



Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

September 18, 1992

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Document Control Desk

Subject: Commonwealth Edison Methodology and Schedule for the
Individual Plant Examination for External Events (IPEEE),

Byron Units 1 and 2,
NRC Docket Numbers 50-454 and 50-455
Braidwood Units 1 and 2,
NRC Docket Numbers 50-456 and 50-457
Zion Units 1 and 2
NRC Docket Numbers 50-295 and 50-304
Dresden Units 2 and 3,
NRC Docket Numbers 50-237 and 50-249
Quad Cities Units 1 and 2,
NRC Docket Numbers 50-254 and 50-265
LaSalle Units 1 and 2,
NRC Docket Numbers 50-373 and 50-374

- References: (1) Generic Letter 88-20, Supplement 4
Individual Plant Examination for External Events (IPEEE),
dated June 28, 1991.
- (2) D. J. Chrzanowski to Dr. T. E. Murley letter dated
December 24, 1991.
- (3) R. J. Barrett to T. J. Kovach letter dated July 27, 1992.

Dear Dr. Murley:

The purpose of this letter is to provide additional information on the methodology and the schedule that Commonwealth Edison (CECo) is proposing to meet the recommendations of the Reference (1) generic communication.

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Reference (2) described the CECO approach to assessing the severe accident vulnerabilities that may arise from external event initiators. This methodology is being proposed as an optional systematic examination method to address seismic and fire issues at CECO nuclear stations. Since this is classified as an optional approach, this methodology was submitted for staff review in accordance with the recommendations contained in NUREG 1407, "Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities."

In support of this review, the staff, in Reference (3), requested that CECO provide supporting documentation for the IPEEE methodology in order to justify the program's acceptability for IPEEE purposes. Reference (3) also requested details on the project milestones and schedule. Per this request, CECO is providing additional details on the IPEEE methodology and schedule in Attachment 1.

CECO recognizes that this submittal schedule extends beyond the NRC's requested date of June 1994 and the "no later than" date of June 1995. As with CECO's base IPE, the schedule is driven by the multiple sites to be examined as well as the need to complete the specific station's IPE prior to the IPEEE program. In addition, the IPEEE program requires coordination with the SQUG activities. Therefore the submittal schedule, provided in Attachment 1, represents the most efficient use of CECO PRA personnel.

CECO requests an opportunity to meet with NRC staff to further discuss the particulars of our IPEEE methodology for fire and seismic events. Please contact me at (708) 515-7292 to arrange for this meeting.

Sincerely,



David J. Chrzanowski
Nuclear Licensing Administrator

Attachment 1 - IPEEE Program Description (6 pages)

cc: A. Bert Davis, Regional Administrator-RIII
R. Pulsifer, Project Manager-NRR/PDIII-2
J. Hickman, Project Manager-NRR/PDIII-2
B. Siegel, Project Manager-NRR/PDIII-2
L. Olshan, Project Manager-NRR/PDIII-2
C. Patel, Project Manager-NRR/PDIII-2
J. Hickman, Project Manager-NRR/PDIII-2
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S. DuPont, Senior Resident Inspector (Braidwood)
W. Kropp, Senior Resident Inspector (Byron)
W. Rogers, Senior Resident Inspector (Dresden)
D. Hills, Senior Resident Inspector (LaSalle)
T. Taylor, Senior Resident Inspector (Quad Cities)
J. Smith, Senior Resident Inspector (Zion)

ATTACHMENT 1

COMMONWEALTH EDISON COMPANY

IPEEE PROGRAM: PLAN OUTLINE

This document provides the plan outline for the Commonwealth Edison Company (CECo) Individual Plant Examination (External Events) (IPEEE) program. This focused scope program is designed to meet the stipulations of Supplement No. 4 to Generic Letter 88-20. CECo believes that this program is a technically acceptable alternate method to the guidance provided in NUREG-1407 to fulfill the objectives of an IPEEE. As stated in NUREG-1407, "the objectives of the IPEEE, which are similar to the objectives of the internal event IPE, are for each licensee:

1. to develop an appreciation of severe accident behavior,
2. to understand the most likely severe accident sequences that could occur at the licensee's plant under full power operating conditions,
3. to gain a qualitative understanding of the overall likelihood of core damage and fission product releases, and
4. if necessary, to reduce the overall likelihood of core damage and radioactive material releases by modifying, where appropriate, hardware and procedures that would help prevent or mitigate severe accidents."

In general terms, the CECo IPE itself answers many of the objectives for the IPEEE, especially the first and second objective. Specifically, insights into plant performance due to external event initiators will not differ from those gained from the basic IPE process due to the extensive and realistic nature of the CECo IPE program. With hundreds of MAAP code runs, extensive Plant Response (Event) Tree modelling using the plant EOP's, and detailed accident management development, the CECo IPE's cover the responses of each plant to such a wide spectrum of severe accidents that it is not reasonable to expect new responses to evolve from external initiators.

In summary, CECo believes that the IPEEE program outlined below, when coupled with our current IPE program, meets the IPEEE objectives in full. The discussions which follow will highlight how the CECo program develops an understanding of severe accident behavior, identifies key sequences by combining failures, captures a qualitative understanding of core damage frequency and identifies insights for improvements.

A. INTRODUCTION

The CECo IPEEE program will be based on a combination of detailed plant walkdowns, careful screening analyses, and focused scope PRA's and/or deterministic analyses. Prior to embarking on this effort, detailed program

methodology, guidelines, and criteria for the various program activities including document screening, walkdowns, and focused study/PRA's will be developed. The information generated during this phase will be similar in scope and detail to that developed for the CECO IPE's. As such it will allow a well coordinated and planned program to be consistently applied to the CECO nuclear stations, insuring that the projected resources (estimated to be approximately 5-7 person-years per station) will be utilized in the most beneficial and effective manner.

The program described herein applies to all CECO nuclear stations except LaSalle County for which the recently published NUREG/CR-4832, entitled "Analysis of the LaSalle Unit 2 Nuclear Power Plant: Risk Methods Integration and Evaluation Program (RMIEP)," fulfills the IPEEE objectives. The RMIEP work consists of a Level 3 PRA for LaSalle which covers both internal and external events in a "state of the art" PRA demonstration.

B. INITIATING EVENTS

The specific plan outline for each of the initiating external events is provided below.

1. Seismic Events

The first phase of the effort for seismic events will be an extensive review of key reference documents for the particular station such as the based IPE, system diagrams, FSAR/UFSAR, special "seismic studies," and any previously performed external event PRA's such as the Zion Probabilistic Safety Study. This review will be performed by IPE/PRA practioners and experienced seismic engineers. The objective of the review will be to screen the documents to identify critical structures, systems, and components (SSC's) which should receive further attention through the walkdown and/or focused analysis phases of the program. It will also identify SSC's which, because they are seismically and risk insignificant, do not require any further investigation or analysis.

The second phase will be to perform plant seismic walkdowns in accordance with detailed guidelines. As noted in Appendix B to NUREG-1407, the walkdown is the key element of the IPEEE. Seismic anomalies and potential vulnerabilities will be identified using formalized criteria. These walkdowns will be performed in conjunction with the SQUG walkdowns for A-46 plants in a carefully coordinated and integrated manner. They will be performed by PRA experienced engineers who have also received the formal SQUG walkdown training. The non-A-46 plants are newer plants designed to more modern seismic criteria. Walkdowns for these plants will be similar in scope to those conducted for the A-46 plants but will not follow the A-46 constraints.

In general, the walkdown phase is expected to result in two broad types of issues. The first type are the more simple or obvious issues such as missing hangers or hanger parts on piping systems, loose anchor

bolts on equipment, etc. Most of these issues would be expected to be resolved by simply remedying the situation found and instituting appropriate preventative measures to avoid recurrence.

The second type of issues would result from the use of subject matter experts as walkdown team members. Such individuals would be expected to identify issues not related to obvious faults. They would be expected to note issues based on experience and professional judgement. For example, an experienced seismic engineer would be expected to flag for further focused study a tank which might undergo support buckling during seismic events beyond the plant design bases.

The product of the walkdowns will be the identification of specific areas of the plant for focused study as described below.

2. Internal Fires

The basic phases of the CECO IPEEE program for internal fires will be the same as those discussed above for seismic events. The key reference documents will be jointly reviewed by a qualified fire engineer and a PRA experienced engineer to identify critical SSC's which, from an internal fire perspective, should receive further attention. The internal fire plant walkdowns will also be performed jointly by individuals with these qualifications using a formalized set of guidelines to identify specific areas of the plant for focused study.

Examples of the more obvious type of internal fire issues which might be identified during these walkdowns include fire stops removed for cable pulling during modifications and improperly re-installed or unanticipated aggregations of combustible material in inappropriate locations. As with the seismic walkdowns, the qualified fire and PRA experienced engineers performing the fire walkdowns would also be expected to identify issues not related to obvious faults. For example, they might identify, for further focused study, a fire zone which does not have adequate fire suppression capacity given the combustible loading currently in the area.

3. High Winds, Floods, and Transportation and Nearby Facility Accidents

The CECO IPEEE program for high winds, floods, and transportation and nearby facility accident initiating events will be the "progressive screening approach" as recommended by the staff in NUREG-1407.

C. FOCUSED STUDY

As discussed above, a focused study will be performed on specific areas of the plant that were identified in the seismic and fire document screening

and walkdowns.¹ This detailed evaluation would be performed using deterministic or a focused PRA, as appropriate.

For example, the internal fire document screening and walkdown effort might identify one or more exemptions to 10CFR50, Appendix R fire protection requirements which appear, to the experienced PRA individual, to have potential impacts on systems or components treated in the IPE. If appropriate, a focused scope fire PRA would be performed to examine those exemptions and to establish the unavailability of those systems or components due to fire initiators. The focused scope fire PRA would be performed as a modification to base IPE results. The resulting increases in component or system unavailabilities would be considered in conjunction with other, random failures to derive a risk impact (i.e. increase in core damage and/or significant release frequencies) associated with the issue(s) in question.

A similar example in the seismic domain would be a situation in which an experienced seismic engineer had identified a tank which might undergo support buckling during seismic events beyond the plant design bases. The focused study in this situation would include verification that the tank would, indeed fail upon support buckling. If so, the loss of the tank in conjunction with the loss of other similarly identified components would be modeled as modifications to the base IPE along with appropriate random failures. Additionally, the effect of the fluid spill on nearby components would be appropriately included in the analysis.

In some cases, deterministic analyses may be appropriate. For example, an experienced fire engineer might identify a fire zone which does not have adequate fire suppression capacity given the combustible loading currently in the area. That loading might well have been increased in stages during two or more plant modifications. In this situation, a deterministic analyses could be performed to identify the added suppression capability required to cope with the postulated fire. A focused scope fire PRA may or may not be performed depending on the judgement of the team regarding the benefits to be gained from such an analysis.

In all cases, the findings and conclusions from the focused scope analyses would be communicated to appropriate levels of CECo management for disposition and resolution.

1.

A focused scope evaluation would be performed for initiators other than seismic events and internal floods should the progressive screening approach described in NUREG-1407 reveal the need for more extensive analyses.

D. PROGRAM MILESTONES AND SCHEDULES

The following table provides the key milestones for the CECo IPEEE Program.

IPEEE PROGRAM MILESTONES

MILESTONE	MONTHS AFTER START
1. Complete: - IPE and Other Reference Document Screening - Appropriate Data Collection - Detailed Walkdown Plan	6
2. Complete Initial Screening and Schedule Walkdown	10
3. Complete Walkdown	12
4. Complete Evaluation of Walkdown and Definition of Areas Requiring Focused Study	16
5. Complete Focused Study	20
6. Submit Station IPEEE Results	24

More specific program milestones will be generated during the detailed development phase of the program.

The schedule for IPEEE submittal for each of the CECo nuclear power stations is provided in the following table. These submittals will, of course, follow the IPE submittals for each of the stations.

IPEEE SUBMITTAL SCHEDULE

STATION	SUBMITTAL DATE
ZION	JUNE 1996
DRESDEN	JUNE 1996
QUAD CITIES	DECEMBER 1996
BYRON	JUNE 1996
BRAIDWOOD	JUNE 1997
LASALLE*	JANUARY 1994

* The LaSalle IPEEE submittal date reflects the submittal of the RMIEP study.

CECo recognizes that this submittal schedule extends beyond the NRC's requested date of June 1994 and the "no later than" date of June 1995. The schedule is driven by the multiple sites to be examined, the coordination with the SQUG activities, and the need to complete the specific station's IPE prior to commencing the IPEEE program.