

EDO Principal Correspondence Control

FROM: DUE: / / EDO CONTROL: G20120630
DOC DT: 08/15/12
FINAL REPLY:

Jim Willard
Washington, D.C.

TO:

Chairman Macfarlane

FOR SIGNATURE OF : ** GRN ** CRC NO: 12-0460

DESC: ROUTING:
Materials Property Problems - Irradiation Growth Borchart
(EDATS: SECY-2012-0425) Weber
Johnson
Ash
Mamish
OGC/GC
Merzke, OEDO

DATE: 08/22/12

ASSIGNED TO: CONTACT:
NRR Leeds

SPECIAL INSTRUCTIONS OR REMARKS:

For Appropriate Action. If response is determined, please be sure to create an ADAMS Package to include the incoming (version we forward to you from DPC), with response and process accordingly. Copies should be sent to RidsEdoMailCenter and RidsSecyMailCenter.

EDATS

Electronic Document and Action Tracking System



EDATS Number: SECY-2012-0425

Source: SECY

General Information

Assigned To: NRR

OEDO Due Date: NONE

Other Assignees:

SECY Due Date: NONE

Subject: Materials Property Problems - Irradiation Growth

Description:

CC Routing: NONE

ADAMS Accession Numbers - Incoming: NONE

Response/Package: NONE

Other Information

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Related Task:

Recurring Item: NO

File Routing: EDATS

Agency Lesson Learned: NO

OEDO Monthly Report Item: NO

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Priority: Medium

Signature Level: No Signature Required

Sensitivity: None

Approval Level: No Approval Required

Urgency: NO

OEDO Concurrence: NO

OCM Concurrence: NO

OCA Concurrence: NO

Special Instructions: For Appropriate Action. If response is determined, please be sure to create an ADAMS Package to include the incoming (version we forward to you from DPC), with response and process accordingly. Copies should be provided to RidsEdoMailCenter and RidsSecyMailCenter.

Document Information

Originator Name: Jim Willard

Date of Incoming: 8/15/2012

Originating Organization: Citizens

Document Received by SECY Date: 8/22/2012

Addressee: Chairman Macfarlane

Date Response Requested by Originator: NONE

Incoming Task Received: Letter

OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

Date Printed: Aug 20, 2012 10:29

PAPER NUMBER: LTR-12-0460

LOGGING DATE: 08/20/2012

ACTION OFFICE: EDO

AUTHOR: Jim Willard

AFFILIATION: DC

ADDRESSEE: CHRMs Allison Macfarlane

SUBJECT: Expresses congratulations on the appointment of Chairman of the NRC and concerns about a materials property problems, irradiation growth

ACTION: Appropriate

DISTRIBUTION: Chrm

LETTER DATE: 08/15/2012

ACKNOWLEDGED No

SPECIAL HANDLING:

NOTES:

FILE LOCATION: ADAMS

DATE DUE:

DATE SIGNED:

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P.O. Box 7892
Washington, D.C.
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Dr. Allison Macfarland, Chair
Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

August 15, 2012

Dear Dr. Macfarland,

Congratulations for your appointment to the Chairmanship of the Nuclear Regulatory Commission. I listened with great interest to your recent speech at the National Press Club.

I wish you great success in your endeavors to ensure that the nuclear power industry operates in a manner which is safe for our nation, and, indeed, humanity, now and for generations to come.

As you pointed out, the NRC carries out the policies established by Congress and implemented by the President, presumably, although exactly what day-to-day authority the President wields over the NRC is not clear.

As an interested citizen, with perhaps more than average experience in the nuclear field, I have been concerned about our country's approach to nuclear power and have expressed my concerns to various officials. Enclosed is a copy of a letter I sent to Admiral James Ellis, Jr., President and CEO of the Institute for Nuclear Power Operations. Admiral Ellis had his training under Admiral H.G. Rickover in the Naval Nuclear Propulsion Program, in which I also worked.

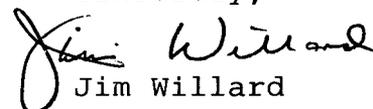
My letter brought to the Admiral's attention my concerns about a materials property problem, irradiation growth, which is design limiting and could lead to fuel element failure, if not properly allowed for in design and operations.

I hope that you will review this information and have your staff take appropriate steps to ensure that operating plants perform within safe temperature and lifetime limits.

May I also suggest that the NRC consider the consequences of radioactive debris from the Fukushima event, which may reach our shores via ocean currents? Some of this material could be highly radioactive.

Again, best wishes on your new assignment.

Sincerely,


Jim Willard

Enclosure
cc: The Honorable Daniel Inouye
United States Senate

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November 18, 2010

James O. Ellis, Jr.
President and CEO
Institute for Nuclear Power Operations
700 Galleria Pkwy, S.E. Suite 100
Atlanta, GA 30339

Dear Admiral Ellis,

I listened with great interest to your testimony before the White House National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, on August 25, 2010. I share your admiration for the Naval Nuclear Propulsion Program under Admiral H.G. Rickover, as expressed in the Q & A session. I worked in that program at the Bettis Laboratory in Pittsburgh, the prototypes in Idaho, and the Nuclear Power School in Orlando. While in Idaho, our group provided support for the Senior Officers Readiness Course mandated by Congress to instruct non-nuclear officers how to properly supervise maintenance operations.

One of the men in the group reporting to me, Don Bloomer, had retired from the Navy as Chief Warrant Officer, having served on the Nautilus, probably under Vice Admiral Wilkinson. When Don returned from giving his presentation on steam plant valve maintenance, I asked him how it went. "Fine", he said, "but, you know, Jim, in all my twenty years in the Navy I saw one, maybe two Admirals; but here I am, a civilian giving a lecture to a whole room full of them."

Apparently, INPO operates much like an ORSE team, but lacks the authority to shut a plant down if it is operating in an unsafe manner. It seems that your leverage is through the impact a poor evaluation by INPO can have on the ability of the owner of the plant to get insurance at a reasonable rate.

I qualified EOOW at the SIW plant while in Idaho, then became consultant to the Nuclear Power School in Orlando. I returned to Bettis in 1979 to become Program Manager for the training program for the pre-commissioning crew of the CVN-70, Carl Vinson. Subsequently, I returned to research in the reactor materials area and completed some basic work on a critical materials problem: irradiation growth of Zircaloy. (See "Irradiation Growth of Zircaloy", Sixth International Conference on Zirconium in the Nuclear Industry", ASTM 824(1982).

Without going into areas which may still be classified after all these years, please permit me to bring to your attention:

Admiral Ellis, INPO

my concerns about irradiation growth and the civilian nuclear power industry which I hope you will evaluate.

Irradiation growth of Zircaloy used in fuel assemblies, for some conditions, can be design limiting. In my last literature review several years ago, I found that the commercial industry is using an approach which we had replaced at Bettis. Figure 1, a schematic illustrating growth behavior for the longitudinal orientation of tubes, illustrates my concerns. Growth strain has four distinct phases. My understanding is that civilian plants operate in the Phase I and II regions and do not reach the high strain-rate Stage III and IV regions. The onset of these high strain-rate regions is affected by texture, cold-work, temperature, flux and the length of irradiation. The breakaway occurs earlier at higher temperatures, according to my research.

My concern is that the civilian nuclear industry may increase core temperatures or irradiate their assemblies longer in order to increase profitability. If so, serious consequences could result, perhaps even fuel element failure, if irradiation growth has not been properly factored into the design.

I became interested in nuclear power in 1959 or so when my mother gave me a subscription to Nuclear Engineering, a trade magazine with large centerfolds of nuclear plants. (I must admit, however, there was another magazine with centerfolds that I found much more interesting.) I received a B.S.M.E. in 1960, then transferred to the Nuclear Science and Engineering Department for a Master's. My PhD was in Solid State Physics in 1967, when I joined Bettis.

The radioactive waste problem was recognized at that time, but it was felt that it could be solved. Unfortunately, this has not proved to be the case. I do not feel that the recent patent granted for converting high level waste to more stable forms by irradiating it will prove practical. However, even if such a scheme were to be successful, handling the residue and the spent rods at the plant sites- as well as the issue of producing more nuclear bomb material - renders the risk associated with nuclear plants unacceptable, in my judgement.

If the planes which struck the Twin Towers had instead hit the Indian Point Nuclear Power Plant, or, more importantly, the holding pool adjacent to the plant, it is likely that West Point and the surrounding area, as well as the Hudson River and sections of New York City would have become heavily contaminated and would

Admiral Ellis, INPO

remain uninhabitable for hundreds (thousands?) of years, with the loss of life in ~~the~~ tens of thousands or more.

To argue that no loss of life has occurred due to a major nuclear power plant event justifies continued building of these plants is, in my judgement, not justified. A drunk who weaves his way through traffic after drinking several martinis might make a similar argument about his ability to repeat his dangerous act, with disastrous consequences.

When nuclear plants were first constructed, terrorist events were not a major problem in world affairs. Now they are and will likely remain so for the foreseeable future.

It seems to me that nuclear plants pose an unacceptable risk to humanity, not just the United States, and should be phased out, to be replaced by solar, wind, geothermal, and other power sources, including, hopefully, fusion, which does not produce high-level radioactive debris in a significant amount, when compared to fission plants. However, these plants must be phased out in an orderly, safe manner, with close, competent supervision, such as INPO can provide. I suspect that several decades will be required for the process and, after that, continual monitoring of the already accumulated waste.

It is evident that INPO, even if you agreed with this perspective, cannot act without direction from our federal and state governments. And I suspect that our governments will not act until the public is aroused through an open debate on the advantages and risks associated with nuclear power, which I hope will not come about because of a major event.

If, after our people are fully informed they decide that these plants are necessary, then INPO will have a primary role in ensuring that they operate safely, as you do now. However, our law enforcement officials and military will have to ensure that they are protected against terrorist attacks, sabotage, or other wrongful activities. These officials will most likely turn to you for knowledge and assistance, especially in the event of a major event.

As best I can determine, our government is not prepared to cope with a major event, whose consequences could make the 9-11 and Katrina episodes pale in comparison.

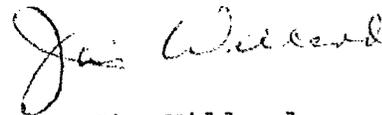
Please give these thoughts your consideration and take whatever steps you deem appropriate to help our nation cope with this problem. I suspect that Admiral Rickover would be actively involved

Admiral Ellis, INPO

in this debate if he were alive. He strongly supported protecting personnel, the public and the environment when he managed the Naval Nuclear Propulsion Program.

Thank you for your attention and for ensuring that these plants continue to meet high standards for competence and integrity. I should add that I was surprised to learn that the results of your evaluations are not shared among the various plants because of plant manager objections. It seems to me that the lessons learned from these evaluations would be of great value to all plant managers and operating personnel.

Sincerely,



Jim Willard

Enclosure

cc: The Honorable Eleanor Holmes Norton, U.S. House of Representatives
The Honorable Daniel Inouye, United States Senate

*I received a polite, non-committal response from the Admiral.
My two sons served as officers on nuclear submarines, also.
JW. 2/15/12*

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CENTRAL DISTRICT

NEW YORK OFFICE



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Nuclear Regulatory Commission
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