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TBAbernathy, TIC
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Docket No. 50-316

Indiana & Michigan Electric Company
Indiana & Michigan Power Company
ATTN: Mr. John Tillinghast
Vice President
P. O. Box 18
Bowling Green Station
New York, New York 10006

Gentlemen:

SUBJECT: SEISMIC QUALIFICATION REVIEW OF SAFETY-RELATED ELECTRICAL AND MECHANICAL EQUIPMENT - D. C. COOK UNIT 2

In response to the continuing concern of the Advisory Committee on Reactor Safeguards with regard to the seismic qualification of safety-related electrical and mechanical equipment, the NRC staff has recently developed a seismic qualification review effort. A seismic qualification review team (SQRT) has been established to evaluate the seismic design adequacy of safety-related mechanical components, electrical instrumentation and supporting structures. Your facility, D. C. Cook Unit 2, will be reviewed to insure that components qualified under criteria which predate IEEE-344 and Regulatory Guide 1.100 have adequate margin to perform their intended functions during a seismic event.

Enclosure 1 presents a general description of the seismic review team's objectives and responsibilities. Section IV.2.A. describes the information you are requested to submit to allow the SQRT to perform a preliminary evaluation of your qualification program. Enclosure 2 provides better definition of typical systems whose electrical and mechanical equipment will be reviewed. Note that Enclosure 2 is a typical listing and is not intended to represent the total inventory of safety-related equipment for your facility. In accordance with the direction provided in Enclosures 1 and 2, you are requested to submit

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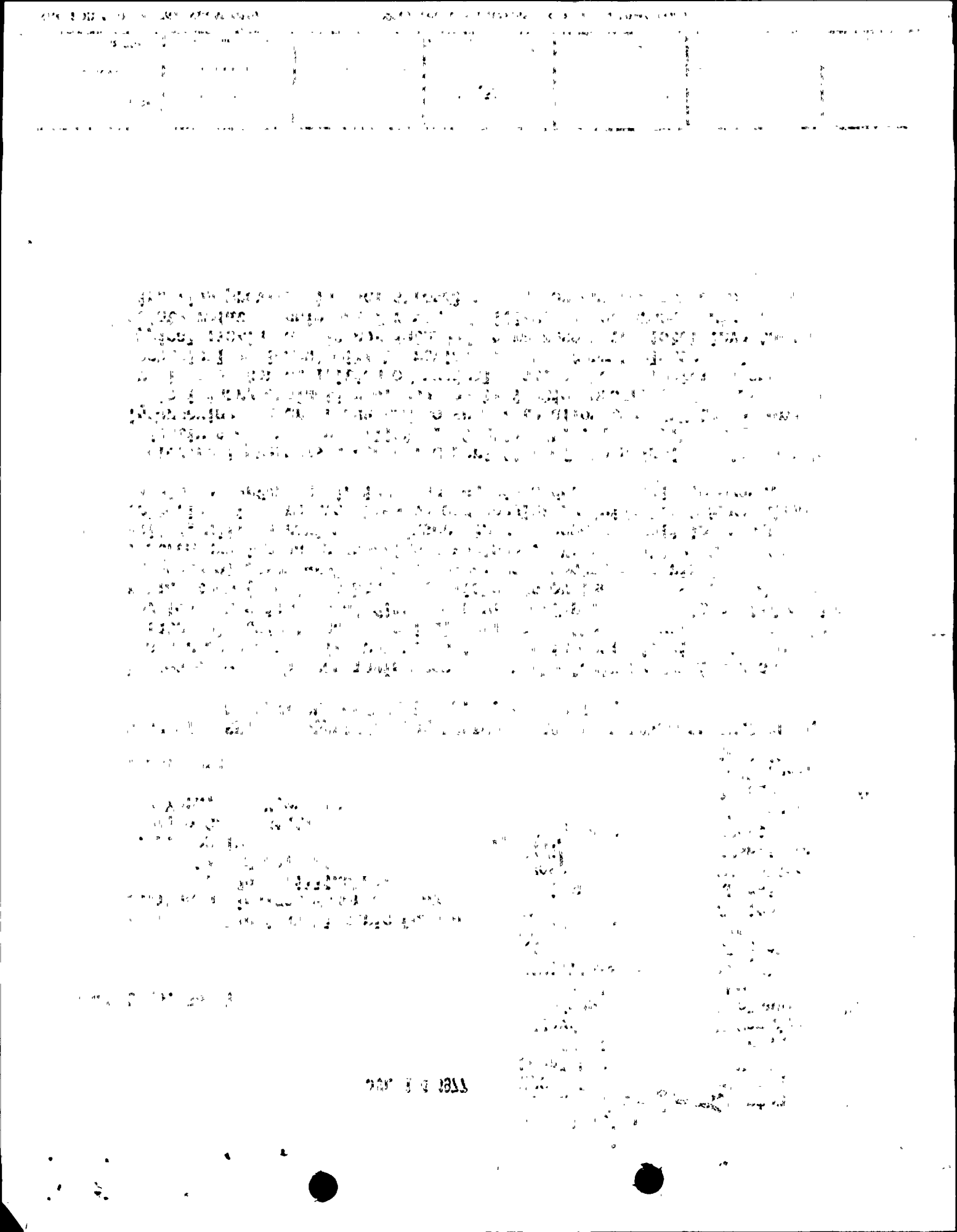
GD

OFFICE➤						
SURNAME➤						
DATE➤						



the required summary equipment lists within two weeks of receipt of this letter. The seismic qualification review team will perform an on-site review of your facility approximately two weeks after we have received your submittal.

Sincerely,

Original signed by
K. Kniel

Karl Kniel, Chief
Light Water Reactors
Branch No. 2
Division of Project Management

Enclosures:
1. Seismic Qualification Review Team (SQRT)
2. List of Equipment to be Inspected at D. C. Cook Unit 2

ccs w/encls:
See page 3

OFFICE	DPM:LWR #2	DSS	DSS	DPM:LWR #2		
SURNAME	NMMiynozak:mt	JSmith	PYChen	KKniel		
DATE	7/14/77	7/14/77	7/14/77	7/14/77		

JUL 1 1 1977

cc: Mr. Robert Hunter
Vice President
American Electric Power Service Corporation
2 Broadway
New York, New York 10004

Gerald Charnoff
Shaw, Pittman, Potts & Trowbridge
910 17th Street, N. W.
Washington, D. C. 20006

Mr. David Dinsmore Comey
Executive Director
Citizens for a Better Environment
59 East Van Buren Street
Chicago, Illinois 60605

OFFICE ➤						
SURNAME ➤						
DATE ➤						

ENCLOSURE 1

SEISMIC QUALIFICATION REVIEW TEAM (SQRT)

I. SCOPE

SQRT tasks include both generic and site specific reviews. Generic reviews cover equipment supplied by NSSS and A/E common to more than one plant. Specific plant reviews as delineated in the Standard Review Plans, Section 3.10 will be supplemented by SQRT site visits and evaluation.

II. OBJECTIVES

SQRT is a group of NRC staff members established to conduct reviews of the seismic design adequacy of safety related mechanical components, electrical instrumentation and their supporting structures to accomplish the following:

1. Changes in seismic qualification criteria, such as the revision of IEEE-344 Standard and the issuance of Regulatory Guide 1.100, require that the staff verify:

   (a) For older plants having components qualified under previous criteria; that components have adequate margin to perform their intended design functions during a seismic event.

   (b) For new plant applications; that there has been uniformity and consistency in implementing the new criteria.

2. Determine the design adequacy of selected components for seismic loading conditions.

3. In the case of plants which have design basis seismic ground motion levels increased, review to assure adequate design margin exists at the revised levels.

III. GENERAL PROCEDURES

SQRT will conduct generic and plant specific reviews:

1. Generic reviews will be conducted of all NSSS vendors and most architect engineers (major equipment vendors and testing laboratories may be included if necessary) to assure proper interpretation and implementation of current seismic qualification criteria applied to plants applying for construction permits and operating licenses.

2. A plant specific seismic review will be conducted of each plant now undergoing licensing review having components qualified under previous criteria; i.e. plants having construction permit applications docketed prior to October 1972 (See Attachment I).

   A. For components having multi-plant application, (such as those within the scope of an NSSS vendor) seismic qualification review at specific sites will provide generic information.

   B. For components which have only specific plant application (mostly those within the scope of AE supply)seismic qualification review at specific sites will provide information for the site.

3. Seismic qualification review for plants with revised increased design basis seismic ground motion levels will be conducted on a plant by plant basis.

IV. SPECIFIC PROCEDURES

SQRT procedures provide for both generic discussion meetings and plant site visits.

1. Generic Discussion Meeting:

To implement the generic review specified in III.1 and III.2.A, a generic discussion meeting will be held to discuss the following:

A. Meeting Agenda

Meeting Objectives by SQRT

B. NSSS or A/E personnel should be prepared to present the following information:

(1) A detailed description of current practice followed in seismic qualification, including criteria, methods and procedures used in conducting testing and analysis. Present and discuss the seismic qualification program on certain specified items (i.e. pumps, valves, diesel generators, motors, bistable units, relays, etc.)

(2) Information regarding administrative control of component seismic qualification, especially the handling of interface problems, documentation and internal review procedures.

(3) Identifying the scope of their suppliers. A list of equipment should be made available if possible prior to the meeting.

C. For the cases specified in III.2.A., methods and procedures for conducting seismic qualification review are discussed, including selection of plants for site visit and setting up a tentative schedule for such visits.

D. Discuss necessary documentation.

E. Inspect testing facilities, if any. Testing capability, format of testing reports, wave forms of shake table motions, monitoring and control devices are the major items for inspection.

F. SQRT concludes the meeting and specifies the follow-up items.

2. Plant Site Reviews:

To implement plant specific seismic qualification reviews specified in III.2 above, on-site inspection of equipment and supporting structures in question is required. Site visits generally follow the following procedures:

A. Pre-visit information submission:

The applicant (plant owner) receives initial information concerning the intended visit, and should subsequently submit two summary equipment lists (one for NSSS supplied equipment and one for A/E supplied equipment) two weeks prior to the visit. In the list the following information should be specified for each item of equipment:

(1) Description of equipment (i.e. manufacturer type, size, capacity)

(2) Method of qualification used:

(a) Analysis or test

(b) If by test describe whether single or multi-frequency test and whether input was single or bi-axial

(c) If by analysis, describe whether static or dynamic analysis. Present natural frequency of equipment.

(3) g-level tested and required if using single frequency test. Clarify whether TRS enveloping RRS is using multi-frequency test (Yes or No).

(4) Resonance frequency finding, if any.

(5) Availability for inspection (Is the equipment already installed at the plant site?)

(6) Was a functional verification determined.

SQRT screens the above information and decides which items will be evaluated during our forthcoming site visit.

B. A brief meeting is held at the beginning of a site visit with the following agenda:

(1) SQRT explains the objectives of the site visit and procedures to conduct equipment inspection.

(2) Utility personnel or their designees present an over view of the seismic qualification program conducted.

(3) The seismic qualification of certain specified items may be discussed as necessary.

(4) SQRT specifies items that need to be inspected.

C. SQRT conduct inspection on specified items.

D. SQRT describes findings of the inspection.

E. General discussion.

F. SQRT concludes the visit and specifies needed information and the follow-up actions.

3. Plant site reviews for cases involving increased design basis seismic ground motion.

[under development]

In general utility will provide data on systems and components used to bring the plant to shutdown and maintain it in a cold shutdown condition.

4. After each visit SQRT will issue a trip report, which identifies findings, conclusions and follow-up items. Status reports may be issued as necessary. The site review will include the issuance of an Evaluation Report for the specific plant. Generic evaluations will be referenced to the NSSS vendor or A/E.

V. RESPONSIBILITIES OF NRC PARTICIPANTS:

A. The following members make up the current SQRT.

Shou-nien Hou	Team Leader
Pei-Ying Chen	Member/MEB
Kulin D. Desai	Member/MEB
Jerry Smith	Member/ICSB

One additional member from each of MEB and ICSB will join the team when an audit on a specific plant is going to be conducted. These two members will be the reviewers of the plant.

The Team Leader is responsible for scheduling actions, coordinating staff positions and contacting with appropriate authorities for work assignments to each member. He reports to the MEB Chief regarding the progress of SQRT performance. He will set up necessary contacts for generic reviews and will contact project management for specific plant site visits. He will specify the meeting objectives and concludes meetings.

The MEB members and Team Leader are responsible for reviewing assigned seismic qualifications in the area of responsibility of Mechanical Engineering Branch, including the methods and procedures used in test and analysis.

The Instrumentation & Control Systems Branch (ICSB) member is responsible for reviewing assigned seismic qualification in the area of their branch, including equipment signal interpretations for functions verifications. He serves as a liaison between SQRT and ICSB.

All members shall present their opinions and professional judgement to the Team Leader in order to arrive at consistent and uniform SQRT positions.

B. The MEB and ICSB project reviewers will be advised of SQRT activities which relate to specific plants. The branch project reviewer is responsible for evaluating the impact of SQRT activity on the specific plant review and for taking appropriate action to include pertinent information in the plant safety evaluation. The branch project reviewer is expected to participate in the site visit and attend pertinent generic meetings as necessary. The MEB reviewer will have further responsibilities in those cases - where revised seismic loads have been established.

The DPM project manager, after being informed of the intended plant visit, is expected to contact the applicant and arrange for the visit. The project manager serves as a liaison between the SQRT and the applicant.

C. Generic meetings will be arranged by the SQRT or via the DPM generic project manager if one is assigned.

D. Representatives from I & E Regional Offices and other interested organizational groups within NRC are welcome to attend either generic meetings or plant site visits as observers. The SQRT should be informed of expected attendance at such meetings or site visits.

Enclosure 2

List of Typical Equipment to be Inspected at
D. C. Cook Unit 2 During SQRT Visit

I. Reactor Protection System: Field mounted RPS transmitters, instrument power supplies, instrument racks and cabinets, control boards and panels associated with RPS. Include all equipment up to and including the Reactor Trip Breakers. The block diagram in the FSAR titled, "Reactor Protection Systems," Figure 7.2-3 identifies most of the functional areas of interest.

II. Engineered Safeguards: Instrumentation, Electrical and Mechanical devices required to perform the functions listed as items 18 thru 26 of Table 7.2-1 of the FSAR (per Amendment 20). The scope of the instrumentation involved will be from the sensing element process-side up to and including the logic cabinets and actuation. Electrical scope will include instrument power supplies and prime movers. Mechanical scope will include all non-electric pumps, valves, fans, heat exchangers and tanks required for the ESF to perform its intended purpose.

III. Auxiliary Systems - Scope (same as item II)

1. Component Cooling Water System
2. Essential Service Water System
3. Diesel Generator Fuel Oil Storage & Transfer Systems
4. Instrument Air (those portions, if safety-related)
5. Safety related HVAC systems
6. Chemical and Volume Control System

IV. Electrical (Safety-related)

1. Diesel Generators and associated auxiliaries and controls
2. 4KV Switchgear and protective relaying
3. 600 Volt Switchgear and protective relaying
4. Inverters
5. Battery Chargers
6. 120VAC Vital, Distribution Panels
7. 250VDC Transfer Cabinets
8. 250VDC Distribution Cabinets TDAB, MDAB, MCAB, etc.
9. 250VDC undervoltage relaying and associated alarms
10. 250VDC Batteries and Racks
11. Electrical Penetrations