



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 1, 1995

APPLICANT: NUCLEAR ENERGY INSTITUTE
PROJECT: EMERGENCY PLANNING FOR ADVANCED LIGHT WATER REACTORS
SUBJECT: PUBLIC MEETING ON JANUARY 24, 1995, REGARDING THE REASSESSMENT OF EMERGENCY PLANNING FOR ADVANCED LIGHT WATER REACTORS

On January 24, 1995, the staff held a public meeting with the Nuclear Energy Institute (NEI) at the Nuclear Regulatory Commission (NRC) headquarters in Rockville, Maryland to discuss the nuclear industry's approach to emergency planning (EP) for advanced light water reactors (ALWRs). A list of attendees and their affiliations is provided as Enclosure 1. The meeting agenda is provided as Enclosure 2. A copy of the slides used in NEI's presentation is provided as Enclosure 3.

At the meeting, NEI presented its concept of EP for ALWRs. NEI provided some background information on its responsibilities and described its involvement in EP. NEI believes that EP for the next generation of reactors should benefit from operational experience and other information obtained over the last 18 years. NEI stated that the improved design characteristics of the advanced reactors warrant a reassessment of EP for the advanced plants.

NEI also believes that there should be a common framework for offsite EP for nuclear and non-nuclear facilities. NEI referenced the analogous EP framework for non-nuclear activities; these are outlined in the Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III, "Emergency Planning and Community Right-to-Know Act of 1986."

In its concept of EP, NEI defined two EP areas to replace the plume exposure pathway emergency planning zone (EPZ). The first of these areas is called the "response area." It encompasses the immediate plant area and its size is defined by dose considerations. Additionally, the rapid response activities would be performed by the licensee. The second area is called an "awareness area." The awareness area extends beyond the response area and its size depends on physiographic, geopolitical and infrastructure characteristics. EP and emergency response actions would be the responsibility of the State and local governments within the awareness area. NEI expects to finalize this preliminary concept within a few weeks.

Staff from the Office of Regulatory Research described activities underway with Brookhaven National Laboratory (BNL) to perform a series of parametric studies, using the source term insights outlined in NUREG-1465 and the best available information from ALWRs that have submitted probabilistic risk assessments in support of applications for design certification under 10 CFR Part 52. The staff expects to receive BNL's draft report in mid-1995.

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X-IDR-5-1-EMERGENCY PLANNING
X-RD-25-ADVANCED REACTOR PROGRAM

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The NRC staff was interested in the results of NEI sensitivity analyses to determine the robustness of the size of the response area to various accident probabilities. The staff also noted that, while NEI's proposed response and awareness areas were keyed toward the plume exposure pathway, NEI will still need to consider whether conceptual changes are envisioned for the ingestion pathway as well.

NEI will be working with EPRI and the reactor vendors to develop sound technical bases to support its proposed concept for EP at ALWRs. At this time, the staff is not accelerating the schedule for a reassessment of EP for ALWRs. After staff review and approval of its concept, NEI expects to petition the Commission for rulemaking. This is expected to occur no sooner than the end of 1996.

A followup discussion between senior management from NEI and NRC will be held to discuss the status and schedule of NEI's EP proposal for ALWRs.

Original signed by
James H. Wilson, Project Manager
Standardization Project Directorate
Associate Directorate for Advanced Reactors
and License Renewal
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc w/enclosures:
See next page

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LIST OF ATTENDEES AT MEETING WITH NEI HELD IN
ROCKVILLE, MARYLAND ON JANUARY 24, 1995

<u>NAME</u>	<u>AFFILIATION</u>
J. N. Wilson	NRC
J. H. Wilson	NRC
B. Zalcman	NRC
J. Calvo	NRC
C. Miller	NRC
T. Essig	NRC
L. Cohen	NRC
J. O'Brien	NRC
N. Stinson	NRC
M. Snodderly	NRC
L. Soffer	NRC
B. Hardin	NRC
M. Jamgochian	NRC
D. Houston	NRC
V. Mubayi	BNL
R. Simard	NEI
A. Nelson	NEI
M. Gmyrek	NEI
J. Schmitt	NEI
D. Airozo	Nucleonics Week
P. Gunter	NIRS
M. Barren	NUS

**Emergency Planning Concepts
For
Advanced Light Water Reactors**

Time & Date: 08:30 - 4:30 January 24, 1995

Location: White Flint

Purpose of the meeting:

The meeting is to provide an information exchange on emergency planning concepts for Advanced Light Water Reactors.

Industry will provide a presentation of various emergency planning concepts that have been developed for the next generation of reactors. The presentation is designed to share opinions with and gather feedback from the NRC.

In addition, we hope to gain insight into NRC activities and schedules related to this topic.

Meeting Agenda

- 1) Introduction
- 2) Industry presentation on emergency planning concepts for Advanced Light Water Reactors
- 3) NRC update on Advanced Light Water Reactor emergency planning activities
- 4) Break for lunch
- 5) Follow up discussions and future agenda items

**A DISCUSSION OF
EMERGENCY PLANNING
CONCEPTS FOR ADVANCED LIGHT
WATER REACTORS**

Presented by:

Alan P. Nelson

Melvin W. Gmyrek

Nuclear Energy Institute

January 24, 1995

NEI

**ALWR EP CONCEPTS ARE BASED
ON TRADITIONAL EMERGENCY
PLANNING PRINCIPLES,
INCLUDING:**

- Commitment to protecting public health and safety
- Maintaining defense-in-depth
 - Use of preplanning
 - Public involvement and awareness
- Establishing a technical basis to support emergency planning
 - Wash 1400
 - NUREG-1465
- Use of EPA PAGs
- Use of an emergency classification matrix
- Use of the 16 planning criteria

THE PRINCIPLES THAT SUPPORT ALWR EMERGENCY PLANNING INCLUDE THE FOLLOWING:

- Emergency planning will be retained as part of the defense-in-depth philosophy for nuclear plant safety
- Emergency planning for ALWRs should be commensurate with the attributes of facility design

**THE PRINCIPLES THAT SUPPORT
ALWR EMERGENCY PLANNING
INCLUDE THE FOLLOWING(cont'd.):**

- The new concept should address “lessons learned” from existing emergency planning experience
- A common framework should be considered for offsite emergency planning for nuclear and non-nuclear facilities

IMPLEMENTING EMERGENCY PLANNING REQUIREMENTS FOR ALWRs SHOULD INCLUDE:

- A greatly improved understanding of severe accident risk since the time at which the existing emergency planning basis was developed
- The ALWR plant design capability which results in greatly reduced radiological risk
- The opportunity to benefit from 18 years of emergency planning experience
 - plan should reflect a current technical basis
 - plans should be realistic, simple and flexible
- The need to establish planning that is commensurate with the risk

ALWR EMERGENCY PLANNING ACTIVITIES INCLUDE:

- Utility Requirements Document (for the passive plants) was submitted to NRC in May 1993
- Industry's supporting technical report submitted to the NRC in December 1993
- New source term insights reflected in NUREG-1465
- NRC staff has been requested by the Commission to develop criteria and technical methods to reconsider emergency planning requirements for ALWRs

TECHNICAL DESIGN CRITERIA THAT SUPPORTS AN EVALUATION OF THE ALWRS INCLUDES:

- Containment Performance
 - Meet Utility Requirements Document provisions addressing comprehensive list of containment challenges
 - Containment loads from low pressure core melt sequences do not result in exceeding Service Level C for at least 24 hours
 - Beyond 24 hours, there shall be no uncontrolled release

- Site Boundary Limits
 - Dose from physically-based source term for average meteorology does not exceed 1 rem beyond 0.5 miles for 24 hours

**PRA EVALUATION IN SUPPORT OF
ALWR DESIGN CRITERIA
CONCLUDES THE FOLLOWING:**

- PRA predicts a core damage frequency of $< 10^{-5}$ per year
- PRA predicts the cumulative core damage frequency of exceeding 25 REM at 0.5 miles from reactor $< 10^{-6}$ per year
- Meet the quantitative health objectives of the NRC Safety Goal Policy with no credit for evacuation prior to 24 hours

A DISCUSSION OF THE ALWR EMERGENCY PLANNING TWO AREA CONCEPT

Plume exposure pathway emergency planning provisions for the ALWR could be based on the following:

- Response Area - That area close to the plant within which a serious reactor accident could possibly cause radiological consequences of sufficient concern that there should be provisions for prompt notification and response.

A DISCUSSION OF THE ALWR EMERGENCY PLANNING TWO AREA CONCEPT (cont'd.):

Response Area - That area close to the plant...

- Size determined on basis of plant design considerations
- Dose at response area boundary is less than 1 rem for approximately 1 day or longer for maximum credible accident
- Planning should include capability for rapid response to be provided such as prompt notification and evacuation exercises

A DISCUSSION OF THE ALWR EMERGENCY PLANNING TWO AREA CONCEPT (cont'd.):

Response Area - That area close to the plant...

- Planning should include a complete set of planning actions similar to what is required in existing emergency planning
- Planning actions are responsibility of licensee

A DISCUSSION OF THE ALWR EMERGENCY PLANNING TWO AREA CONCEPT (cont'd.):

- Awareness Area - That area, beyond the response area, within which the radiological effects (if any) following a serious accident would be small and would take place over a longer time frame

A DISCUSSION OF THE ALWR EMERGENCY PLANNING TWO AREA CONCEPT (cont'd.):

Awareness Area - That area, beyond the response area, within which...

Size and shape determined on the basis of the design, as well as other considerations, including:

- Existing state and local governments' capabilities for responding to industrial emergencies
 - Matters specific to site, such as egress limitations and meteorological considerations
-
- Planning and implementation of emergency response actions over a longer time frame (approximately 1 day or longer)

A DISCUSSION OF THE ALWR EMERGENCY PLANNING TWO AREA CONCEPT (cont'd.):

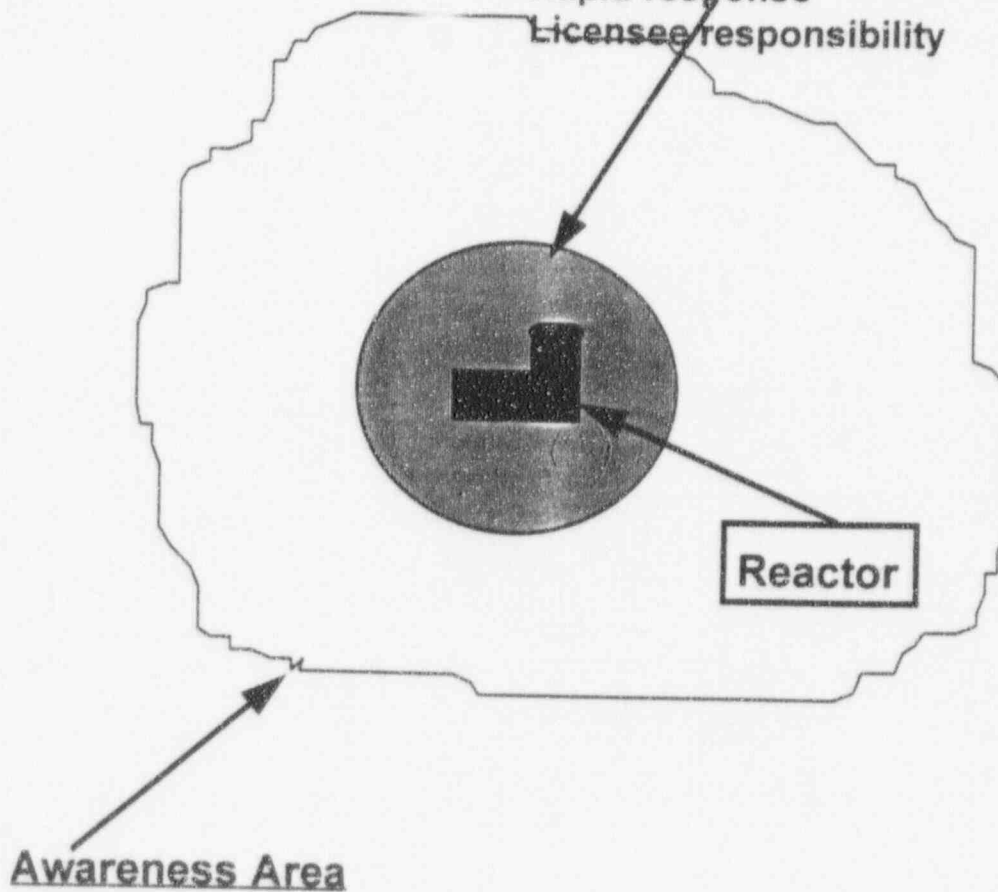
Awareness Area - That area, beyond the response area, within which...

- Planning and implementation actions are the responsibility of offsite agencies, with supplementary support by licensee in certain areas (e.g., dose assessment, field monitoring, radiological training)

Illustration of ALWR Emergency Planning Concept

Response Area

Determined by technical considerations
Immediate notification of offsite authorities
Rapid response
Licensee responsibility



Awareness Area

Determined by technical and other considerations
Response over longer time frame
Offsite agency responsibility

SUMMARY

- The principles of the existing emergency planning framework apply to new ALWR emergency planning concepts
- Plant design attributes and EP experience should be considered when forming new requirements
 - EP is a necessary part of the defense-in-depth
 - Emergency planning should be commensurate with facility design, and the risk associated with the specific design
 - ALWR emergency planning should benefit from industry experience
 - A common emergency planning framework, for nuclear and non-nuclear facilities, should be considered

SUMMARY

- A technical basis to support emergency planning requirements for ALWRs can be established
- The nature and timing of actions should be commensurate with ALWR designs
- The size of the response area is technically supportable
- A common framework should be utilized for offsite nuclear and non nuclear emergency planning