Emergency Plan Review for Initial Licensing

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Introduction

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- Emergency Preparedness is an issue in the initial licensing of nuclear power reactors.
  - Once the license has been issued, the licensee's continuing performance is evaluated through the Reactor Oversight Process (ROP).
- Under NRC regulations, an initial license may not be issued if the Commission cannot make a finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.
  - Onsite (NRC) and offsite (FEMA) findings and determinations are factored into the Commission's finding.
- The emergency preparedness review proceeds in parallel with the staff review of plant design, etc.

Two Licensing Processes

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- There are currently two processes that can be used for licensing nuclear power reactors.
  - The traditional, two-step process of 10 CFR Part 50:
    - Construction permit (CP) and operating license (OL).
  - The newer, one-step process of 10 CFR Part 52:
    - Combined operating license (COL).
    - Can reference previously certified plant designs and previously approved reactor site.
- Regardless of the licensing process, issuance of a license (or permit) requires a finding regarding onsite and offsite emergency preparedness.
  - The sequence and timing of various aspects of the emergency preparedness review will vary depending on the process.
  - The emergency preparedness criteria do not change.
    - 10 CFR 50.47(b)
    - 10 CFR Part 50 Appendix E

Two Licensing Processes

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- Generally speaking, the multiple reactors on a single site can be reviewed under one application, if the reactor designs are the same.
- With regard to EP, an application for a new plant on a site that has a plant which already has an approved emergency plan, can credit that plan.
  - Review then becomes limited to establishing that the existing plan is adequate for the new unit.
  - A qualifying exercise may not be needed for the additional unit.
- Under Part 50, the operating license can be issued in two phases:
  - Power level limited to 5% rated power
    - No NRC or FEMA findings related to offsite emergency plans are required; an NRC finding on onsite planning is required.
  - Power level limited to the full rated power

Part 50 Licensing

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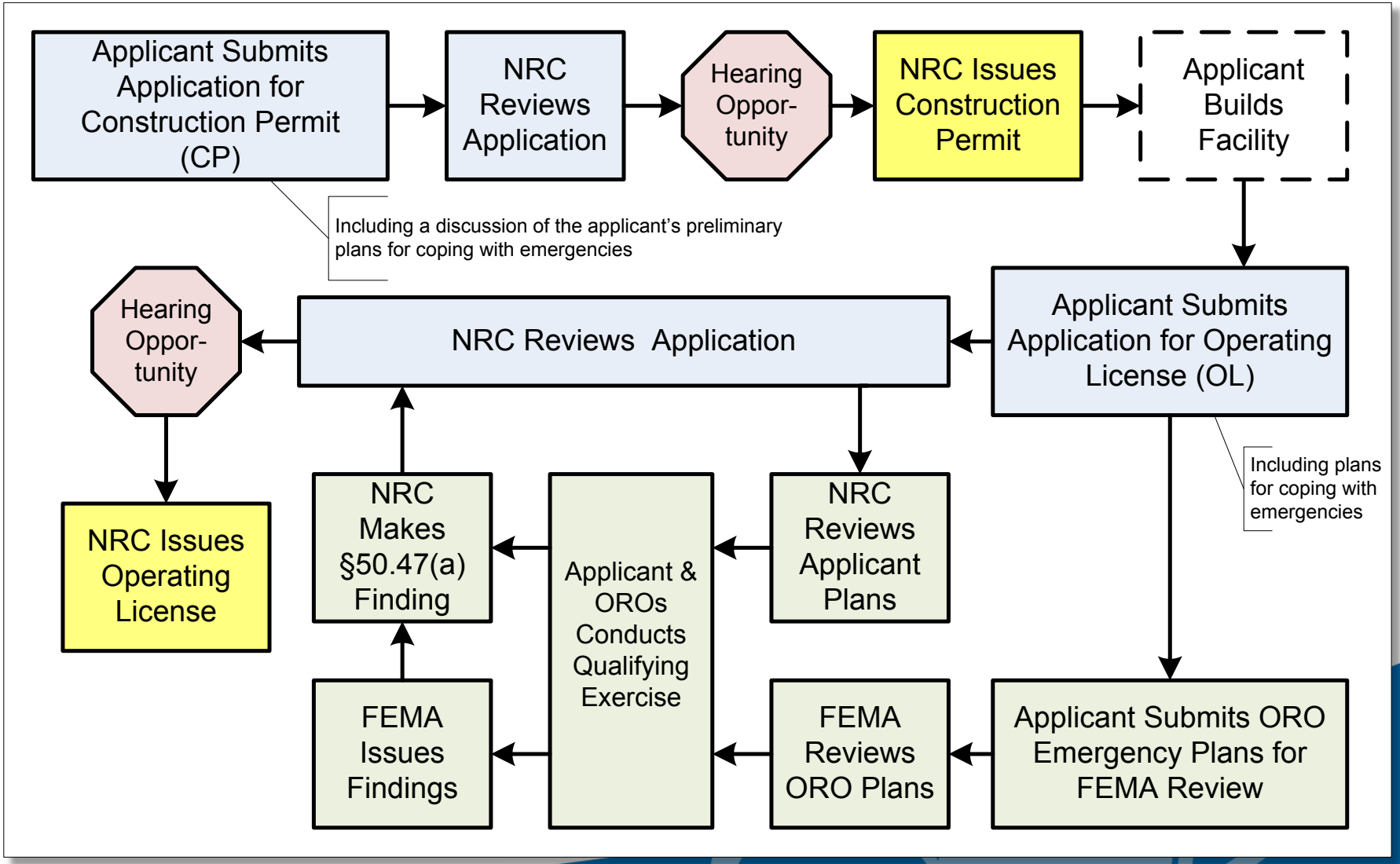
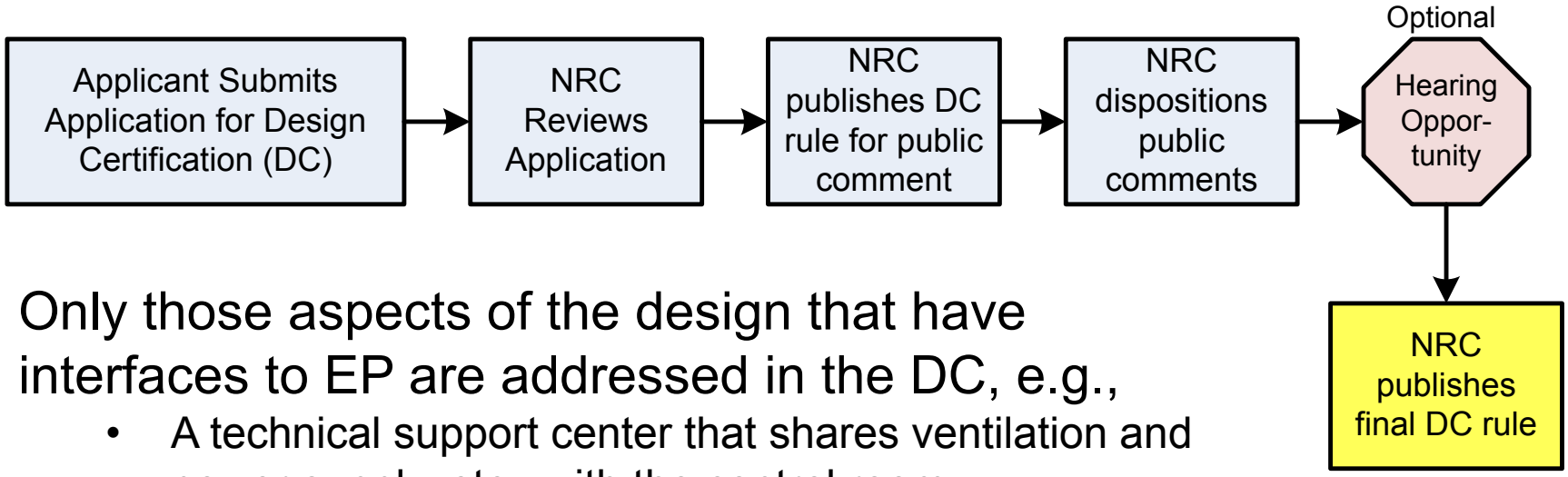


Part 52 Licensing Design Certification



Only those aspects of the design that have interfaces to EP are addressed in the DC, e.g.,

- A technical support center that shares ventilation and power supply, etc., with the control room,
- An onsite support center located in the power block,
- Communications
- Emergency Action Levels are generally approved at the COL stage.

Part 52 Licensing Early Site Permit

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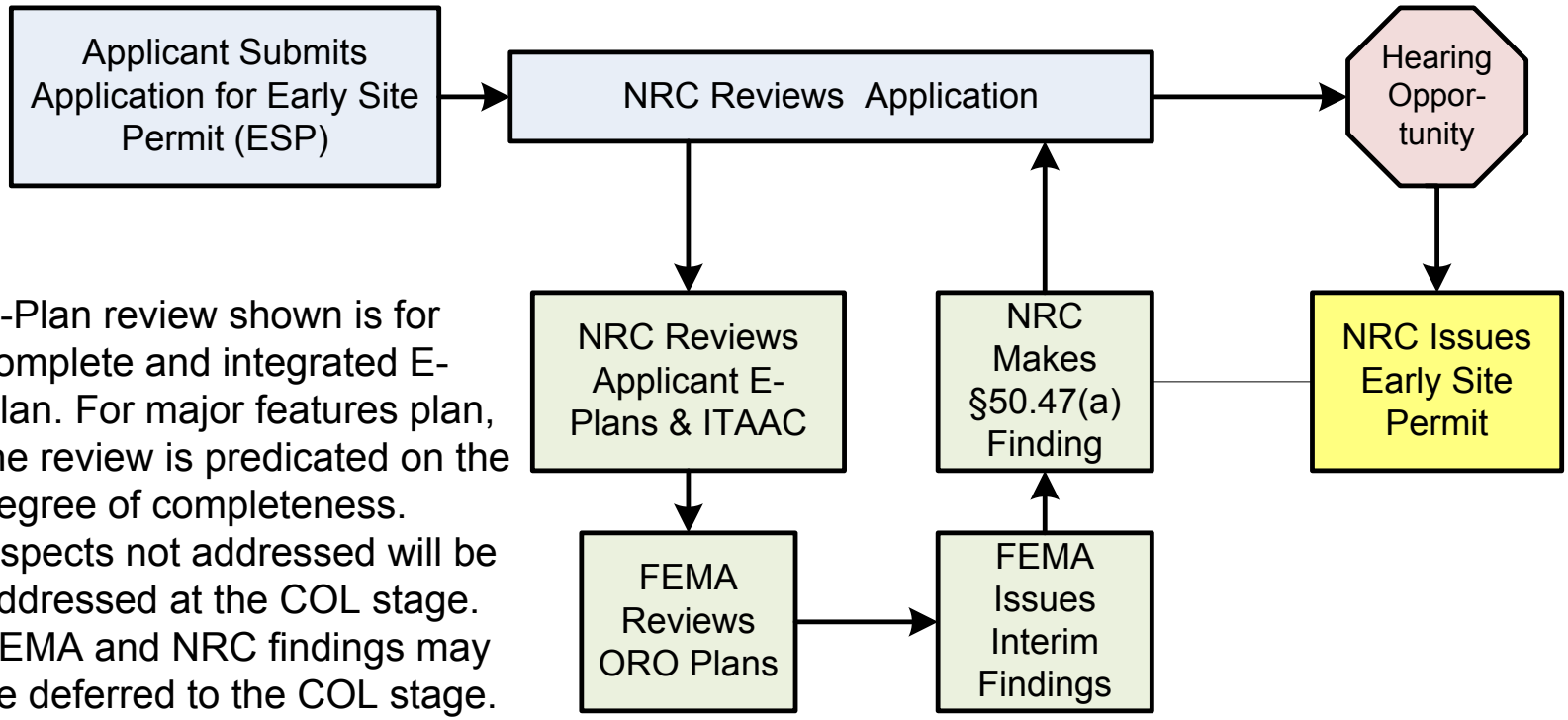

E-Plan review shown is for complete and integrated E-Plan. For major features plan, the review is predicated on the degree of completeness. Aspects not addressed will be addressed at the COL stage. FEMA and NRC findings may be deferred to the COL stage.

Part 52 Licensing
Combined Operating License

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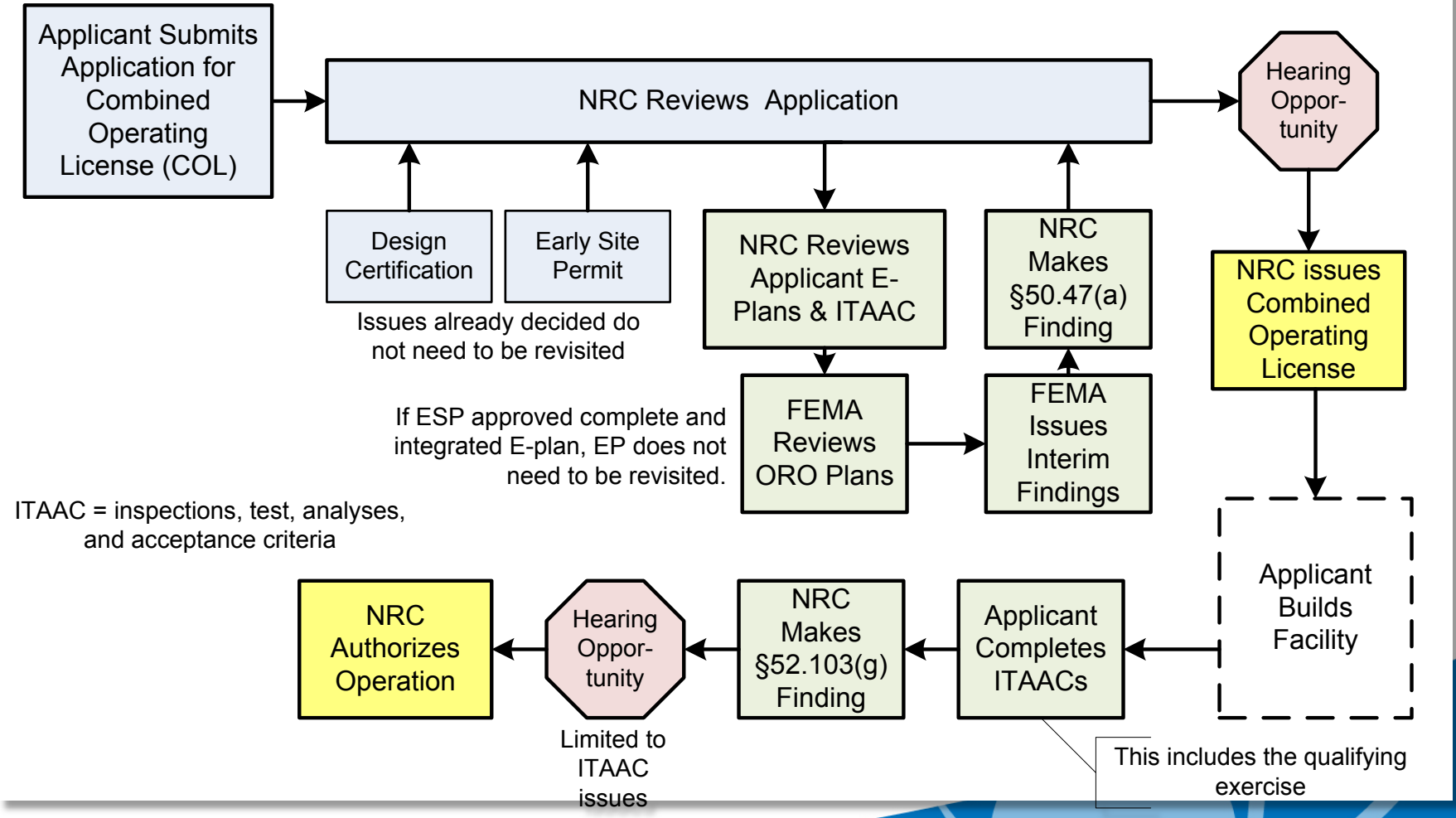

Standard Review Plan (SRP)

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- Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition, NUREG-0800
  - The Standard Review Plan (SRP) provides guidance to the NRC staff in performing safety reviews of applications for permits and licenses (including requests for amendments).
  - The principal purpose of the SRP is to assure the quality and uniformity of staff safety reviews.
- Each Chapter:
  - identifies primary and secondary technical branch for review,
  - describes area of review,
  - identifies acceptance criteria and applicable guidance,
  - review procedures, and
  - evaluation findings.

SRP Chapter 13.3

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- This standard review plan (SRP) section addresses the applicant's emergency planning, as described in the safety analysis report (SAR).
- The areas of review will depend on the specific application:
  - Part 50: this primary review responsibility involves evaluation of evidence of preliminary planning (in the Preliminary Safety Analysis Report, PSAR) or substantive evidence of planning (in the Final Safety Analysis Report, FSAR) for emergency preparedness.
  - Part 52: the review involves evaluation of various aspects of emergency planning, which will depend on whether the application is for:
    - an early site permit (ESP),
    - design certification, or
    - combined license (COL).

Primary Applicable Guidance

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- Regulatory Guide-1.101
  - "Emergency Planning and Preparedness for Nuclear Power Reactors"
- NUREG-0654/FEMA-REP-1
  - "Criteria for Preparation and Evaluation of radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."
    - Under revision at this time.
- NUREG-0696*
  - "Functional Criteria for Emergency Response Facilities"
- NUREG-0737*
  - "Clarification of TMI Action Plan Requirements"
- NSIR/DPR-ISG-01*
  - "Emergency Planning for Nuclear Power Plants"

* Being updated and combined into a new NUREG.

NRC Review of Applicant E-plan

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- On receipt of application, the NRC
  - Performs an acceptance review on the submittal to determine whether it provides the information necessary to perform the review. Outcomes:
    - accepts the submittal,
    - request that the applicant supplements the submittal, or
    - reject the submittal.
- Following acceptance, the NRC
  - Notices the application, and the opportunity for stakeholders to intervene, in the Federal Register.
  - Sends the application to the technical branches primarily responsible for the review of the various sections/aspects.
  - Arranges for contractor support to evaluate the Evacuation Time Estimate study.
  - Requests a FEMA review of the offsite emergency plans.

NRC Review of Applicant E-plan

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- Conduct the review
  - Review the material submitted with the application.
  - Identify information needs.
    - Prepare requests for additional information (RAIs) to be sent to the applicant,
    - Review the applicant's response.
    - Prepare additional RAIs if needed.
  - Identify open items / confirmatory items (mostly Part 50)
    - OI: something that requires additional information from applicant to resolve before the SER can be issued, e.g., conduct of exercise.
    - CI: An applicant's proposal is acceptable but the implementation needs to be reviewed by inspection.
- If COL, review ITAAC.
- Participate in public meetings, as applicable to the review

NRC Review of Applicant E-plan

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- Document the review in an input to Chapter 13.3 of the safety evaluation report (SER).
  - SER input needs to stand on its own, with cross-references.
  - All conclusions must be supported by justifications:
    - e.g., "Given A, B, C, and D, the staff finds that the applicant meets…"
  - Work on resolving review comments on the SER.
  - Incorporate FEMA findings and determinations.
  - Draft overall reasonable assurance determination.
- Participate in Advisory Committee on Reactor Safeguards (ACRS) meeting on the review.
  - Respond to questions and issues raised by the ACRS regarding EP
  - Update SER as needed.

NRC Review of Applicant E-plan

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- Participate in hearings conducted by the Atomic Safety and Licensing Board (ASLB).
  - Working with Office of General Counsel (OGC),
    - Respond to discovery requests if contentions involve EP topics,
    - Prepare testimony if to be called upon as a witness on EP topics.
  - Update SER input as needed.
- Participate in Commission hearing as requested.
- Every document, e-mail, etc., submitted by the applicant, issued by the NRC, that is relied upon in the review must be retained in the licensing file for the particulate docket.

Qualifying Exercises

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- 10 CFR Part 50 Appendix E §IV.F.2
  - A full participation exercise testing as much of the applicant, State, and local emergency plans as reasonably achievable without mandatory public participation.
    - Within 2-years of issuance of operating license above 5% power (Part 50), or within 2-years of the scheduled initial fuel loading (Part 52 COL)
    - In either case, if the exercise is more than 1 year before, applicant onsite plans must be tested in an exercise.
    - Special provisions for new reactor on same site, etc.
  - Exercise is reviewed by NRC (applicant plan) and FEMA (offsite plans). Exercises must be successful or will be required to be redone prior to licensing or fuel load.
  - After startup, onsite and offsite plans must be tested every two years.
    - Special provisions for States with more than one site having an EPZ within the State

EP Licensing Criteria

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- Following TMI, Commission issued regulations stating:
  - "no operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency"
- Adequacy of Reasonable Assurance
  - Requires NRC to make a predictive finding that there are no undue risks to public safety. It does not require zero risk.

EP Licensing Criteria

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- NRC bases findings on review of FEMA findings and determinations as to whether State and local plans are adequate and capable of being implemented
  - A FEMA finding will constitute a rebuttable presumption on questions of adequacy and implementation capability in a licensing proceeding.
- In addition, NRC assesses whether the onsite plan is adequate and capable of being implemented
- Adequate emergency plans are in place
  - Adequate staff and facilities to implement plan
  - Emergency plans are workable

Reasonable Assurance

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- The phrase, *reasonable assurance* is included to indicate the required level of confidence that the NRC and FEMA must have in their respective findings and determinations.
  - The regulations do not require *absolute* assurance that state and local governments adopt extraordinary measures to address every conceivable occurrence.
  - The regulations place emphasis on prudent risk reduction measures
  - There should be core planning with sufficient planning flexibility to develop reasonable response to those very serious low probability accidents which could affect the public.
  - Objective is achievement of reasonable and feasible dose reductions in the event of an accident
    - Not a preset minimum dose saving or minimum evacuation time

Realism Rule

What happens if a State or local government refuses to participate in emergency planning?

- 10 CFR 50.47(c)(1)
  - Provides means for an applicant to obtain a license when State or local governments decline or fail to participate adequately in offsite emergency planning
  - Applicant/licensee may:
    - Demonstrate that deficiencies in emergency plans are not significant
    - Show that adequate interim compensatory actions have been or will be taken promptly
    - Assert that other compelling reasons exist that would permit plant operations

Realism Rule

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- Compensatory actions may be required for licensing
  - May involve some form of utility offsite plan
  - Guidance contained in NUREG-0654/FEMA-REP-1, Rev. 1, Supp. 1
- NRC recognizes that in an actual emergency, State and locals will exercise best efforts to protect the public
  - Hence, 10 CFR 50.47(c)(1) is known as the “realism” rule
- Historical Perspective
  - Shoreham (NY)
    - New York refused to support the licensing of Shoreham on Long Island (applicant agreed not to operate the plant and transferred the plant and $6B debt to a state power authority).
  - Seabrook (NH/MA) licensed under this rule
    - Massachusetts refused to support the licensing of Seabrook which is located in New Hampshire, 2 miles from the Massachusetts State line.
    - They now participate

Realism Rule

- Suffolk County, NY refused to participate in emergency planning for the Shoreham.
  - Licensee developed offsite plans and they were tested in an exercise with some deficiencies.
  - State of NY “bought out” the plant and closed it.
  - It never operated above 5% power.
  - The picture is current.

Realism Rule

- Massachusetts (MA) refused to allow Seabrook to install sirens in its portion of the EPZ
  - The applicant purchased truck mounted sirens that could be dispatched into MA if needed
  - The applicant pre-positioned the trucks and 24/7 crews to carry out the alerting.
  - Once the Seabrook licensee was issued, MA relaxed its position.

Realism Rule

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- Executive Order 12657
  - Directs FEMA to assist licensees when State & locals decline or fail to participate
  - 44 CFR 352 contains procedures for requesting FEMA assistance
  - Contingent on applicants making maximum use of its resources & extent of applicant compliance with 10 CFR 50.47(c)(1)
  - To date, the order has not been invoked