NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

DOCKET NUMBER: 50-315

FILE NUMBER:

TO: Mr. Benard C. Rusche

FROM: Indiana & Michigan Power Company, New York, N. Y., G. P. Maloney

DATE OF DOCUMENT: 2/28/77

DATE RECEIVED: 3/2/77

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PROP

INPUT FORM

NUMBER OF COPIES RECEIVED: One signed

DESCRIPTION

Ltr. re our 11/23/76 ltr...trans the following:

PLANT NAME: Cook Unit No. 1 (2-P)

ENCLOSURE

Consists of letter from Exxon concerning fission gas release in Exxon Nuclear supplied fuel.....

ACKNOWLEDGED
DO NOT REMOVE

(1-P)

SAFETY — FOR ACTION/INFORMATION — ENVIRO 3/3/77 — RJL

X	ASSIGNED AD:	Goller		ASSIGNED AD:
X	BRANCH CHIEF:	Ziemann		BRANCH CHIEF:
X	PROJECT MANAGER:	Fletcher		PROJECT MANAGER:
X	LIC. ASST. :	Diggs		LIC. ASST. :

INTERNAL DISTRIBUTION

X	REG FILE		SYSTEMS SAFETY		PLANT SYSTEMS		SITE SAFETY &
X	NRC PDR		HEINEMAN		TEDESCO		ENVIRO ANALYSIS
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X	OELD				LAINAS		
X	GOSSICK & STAFF		ENGINEERING		IPPOLITO		ENVIRO TECH.
	MIPC		MACARRY		KIRKWOOD		ERNST
	CASE		BOSNAK				BALLARD
	HANAUER		SIHWEIL		OPERATING REACTORS		SPANGLER
	HARLESS		PAWLICKI		STELLO		
							SITE TECH.
	PROJECT MANAGEMENT		REACTOR SAFETY		OPERATING TECH.		GAMMILL
	BOYD	X	ROSS	X	EISENHUT (Ltr.)		STEPP
	P. COLLINS		NOVAK	X	SHAO		HULMAN
	HOUSTON		ROSZTOCZY	X	BAER (2)		
	PETERSON	X	CHECK	X	BUTLER		SITE ANALYSIS
	MELTZ	X	R. MEYER	X	GRIMES		VOLLMER
	HELTEMES		AT & I	X	F. COFFMAN		BUNCH
	SKOVHOLT		SALTZMAN	X	J. GUIBERT	X	J. COLLINS
			RUTBERG				KREGER

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X	NSIC:		LA PDR		
	ASLB:		CONSULTANTS:		
X	ACRS 16 CYS ~~HOLDING~~/SENT: Cat. B. (3/3/77)				

CONTROL NUMBER: 2170

NRC FORM 195 (2-76)

INDIANA & MICHIGAN POWER COMPANY

P. O. BOX 18
BOWLING GREEN STATION
NEW YORK, N.Y. 10004

Regulatory Docket File

February 28, 1977

Donald C. Cook Nuclear Plant Unit No. 1
Docket No. 50-315
DPR No. 58

Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Rusche:

In Mr. Dennis L. Ziemann's letter of November 23, 1976, which we received on November 29, 1976, he requested further information regarding the effect of high burnup on fission gas release and the impact of increased rod internal pressure on the safety analysis. We transmitted that letter to Exxon Nuclear Company, Inc. asking that they reply promptly to us for your category of plants that will reach peak local fuel rod burnups of 20,000 Megawatt days per metric ton of uranium after June 1, 1977. We estimate that this burnup of the Exxon Nuclear Company fuel will be achieved in Unit 1 of the Donald C. Cook Nuclear Plant during the early portion of our third cycle of operation (2nd cycle for the Exxon fuel). This will probably be in the first half of 1978.

The attached letter from Exxon, in response to our request indicates the results of calculation of internal fuel rod pressure in accordance with your request. Exxon also indicates that they will have completed the balance of the

2170

evaluation as requested by your letter by November 1977.

Very truly yours,

G. P. Maloney
Vice President

GPM:mam
Attachment

Sworn and subscribed to before me
this 28th day of February in
New York County, New York

Kathleen Barry
Notary Public

KATHLEEN BARRY,
NOTARY PUBLIC, State of New York
No. 41-4606792
Qualified in Queens County
Certificate filed in New York County
Commission expires March 30, 1977

cc: G. Charnoff
R. C. Callen
R. J. Vollen
P. W. Steketee
R. Walsh
R. S. Hunter
R. W. Jurgensen - Bridgman

EXXON NUCLEAR COMPANY, Inc.

2101 Horn Rapids Road
P. O. Box 130, Richland, Washington 99352
Phone: (509) 943-8103 Telex: 32-6353

TO: J. G. EINSTEIN
(AEP)

FROM: G. F. OWSLEY
(ENC)

February 22, 1977

Mr. Robert Hunter,
Vice President, Nuclear Engineering
American Electric Power
Two Broadway
New York, New York 10004

SUBJECT: Fission Gas Release in Exxon Nuclear supplied Fuel - Donald C. Cook Nuclear Plant Unit I

Reference: Letter from D. L. Ziemann (NRC) to Mr. John Tillinghast (Indiana & Michigan Electric Company) dated November 23, 1976

Dear Mr. Hunter:

In response to the request by the NRC (above reference), the impact of additional fission gas release after 20,000 MWD/MTM burnup is being investigated for the Exxon Nuclear supplied 15x15 fuel. To evaluate the fission gas release and the fuel pin internal pressure, the NRC approved PWR fuel densification model with modifications to incorporate the fission gas release formula specified in the reference letter has been used. A maximum linear heat generation rate of 13.68 kW/ft. was used in the analysis. With the revised release formula, a peak pin pressure of 1855 psia is calculated, as compared to 1145 psia with the present model. The maximum fission gas release fraction is calculated to be .24 with the revised model, compared to .05 with the present model. The maximum fuel pin pressures at end-of-life (EOL) were found not to exceed the system operating pressure.

Exxon Nuclear will complete its evaluation as requested in the reference letter by November 1977. The maximum exposure in Exxon Nuclear supplied fuel in the Donald C. Cook Nuclear Plant Unit I will not reach 20,000 MWD/T prior to mid-1978.

Sincerely,

Gerald Owsley

G. F. Owsley, Manager
Reload Licensing

GFO:gf

CC: Mr. R. H. Dischinger