

**UNION OF
CONCERNED
SCIENTISTS**

April 14, 2000

Dr. William Travers
Executive Director for Operations
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

**SUBJECT: SUPPLEMENT TO PETITION PURSUANT TO 10 CFR 2.206, INDIAN POINT
UNIT 2, DOCKET NO. 50-247**

Dear Dr. Travers:

On behalf of the Nuclear Information & Resource Service, the PACE Law School Energy Project, and Public Citizen's Critical Mass Energy Project, the Union of Concerned Scientists submits this supplement to the petition dated March 14, 2000, we submitted pursuant to 10 CFR §2.206.

In developing the petition and preparing for the April 7, 2000, public meeting conducted regarding the petition, the petitioners reviewed information available from the NRC's Public Document Room. As we reported in our petition and discussed during the public meeting, that effort was hindered by very serious and persistent problems with the NRC's ADAMS for recent information. It was only this morning that the petitioners were able to access ADAMS to find and retrieve a recent NRC document relevant to two of the three requested actions in our petition.

We supplement our original petition to include information from NRC NUREG/CR-5752, "Assessment of Current Understanding of Mechanism of Initiation, Arrest, and Reinitiation of Stress Corrosion Cracks in PWR Steam Generator Tubing," dated February 2000. Specifically, the petitioners call the NRC staff's attention to Figure 2 (a) on page 93 of this document. This figure shows the results from a load test conducted on mill-annealed Alloy 600 tubes. The test results show gradual growth of a tube crack until a point is reached where fast propagation followed by failure occurs.

The petitioners contend that this information is relevant to items (1) and (2) of our March 14th petition. In item (1), we seek replacement of the steam generators at Indian Point Unit 2. In item (2), we seek resolution of technical concerns raised by NRC staffer Joram Hopfenfeld about the probability and concerns of multiple steam generate tube ruptures.

Indian Point Unit 2's steam generator tubes are made of mill-annealed Alloy 600 material. Thus, Figure 2(a) applies. Indian Point Unit 2 has the oldest mill-annealed Alloy 600 material steam generator tubes currently installed at a US nuclear power plant. Thus, many - if not the majority - of the tube cracks at Indian Point 2 are closer to time t_2 on Figure 2(a) than to time t_1 . Finally, the results are from tests conducted at constant load. If cracked tubes close to time t_2 experience higher than steady-state loads, as will be encountered following design bases transients and accidents, it is reasonable to assume that tubes could undergo fast propagation and failure as a direct consequence. In other words, such a design bases transient or accident occurring when many of the steam generator tubes at Indian Point Unit 2 are approaching time t_2 on Figure 2(a) increases the potential for multiple steam generator tube ruptures.

Washington Office: 1616 P Street NW Suite 310 • Washington DC 20036-1495 • 202-332-0900 • FAX: 202-332-0905
Cambridge Headquarters: Two Brattle Square • Cambridge MA 02238-9105 • 617-547-5552 • FAX: 617-864-9405
California Office: 2397 Shattuck Avenue Suite 203 • Berkeley CA 94704-1567 • 510-843-1872 • FAX: 510-843-3785

TEMPLATE: EDO-001

E-RIDS: EDO-01

This information supports requested actions (1) and (2) in our petition. Replacement of the steam generators would reset the condition back such that cracks were nearer to time t_1 on Figure 2(a) while resolution of Dr. Hopenfeld's technical concerns lessens the chances of multiple steam generator tube ruptures. We ask the NRC staff to consider this information in reaching its final conclusion.

Sincerely,



David A. Lochbaum
Union of Concerned Scientists

For:

Michael Mariotte
Nuclear Information & Resource Service

Edward Smeloff
PACE Law School Energy Project

James P. Riccio
Public Citizen's Critical Mass Energy Project

Enclosure: title page, page iii, and page 93 from NUREG/CR-5752, February 2000.

NUREG/CR-5752
ANL-99/4

Assessment of Current Understanding of Mechanisms of Initiation, Arrest, and Reinitiation of Stress Corrosion Cracks in PWR Steam Generator Tubing

Manuscript Completed: January 2000
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Prepared by
S. Majumdar

Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439

J. Muscara, NRC Project Manager

Prepared for
Division of Engineering Technology
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
NRC Job Code W6487



**Assessment of Current Understanding of Mechanisms
of Initiation, Arrest, and Reinitiation of Stress Corrosion Cracks
in PWR Steam Generator Tubing**

by

S. Majumdar

Abstract

This report summarizes the status of our current understanding on mechanisms of stress corrosion crack initiation and propagation in Alloy 600 PWR steam generator tubes. More than 200 publications from the literature were reviewed for this purpose. Factors influencing stress corrosion cracking and various mechanistic and empirical models available for predicting stress corrosion cracking behavior are critically reviewed. Tests are recommended for enhancing our understanding and predictive capability on stress corrosion cracking in Alloy 600 steam generator tubes.

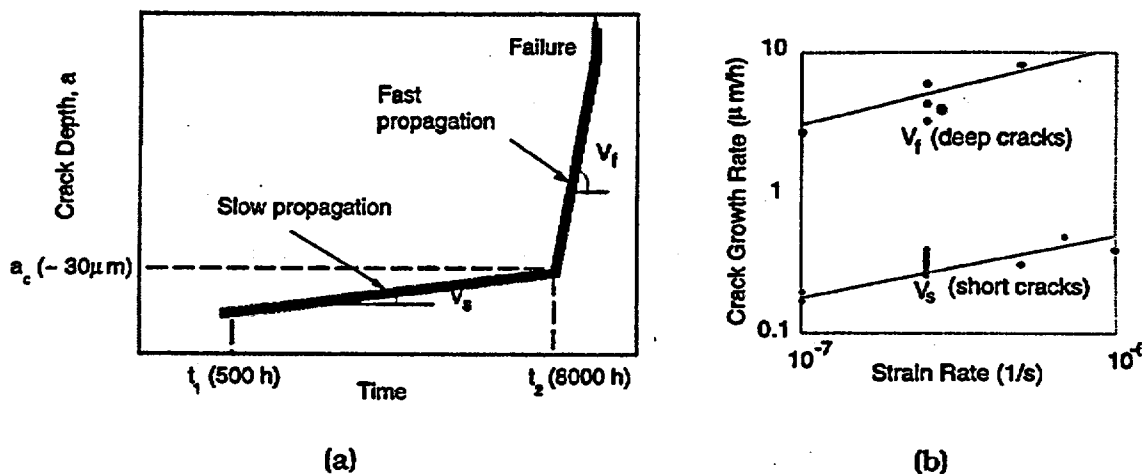


Figure 2. Crack growth rate of mill-annealed Alloy 600 tubes: (a) schematic representation of crack depth vs. time (values in bracket are for a constant load test at 450 MPa [65 ksi] in pure hydrogenated water)¹⁰ and (b) CERT in primary water at 360°C.⁶²

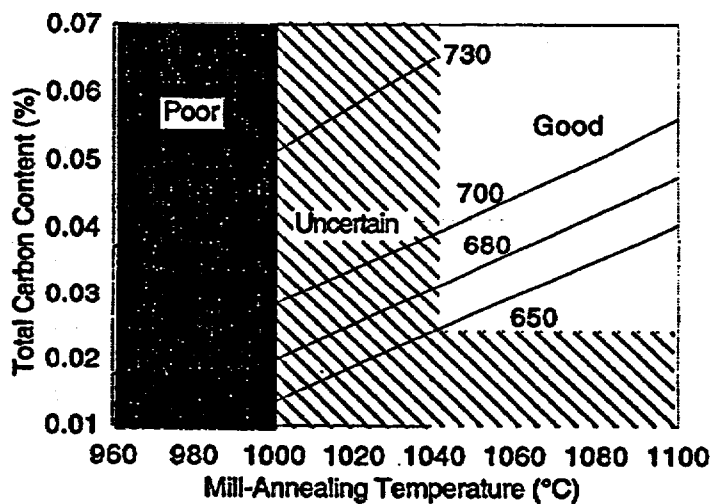


Figure 3. Regions of poor, uncertain, and good resistance to IGSCC of mill-annealed Alloy 600 (without thermal treatment) in pure hydrogenated water at 350°C. Also shown are lines of constant ultimate tensile strength (in MPa) at 350°C.¹⁰



Critical Mass Energy Project

215 Pennsylvania Ave, SE Washington, DC 20003 (202) 546-4996 fax (202) 547-7392

June 12, 2000

Dr. William Travers
Executive Director for Operations
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

**SUBJECT: SUPPLEMENT TO THE 10 CFR 2.206 PETITION CONCERNING INDIAN
POINT UNIT 2, DOCKET NO. 50-247**

Dear Dr. Travers:

It has come to our attention there are serious concerns within the Federal Emergency Management Agency regarding the adequacy of the emergency planning exercises. While these concerns potentially effect every reactor in the United States, we are particularly concerned with their impact upon emergency preparedness at the Indian Point 2 nuclear power plant.

In particular, we are concerned about the FEMA contractor analysis of Indian Point 2, which states that "Past EP drills and exercises did not adequately test the Emergency Response Organization in all aspects of their responsibilities." Furthermore, we are concerned with the contention in a FEMA memo that "the expanded use of granting exercise credit, and the possible increase of demon-strating REP functions and activities out-of-sequence from the exercise may have serious consequences." I have attached a copy of the FEMA memo for your consideration and to further support our petition regarding the use of Potassium Iodide in the vicinity of the Indian Point 2 nuclear power plant.

Additionally we wish to amend our petition to ask that the NRC not allow the Indian Point 2 nuclear reactor to restart unless and until the concerns identified in the FEMA memo are thoroughly addressed. According to the FEMA memo, the root causes

of the emergency planning failures at Indian Point 2 were "unrealistic drills and the artificialities in the practice of new/existing procedures." In light of this fact, we are requesting that the NRC and FEMA re-evaluate the adequacy of the Indian Point 2 emergency planning drill and that a new, more realistic exercise be conducted.

Sincerely,

James P. Riccio
Public Citizen's Critical Mass Energy Project

David Lochbaum
Union of Concerned Scientists

Michael Mariotte
Nuclear Information & Resource Service

Ed Smeloff
Pace University Law School Energy Project



Federal Emergency Management Agency

Washington, D.C. 20472

MAY 12 2000

PT-CR-RP

MEMORANDUM FOR:

Vanessa E. Quinn
Acting Chief
Radiological Emergency Preparedness Branch

Russell Salter
Director
Chemical and Radiological Preparedness Division

FROM:

William F. McNutt *Bill McNutt*
Senior Policy Advisor
Radiological Emergency Preparedness Branch

SUBJECT:

Preparedness Concerns at Indian Point 2

The following concerns are provided for your consideration:

The proposed expanded use of granting exercise credit, and the possible increase of demonstrating REP functions and activities out-of-sequence from the exercise may have serious consequences.

The root causes identified in the Indian Point 2 accident for failure in Emergency Preparedness (EP) were unrealistic drills and artificialities in the practice of new/existing procedures. The result was that, in this real incident, the State and locals could not respond to the continuous flow of information, nor could they integrate their response as needed. This could affect our assumptions about out-of-sequence demonstrations and the impact of granting credits and exempting exercise demonstration/evaluation.

Elaine Chan and I are concerned about the basis for FEMA's reasonable assurance finding that is issued on plan reviews, verification of resources and the results of an evaluated biennial exercise. Significant changes to the basis for FEMA's evaluation could result in challenges to the validity of FEMA's reasonable assurance findings on the adequacy of plans and preparedness, and that could shift the burden of proof from a challenger to FEMA.

In addition, the FEMA contractor analysis of Indian Point 2 states that "Past EP drills and exercises did not adequately test the Emergency Response Organization in all aspects of their responsibilities."

I have completed the work on the policy for expanding the use of exercise credit. However, I am seeking your advice in light of the Indian Point findings on how to proceed. If there are any questions on this matter, please contact me at x2857.