



Emergency Preparedness for New Reactors

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I/24

*3/17/10
Being Released for
their Entirety (CSTB)
11*



Three Mile Island Event

- Enhanced Emergency Preparedness
 - New regulations
 - 10 CFR 50.47 implemented
 - EPZ concept formally adopted
 - Prompt notification of the NRC
 - NRC operations center staffed 24 hours a day
 - Periodic exercises and drills required
 - Emergency plan approval for new plants
 - Additional EP guidance in NUREG-0654
 - Strengthened onsite and offsite preparedness
 - Established emergency response facilities



September 11, 2001 Event

- Issued Order and Guidance containing EP Actions
 - Emergency Action Levels (EALs) must address hostile actions
 - Early notification to the NRC
 - Onsite protective measures
 - Alternate facility
 - Hostile action-based drills and exercises



Today's Discussion

- Large, light-water power reactors
 - Generation III and III+, advanced light-water reactors (U.S. DOE)
 - Primary EP Regulations
 - 10 CFR 50.47
 - Appendix E to 10 CFR Part 50
 - The same for Generation I, II, III and III+ reactors



What Won't Be Discussed

- Will not include the next generation of advanced reactors (*Generation IV*)
- Power reactors under 250MW or gas cooled reactors (per Appendix E to 10 CFR Part 50)
- Small modular reactors

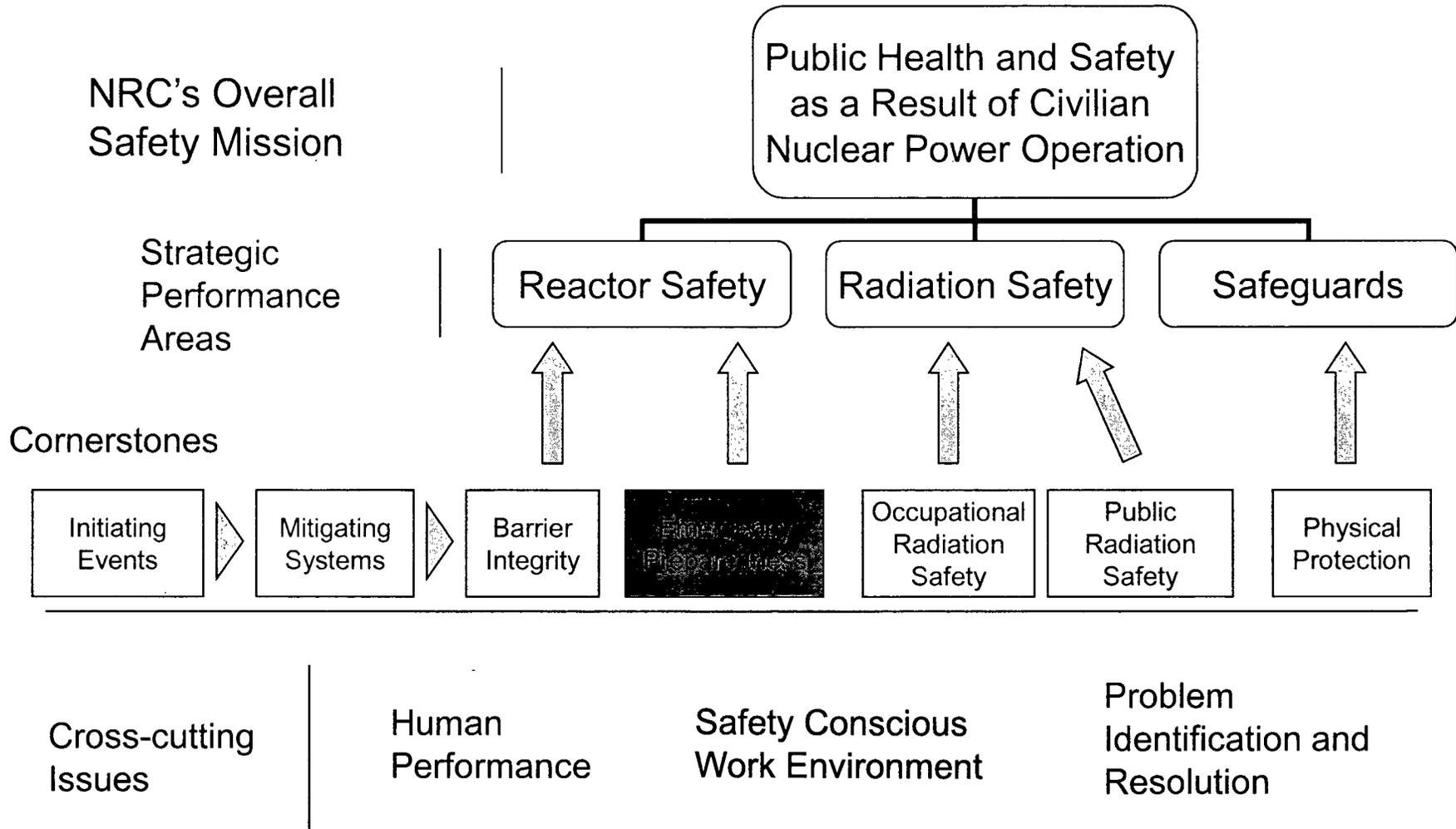


Overall Objective of Emergency Preparedness (EP)

- To ensure that emergency plans provide reasonable assurance that adequate measures can and will be taken to protect public health and safety in the event of a radiological emergency.



Reactor Oversight Process (ROP)





FEMA-NRC Partnership

- Federal Emergency Management Agency (FEMA):
 - Determines “*reasonable assurance*” of the adequacy of “offsite” State/Local/Tribal emergency plans and preparedness
 - Forwards their findings to NRC
 - Notifies NRC of issues in the offsite response plans
 - Oversees resolution of offsite EP issues
 - FEMA regulations contain the NRC/FEMA MOU



FEMA-NRC Partnership

- NRC
 - Determines the adequacy of “onsite” plans made by the Licensee
 - Gives overall reasonable assurance of the integrated emergency plans of both Onsite and Offsite response organizations
 - Has overall regulatory authority
 - Makes the final approval of emergency plans as required for the plant to operate



Key Elements of EP

- Emergency Classification Levels (ECLs)
 - Determines the extent of response actions
 - Notification of Unusual Event (least severe)
 - Alert
 - Site Area
 - General (most severe)
 - On-shift manager makes the declaration
 - Line of succession with authority
 - State/local governments notified first, then NRC is notified within about 1 hour

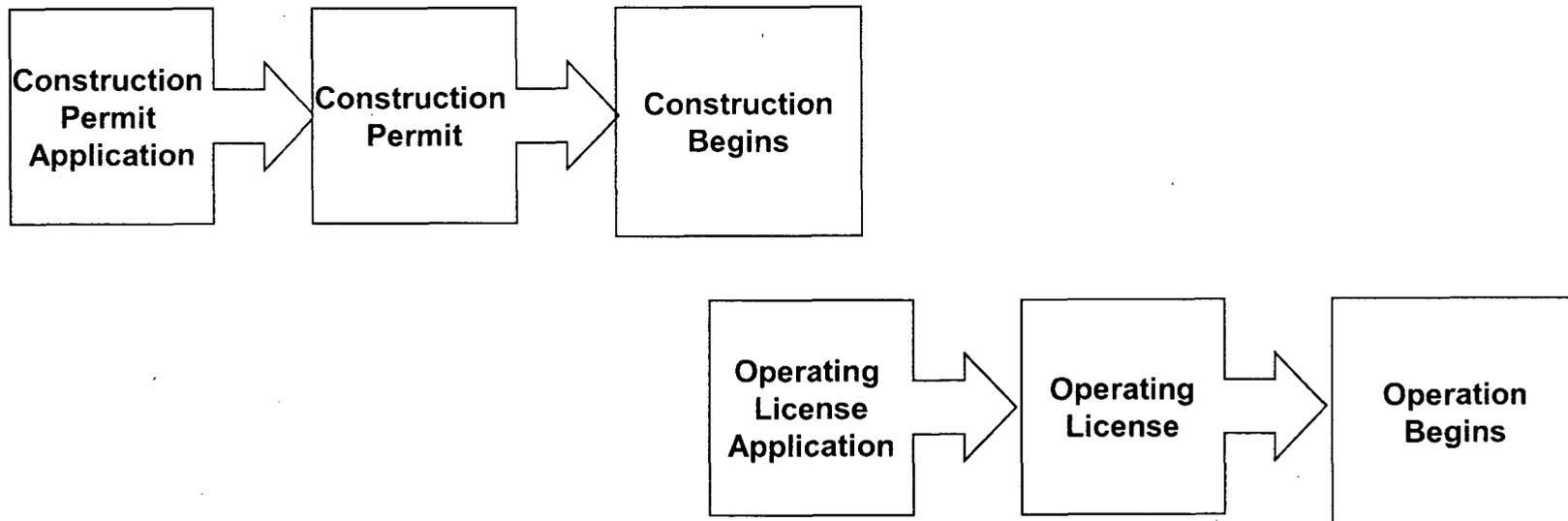


Key Elements of EP

- Emergency Planning Zones (EPZs)
- Emergency Plans and procedures
- Emergency Response Facilities (ERFs)
- Coordination of Plans between Licensees and State/Local and Tribal officials
- Exercises and Drills



Licensing Process for current fleet (10 CFR Part 50)

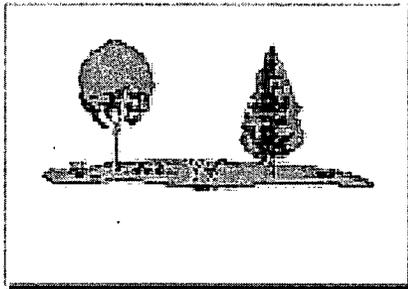


- Design effort proceeded throughout process
- Regulatory standards evolved as construction proceeded

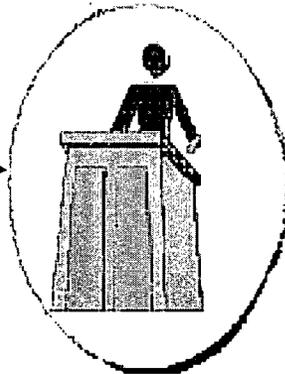


Reactor Licensing Process

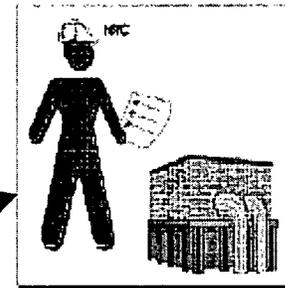
Early Site Permits (maybe)



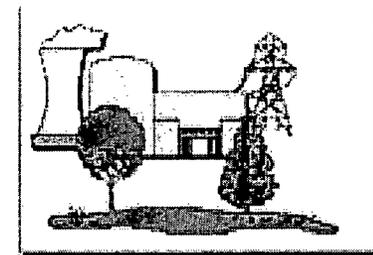
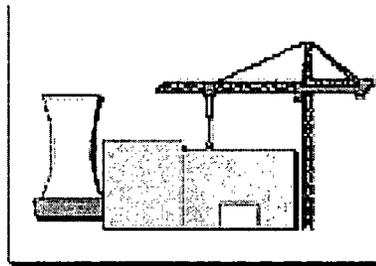
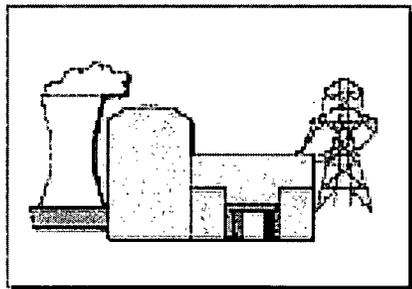
Combined License Review and Hearing



Verification of Inspection, Test, Analysis, and Acceptance Criteria



Design Certifications



Reactor Construction

Reactor Operation



“New” Changes for New Reactors

- The “reasonable assurance” finding is issued earlier in the process (*with the Combined License (COL) prior to construction*).
- Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) require a successful EP exercise prior to fuel load.



Incident Response by the NRC

- Headquarters Operation Center
 - Focal point of NRC response
 - Staffed 24/7 with a minimum of 2 officers
 - Ability to monitor plant data
 - Support staff as needed 24/7
 - Threat assessment
- Exercise participation
 - Goal is to participate in 1 exercise per region per quarter per year



Key Messages for EP

- Any “new” reactors being built must meet existing EP regulations.
 - Protect the health and safety of the public
- The licensee works together with offsite partners to develop plans and procedures
- The NRC and FEMA work together to be sure that plans are workable.



Websites

- Emergency Preparedness
 - <http://www.nrc.gov/about-nrc/emerg-preparedness.html>