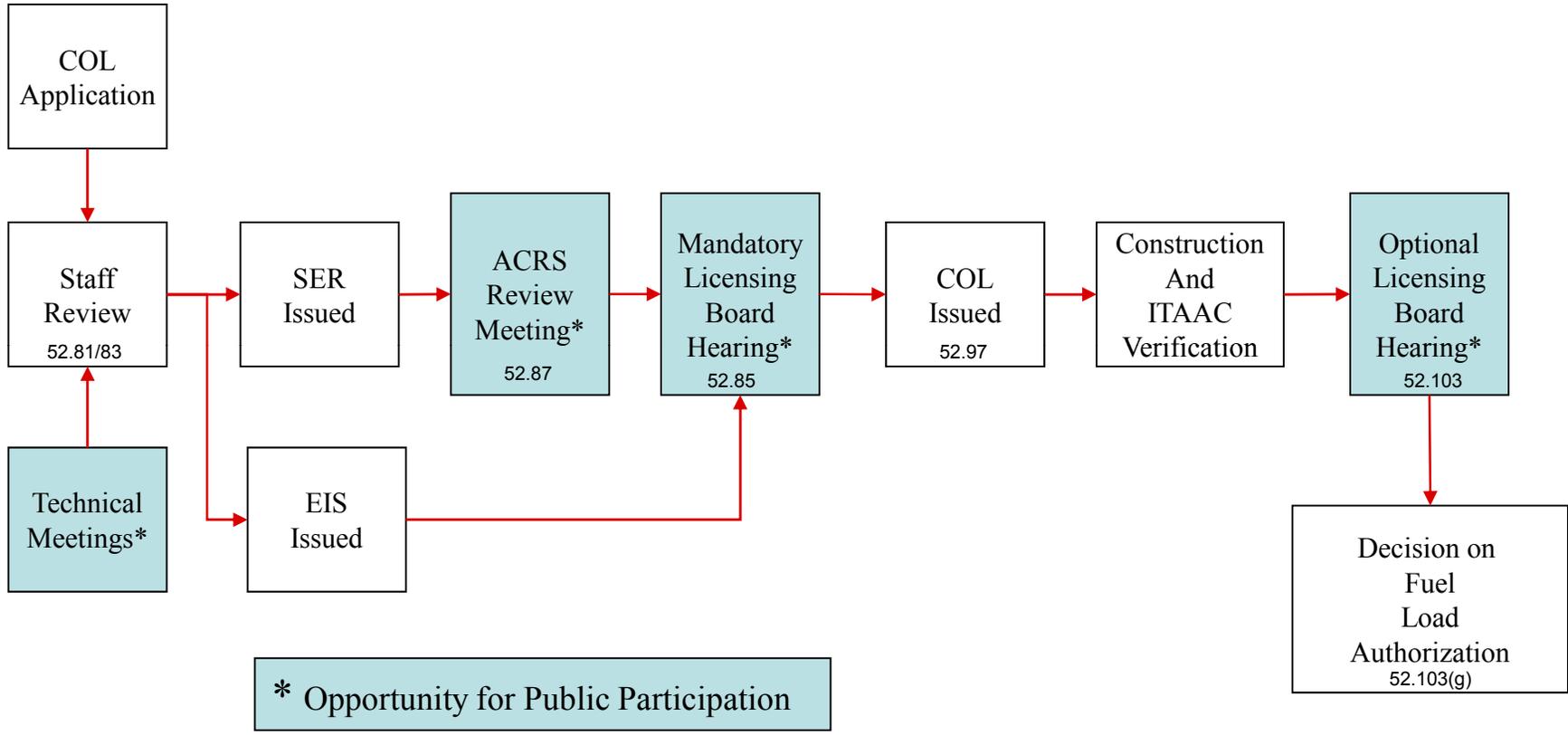
Combined License - What is it?

§ 52.1 (a) “ Combined license means a combined construction permit and operating license with conditions, for a nuclear power facility issued pursuant to subpart C of this part.”

COL application can reference: ^[52.73]:

- Certified design
- Design approval
- Early Site Permit
- Manufacturing License

COL Review Process



Design Reviews for COLs

NRC's COL decision includes resolution of safety matters related to the nuclear power plant design [52.97(a)]

- If an DCR is referenced, then
the final safety analyses and resolution of safety matters is incorporated by reference into the COL application
- If an DCR is not referenced, then
all safety matters related to the complete nuclear plant design are reviewed

COL/DCR Interface Issues

- Generic DCD must be made plant-specific [DCR Appendix IV.A.2.a]
- Plant-specific Technical Specifications must be submitted [DCR Appendix IV.A.2.c]
- Compliance with system interface requirements must be demonstrated [52.79(d)]
- Proposed ITAAC for site-specific design features must be submitted [52.80(a)]
- Site-specific design features must be described
- The application must contain information sufficient to demonstrate that the site characteristics fall within the site parameters specified in the design certification [52.79(d)]

Environmental Reviews for COLs

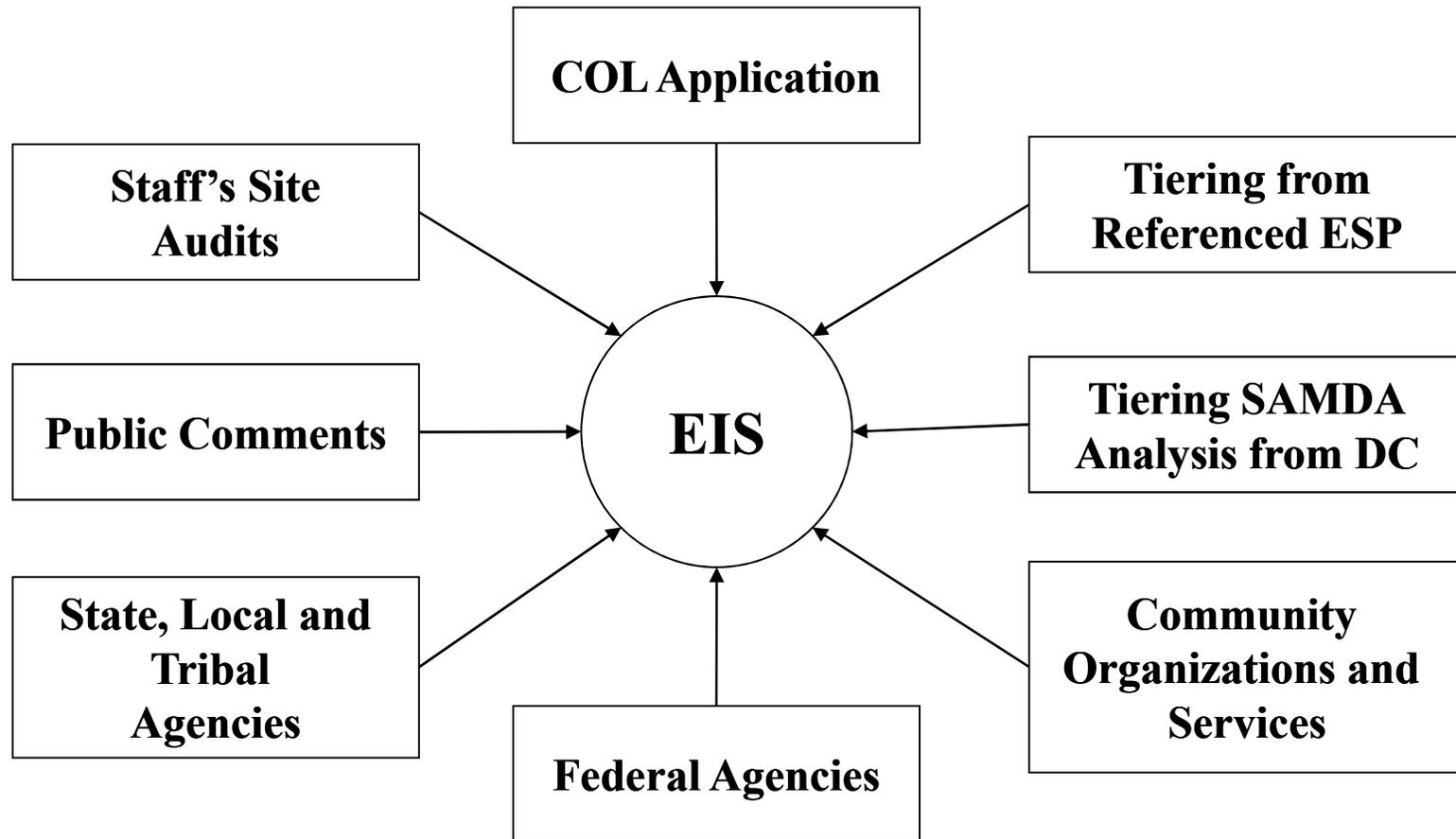
NRC's COL decision considers environmental impacts from construction & operation of nuclear plants [52.97(a)]

- If an ESP is referenced, then the analyses and conclusions for resolved environmental issues are tiered into, “incorporated by reference from,” or “adopted by” the COL EIS provided that there is no “new and significant information.”
- If an ESP is not referenced, then all environmental issues related to construction and operation (including “alternative sites”) are considered.

COL/ESP Interface Issues

- COL is a major Federal action
 - an EIS must be prepared
- The COL EIS must address environmental issues not previously considered
 - Issues deferred at the ESP stage
 - Newly identified issues
- For issues that were resolved at the ESP stage, the staff must determine whether there is new and significant information.
- The application must contain information sufficient to demonstrate that the design of the facility falls within the site characteristics and design parameters specified in the ESP [52.79 (b)]
- If no new and significant information is identified and the COL site characteristics remain bounded by the ESP site characteristics, then no further analysis is needed.

COL EIS Development



COL ITAAC

- Applicants must provide ITAAC for the facility [52.80(a)]
- Applicants may complete some ITAAC before COL is issued [52.97(a)(2)]
- Licensee shall submit schedule for completing ITAAC [52.99(a)]
- Licensee must inform NRC that ITAAC have been completed [52.99(c)]
- NRC shall ensure that the ITAAC are performed [52.99(e)]
- NRC shall notify the public of ITAAC completion [52.99(e)]



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Example ITAAC

26A6641AB Rev. 00

ESBWR

Design Control Document/Tier 1

**Table 2.1.1-2
ITAAC For Reactor Pressure Vessel System**

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The basic configuration of the RPV system is as defined as Subsection 2.1.1, Table 2.1.1-1 and Figure 2.1.1-1.	1. Inspections of the as-built RPV System will be conducted.	1. The RPV system conforms with the basic configuration defined in Subsection 2.1.1, Table 2.1.1-1 and Figure 2.1.1-1.
2. The RPV pressure boundary defined in Subsection 2.1.1 is designed to meet the ASME Code Class 1 vessel requirements.	2. Inspections of the ASME Code required documents will be conducted.	2. An ASME Code Certified Stress Report exists for the RPV pressure boundary components.
3. The ASME Code components of the RPV system retain their pressure boundary integrity under internal pressure that will be experienced during service.	3. A hydrostatic test will be conducted on those code components of the RPV system required to be hydrostatically tested by the ASME Code.	3. The results of the hydrostatic test of the ASME Code components of the RPV system conform with the requirements in the ASME Code, Section III.

ITAAC/Construction Inspection Program

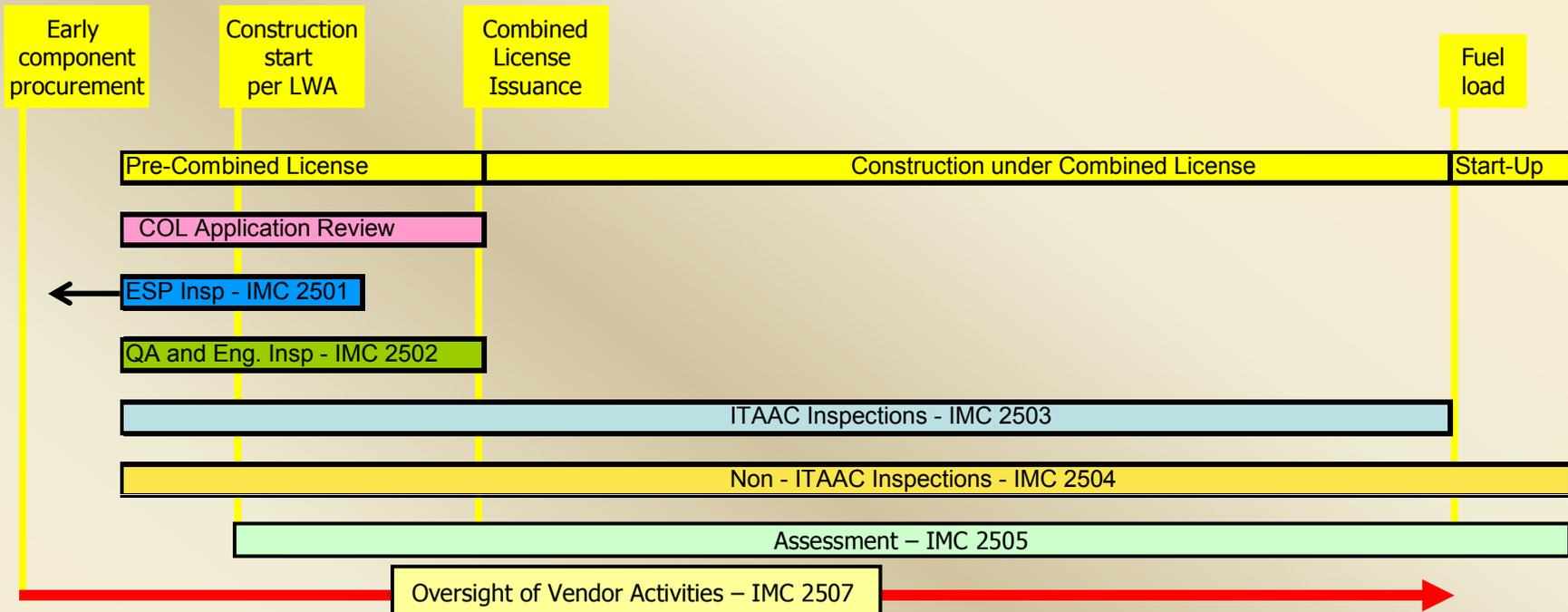
- Major focus - licensee work being performed to support the completion of the ITAAC.
- Additional inspections of quality assurance verification activities and operational programs will also be needed
- Inspections broken down into four parts:
 - First part supports a licensing decision for an early site permit (ESP)
 - Second part supports a licensing decision on the combined license (COL) application
 - Third part supports a determination on whether construction activities supporting ITAAC have been successfully completed
 - Fourth part supports a determination on whether preparations for plant operation have been successful.

A Word About Operational Programs

- Typical operational programs:
 - Fire Protection
 - Radiation Protection
 - Security
- Commission has denied staff requests to have ITAAC for operational programs
- No ITAAC required if programs fully described in the COL application
- Operational program implementation may become license conditions
- Inspections will verify operational programs are implemented

NRC CONSTRUCTION OVERSIGHT HAS MULTIPLE COMPONENTS

Oversight will assure plants are constructed as designed.



Abbreviations

ESP – Early Site Permit
 IMC – Inspection Manual Chapter
 ITAAC – Inspections, Tests, Analyses,
 and Acceptance Criteria
 LWA – Limited Work Authorization

IMC 2501

-ESP QA controls on integrity & reliability of data collected for site characterization.
 -ESP controls for application preparation

IMC 2502

-QA for design, procurement, & construction
 -Translation of certified design into design details
 -COL controls for application preparation

IMC 2503

Verification of successful performance of ITAAC-related activities

IMC 2504

-QA for construction & operations
 -Problem identification, reporting, & corrective action
 -Work planning/control over work & contractors
 -Translation of certified design into design details
 -Design change process
 -Pre-operational & startup testing
 -Operational programs & operational readiness

IMC 2505

-Guides inspection planning
 -Guides assessment of licensee performance

IMC 2507

- Verification of QA program implementation, compliance, reporting and corrective action



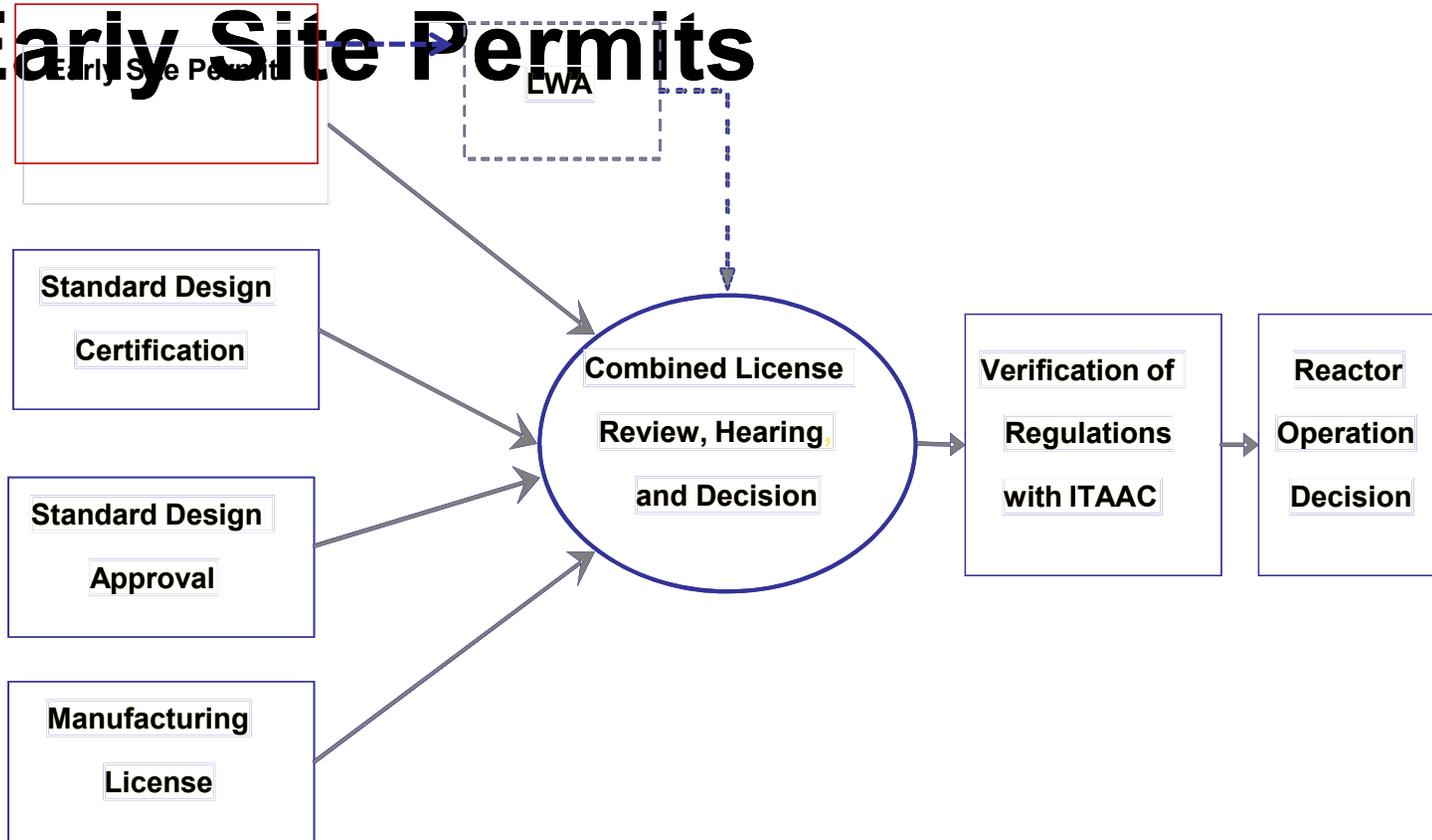
Workshop/Webinar on Licensing Advanced Reactors

Early Site Permits, Design Approvals, and Manufacturing Licenses

February 3, 2010

William Reckley
Advanced Reactor Program
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Early Site Permits



Early Site Permits

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Early Site Permits

- Approving a site without a selected technology
 - Plant Parameter Envelope (PPE) bounds variety of technologies
 - PPE values compared to technology at COL stage
 - If design parameters for technology exceed PPE values in ESP, additional reviews conducted

Early Site Permit

- **ESP Application/Review Addresses:**
 - Site Safety Issues (environment to design)
 - Seismology
 - Geology
 - Hydrology
 - Meteorology
 - Geography
 - Demography
 - Site Hazards Evaluation

Early Site Permit

- **ESP Application/Review Addresses:**
 - Environmental Protection (design to environment)
 - Water quality and use
 - Ecology/Endangered species
 - Air quality
 - Land use
 - Fuel cycle
 - Human health
 - Socioeconomics/Environmental Justice
 - Postulated accidents
 - Decommissioning
 - Alternate sites

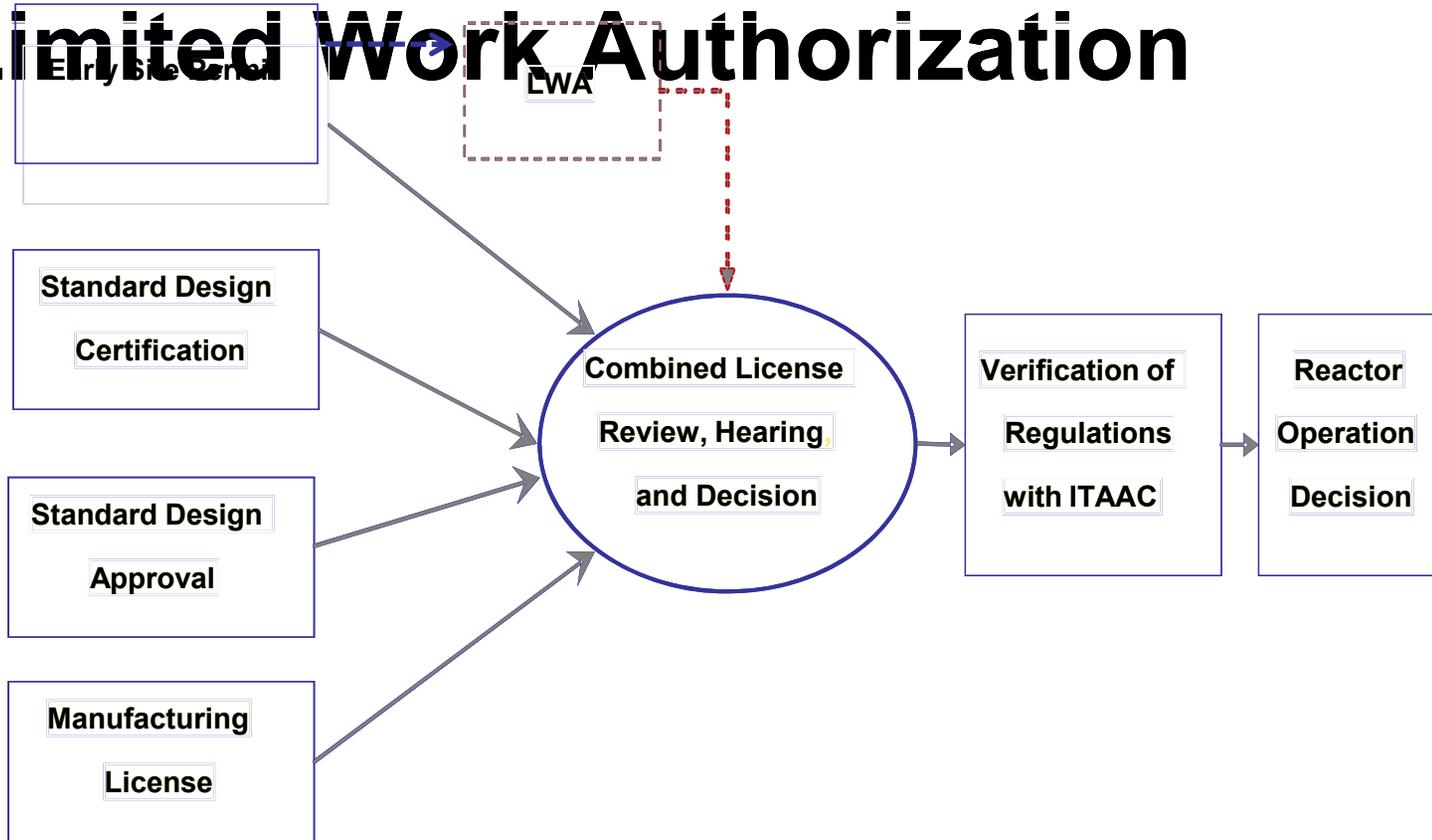
Early Site Permits

- Emergency Preparedness
 - Evaluate physical impediments, population distribution, and transportation routes
 - Evaluate proposed emergency plan, or emergency preparedness information in consultation with FEMA
 - Certifications of participation by local, state, and federal agencies (or alternate licensee plan)

Early Site Permits

- ESPs issued for:
 - North Anna
 - Grand Gulf
 - Clinton
 - Vogtle

Limited Work Authorization



Limited Work Authorization

- Limited work authorizations (LWAs) allow certain construction activities to commence before a construction permit or combined license is issued
- Process Includes
 - Application
 - Review
 - Environmental Impact Statement
 - Site Redress Plan
 - Hearing
- Interim Staff Guidance (ISG)-4 on Definition of Construction

Definition of Construction

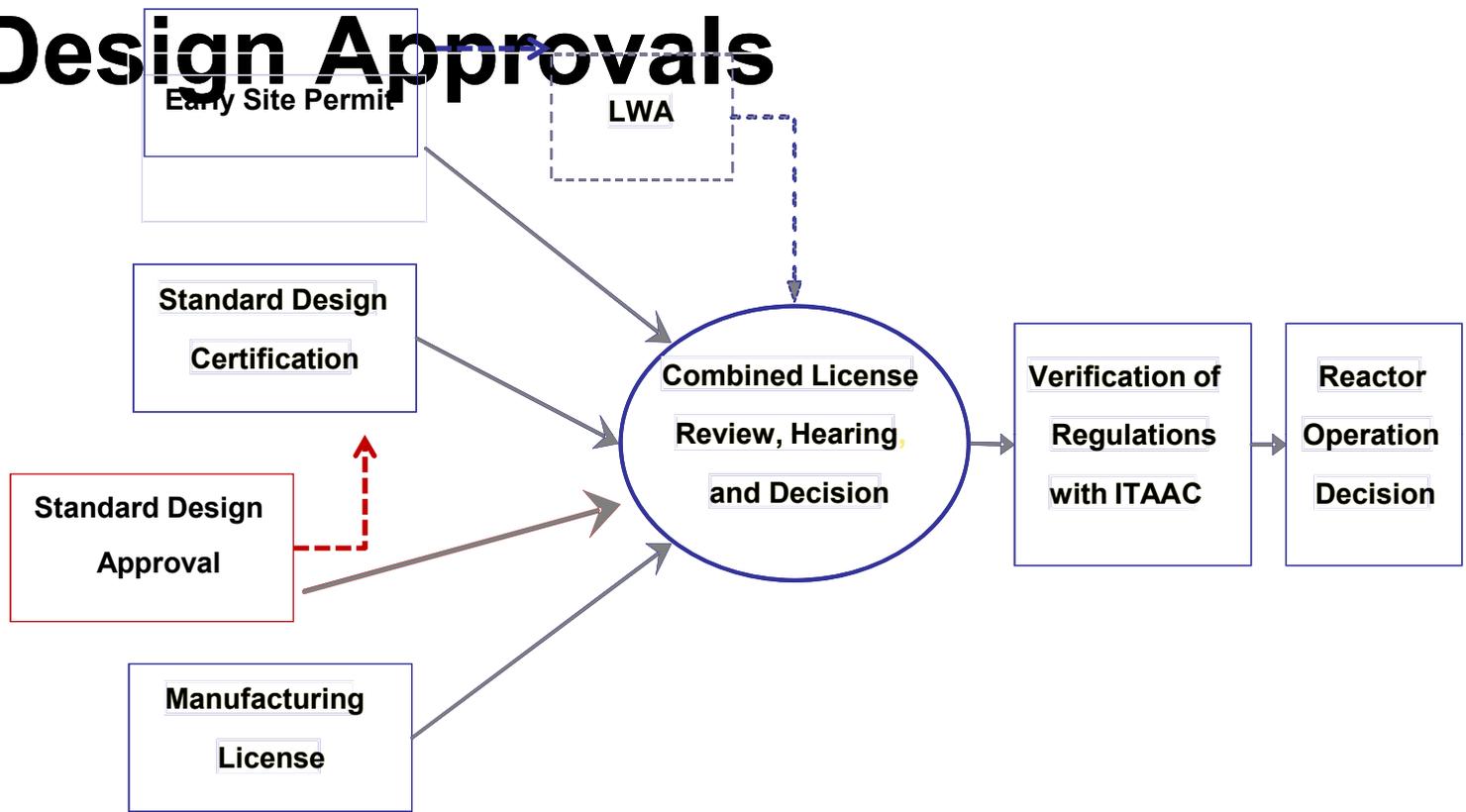
- Construction is driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of foundations, or in-place assembly, erection, fabrication, or testing, which are for:
 - Safety-related structures, systems, or components (SSCs)
 - SSCs relied upon to mitigate accidents or transients or used in plant emergency operating procedures;
 - SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function;
 - SSCs whose failure could cause a reactor scram or actuation of a safety-related system;
 - SSCs necessary to comply with 10 CFR Part 73 (Security);
 - SSCs necessary to comply with fire protection requirements
 - Onsite emergency facilities

- Construction does not include:

Definition of Construction

- Changes for temporary use of the land for public recreational purposes;
- Site exploration (e.g., borings)
- Clearing of the site, grading, installation of drainage, erosion and other environmental mitigation measures, and construction of temporary roads and borrow areas;
- Erection of fences and other access control measures;
- Excavation;
- Erection of support buildings
- Building of service facilities (e.g., roads, parking lots, railroad spurs)
- Procurement or fabrication of components or portions of the proposed facility occurring at other than the final, in-place location at the facility;
- Manufacture of a nuclear power reactor under a manufacturing license under Subpart F of Part 52 to be installed at the proposed site and to be part of the proposed facility.

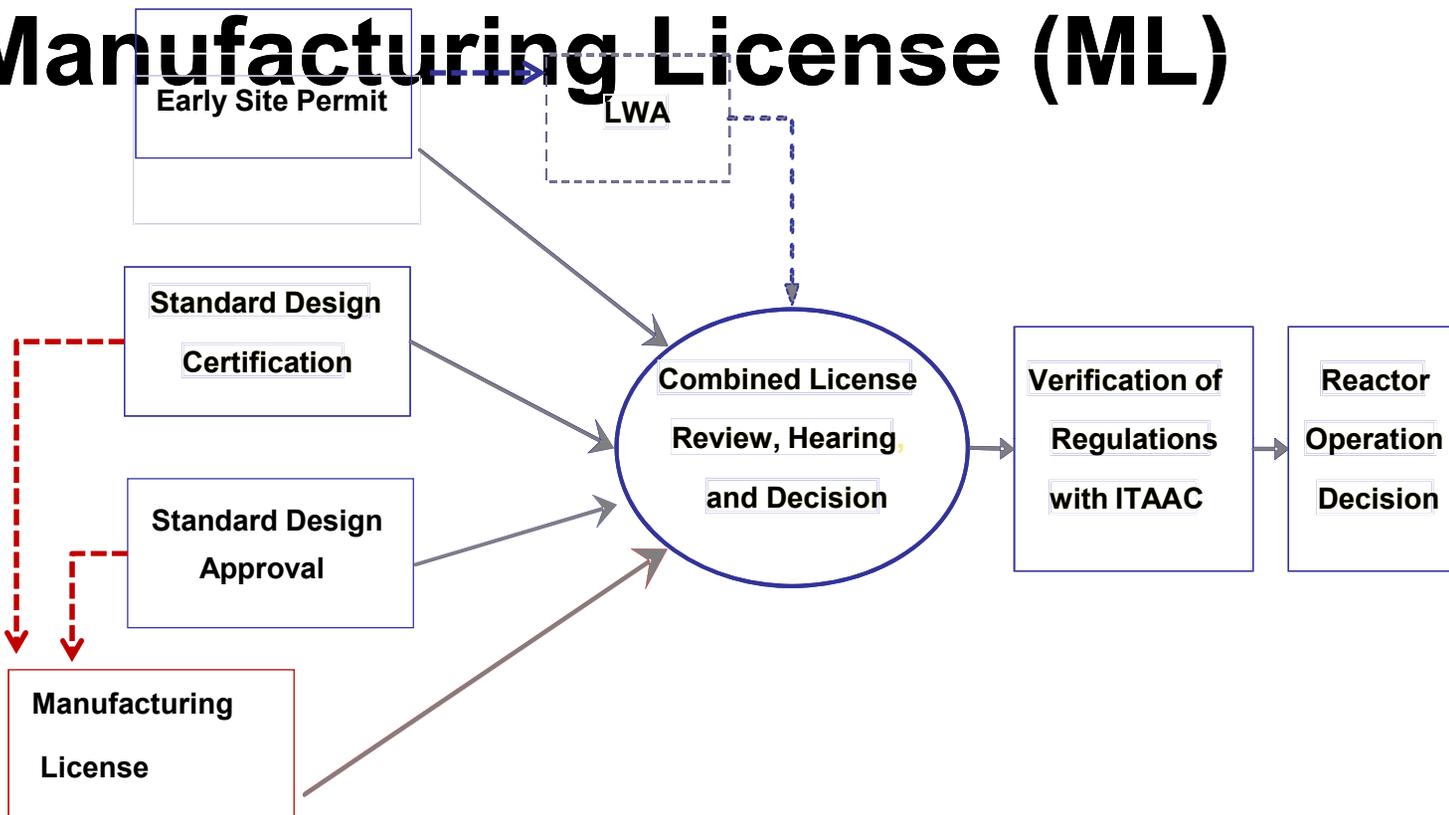
Design Approvals



Design Approvals

- Supplier/applicant can request a final design approval
- Can cover entire facility or major portion
- Can be referenced in a combined license (or to support subsequent design certification application)
- No hearing/Commission review, but ACRS reviews/reports
- Design approval is staff-level review - Not a rule

Manufacturing License (ML)



Manufacturing License

- Commission issues a license authorizing manufacture of nuclear power reactors to be installed at sites not identified in the manufacturing license application
- A nuclear power reactor manufactured under a ML may only be transported to and installed at a site with either a construction permit or COL
- Limited experience with manufacturing license
 - Offshore Power Systems
 - Essentially complete plant



Questions?



February 3-4, 2010
Licensing Workshop/Webinar

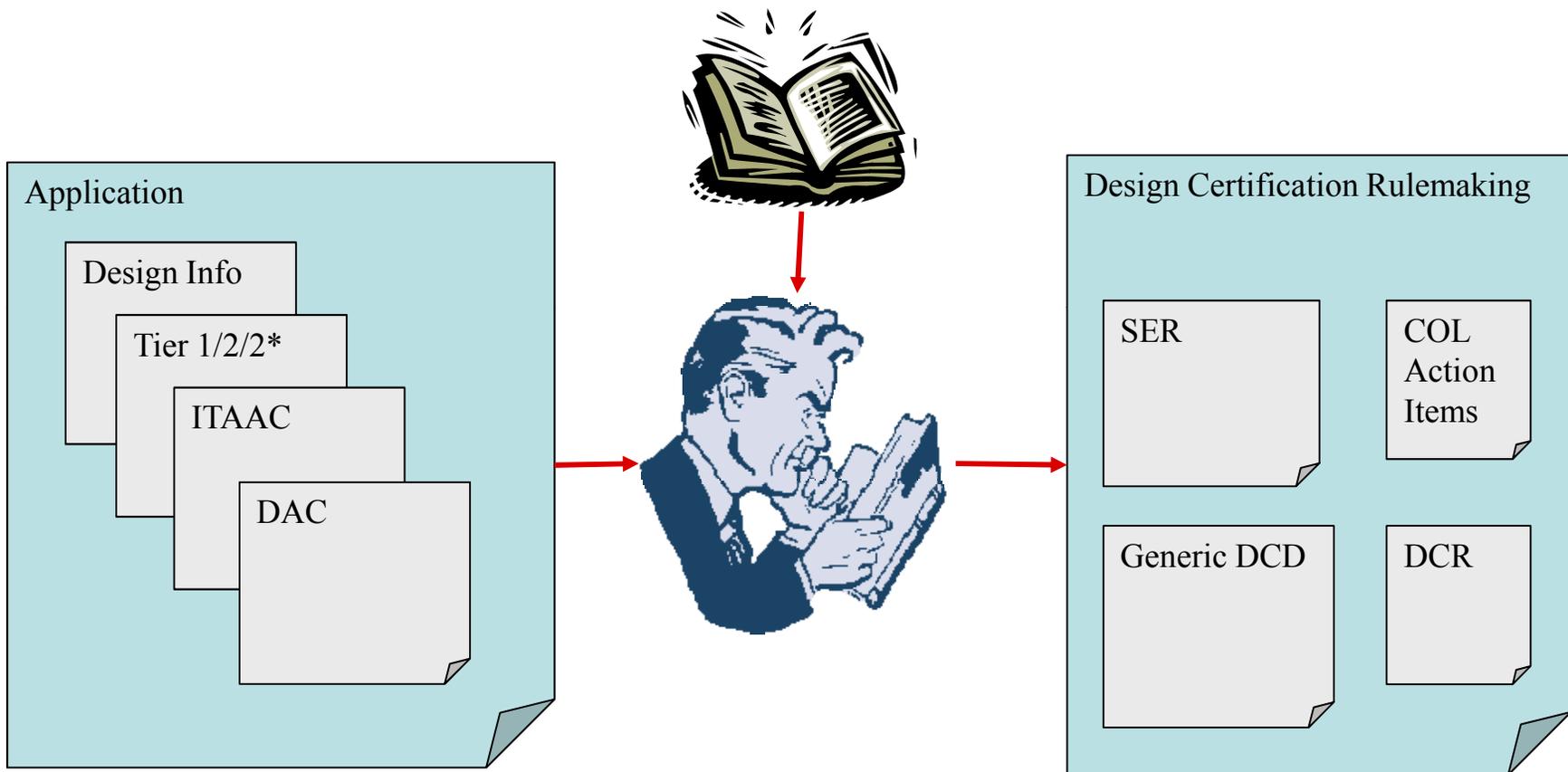
NRC Review Guidance and Processes

Advanced Reactor Program
Office of New Reactors

ACRONYMS

- ACRS -- Advisory Committee on Reactor Safeguards
- ASLB -- Atomic Safety and Licensing Board
- BTP – Branch Technical Position
- CFR – Code of Federal Regulations
- CIP – Construction Inspection Program
- COL – Combined License
- COLA – Combined License Application
- DAC – Design Acceptance Criteria
- DCD – Design Control Document
- DCRA – Design Centered Review Approach
- DCR – Design Certification Rulemaking
- EDO -- Executive Director for Operations
- EIS – Environmental Impact Statement
- ESP – Early Site Permit
- ITAAC – Inspection, Test, Analysis, and Acceptance Criterion/Criteria
- ISG -- Interim Staff Guidance
- LWR – Light-Water Reactor
- OAR – Official Agency Record
- OGC – Office of the General Counsel
- R-COL – Reference Combined License
- RAI – Request for Additional Information
- RG – Regulatory Guide
- SER – Safety Evaluation Report
- SRP – Standard Review Plan
- S-COL – Subsequent Combined License
- TER – Technical Evaluation Report

NRC Staff Design Review



Licensing Guidance Documents – RG 1.206

Regulatory Guide 1.206, “Combined License Applications for Nuclear Power Plants (LWR Edition)”

- Purpose
 - Provides guidance **to applicants** on information to be submitted in combined license (COL) application.
 - Addresses many of application options allowed by Title 10, Part 52.

- RG 1.206 available on external web

<http://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/active/01-206/>

Licensing Guidance Documents – RG 1.206

- **Structure: 4 Parts**
 - Standard Format and Content (based on RG 1.70 with new Chapters 18 and 19)
 - Additional Technical Information (ITAAC, Environmental Report)
 - Applications Referencing Certified Designs and/or Early Site Permits
 - Miscellaneous Topics (Acceptance Review Checklist, Submittal Guidance, Description of Change Processes, etc.)
- **Regulatory Guide 1.206 issued June 2007**

Licensing Guidance Documents – RG 1.206

- Prepared primarily for COL applicants
(custom COL or COL referencing DCD)
- How can DC applicants use RG 1.206?
 - Cognizant of complete COL application contents - Part I
 - DCD provides information within scope of desired certified design
 - Cognizant of COL applicant responsibility when referencing a DC (site characteristics, site-specific design information, COL information items, operational programs)
- Review Actual Applications
- Discuss Electronic Submittal Preparation with NRC/NEI working group



Licensing Guidance Documents – Standard Review Plans

- NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants” – safety review
- NUREG-1555, “Standard Review Plans for Environmental Reviews for Nuclear Power Plants” – environmental review (not discussed in presentation)

Licensing Guidance Documents – NUREG-0800

- **Purpose of the Standard Review Plan**
 - Provides guidance **to NRC staff** in performing safety reviews of applications under 10 CFR Part 52 (including requests for amendments).
 - Assures the quality and uniformity of staff safety reviews.
 - Makes information about regulatory matters widely available.

Licensing Guidance Documents – NUREG-0800

- **Purpose, continued**
 - Describes methods or approaches that staff has found acceptable for meeting NRC requirements.
 - SRP is not a substitute for NRC regulations, and compliance with SRP is not required; however, applicant is required to evaluate application against SRP acceptance criteria and justify how alternatives satisfies requirements.

Licensing Guidance Documents – **NUREG-0800**

Organization of SRP

- Review Responsibilities – primary and secondary
- Areas of Review – aligns with RG 1.206, also contains interfaces with other SRP Sections
- Acceptance Criteria
 - Applicable NRC requirements
 - Guidance which provides an acceptable approach for satisfying applicable requirements (i.e., SRP acceptance criteria).
 - Regulatory Guides
 - Commission policy (Staff Requirement Memoranda and associated SECY papers)
 - NRC-approved or endorsed industry codes and standards
 - technical reports, and
 - Branch Technical Positions (BTPs)

Organization of SRP, Continued

- Review Procedures - how review is accomplished
- Evaluation Findings - type of conclusion that is sought for the particular review area.
- Implementation – keys applicants evaluation against SRP in effect 6 months prior to the docket date of application, however, staff will use SRP in effect at time of application review.
- References

Licensing Guidance Documents – Other

- Regulatory Guides
- Commission policy (Staff Requirement Memoranda and associated SECY papers)
- NRC-approved or endorsed industry codes and standards
- Technical reports
- Branch Technical Positions (BTPs)
- Interim Staff Guidance (ISG)

Requests for Additional Information (RAIs)

- Information needed to support design review or licensing decisions
- Means to gather additional details about proposed designs/approaches in application
- Early indicator of possible issues and/or obstacles in the review process
- Communication is key to keeping review process moving forward

Requests for Additional Information (RAIs)

- Process
 - Reviewer identifies possible questions and enters into electronic RAI system (database)
 - Questions reviewed by supervisors and project managers
 - Questions sent to applicant (email) and entered into records management system
 - Applicant responds
 - Response reviewed and question is closed, held for confirmation in document update, or follow-up question is generated

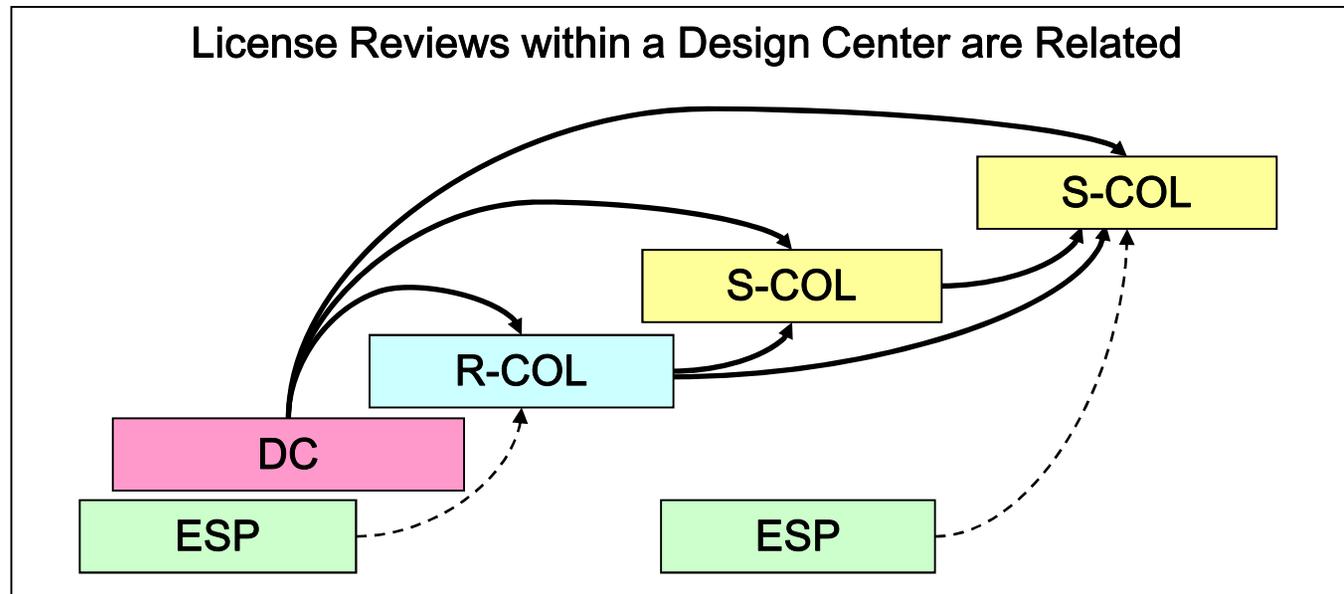


Licensing Guidance Documents

Questions?

Review Process - DCRA

- Design-centered review approach
 - Reviews organized into design centers based on reactor design (e.g., ESBWR, EPR, AP1000)
 - Decisions, experience, and lessons-learned from earlier reviews will be applied, where appropriate, to later reviews in the same design center



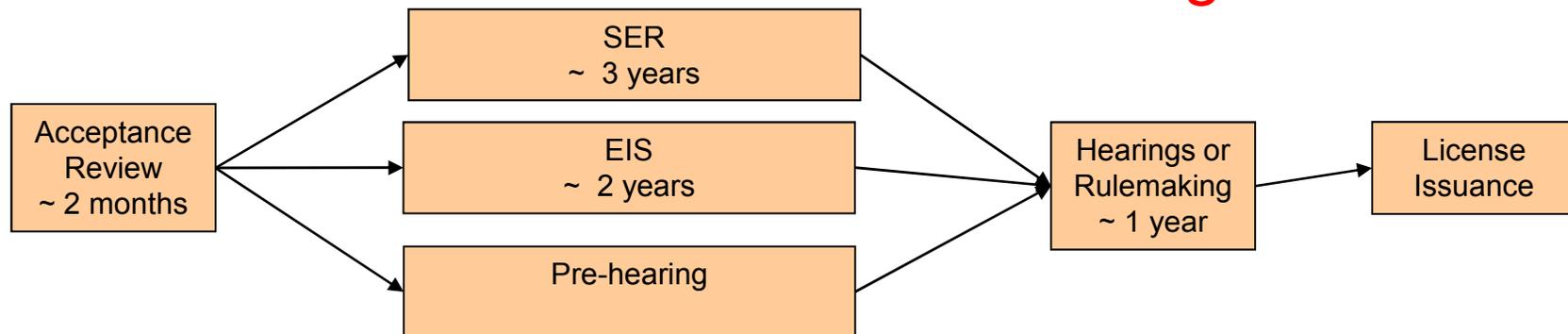
Review Process - DCRA

- For licensing reviews occurring concurrently (e.g., the COLA references a non certified design)
 - The reviewer assumes issues in the DCA will be resolved in the DCA and that issues in the COLA will be resolved in the COLA;
 - However, the COL applicant is responsible for supplementing the COLA, as necessary, based on resolution of issues within the DCA
- Likewise, for licensing reviews occurring concurrently (e.g., the RCOLA review is at the same time as the SCOLA)
 - The reviewer assumes issues in the RCOLA will be resolved in the RCOLA
 - The SCOL applicant is responsible for supplementing the SCOLA, as necessary, based on resolution of issues within the RCOLA
 - For standard sections, the SCOLA review will follow the RCOLA
 - In this case the review is a verification that the SCOLA is still identical to the RCOLA

Review Process – Parts of Review by License Process

- Licensing work for DCs, COLs and ESPs is organized into the same overall work structure
 - Acceptance/Adequacy Review (~ 2 months)
 - SER (~ 3 years)
 - EIS (~ 2 years)
 - Hearings (~ 1 year)
 - License or Rule Issuance

**Estimates
assume work
included in NRC
budget**



Review Process – Planning

- Use of Enterprise Project Management MS Project for planning, scheduling, and managing work (technical monitor serves as interface)
- Schedule templates for anticipated reviews
- Schedule templates customized to specific application characteristics, including:
 - Licensing process (DC, COL, or ESP)
 - Reactor type, BWR or PWR
 - Reactor design (ESBWR, AP1000, etc.)
 - For COL (Non-site-specific SER sections Reference COL (R-COL) vs Subsequent COL (S-COL)
 - SER sections affected by an ESP

Review Process - Acceptance Review

- Performed with NRO-REG-100, Draft Rev. 1, “Acceptance Review Process for Design Certification and Combined License Applications,” For Use and Comment [ML073551155]
- Scheduled for 60 days
 - Application complete and technically sufficient
 - Confirm planning assumptions
 - Identify review dependencies

Review Process - Acceptance Review

- Acceptable for docketing if application contains sufficient technical information in scope and depth for **staff to begin its detailed technical review**
- Communicate results to technical monitor
- Baseline schedule (adjusted based on acceptance review) expected when docketing occurs; however, may not be issued until supplemental information is provided

Review Process – Safety Review Contractor Support

- Perform work in accordance with Statement of Work/Task Order
- Provide Technical Evaluation Report (TER) inputs using furnished SER templates
- Need to provide appropriate information to technical monitor which will provide interface with EPM

QUESTIONS???

Finality Matrix

Purpose

- Provides organized compilation of **expected** COL review items and issues associated with the certified designs (ABWR and AP1000), that will need to be reviewed by NRC/NRO as part of COL application process.
- Provides understanding of DCD/FSAR sections expected to have review finality and those that have open issues.

Finality Matrix - Contents

- The categories of COL issues contained in the columns on the right side of the matrix are:
 - COL information items (and COL action items)
 - Interfaces for standard design
 - Generic design changes
 - Plant specific design departures
 - Operational programs
 - Technical Report nos.
 - Generic Issues
 - New Standard Content
 - Comments

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Pro

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	SRP section #	SRP section title	FSER section #	FSER section title	DCD section #	FSAR section #	DCD section title	A						
2	March-07		Sept. 2004		Rev. 16									
3								COL issue title	FSER COL action item no.	DCD COL info. item no.	Interfaces for standard design (Item no.)	DAC/ITAA C for NRO review	Generi design change	
4	1.0	Introduction and Interfaces	1.0	Introduction and General Discussion	1.0		Introduction and General Description of the Plant							
5	1.0	Introduction and Interfaces	1.1	Introduction	1.1		Introduction	Construction and Startup Schedule		1.1-1				
6	1.0	Introduction and Interfaces	1.2	General Design Description	1.2		General Plant Description							
7	1.0	Introduction and Interfaces	1.3	Comparison with Similar Facility Designs	1.3		Comparison with Similar Facility Designs							
8	1.0	Introduction and Interfaces	1.4	Identification of Agents and Contractors	1.4		Identification of Agents and Contractors							
9	1.0	Introduction and Interfaces	1.5	Summary of Principal Review Matters	1.5		Requirements for Further Technical Information							
10	1.0	Introduction and Interfaces	1.6	Summary of Open Items	1.6		Material Referenced							
11	1.0	Introduction and Interfaces	1.7	Summary of Confirmatory Items	1.7		Drawings and Other Detailed Information							
12	1.0	Introduction and Interfaces	1.8	Index of Exemptions	1.8		Interfaces for Standard Design							
13	1.0	Introduction and Interfaces	1.9	Index of Tier2* Information	1.9		Compliance with Regulatory Criteria	Regulatory Guide Conformance		1.9-1				
	1.0	Introduction and Interfaces	X	X	1.9.3		Three Mile Island Issues	Post accident Radio-Iodine sampling capability			1.1			

Updated AP1000 Matrix | References | Discussion



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H	I	J	K	L	M	N	O	P	Q	R	S	T
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COL Issues for NRC Review												Comment
COL Items				Interfaces for Standard Design (Item No.)	DAC/ITA AC for NRO Review	Generic Design Change	Plant Specific Design Departure	Operational Program	Tech. Rpt. No.	Generic Issue	ESP action item	
COL Issue Title	Table 1.9 COL Info. Item No.	DCD Subsection Ref.	Additional DCD References									
ABWR Startup Administrative Manual (NEDO-33305)									NEDO-33305			
ABWR Hydrogen Recombiner Requirements Elimination (NEDO-33330)									NEDO-33330			
ABWR Plant Medium Voltage Electrical System Design (NEDO-33335)									NEDO-33335			
Test Procedures/Startup Administrative Manual (Summary Level)	14.2	14.2.13.2	14.2.3, 14.2.4, 14.2.10, 14.2.11									
ABWR Startup Test Specification (NEDO-33310)									NEDO-33310			
Other Testing	14.1	14.2.13.1										
Test Procedures/Startup Administrative Manual (Summary Level)	14.2	14.2.13.2	14.2.3, 14.2.4, 14.2.10, 14.2.11									



A1 SRP section #

AP1000 COL Issues for NRC Review													
COL issue title	FSER COL action item no.	DCD COL info. item no.	Interfaces for standard design (Item no.)	DAC/ITAA C for NRO review	Generic design change	Plant specific design departure	Operational program	Tech. Rpt. no.	Generic Issue	ESP action item	New Standard Content		Comment
											STD	PS	
Leak-Before-Break Evaluation of as-Built Piping	3.6.3.1-1	3.6-3						6					
Primary System Inspection Program for Leak-Before-Break Piping	3.6.3.4-1	3.6-4											
											X	X	
Seismic Analysis of Dams	3.7.2.13-1	3.7-1						03 Rev.0, 03 Rev.1					
								115					
Site Seismic Sensor Location and			3.3										
Earthquake Response Procedures			3.12										
Post-Earthquake Procedures	3.7.5-2	3.7-2											
Seismic Interaction Review	3.7.5-3	3.7-3						6					
Reconciliation of Seismic Analyses of Nuclear Island Structures	3.7.5-1	3.7-4						6, 57, 57 Rev. 1, 85					
Location of Free-Field Acceleration	3.7.5-4	3.7-5											

Safety Evaluation Reports

- NRC Safety Evaluation Report (SER) provides regulatory basis for NRC decision regarding license application.
 - Preliminary SER (PSER) & Requests for Additional Information (RAI) – Review Phase 1
 - SER with Open Items – Review Phases 2 and 3
 - Final SER (FSAR), no open items – Review Phases 4, 5, and 6
- Contract deliverable Technical Evaluation Report (TER) inputs using furnished SER templates
- SER templates provide standard format and general content to be used as starting point in development of SER.
 - Allows staff to focus on technical evaluation
 - Helps define anticipated scope of review
 - Secondary tool for acceptance review
 - Facilitates PM assembly of SER
 - Standardizes documentation for consistency of licensing basis across design centers
 - Provides for early interaction with OGC

SER Template Structure

Six Parts – as related to COL referencing a DC

- X.Y.Z.1 – Introduction
 - X.Y.Z.2 – Summary of Application
 - X.Y.Z.3 – Regulatory Basis
 - X.Y.Z.4 – Technical Evaluation
 - X.Y.Z.5 – Post Combined License Activities
 - X.Y.Z.6 – Conclusions
-
- X.Y.Z represents a typical chapter section number
 - New templates for DC will have same subsection headings with exception X.Y.Z.5 – Combined License Activities

Operational programs

The operation programs are required to be specified by each COL applicant.

SRP Section 13.4 identifies the 19 specific operational programs that must be addressed by an applicant. These operational programs have been inserted into the matrix with the appropriate SRP section.

1. Inservice Inspection Program
2. Inservice Testing Program
3. EQ Program
4. Preservice Inspection Program
5. Reactor Vessel Material Surveillance Program
6. Preservice Testing Program
7. Containment Leakage Rate Testing Program
8. Fire Protection Program
9. Process and Effluent Monitoring and Sampling Program
10. Radiation Protection Program
11. Non licensed Plant Staff Training Program
12. Reactor Operator Training Program
13. Reactor Operator Requal. Program
14. Emergency Planning
15. Security program
16. QA Program
17. Maintenance Rule
18. MOV Testing Program
19. Initial Test Program



Questions?