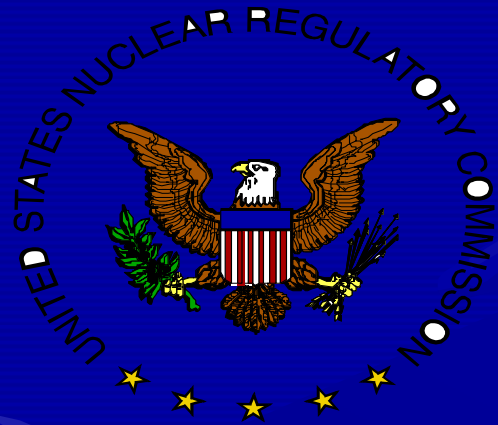


Commission Briefing Emergency Preparedness and Response



**Office of Nuclear Security
and
Incident Response**

Emergency Planning

Ongoing coordination, planning, practice, and refinement of emergency plans contribute to successful EP

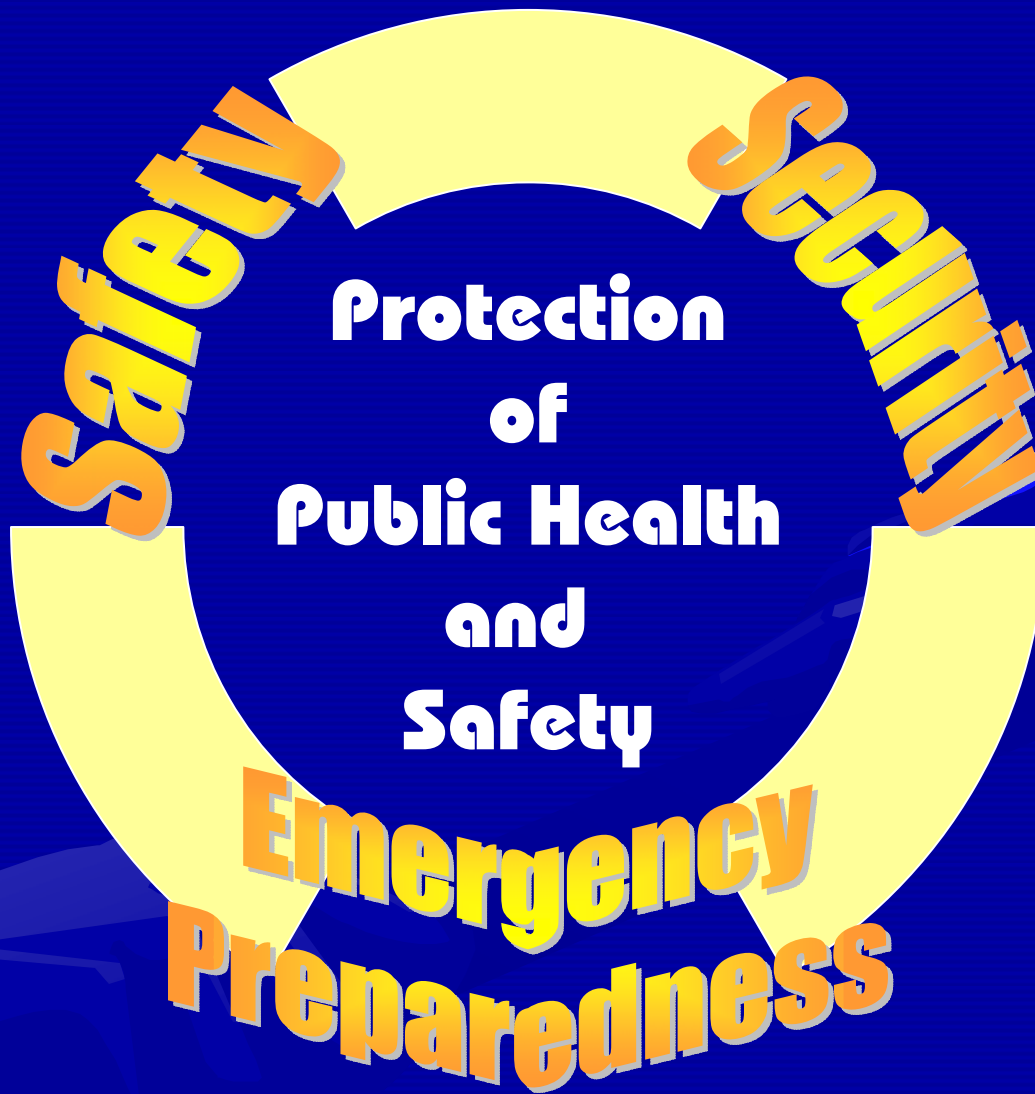


Emergency Planning

Develops workable plans

Confirms that plans work

**Can identify, evaluate and react
to a wide spectrum of
emergency conditions**



EMERGENCY PLANNING BASIS REMAINS

VALID

IN THE

POST 9/11/2001 WORLD

Successful Planning

Successful Response

Emergency Preparedness

**Actions which can and should be performed
prior to an emergency**

Planning and Coordination Meetings

Procedure Development/Implementation

Training

Drills and Exercises

Evaluations, Critiques, Continuous Improvements

Lessons Learned

Pre-positioning/Maintenance of Emergency
Equipment

Emergency Preparedness Directorate

Director, Emergency Preparedness Directorate

Section Chief, Inspection & Communications

Section Chief, Licensing & Regulatory Improvements

Communications Team

Inspection Team

Licensing Team

Security Interface Team

Regulatory Improvements Team

- Communications
 - Internal Outreach
 - External Outreach
 - Webpage
- Media Center & Public Information Guidance
- Interagency
- International
- KI/Radiopharm

- Inspections (SDP/PI)
- Event Follow-up
- Regional Support
- EP Training Development

- Licensing Actions
- New Reactor Licensing
- 2.206 Support
- Blackout Lessons

- Vulnerability Studies
- FOF Exercise Support
- Security Orders

- Regulatory Guides
- Rulemaking
- Shift Staffing Study
- Protective Action Guidance (e.g., sheltering)
- Special Issues

Emergency Preparedness A Dynamic Process

Plans are flexible

Can be modified as needed
to meet new challenges

EP Webpage

- Emergency Preparedness Information on Public Website
- Integrated Preparedness & Response Web Page

U.S. Nuclear Regulatory Commission

Home | Who We Are | What We Do | Nuclear Reactors | Nuclear Materials | Radioactive Waste | Facility Info | Public Involvement | Electronic Reading Room

Home > [What We Do](#) > [Emergency Preparedness and Response](#) > [How We Respond to an Emergency](#) > Response to Dirty Bombs

Response to Dirty Bombs

Basically, the principal type of dirty bomb, or Radiological Dispersal Device (RDD), combines a conventional explosive, such as dynamite, with radioactive material. In most instances, the conventional explosive itself would have more immediate lethality than the radioactive material. At the levels created by most probable sources, not enough radiation would be present in a dirty bomb to kill people or cause severe illness.

contaminate up to several city blocks, creating accurate, non-emotional public information

the explosion—and go inside. This will reduce response and health authorities.

plastic bag. Saving contaminated clothing station exposure, if the explosive device

rise people where to report for radiation here in fact exposed and what steps to take

U.S. Nuclear Regulatory Commission

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Home > [What We Do](#) > [Emergency Preparedness and Response](#) > [How We Respond to an Emergency](#) > [Emergency Preparedness in Response to Terrorism](#)

Emergency Preparedness in Response to Terrorism

Emergency preparedness (EP) is a prudent defense-in-depth measure regardless how small the probability of a serious reactor accident or a terrorist attack. It is one of many defense-in-depth measures that can mitigate the public health consequences of a reactor accident even though nuclear safety regulations, engineering, and operations reduce the likelihood of such accidents. The existence of terrorist threats may affect the likelihood of a reactor accident, although it is not currently possible to estimate the change in probabilities with great confidence. However, EP requirements are not based on the probability of a terrorist-based attack on a nuclear plant in the same manner that they are not based

U.S. Nuclear Regulatory Commission

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Home > [What We Do](#) > [Emergency Preparedness and Response](#)

Emergency Preparedness and Response

We prepare for emergencies before they happen to simplify the decisionmaking process. Our emergency preparedness programs enable emergency personnel to rapidly identify, evaluate, and react to a wide spectrum of emergencies, including those arising from terrorism or natural events such as hurricanes. We ensure that the NRC and its licensees protect the public health and safety in any event involving an NRC-licensed facility or radioactive materials. In such an emergency, we cooperate with other Federal, State, and local emergency organizations. The NRC's [Office of Nuclear Security and Incident Response](#) (NSIR) has the primary responsibility for these essential agency functions.

On this page:

- [What To Do](#)
- [Emergency Preparedness](#)
- [Emergency Response](#)
- [Additional Information](#)

What To Do

- [What Can I Do To Prepare for a Radiological Emergency?](#)
- [What Do I Do in a Radiological Emergency?](#)

Emergency Preparedness

- [How We Prepare To Protect the Public](#)
- [Federal, State, and Local Responsibilities](#)
- [Evaluation and Sheltering](#)
- [Emergency Classification](#)

Preparedness

NESS

In response, NRC took immediate high they all promptly did. Shortly after the Fukushima Daiichi nuclear power plant, in February 2011, nuclear power plants to perform specific action features, improve EP, and provide relevant agencies assisted in the prompt set new planning elements.

reactor plant design and operation. Robust systems, such as diesel generators, are in from external hazards, such as area also protect against potential acts (fictitious) facilities in the country.

trained security personnel who remain on-site protected by sensitive intrusion security patrols. The NRC is conducting regular plant security personnel can exercises to ensure the licensee can conduct a routine inspections to ensure licensees



U.S. Nuclear Regulatory Commission



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[Home](#) > [What We Do](#) > [Emergency Preparedness and Response](#) > [How We Respond to an Emergency](#) > [Emergency Preparedness in Response to Terrorism](#)

Emergency Preparedness in Response to Terrorism

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On this page:

- [Impact of September 11, 2001, on Emergency Preparedness](#)
- [Consideration of Potential Terrorist Activities with Respect to Emergency Preparedness](#)

Impact of September 11, 2001, on Emergency Preparedness

The world has changed since the terroristic events of September 11, 2001, and in response, NRC took immediate action by advising nuclear power plants to go the highest level of security -- which they all promptly did. Shortly afterward, NRC and the industry reevaluated the physical security at the nation's nuclear power plants. In February 2002, the NRC issued Interim Compensatory Measures (ICMs) requiring all U.S. nuclear power plants to perform specific plant design studies, add additional security personnel, enhance physical protection features, improve EP, and provide additional training. Nuclear industry groups and Federal, State, and local government agencies assisted in the prompt implementation of these measures and participated in drills and exercises to test new planning elements.

Protecting public health and safety has always been paramount in nuclear power plant design and operation. Robust structures, such as reactor containment buildings, protect the reactor. Safety systems, such as diesel generators, are redundant and independent. These design features provide excellent protection from external hazards, such as tornadoes and hurricanes, as well as nuclear accidents. The same design features also protect against potential acts of terrorism, making nuclear power plants among the most robust and well-protected civilian facilities in the country.

Physical security at nuclear power plants is provided by well-armed and well-trained security personnel who remain ready to respond to an attack 24 hours a day, seven days a week. The sites are protected by sensitive intrusion detection equipment, fences, and barriers and are monitored by cameras and security patrols. The NRC is conducting force-on-force (FOF) exercises using trained adversaries to ensure nuclear power plant security personnel can implement many new security improvements. NRC EP specialists observe these exercises to ensure the licensee can implement emergency plans during a terrorist event. Additionally, NRC conducts routine inspections to ensure licensees comply with EP, security, and all other regulations.

Reaching Out...



INDIAN POINT EXERCISE PARTICIPATION

Organizations Playing

NRC Headquarters Operations Center
 Approximately 65 players
 Reps: DOE, FEMA, USDA, HHS, EPA

NRC Region I Incident Response Center
 Approximately 20 players

**NRC Site Team
 (EOF, TSC, OSC, JNC, State EOC)**
 Approximately 25 players

**IP Emergency Operations Facilities
 (EOF, TSC, OSC)**
 Approximately 70 players
 - EOF facility will house the Incident
 Command Post for the exercise

Joint News Center
 Approximately 20 players, in addition to
 simulated members of the media

State Emergency Operations Center
 Approximately 80 players

County Emergency Operations Centers
 Westchester, Rockland, Orange, and
 Putnam
 Approximately 265 players

Cells Simulating Organizations or Functions

FEMA Regional Operations Center
 Approximately 2 players

**Department of Homeland Security
 HSOC - Homeland Security Operations
 Center**
 IIMG - Interagency Incident
 Management Group
 NRC liaison and controller
 Approximately 6 players (at DHS)

DoD/ NORAD (1 player via telecon)

Federal Bureau of Investigation
 (1 player in Federal Control Cell)

Incident Command Post
 IP Security, NYSP, NY Nat'l Guard,
 NRC, FBI, Local Fire Chiefs,
 Westchester Co. PD
 Approximately 20 players

Exercise Control Cells

Federal Control Cell (At NRC HQ)
 6 controllers in cell, 8 in field

Licensee/State Master Control Cell
 10 controllers in cell, 10 in field

Spokespersons

Federal Information Area

Central location to provide information regarding Federal activity that would occur in response to an event at a nuclear power plant, including events such as those featured in the Indian Point exercise scenario.

Representation from FEMA, FBI and NRC will be available.




Approximately 23 Federal representatives

NRC Liaison(s) For Elected Officials




NRC will accompany elected officials or their representatives during the a tour of onsite facilities and answer general questions regarding event response.

1 or 2 NRC representatives, based on number of participants.

Physical locations

-  Westchester Airport
-  Indian Point Site
-  Various Locations
-  Control Cell Groups

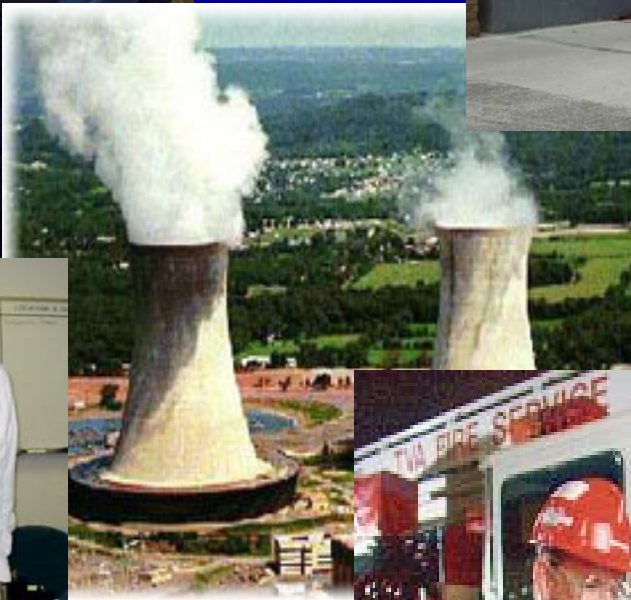
Other symbols

-  Licensee/Federal Controllers
-  NRC or FEMA Evaluated Activities
-  Communication Flow

“Very valuable dialogue”



“Scenarios were very helpful”





Cooperative Efforts



FEMA



Potassium Iodide (KI)

- **Public Health Security And Bio-Terrorism Preparedness And Response Act of 2002, P.L.107-188, section 127.**
 - **Signed into law on June 12, 2002.**
 - **Act is intended to improve the ability of the USA to prevent, prepare for, and respond to bio-terrorism and other public health emergencies.**

Potassium Iodide

- The KI subcommittee of the Federal Radiological Preparedness Coordinating Committee (FRPCC) developed draft guidelines.
- Will include one point of contact for all KI orders

Inspection

NRC Regions - Thousands of hours of ongoing inspections

NRC HQ - Program maintenance & regional support

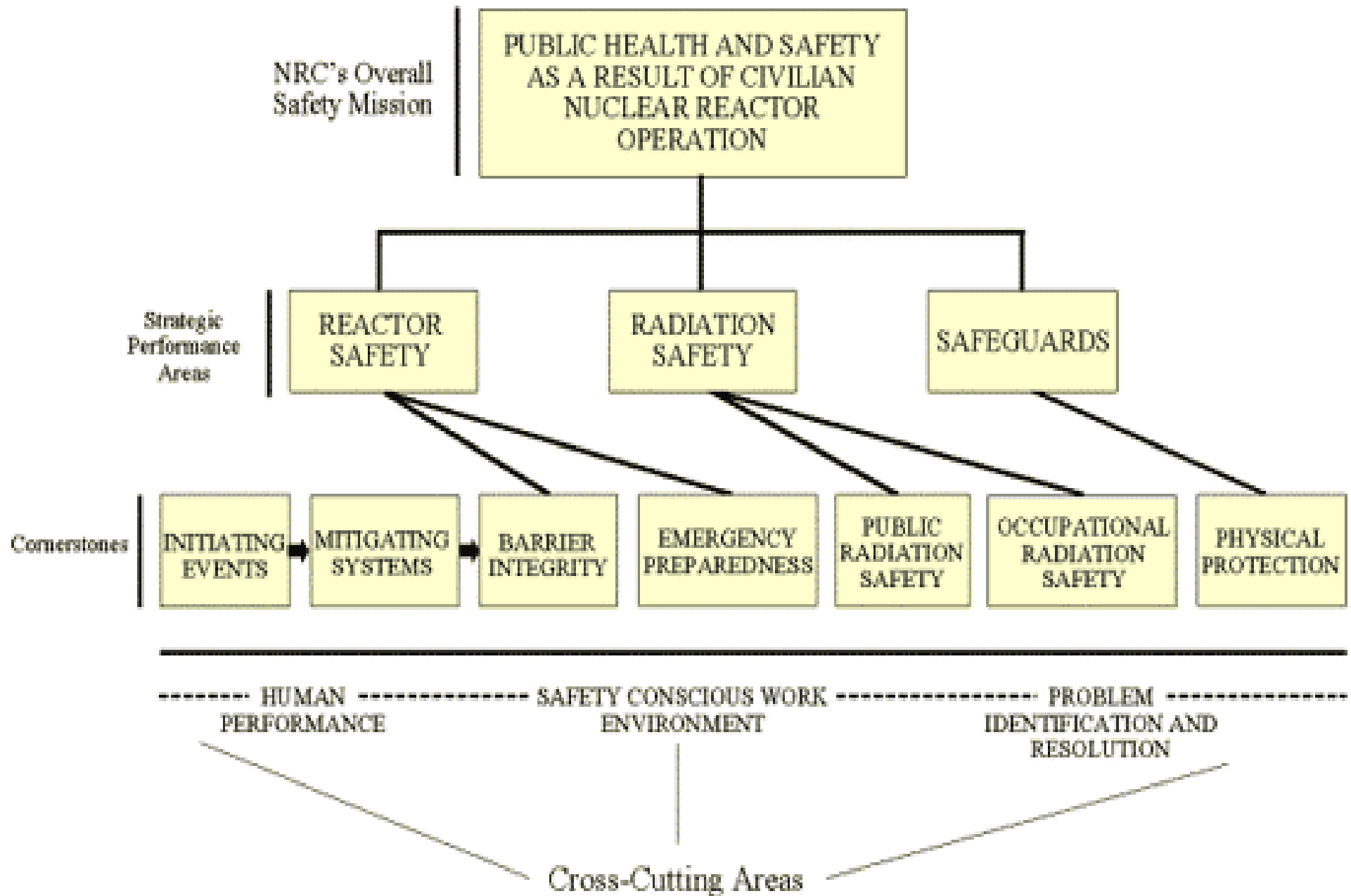


Reactor Oversight Process

EMERGENCY PREPAREDNESS CORNERSTONE OBJECTIVE

“Ensure that the licensee is capable of implementing adequate measures to protect the public health and safety in the event of a radiological emergency.”

REGULATORY FRAMEWORK



Reactor Oversight Process

EP PERFORMANCE INDICATORS

Drill/Exercise Performance (DEP) – 90%

**a. Classification, Notification,
Protective Action Recommendations**

- 1. Emergency Response Organization Drill
Participation – 80%**
- 2. Alert and Notification System
Reliability – 94%**

EP Inspection Efforts

- **Regulatory Issue Summary:
Guidance for Timeliness of Event
Classification**
- **Guidance: Licensee Emergency
Response Staffing**
- **Support Force-on-Force Exercises**

Protective Actions

Evacuation

Sheltering

KI as needed

Protective Actions

Risk of the Protective Action

and

**Risk Associated with
the Dose that will be Avoided**

**NRC Regulatory Issue Summary 2004-13
Consideration of Sheltering in
Licensee's Range of
Protective Action Recommendations**

Shelter



EP Licensing Efforts

- **Reconciled EP Requirements in 10 CFR Parts 50 & 52 Rulemaking**
- **Revised NUREG-0654, Supplement 2**
- **Reviewed Design Certification Applications**
- **Emergency Action Level Reviews**

EP Licensing Efforts

- **Early Site Permit Application Review in Process:**
 - Dominion/North Anna
 - Exelon/Clinton
 - Entergy/Grand Gulf
- **Completed EP Review of Design Certificate for Westinghouse AP1000**



NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

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Washington, DC 20555-0001

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www.nrc.gov

No. 04-112

September 13, 2004

NRC ISSUES FINAL SAFETY EVALUATION REPORT AND FINAL DESIGN APPROVAL FOR WESTINGHOUSE AP1000 ADVANCED REACTOR DESIGN

[Printable Version](#) 

The U.S. Nuclear Regulatory Commission has issued a final safety evaluation report and final design approval for the Westinghouse AP1000 advanced reactor design. The approval is good for five years.

NRC staff spent more than two years carefully reviewing the design for the plant, which is capable of producing approximately 1,000 megawatts of electricity and features enhanced systems to safely shut down the reactor or mitigate the effects of an accident. It is designed for a 60-year operating life.

"The staff at the NRC has conducted an extensive technical evaluation on this next-generation reactor design and recommended its approval," said James Dyer, director of NRC's Office of Nuclear Reactor Regulation. "The final step in the process is to incorporate the design into NRC's regulations, using a rule-making process that includes a public comment period."

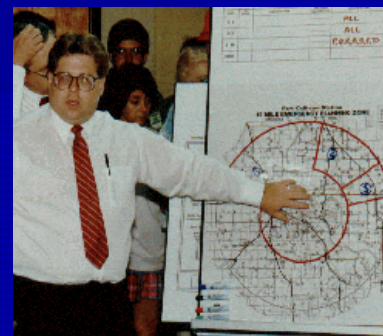
Such a certification, if granted by the commission on staff recommendation, would allow a utility to reference the design in an application for a nuclear power plant license.

NRC has certified three other standard reactor designs: an Advanced Boiling Water Reactor, System 80+ and AP600. NRC has long sought standardization of nuclear power plant designs and the enhanced safety and licensing reform that standardization could make possible.

The Final Safety Evaluation Report can be accessed electronically on Sept. 20, 2004, through the NRC Agencywide Documents Access and Management System (ADAMS) by going to: <http://www.nrc.gov/reading-rm/adams/web-based.html>, and entering accession number ML042540268. For help in using ADAMS, call 800/397-4209 or 301/415-4737. More information about the AP1000 review can be found on the NRC's Web site, <http://www.nrc.gov/reactors/new-licensing/design-cert/ap1000.html>.

The NRC recognizes that many things have changed since the terrorist attacks of September 11, 2001, and has been working with Federal, State, and local organizations to improve coordination of responses to protect the public from the impact of a terrorist attack on a nuclear power plant.

- Department of Homeland Security
- NORTHCOM/NORAD • Department of Defense
- Federal Aviation Administration
- Department of Energy • Department of Justice
- Federal Emergency Management Agency
- Environmental Protection Agency • States • Locals



Integration of Security with Preparedness and Response

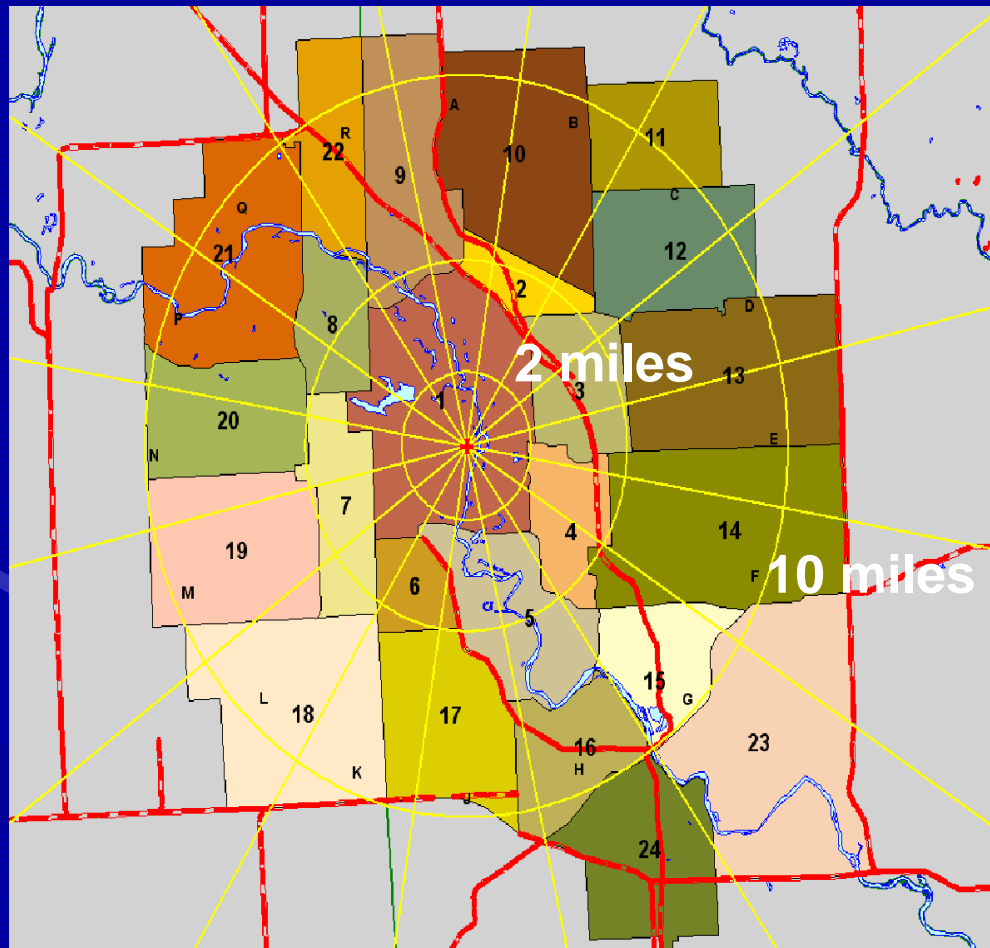
Support of Force-on-Force Activities



Enhancement of Integrated Ops-Security-EP Response



Emergency Preparedness



10 mile Emergency Planning Zone (EPZ) encompasses a wide spectrum of accidents

Terrorist events bounded by this spectrum

Safety and security studies show that a radiological release affecting public health and safety is unlikely from a terrorist attack, including large commercial aircraft.

In unlikely event of a radiation release, there will be time, beyond the minimum time frame used for the emergency planning basis, to implement plant mitigating measures and offsite emergency plans.

**Initial planning
bounds wide range of events**

Laws of physics govern

**Response adapted to
new threats**

Exercises

- **Force on force.**
- **Terrorist-based exercise scenarios:**
 - **Palo Verde in 2000**
 - **Diablo Canyon in 2003**
 - **Indian Point in 2004**

Indian Point Energy Center



The Exercise At Indian Point

Realistic and Challenging:

- Large jet crashed into facility
- Electrical power lost
- Equipment problems led to emergency declarations
- Coordination with off-site responders
- Scenario realistically reflected study results
 - Timing and overall progression of events that could potentially occur as a result from a severe terrorist attack.

The Exercise At Indian Point

NRC studies:

- Likelihood of both damaging the Indian point reactor core and releasing radioactivity that could affect public health and safety is low.
- Significant time would be available to implement plant mitigating measures and offsite emergency plans

EMERGENCY PLANNING BASIS REMAINS

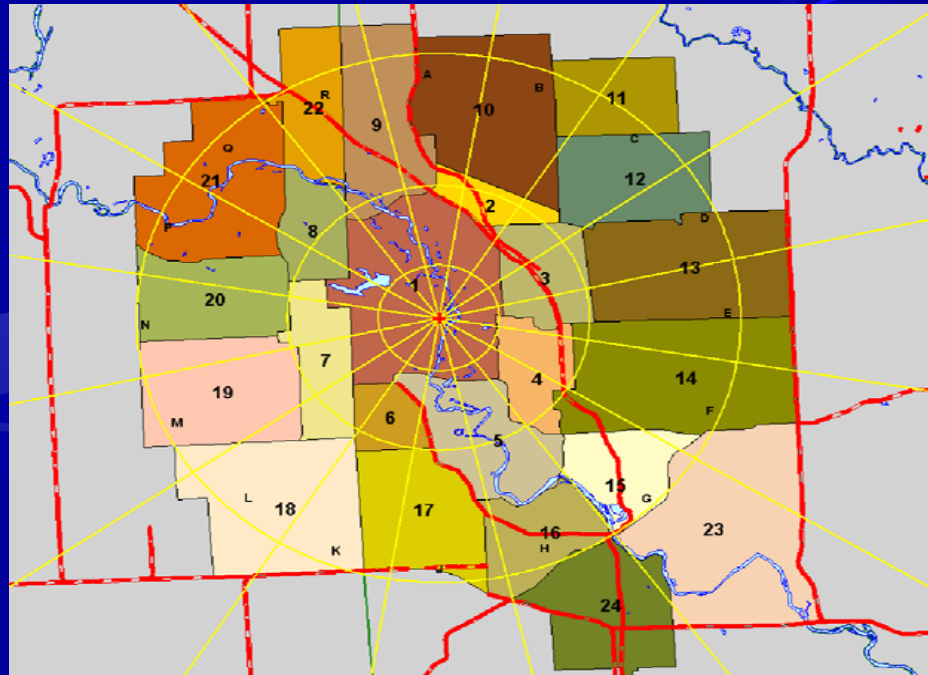
VALID

Regulatory Improvements

- **Top-down Review of Emergency Planning Program**
- **Rulemaking**
 - **Conforming Changes to Part 50 to incorporate Part 52 Licensing Concepts**
 - **Clarification of Exercise Requirements for Co-located Licensees**
- **Regulatory Guides**
- **Studies**
 - **Protective Action Guidance (e.g. Sheltering)**

Evacuation Time Estimate (ETE)

The ETE is the time estimated to evacuate all individuals to outside the EPZ



Evacuation Time Estimate Changes and Improvements

- **Driver Behavior**
- **Computer Models**
- **Implication of Current Threat Environment**
- **Impact of Shadow Evacuations**
- **Use of Mass Transit and Alternative Forms of Transport**
- **Results of Recent Evacuation Study**

Evacuation Study Overview

- **Public Evacuations Have Been Successful in Protecting Public Health & Safety.**
- **Study Validates NRC's Use of Evacuations as an Important Protective Measure.**

Evacuation Study Supports EP Planning Basis

- **Evacuations successfully protect the public health & safety over a broad range of initiating circumstances & challenges**
 - **Large public evacuations occur about once every 3 weeks**
 - **Shadow evacuations don't affect the effective implementation of protective actions**
 - **Emergency workers report to duty**
 - **Public education is important**
 - **Route alerting is important contributor to efficient & effective evacuations.**

EP Top-Down Review

- **Identify current and future necessary emergency preparedness activities**
- **Reexamine the EP basis in light of 9/11 and vulnerability assessment results**
- **Implement these activities**
- **Goal is to enhance effectiveness of EP and incident response**

Regulatory Improvements

- **Information notice (IN) on problems discovered with backup power supplies to emergency response facilities and equipment.**
- **Failure to maintain alert and notification system tone alert radio capability.**
- **Review of the range of protective actions for nuclear power plant incidents.**

Regulatory Improvements

- **Clarifying the Process for Making Emergency Plan Changes**
- **Guidance Regarding Reviews of Licensee Emergency Response Staffing**
- **Revision to NUREG-0654, Supplement 2;**
- **A Review of Public Evacuations**
- **Update of Guidance for Evacuation Time Estimates**





Hurricane





NRC NEWS

U. S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Region IV
611 Ryan Plaza Drive - Suite 400
Arlington, TX 76011-4005

No. IV-04-037
Contact: Victor Dricks
Phone: 817-860-8128

September 15, 2004
E-Mail: opa4@nrc.gov

NRC DISPATCHES STAFF IN PREPARATION FOR HURRICANE IVAN

Nuclear Regulatory Commission staff have been dispatched to two nuclear plants and two emergency response centers in preparation for Hurricane Ivan.

The NRC has staffed its Incident Response Center to monitor and assist Louisiana's River Bend and Waterford nuclear plants, and any other plant that may be impacted by the hurricane. Personnel have already been dispatched to the plants, to augment NRC's resident inspectors permanently assigned to those sites. Staff also have been sent to the Federal Emergency Management Agency's Regional Operations Center in Denton, Texas, and to Louisiana's Emergency Operations Center in Baton Rouge.

"In accordance with NRC requirements, Louisiana's nuclear plants have made the necessary preparations for Hurricane Ivan and we have pre-positioned our people to monitor events and respond, if needed," said Bruce S. Mallett, administrator of NRC's Region IV office in Arlington, Texas.

At this time, the NRC's primary focus is on Waterford, 20 miles west of New Orleans. The plant declared a Notice of Unusual Event, the lowest of NRC's emergency classifications, after the National Weather Service issued a hurricane warning for St. Charles Parish, La., at 4 p.m. on Sept. 14. The plant is operating at full power, but its procedures require that it begin shutting down 12 hours prior to any predicted hurricane force winds on site. The plant has emergency diesel generators available if needed and has additional diesel generators, normally used in routine operations, and emergency battery power available should the need arise.

Waterford is situated some 14 to 17 feet above sea level, and has flood protection above the predicted storm surge. Key components also are housed in watertight buildings capable of withstanding hurricane force winds and flooding.

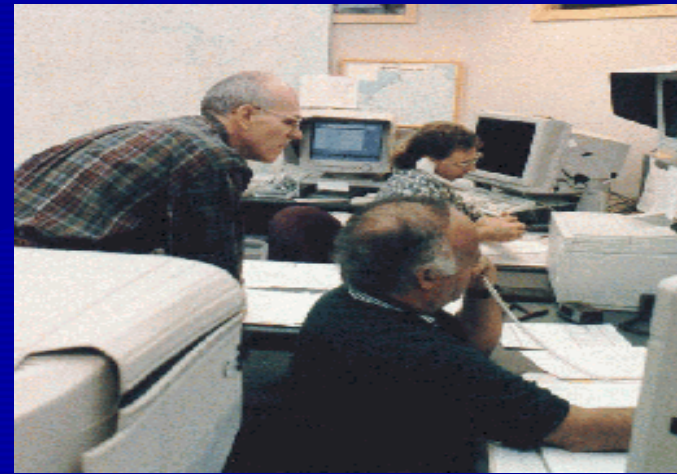


FEMA



High Degree of Readiness

- 24/7 Availability of Operations Center
- Operations Center Upgrade
- Continuity of Operations (COOP) Capability



Operations Center Upgrade

- System Upgrade
- Secure Video-Teleconferencing



Improvement Initiatives

- **Facilities**
- **Information Technology**
- **Incident Response Staffing**
- **Staff Augmentation**
- **Incident Response Qualification Program**
- **Assessment of Response**
- **Lessons Learned and Corrective Actions**
- **Outreach**
- **Post-911 Emergency Preparedness**
- **Benchmarking with Regions and Other Agencies**

Improvement Program Goal

- **Enhance NRC Emergency Preparedness And Response Program**
 - Incorporate programmatic consistency
 - Ensure correct licensee and Agency response to incidents

Incident Response Organization Improvements

- **Specific IRO Team Designation**
 - Teams train, drill & exercise together.
 - Three teams designated to support reactor licensee events.
 - Two teams designated to support fuel facility/material licensee events.

NRC's Response Organization



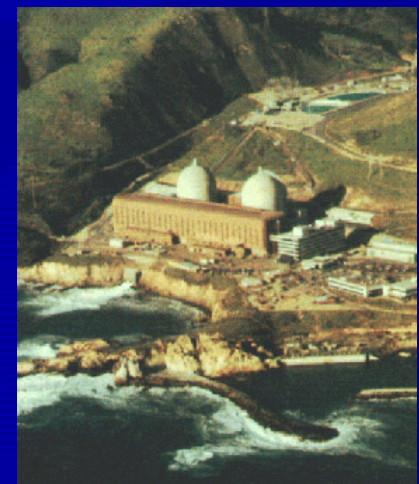
» HQ Operations Officer (HOO)

Executive Team °



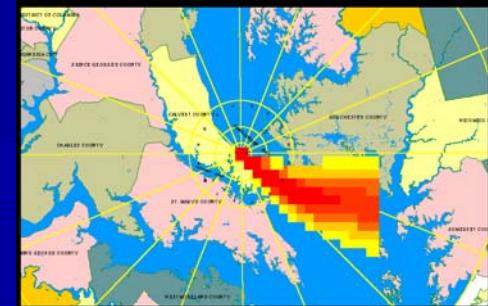
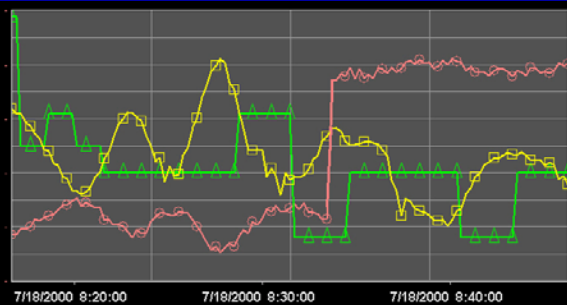
» HQ and Regional Assessment Teams

Site Team °



Assessment Teams

Reactor Safety Team
Fuel Cycle Safety Team
Safeguards Team
Protective Measures Team



Improvements

- **Federal Aviation Administrations
Dulles Operations Center**
- **FEMA's emergency operations center**
- **Montgomery County Maryland's
Emergency Operations Center**
- **Regional "best practices"**

Strong Partner with Other Federal Departments and Agencies

- **Unified Defense 04**
- **Forward Challenge 04**
- **Determined Promise 04**
- **Amalgam Virgo 04**



Homeland Security Presidential Directive 5

- **NRC and DHS work to develop NIMS and NRP consistent with HSPD 5**
 - **National Incident Management System (NIMS) -- standardized process and procedures for incident management**
 - **National Response Plan (NRP) -- activation and proactive application of integrated Federal resources**

National Response Plan Roll Out



PREPARING OUR NATION



Regional Offices

- **Play a key role in emergency planning and incident response**
- **Have responded well to complex events**
- **Continue to enhance incident response capabilities**



