CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9810140031 DOC.DATE: 98/10/08 NOTARIZED: NO DOCKET #
FACIL:50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M 05000316
AUTH.NAME AUTHOR AFFILIATION
POWERS,R.P. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
RECIP.NAME RECIPIENT AFFILIATION
Records Management Branch (Document Control Desk)

SUBJECT: Forwards exemption request sent to DOT to support disposal of Unit 2 SG lower assemblies that removed in 1988. Generators will be shipped in second quarter of 1999.

DISTRIBUTION CODE: A001D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 15+80
TITLE: OR Submittal: General Distribution

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD3-3 LA	1	1	PD3-3 PD	1	1
	STANG,J	1	1			
INTERNAL:	FILE CENTER 01	1	1	NRR/DE/ECGB/A	1	1
	NRR/DE/EMCB	1	1	NRR/DRCH/HICB	1	1
	NRR/DSSA/SPLB	1	1	NRR/DSSA/SRXB	1	1
	NUDOCS-ABSTRACT	1	1	OGC/HDS3	1	0
EXTERNAL:	NOAC	1	1	NRC PDR	1	1

Drawings located in Central Files

?RB 4181

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

TOTAL NUMBER OF COPIES REQUIRED: LTTR 13 ENCL 12

CATEGORY 1 DOCUMENT

Indiana Michigan
Power Company
500 Circle Drive
Buchanan, MI 49107 1373

AEP
INDIANA
MICHIGAN
POWER

October 8, 1998

AEP:NRC:1305

Docket Nos.: 50-315
50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, D. C. 20555-0001

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
DOT Exemption Request

The attached exemption request is forwarded for your information. The exemption request was sent to the Department of Transportation to support the disposal of unit 2 steam generator lower assemblies that were removed in 1988. The generators will be shipped in the second quarter of 1999. The exemption request is to ship the generators unpackaged, because it can be demonstrated that the disposal item itself can provide equivalent packaging.

If you have any questions or concerns regarding this notification, please contact Walter T. MacRae at (616) 697-5067.

Sincerely,

R. P. Powers
Vice President

/jmc

Attachment

c: J. A. Abramson
J. L. Caldwell, w/attachment
MDEQ - DW & RPD
NRC Resident Inspector, w/attachment
J. R. Sampson, w/attachment

1/1
A001

Drawings located in Central Files

bc: T. P. Beilman
E. R. Eckstein/D. R. Hafer/K. R. Baker
J. J. Euto
FOLIO, w/attachment
J. B. Kingseed/G. P. Arent/M. J. Gumns
J. F. Stang, Jr., NRC Washington, DC, w/attachment

Indiana Michigan
Power Company
500 Circle Drive
Buchanan, MI 49107 1373

AEP
INDIANA
MICHIGAN
POWER

October 8, 1998

Associate Administrator for Hazardous Materials Safety
Research and Special Programs Administration
U.S. Department of Transportation
400 7th Street, SW
Washington, D.C. 20590-0001

Attention: Exemptions, DHM-31

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
EXEMPTION REQUEST FROM THE SURFACE CONTAMINATED OBJECT DEMONSTRATION REQUIREMENTS OF 49 CFR 173.403, THE MAXIMUM RADIOACTIVITY CONTENT PER SINGLE CONVEYANCE OF 49 CFR 173.427(a)(2), AND THE PACKAGING REQUIREMENTS OF 49 CFR 173.427(b)(1) FOR THE SHIPMENT OF FOUR STEAM GENERATOR LOWER ASSEMBLIES FROM DONALD C. COOK NUCLEAR PLANT

Indiana Michigan Power (I&M) hereby requests exemption from the subject regulations for the shipment of four steam generator lower assemblies from the Donald C. Cook Nuclear Plant to the Chem-Nuclear Systems (CNS) low-level radioactive waste management facility in Barnwell, South Carolina. These will be one-time shipments, and will be performed in a controlled manner as described in the information provided as attachments to this letter. The transportation of the steam generator lower assemblies is expected to begin on or after April 1, 1999, and be completed within one year.

An informational meeting was held between representatives from I&M and CNS and members of the Department of Transportation (DOT) and Nuclear Regulatory Commission (NRC) staff on July 9, 1998, to discuss this project. During this meeting, DOT and NRC were presented with an overview of the upcoming steam generator transportation effort. DOT and NRC representatives referenced the NRC generic letter 96-07, which was jointly issued by DOT and NRC to provide interim guidance to those desiring to transport steam generators.

Accompanying this letter is a series of attachments that provides supporting information for this exemption request. Attachment 1 is the compliance matrix that addresses the requirements of 49 CFR 107 for an exemption request. Other attachments provide detailed engineering analyses, drawings, and operational plans and procedures supporting the steam generator lower assembly transportation effort. None of the attached information is proprietary.

If you have any questions concerning this request, please contact Mr. Walter T. MacRae at (616) 697-5067.

Sincerely,

R. P. Powers
Vice President

/jmc

Attachments:

1. Compliance Matrix
2. Transportation and Emergency Response Plan
3. Structural Package Evaluation
4. Closure and Shear Key Drawings
5. General Arrangement Drawings
6. Preliminary Waste Characterization
7. Evaluation of Residual Water
8. Evaluation of Dose Rate

bc: J. A. Bender, Chem-Nuclear Systems
R. W. Boyle - DOT, w/attachments (2 copies)
W. T. MacRae, w/attachments
H. N. Shamkhani, Chem-Nuclear Systems
M. S. Whittaker, Chem-Nuclear Systems

AMERICAN ELECTRIC POWER
DONALD C. COOK NUCLEAR PLANT

STEAM GENERATOR DISPOSAL EXEMPTION REQUEST

ATTACHMENT 1
COMPLIANCE MATRIX

ATTACHMENT 1 - COMPLIANCE MATRIX

EXEMPTION REQUEST FROM THE SURFACE CONTAMINATED OBJECT DEMONSTRATION REQUIREMENTS OF 49 CFR 173.403, THE MAXIMUM RADIOACTIVITY CONTENT PER SINGLE CONVEYANCE OF 49 CFR 173.427(a)(2), AND THE PACKAGING REQUIREMENTS OF 49 CFR 173.427(b)(1) FOR THE SHIPMENT OF FOUR STEAM GENERATOR LOWER ASSEMBLIES (SGLAs) FROM DONALD C. COOK NUCLEAR PLANT.

This document provides the basis of the exemption request for the transportation of the Cook Nuclear Plant SGLAs. In the following text, the regulation concerning the exemption request is cited in bold and the applicant's response is provided following the respective regulation. Supporting information is provided in other documents also included as an attachment to this exemption submittal.

TITLE 49--TRANSPORTATION

CHAPTER I--RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION, DEPARTMENT OF TRANSPORTATION

Subpart B--Exemptions

Source: Amdt. 107-38, 61 FR 21095, May 9, 1996, unless otherwise noted.

Sec. 107.101 Purpose and scope.

This subpart prescribes procedures for the issuance, modification and termination of exemptions from requirements of this subchapter, subchapter C of this chapter, or regulations issued under chapter 51 of 49 U.S.C.

Sec. 107.105 Application for exemption.

(a) General. Each application for an exemption or modification of an exemption must--

(1) Be submitted in duplicate and, for timely consideration, at least 120 days before the requested effective date to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, U.S. Department of Transportation, 400 7th Street, SW, Washington, DC 20590-0001. Attention: Exemptions, DHM-31;

> This application is being submitted on or before October 9, 1998, approximately 120 days prior to the desired issuance date of February 9, 1999. Two copies are provided to the address as stated.

(2) State the name, street and mailing addresses, and telephone number of the applicant; if the applicant is not an individual, state the name, street and mailing addresses, and

telephone number of an individual designated as an agent of the applicant for all purposes related to the application;

Applicant
Indiana Michigan Power
Donald C. Cook Nuclear Plant
Agent
Mr. Walter T. MacRae
American Electric Power, Nuclear Generation Group
500 Circle Dr.
Buchanan, MI 49107
(616) 697-5067

(3) If the applicant is not a resident of the United States, a designation of agent for service in accordance with Sec. 107.7 of this part; and

The applicant is a United States Corporation and the agent is a resident of the United States.

(4) For a manufacturing exemption, a statement of the name and street address of each facility where manufacturing under the exemption will occur.

Not applicable. A manufacturing exemption is not requested.

(b) Confidential treatment. To request confidential treatment for information contained in the application, the applicant shall comply with Sec. 107.5(a).

Not applicable. No confidential treatment is requested.

(c) Description of exemption proposal. The application must include the following information that is relevant to the exemption proposal:

(1) A citation of the specific regulation from which the applicant seeks relief;

Regulatory Requirements:

49 CFR 173.403 - Definitions
For purposes of this subpart—
... Surface Contaminated Object (SCO) means a solid object which is not itself radioactive but which has Class 7 (radioactive) material distributed on any of its surfaces. 49 CFR 173.427 - Transport requirements for low specific activity (LSA) Class 7 (radioactive) materials and surface contaminated objects (SCO).

(a) In addition to other applicable requirements...surface contaminated objects (SCO)...must be transported in accordance with the following conditions:

> (2) The quantity of LSA and SCO material in any single conveyance must not exceed the limits specified in Table 9;
> 49 CFR 173.427 - Transport requirements for low specific activity (LSA) Class 7 (radioactive) materials and surface contaminated objects (SCO)…
>
> (b) Except as provided in paragraph (c) of this section, LSA material and SCO must be packaged as follows:
>
> (1) In an industrial package (IP-1, IP-2 or IP-3; Sec. 173.411), subject to the limitations of Table 8;

Exemption Request:

NRC generic letter (GL) 96-07, "Interim Guidance on Transportation of Steam Generators," provides NRC and DOT guidance on the application of existing radioactive material transportation requirements to the transportation of steam generators. This letter indicates that unit 2 steam generators are best characterized within the scope of the regulations as SCO, as they are solid, non-radioactive objects with radioactive material distributed on their surfaces. As such, SCO material is required to be transported in packaging meeting DOT's industrial packaging definitions in 49 CFR 173.411.

The GL goes on to state that it is impractical to measure the contamination level over all contaminated surfaces as required to demonstrate compliance with the SCO definition. Furthermore, the letter states that, if the shipper desires to ship the steam generators without first packaging them, an exemption should be requested from the packaging requirements for SCO material.

As a result of this guidance, we hereby request exemptions from the SCO demonstration requirements and from the packaging requirements for SCO material. Additionally, we request exemption from the conveyance limit of 100 A_2. Supporting information is provided in the form of attachments accompanying this request that demonstrate equivalent safety to that specified for the transportation of SCO material per existing regulations. The supporting information is preliminary. Sampling and analysis of the radioactivity of the generators will be complete in late 1998. If as a result of that analysis, an exemption for the conveyance limit is not needed, a letter to the DOT withdrawing that portion of the exemption request will be sent.

(2) Specification of the proposed mode or modes of transportation;

The SGLAs will be transported by two primary modes, rail and heavy-haul motor vehicle transportation. The SGLAs will be transported via rail from Cook Nuclear Plant to the CNS Consolidation Facility (CNCF). The SGLAs will be transported via land from the CNCF to the Barnwell Disposal Facility. Details of the transportation are included in the transportation plan in attachment 2.

(3) A detailed description of the proposed exemption (e.g., alternative packaging, test, procedure or activity) including, as appropriate, written descriptions, drawings, flow charts, plans and other supporting documents;

Alternative Packaging of the Cook Nuclear Plant SGLAs:

The SGLAs will be transported as unpackaged radioactive material. Drawings of the SGLAs are provided in attachment 5. The steam generators are approximately 533 inches long, 176 inches in maximum diameter, and weigh approximately 238 tons. The steam generator shell is constructed of carbon steel, and is 2.82 inches thick. The steam generators are designed for an operating pressure of more than 1000 pounds per square inch.

The Cook Nuclear Plant Unit 2 steam generators were removed from service in 1988. At that time, the steam domes were removed for reuse, leaving the lower assemblies. A 3-inch steel plate was welded across the opening left by removal of the dome and closures were welded over inlet and outlet nozzles and penetrations to prevent release of the radioactive contents. These welded closures also provide shielding of the radioactive material inside. The welded and bolted closures of the SGLAs are covered by specially designed caps that are welded to the SGLA body. The SGLAs were placed in storage at Cook Nuclear Plant in 1988. The SGLAs as prepared for transport are structurally evaluated in attachment 3. The conclusion of attachment 3 states:

> "It has been shown in this report that all the closures of the SGLA have adequate strength to react to the load normally expected during its handling and transportation. The stress allowables based on the AISC criteria are satisfied by all the components of the closure assembly with a large margin of safety. The SGLAs will be, therefore, completely sealed and behave like

a unitized body for which exemption from packaging may be requested from DOT."

Sketches depicting the orientation of the SGLA and supporting equipment are provided in attachments 3 and 4.

The primary side surfaces of the SGLAs are coated with radioactive materials deposited from reactor coolant water during the course of normal operation. The characterization of this radioactive content is provided in attachment 6. Each steam generator contains approximately 80 curies of radioactive material and on average, will meet the SCO-III limit of 20 $\mu Ci/cm^2$. It is assumed that the radioactive content of water potentially trapped in plugged tubes is negligible. The assessment of water remaining in plugged tubes is provided in attachment 7. The generators were conservatively shown to contain a maximum of 58 to 213 gallons of water. Furthermore, it is assumed that the secondary side surfaces of the steam generator contain negligible quantities of radioactive material.

Based on the engineering evaluations performed for the alternatively packaged steam generators, it is concluded that the steam generators as described herein, along with the transportation plans and procedures, provide a level of safety appropriate for this material consistent with DOT regulations.

(4) A specification of the proposed duration or schedule of events for which the exemption is sought;

The current project schedule includes an early start date for transportation activities of April 1, 1999. Each SGLA will be transported on a separate rail car with two SGLAs transported in a single train. The conclusion of the transport of the second pair of SGLAs is scheduled for mid 1999. Based on this schedule of events, and the uncertainties inherent in such a project, we request that the exemption be issued by February 9, 1999, and for a period of one year.

(5) A statement outlining the applicant's basis for seeking relief from compliance with the specified regulations and, if the exemption is requested for a fixed period, a description of how compliance will be achieved at the end of that period;

This exemption request is submitted in accordance with the information provided in NRC GL 96-07, "Interim Guidance on Transportation of Steam Generators." This generic letter is a joint effort between NRC and DOT, and provides a basis for this request. In addition, the request for the exemption from the conveyance limit is made in recognition of

the controls that will be in place during transport and the integrity of the SGLA shell that will prevent loss of radioactive material content and exposure of the public. Under the requested exemption, the transportation of the steam generators will be a one-time event. Compliance with the exemption will be demonstrated during transportation. When the transportation of the generators is complete, continued demonstration will not be applicable.

(6) If the applicant seeks emergency processing specified in Sec. 107.117, a statement of supporting facts and reasons;

Emergency processing of this exemption application is not requested.

(7) Identification and description of the hazardous materials planned for transportation under the exemption;

The characterization of the radioactive waste material contained in the steam generators is provided in attachment 6 . This characterization is preliminary because the SGLA storage configuration prevents an un-augmented dose rate survey of each SGLA. However, as is discussed in the preliminary characterization report, the contribution from the adjacent SGLA can be assessed to allow confident use of the measured dose rates. Also, the isotopic content of the SGLAs in the current version of the characterization report is based on historical scaling factors. The isotopic distribution of radionuclides will be verified by direct sampling and analysis prior to issue of the final version of the preliminary report. The characterization document provides evidence that the final characterization of the generators is not likely to differ significantly from the preliminary evaluation. A final evaluation of the radioactive materials within the steam generators will be performed prior to transportation to comply with all DOT regulatory requirements prior to shipment of the generators.

(8) Description of each packaging, including specification or exemption number, as applicable, to be used in conjunction with the requested exemption;

As previously stated, this exemption request is for the transportation of four SGLAs from Cook Nuclear Plant. Each SGLA will be prepared as described in response to 49 CFR 173.107(c)(3) above.

(9) For alternative packagings, documentation of quality assurance controls, package design, manufacture, performance test criteria, in-service performance and service-life limitations;

Indiana Michigan Power and its contractor, Chem-Nuclear Systems, will perform all steam generator

transportation activities in accordance with their NRC-approved QA programs. Additionally, a project specific QA plan has been developed that covers all activities performed in support of the project.

(d) Justification of exemption proposal. The application must demonstrate that an exemption achieves a level of safety at least equal to that required by regulation, or if a required safety level does not exist, is consistent with the public interest. At a minimum, the application must provide the following:

(1) Information describing all relevant shipping and incident experience of which the applicant is aware that relates to the application;

Indiana Michigan Power's contractor for this transportation project, Chem-Nuclear Systems, has been involved in several previous steam generator transportation projects, e.g., Millstone, Yankee Rowe, Salem, and St. Lucie. Each of these projects involved the transportation of multiple steam generators by barge, rail, and road transport modes. Chem-Nuclear Systems was involved in operational and engineering activities for each of the projects, and is intimately familiar with the issues important to safety.

Of these shipping campaigns, the St. Lucie project was completed most recently, and was performed under a DOT exemption similar to that being requested in this application. The St. Lucie steam generator transportation effort was completed without incident.

(2) A statement identifying any increased risk to safety or property that may result if the exemption is granted, and a description of the measures to be taken to address that risk; and

No increased risk is identified as a result of this request. The structural shells of SGLAs are 2.82 inches (minimum) thick. The openings of the SGLAs are closed with specially designed caps that make the unpackaged SGLAs a robust unitized body that can be safely transported under normal transport conditions.

(3) Either--

(i) Substantiation, with applicable analyses, data or test results, that the proposed alternative will achieve a level of safety that is at least equal to that required by the regulation from which the exemption is sought; or

Structural analyses are provided in attachment 3 that demonstrate the ability of the steam generators to be transported as alternative packagings. The transportation plan provided in attachment 2 details the special steps and operational controls that are performed to provide additional safety over a

typical, uncontrolled shipment of radioactive material.

(ii) If the regulations do not establish a level of safety, an analysis that identifies each hazard, potential failure mode and the probability of its occurrence, and how the risks associated with each hazard and failure mode are controlled for the duration of an activity or life-cycle of a packaging.

Not applicable. This application provides a basis for equivalent safety of the alternative packaging.

AMERICAN ELECTRIC POWER
DONALD C. COOK NUCLEAR PLANT

STEAM GENERATOR DISPOSAL EXEMPTION REQUEST

ATTACHMENT 2
TRANSPORTATION AN EMERGENCY RESPONSE PLAN