FOIA/PA REQUEST
Case No. 2008-0276
Date Rec'd 7-14-08
Specialist
Related Case

FOIA from

Robert H. Leyse

GETR TR-1 FOIA Lowenstein

This FOIA specifies disclosure of the following files, inspection reports and records of other matters that the NRC is obligated to have in its files relative to the General Electric Test Reactor, GETR, License TR-1.

On pages 1, 24, and 25, of the following 25 page letter from GE to Lowenstein, AEC, September 7, 1962, the following records are disclosed and I want copies of those records under this FOIA. The sharpness of the copy of the attached letter from GE to Lowenstein is degraded in comparison with my copy; however, the clarity exceeds that of certain documents that I have received from the NRC under another FOIA. With this e-mail I am also including JPEG image files of pages 1, 24, and 25, of the GE letter to Lowenstein because these are the pages that reference the documents that I am requesting under this FOIA.

1. On page 1: Lines 3 and 4 of paragraph 2 disclose a report to the AEC on July 19, 1962.

2. On page 1: Lines 5 and 6 of paragraph 2 disclose a report to the AEC on July 24, 1962.

3. On page 1: Lines 7 and 8 of paragraph 2 disclose "... numerous visits to the GETR and close liaison ..."

4. On page 1: Lines 9 through 12 of paragraph 2 disclose "The inspectors personally participated in the examination and inspection of control rod components. Their frequent presence,

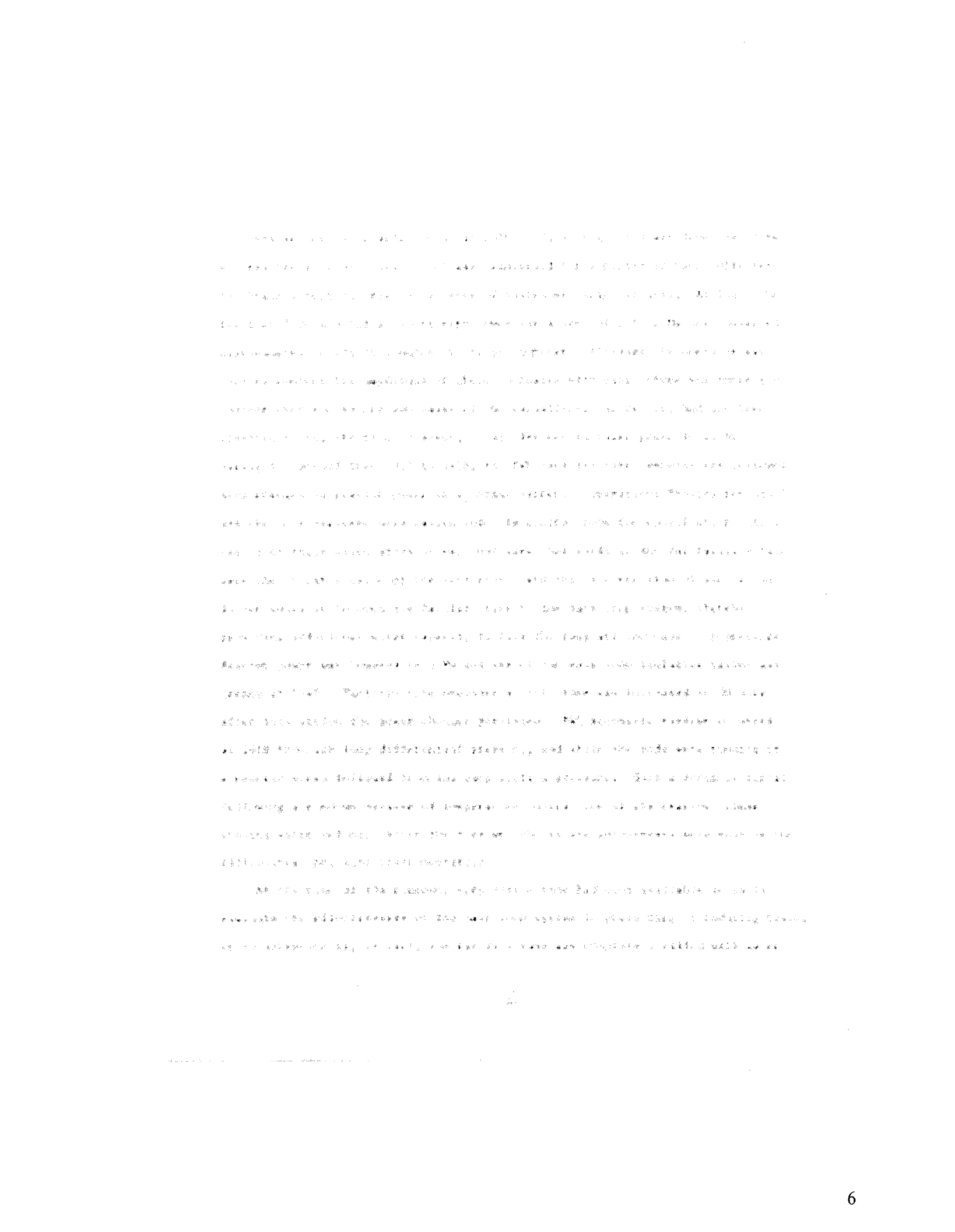
their participation, and their comments provided valuable assistance to General Electric personnel in analyzing the problems encountered."

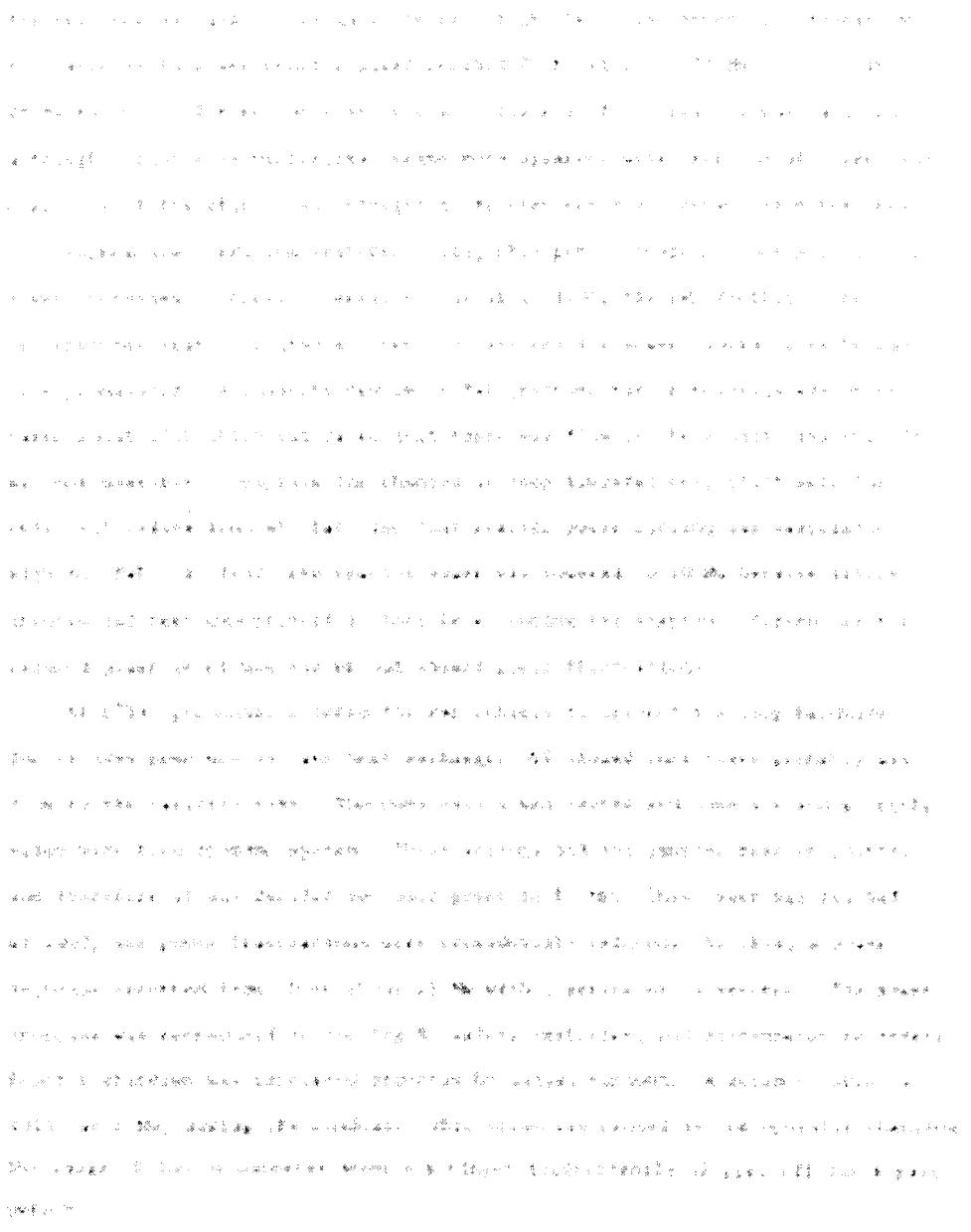
5. On page 1: Lines 2 and 3 of paragraph 3 disclose "... telegrams dated July 30, 1962, and August 2, 1962."

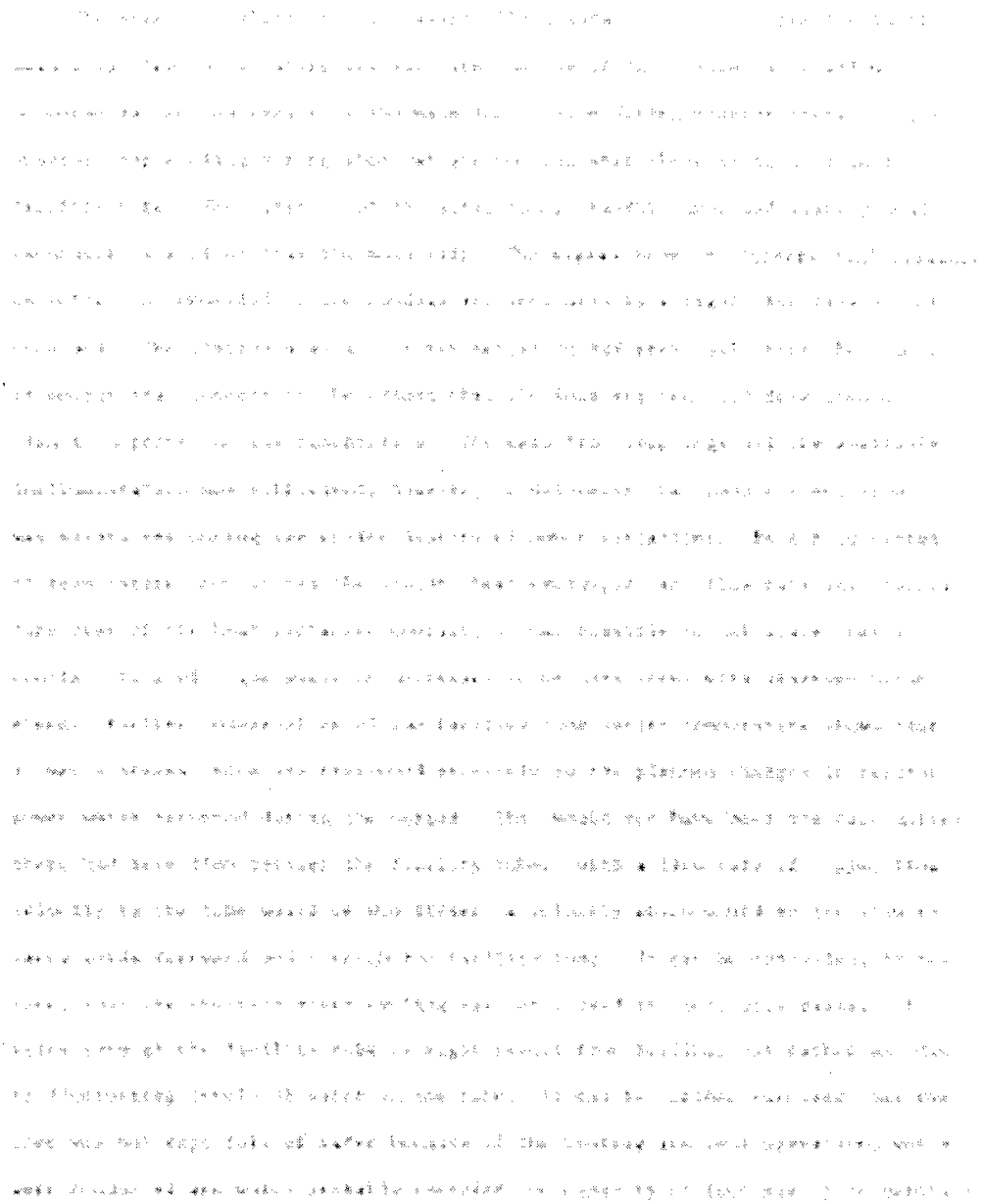
6. On page 1: Lines 4 through 6 of paragraph 3 disclose that "... the Commission's field inspectors had been in contact with and had regularly informed appropriate individuals in the Division of Licensing and Regulation of the events discussed herein."

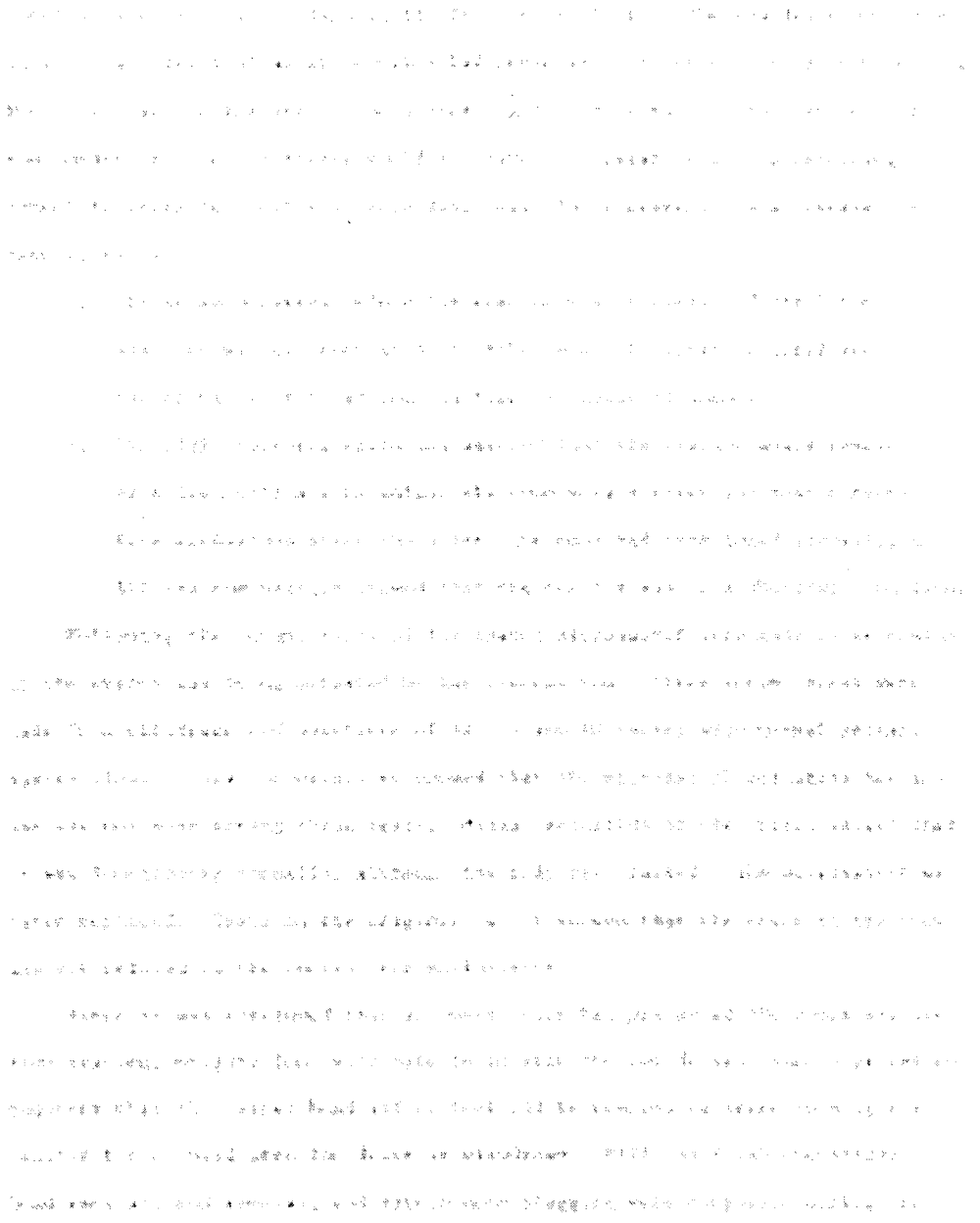
7. On page 24: Lines 3 through 5 disclose, "A redesign of the control rods has been initiated for fabrication and installation in March, 1963. The designs will be forwarded to your office review and approval prior to installation."

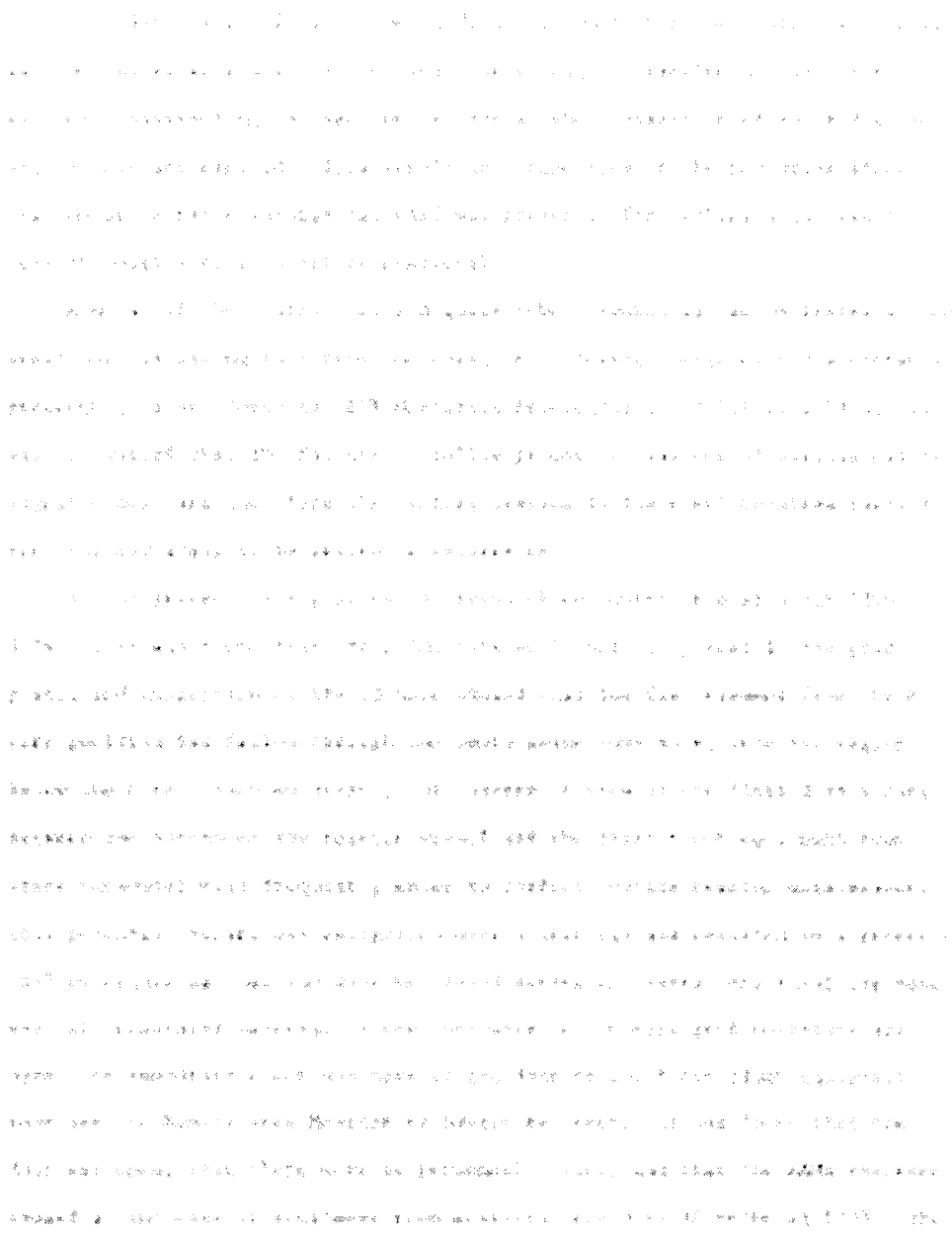
8. On page 25: Lines 1 through 3 disclose, "It is our understanding that we will meet with representatives of the Division of Licensing and Regulation during the week of September 24, 1962 to discuss this report and the events described herein."

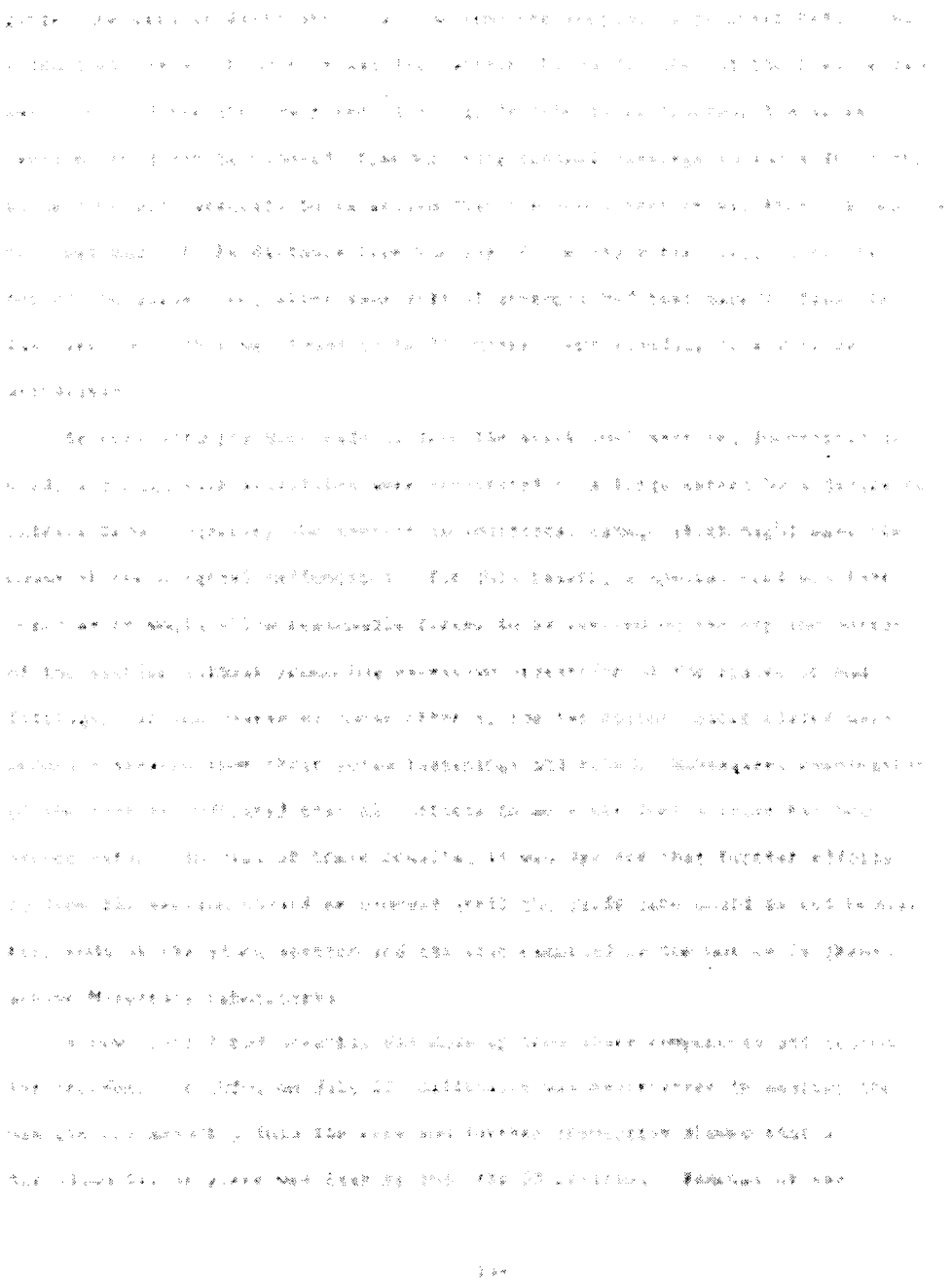


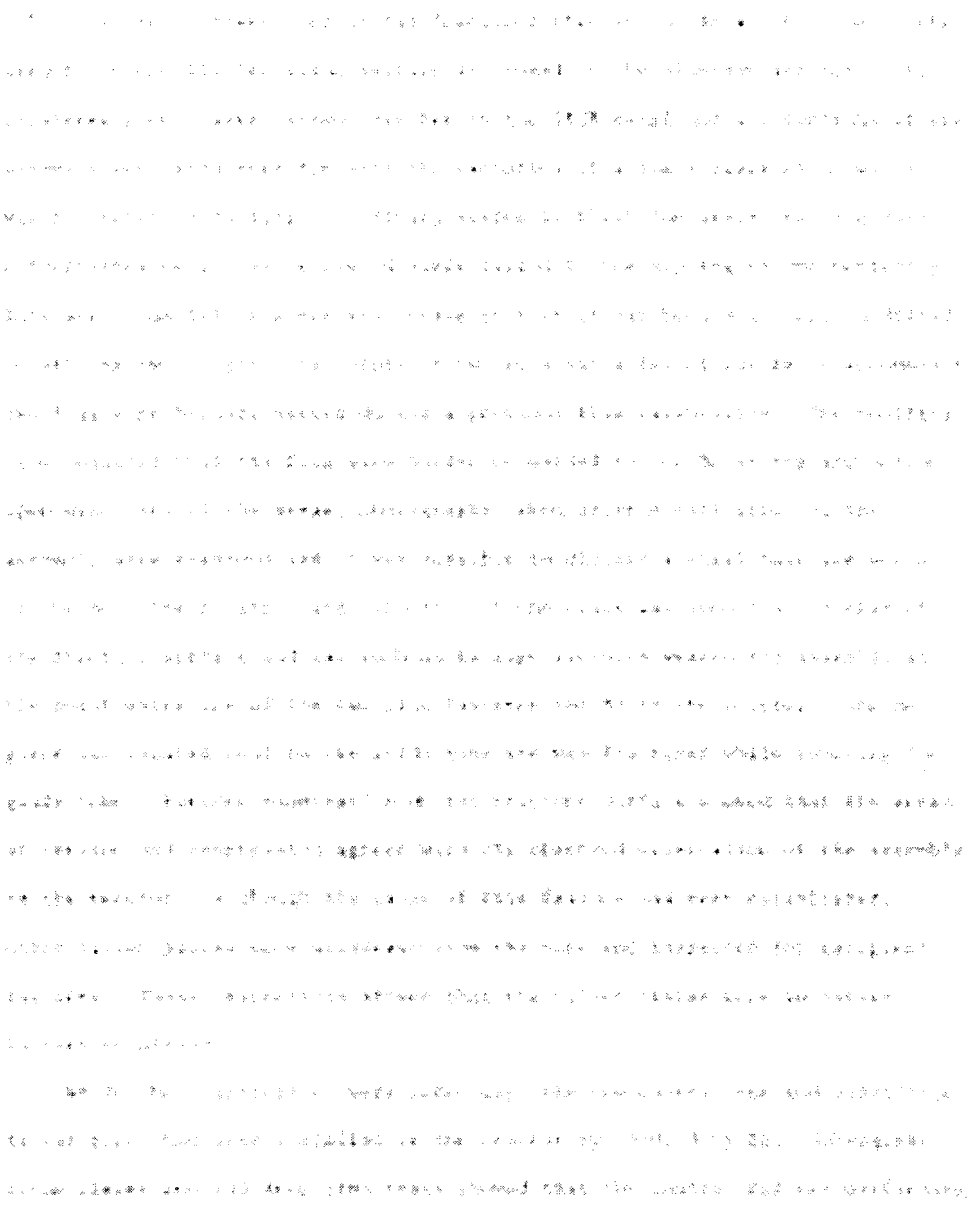


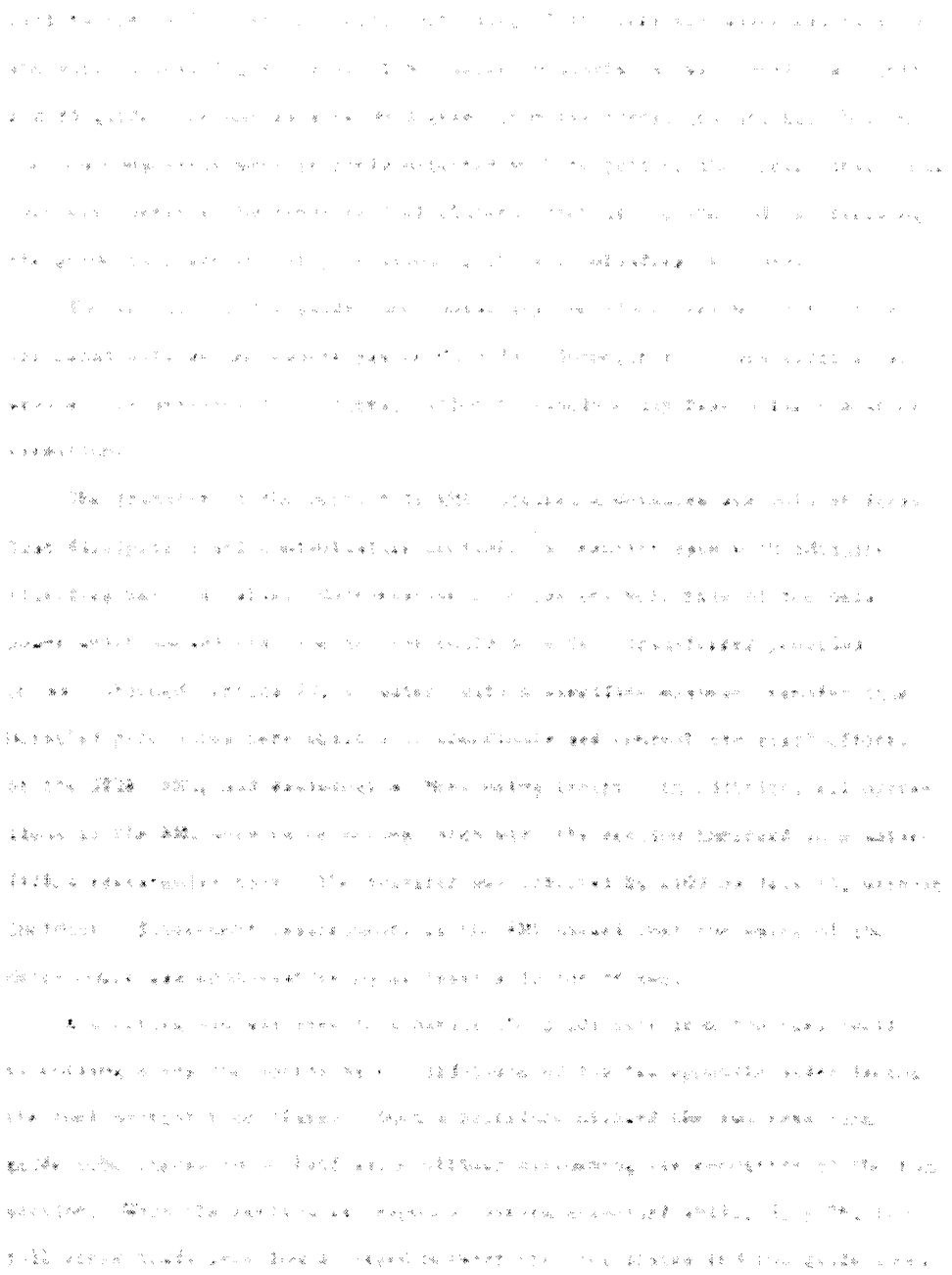


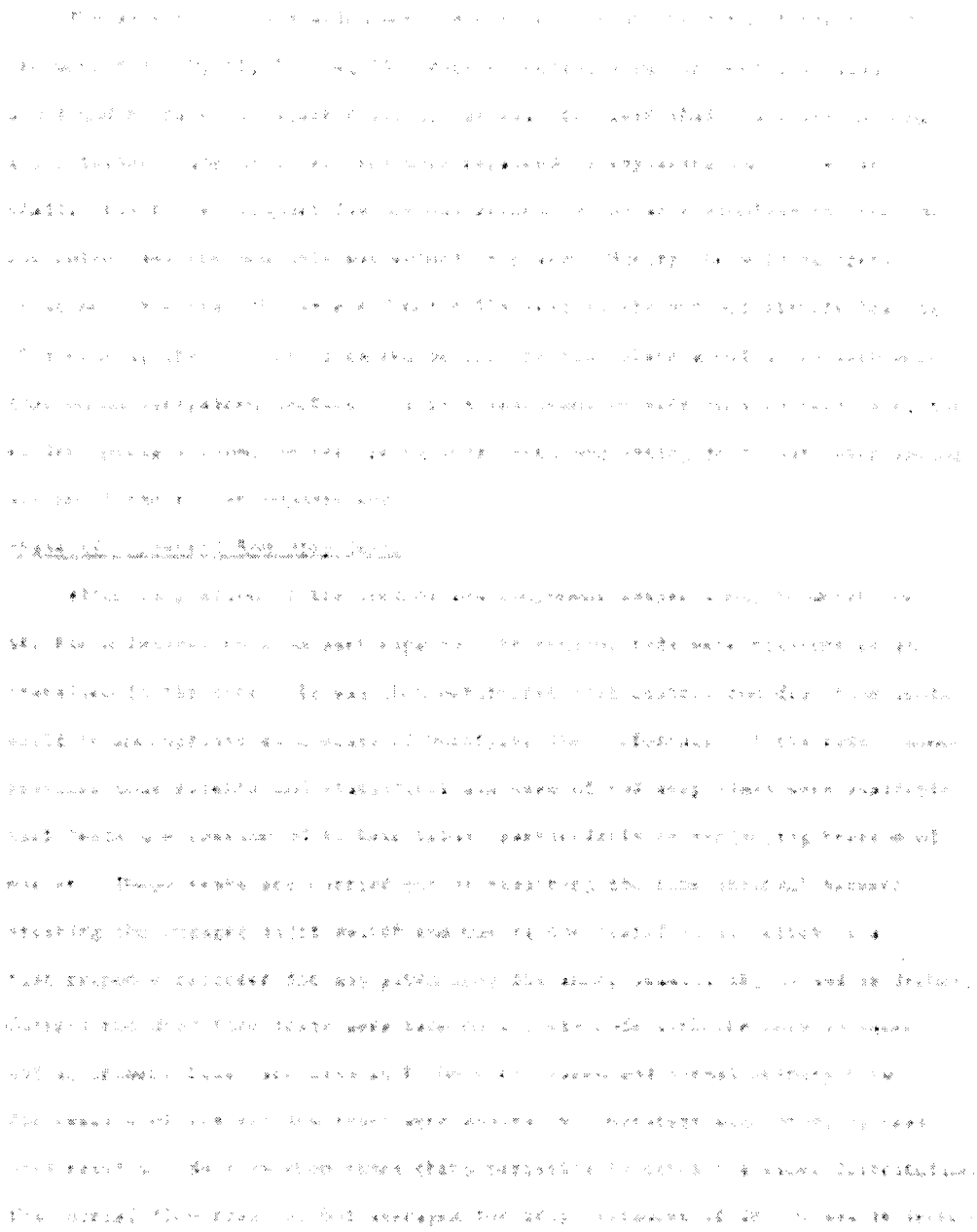












I am asking the NRC to waive its fees for processing this FOIA request, and my statement of justification is as follows:

Describe the purpose for which you intend to use the requested information.

RESPONSE: Among the uses of the requested information is the dissemination to current designers, suppliers and operators of specialized research and test reactors. In addition, it will target students of nuclear engineering and their professors. For example, within the past year the Australians encountered problems in the start up of their new research reactor, OPAL. We had very similar problems during the initial operation of the General Electric Test Reactor (GETR) during the late 1950's and early 1960's. Recently, the OPAL owners disclosed fuel vibration and integrity problems that very expensive and potentially dangerous.

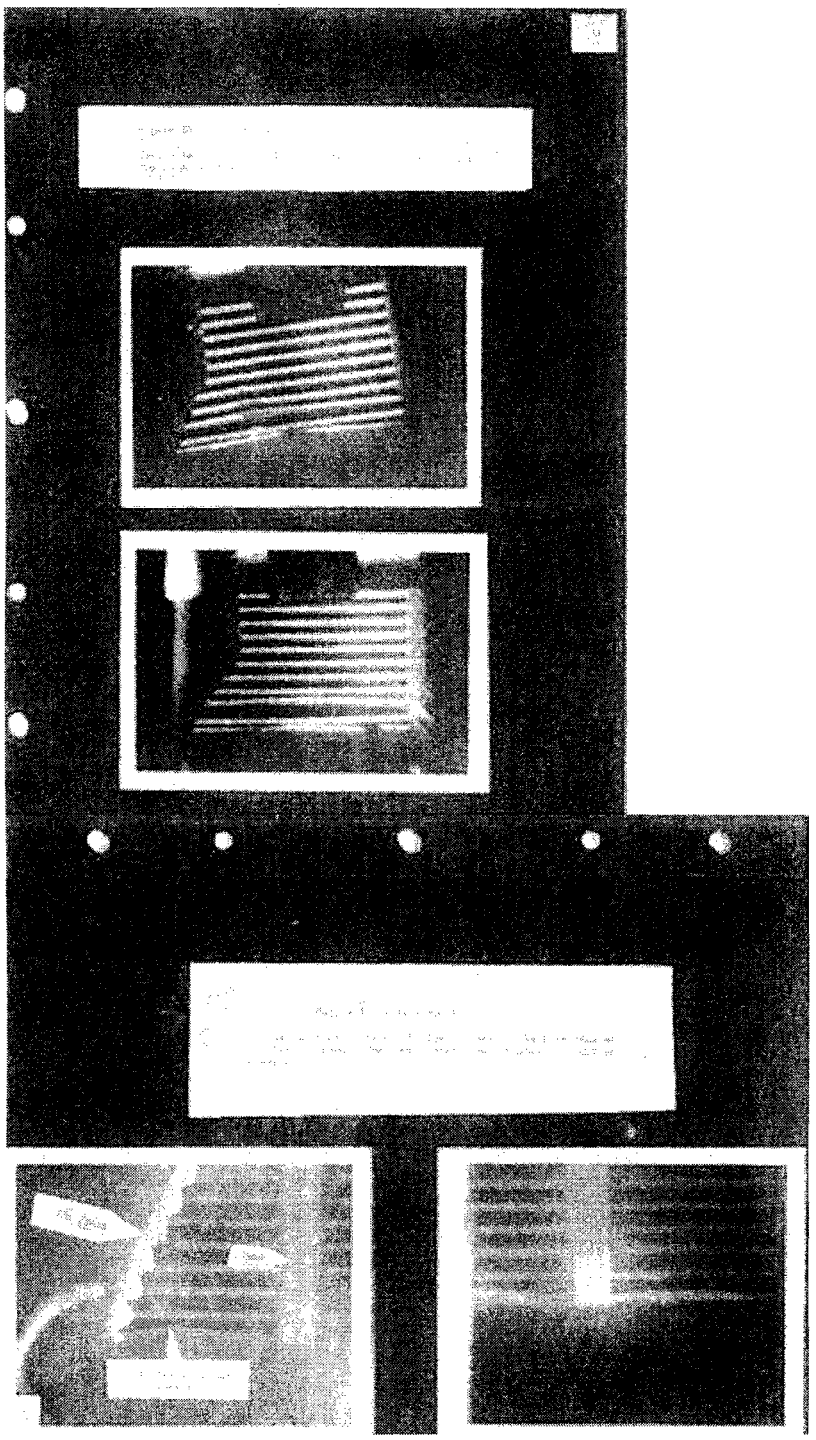
The following several pages are from my blog, *nuclearpowerblog.blogspot.com* and I am certain that the problems with OPAL would have been avoided if the operators of OPAL had been aware of our experiences at GETR. Of course, there are many more significant experiences that I need to document on my blog. The documents that I am seeking under this FOIA will add significant open documentation of this experience base.

So, as a concrete example of how I will use the disclosures of this FOIA, here is the discussion that is copied from my blog of the relevance of early experience at GETR to the recent experience at OPAL.

Sunday, June 15, 2008

FOR WANT OF A COMB:

Clearly, with combs you can get away with more. In today's world, some would say that you should not walk if you need the crutch. (Click on the picture to enlarge, then go back to get the next slide.)



My Kingdom for a Comb!

Opal fuel modifications approved
01 May 2008

Approval has been given to use a modified fuel design in Australia's Opal research reactor, altered to prevent dislodgement of nuclear fuel plates.

Opal at full power. The blue glow isCerenkov radiation caused byfaster-than-light particles travellingthrough cooling water (Image: Ansto)The 20 MWt Open Pool Australian Light-water (Opal) reactor began commissioning in 2006, reaching full power during November that year. It is owned and operated by the Australian Nuclear Science and Technology Organisation (Ansto) and was supplied by Invap of Argentina.

On 24 July, however, it was noticed during refueling that three of the reactor core's 16 nuclear fuel assemblies each had one of their 21 fuel plates partially dislodged. This appeared to have been caused by the motion of coolant water, which flows from the bottom to the top of the tank in which the core sits and causes a certain amount of vibration.

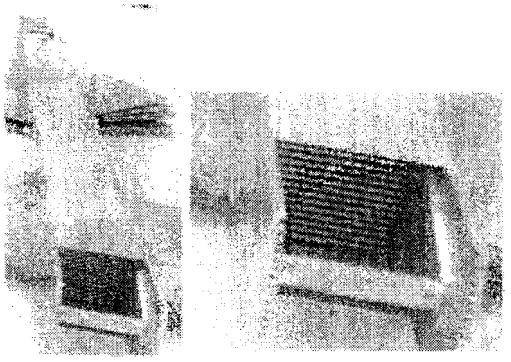
Ansto's response was to shut down the reactor in order to analyse the problem. The organisation decided that a revised fuel assembly design was needed because the existing fuel was subject to "inadequate design and fuel manufacture techniques." Ansto said the roll-swaging process used for the faulted fuel was to blame.

The new fuel plate design incorporates what Ansto describes as 'stoppers' which limit longitudinal movement within the fuel assemblies. These 'defence in depth' features, which Ansto said prevent significant movement, take the form of two 4 mm plates of aluminium fixed by two screws to a side-frame of the fuel assembly and are held in position by the screws and the

assembly handling pin.

This design was approved today by the Australian Radiation Protection and Nuclear Safety Agency (Arpansa), and Ansto is now free to restart Opal when ready.

Ansto said in a submission to Arpansa that it would improve video surveillance of fuel assemblies with in-core video inspection before and after fuel changes. Ansto will also inspect fuel destined for Opal at the point of manufacture and perform pull tests on the plates in a test sample of each batch of new nuclear fuel.



OPAL Fuel Element

Nuclear reactor design 'flawed from start'

By Dani Cooper for ABC Science Online
Posted Mon May 5, 2008 6:49pm AEST

Map: Lucas Heights 2234

A flaw in the original design of Australia's only nuclear reactor is partly responsible for the shutdown of the facility in July last year, just months after it was officially opened.

Dr Greg Storr, who heads reactor operations for the Australian Nuclear Science and Technology Organisation (ANSTO), says an "oversight" at the commissioning stage of the $400 million Open Pool Australian Lightwater (OPAL) reactor left it vulnerable.

His comments come as ANSTO staff begin reloading fuel into the reactor, based at Lucas Heights south of Sydney, following approval today from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) to restart the reactor.

Dr Storr says he expects the reactor to be operating at full power by the end of the month.

OPAL replaced Australia's first reactor, the 40-year-old High Flux Australian Reactor.

It was meant to produce four times the amount of radio-isotopes for nuclear medicine than its predecessor and expand the nation's capacity for nuclear medicine research.

But the OPAL reactor was shut down three months after it opened when staff discovered during routine maintenance that some fuel plates had become dislodged and were projecting above, but still attached to the fuel assembly.

Worst case scenario

Dr Storr says in the worst case one of the fuel plates - which are about 2.5 millimetres thick, about eight millimetres wide and 800 millimetres long - was above the fuel assembly by about 400 millimetres.

Unlike similar reactors around the world, the OPAL reactor design did not have a secondary mechanism in place to stop the fuel plates moving.

"Not only did we miss it in our review, the designer missed it, ARPANSA missed it and internationally people [who were also tendering for the job] missed it," Dr Storr said.

But he says the movement of the fuel plates cannot just be blamed on the design fault.

ANSTO investigators have concluded the plate movement was caused by three factors.
These are the original design fault, **vibrations** caused by the rapid flow of cooling water up through the plates and a fault in the manufacturing process for the fuel plates used by Argentine company CNEA.
Dr Storr says in the OPAL reactor core there are **16 fuel assemblies that each hold 21 fuel plates** made up of aluminium and small amounts of uranium.
The two outside fuel plates are screwed in while the 19 internal plates are slid into grooves and "swaged" or crimped in place.
Readjusted
Dr Storr says the tool used in Argentina to swage the fuel plates had been readjusted and was slightly out.
And tests at the manufacturing site had also shown the vertical strength in the swaging of the fuel plates was "less than expected", he said.
Dr Storr says these factors meant because the plate was not held in place as well as it should have been, once the swaging bond was broken the vibrations caused the plates to move upwards.
To fix the problem, which has been estimated to have cost about $100,000 a week in lost revenue, ANSTO is now sourcing its fuel plates from a French-based manufacturer.
The design of the fuel assembly has also been changed to include a stopper to prevent further fuel plate movement.
Dr Storr says the new design was tested by leaving all but seven fuel plates completely "unswaged" for 33 days, which is the equivalent of one full operating program.
At the end there was only very slight damage to two fuel plates, he says.
Critics
Under the return-to-service approval ARPANSA chief, Dr John Loy has required ANSTO to develop a program to more fully understand the vibrational and other forces acting on the fuel plates; review the design of the modified fuel assemblies within two years; and regularly test the longitudinal strength of the fuel plates.

Nuclear campaigner for Friends of the Earth, Dr Jim Green, says many critics of the Lucas Heights reactor would have preferred it was never turned back on.
Dr Green, who completed his doctorate on medical isotope supply options, says Australia has no need to manufacture its own medical isotopes as there is surplus supply worldwide.
He says research and development funds should instead be directed towards developing a cyclotron facility that can also produce the necessary isotopes without the safety risks and nuclear waste issues.

Explain the extent to which you will extract and analyze the substantive content of the requested records.

RESPONSE: I expect to spend at least 200 hours in extracting and analyzing the content of the requested records and documenting the significance relative to current research and test reactors including the new Australian unit, OPAL. I have communicated my OPAL findings to the Australian government regulators. I will expand this substantially with the data that I will acquire via this FOIA.

Describe the nature of the specific activity or research in which you will use the requested records and the specific qualifications you possess to utilize information for the intended purpose in such a way that it will contribute to public understanding.

RESPONSE: I have very extensively documented my background and experience via many publications as well as my current blog, *nuclearpowerblog.blogspot.com* and I was very active at the GETR during the period of the requested documents. I have very extensive files of GETR documents and the requests of this FOIA will fill several voids. Now, it is not fair for the NRC to burden me with the very specialized task of contributing to public understanding because that is a very narrow field in itself. However, via my blog and communications with the research reactor community, the data will also be available to the public as well as trade publications who may choose to broadcast the findings to specialists in the field including specialists in public relations.

Describe the likely impact on the public's understanding of the subject, compared to the level of public understanding of the subject before disclosure of the requested information.

RESPONSE: Any impact will be to initiate public understanding since there is currently no indication of broad public interest or understanding of nuclear research reactor affairs. As I have stated above, public relations is a very specialized field. My

publications of the findings of this FOIA will be open to all and as such these disclosures will provide data that will be significant to a variety of interested disciplines.

Describe the size and nature of the public segment whose understanding will be increased by disclosing the requested information.

RESPONSE: I believe that I have covered this aspect. I publish technical papers and my blog is open to the public without any charges. I may have water available for the horse (public) but I have no means to force consumption.

Describe the means by which you intend to disseminate the requested information to the general public.

RESPONSE: My blog is open to the public.

Indicate whether you will provide public access to the requested information free of charge or in return for an access or publication fee.

RESPONSE: My blog is open to the public without charges., it is free.

Describe any commercial or private interest that you or any other party may have in the requested records.

RESPONSE: I have no commercial or private interest in the requested records. Now, my request and the documents will be in the public arena, and although others may have a commercial or private interest in these matters, I am unaware of any such interest.

FOIA Resource

From:
Sent: Saturday, July 12, 2008 5:51 PM
To: FOIA Resource
Subject: FOIA request from Leyse
Attachments: GETR Lowenstein 24.jpg; GETR Lowenstein 25.jpg; GETR Lowenstein color.jpg; GETR TR-1 FOIA Lowenstein.doc

Gentlemen:

The attachments are my FOIA request including the reasons for waiver of all fees.

Robert H. Leyse