

February 23, 2001

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Reference: Oregon State University TRIGA Reactor (OSTR)
Docket No. 50-243, License No. R-106

Subject: Replacement of dashpot covers on OSTR control rod barrels

Gentlemen:

The OSTR staff would like to respectfully inform the Commission about the replacement of dashpot covers on two of our fuel following control rod (FFCR) barrels. This letter is for informational purposes only as we do not consider this to be a reportable occurrence.

Upon completion of the biennial control rod inspection on November 13, 2000, one of our operators noticed a small piece of metal at rest on the top grid plate. It was quickly identified as one of two dashpot covers that were no longer on the shim control rod barrel. In Figure 1-A, the shim FFCR barrel is shown as it was found on that day. Evidence of an adhesive can clearly be seen surrounding the dashpots. In Figure 1-B, the safety FFCR barrel is shown with the dashpot covers still intact. Per our own procedures, reactor operations were suspended pending resolution of the situation.

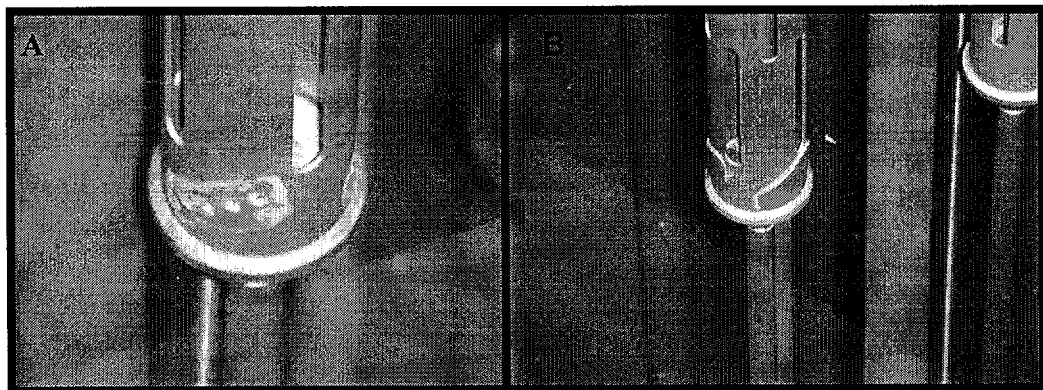


Figure 1 - (A) Evidence of epoxy and missing dashpot cover on the shim barrel; (B) Intact dashpot covers on the safety barrel.

The shim and safety FFCR barrels have three sets of dashpots. Each set consists of four holes of increasing diameter placed in a diagonal pattern on the bottom of each barrel. The safety FFCR barrel was found with both dashpot covers intact. The shim FFCR barrel was found with no covers but evidence of adhesive suggests that two of the three had previously been covered. The OSTR has two other control rods. However, they are both different than the shim and safety. The regulating FFCR barrel has only one set of dashpots and they are not covered. The

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transient rod does not have any dashpots because it is pneumatically operated.

On November 14, we contacted General Atomics. They stated that they were aware of this happening to other facilities and their recommendation was to weld on new dashpot covers.

On November 15, the metal piece found on the top grid plate was retrieved and inspected. It was clear that the adhesive used was an epoxy of some kind. However, this left one of the dashpot covers unaccounted for. Using an underwater camera, all accessible areas surrounding the core were videotaped in an effort to find the missing cover. These areas included the top grid plate, any vacant lattice positions, and underneath the core itself. On November 16, our USNRC Program Manager was informed of the situation.

On the morning of November 17, a Reactor Operations Committee meeting was held. A 10 CFR 50.59 Safety Evaluation was performed which approved welding aluminum covers over the previously covered dashpots. Welding the covers would return the barrels to their original condition, allow the use of the 10 CFR 50.59 process, and preclude the possibility of this problem from reoccurring. Later that afternoon, a series of fuel movements were performed to investigate the possibility that the missing dashpot cover had inadvertently worked its way onto the bottom grid plate. As a fuel element was raised above the top grid plate, a video camera was lowered to look at the bottom grid plate. The missing dashpot cover was not found. After the video search of the bottom grid plate was completed, the shim and safety barrels were removed. The two dashpot covers that were intact on the safety barrel came off with relative ease.

On November 20, both barrels were repaired and reinstalled. A picture of the repaired Safety FFCR barrel is shown in Figure 2. The rod up travel time, rod down travel time, and rod scram time for all four rods were measured and verified to be within the normal range of values observed in the past. On November 21, suspension of reactor operations was lifted, and normal operations resumed.

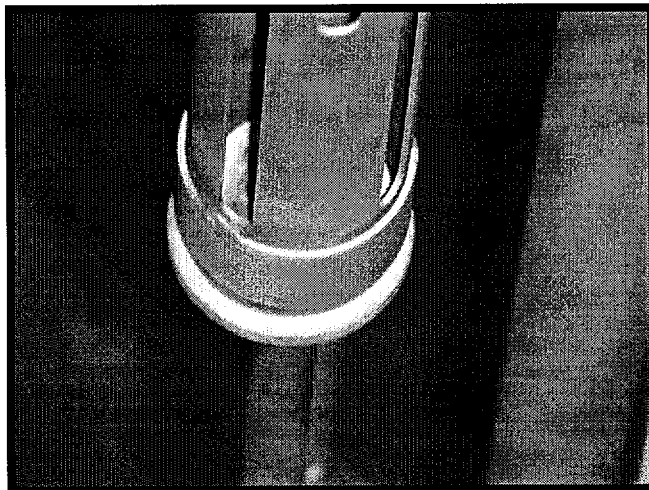
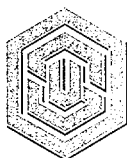


Figure 2 – Repaired dashpot cover on the shim barrel.

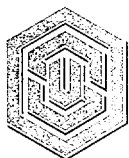


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We have concluded a search of our records to determine the origin of the dashpot covers. We found that the barrels used for the safety and shim FFCRs were the same ones used in the original 20% standard fuel core. In 1976, the OSTR converted to a FLIP core, but chose to retain the barrels for those two control rods. We were able to find an entry in the Supervisor's Log during the core conversion that mentioned a modification done by OSU Physical Plant to the two barrels. However, the entry does not identify what or why, only that it was done.

We suspect that the reason two of the two dashpot sets were covered, leaving one set uncovered, was that the regulating control rod barrel purchased for the new FLIP core only had one set of dashpots. To eliminate the apparent discrepancy between the number of dashpot sets for FLIP FFCRs, we think the decision was made to cover the two sets on the shim and safety barrels with aluminum and epoxy. General Atomics had stated that this is consistent with other FLIP core facilities. Several members of the OSTR staff that were present during the conversion have been interviewed. No one remembers requesting or performing the modification. Unfortunately the only record is the previously mentioned Supervisor's Log entry during the conversion.

We do not believe that this situation is reportable under 10 CFR 21, *Reporting of Defects and Noncompliance*. Firstly, the evidence suggests that the University made the modification. Secondly, General Atomics verified that loss of the covers results in unnecessarily increasing the mechanical shock to a scrambled control rod. Safe operation and shutdown of the reactor could still be performed without the dashpot covers, although General Atomics did not recommend it for the long term. Therefore, this did not represent a substantial safety hazard.

We suspect that the dashpot cover that was retrieved on November 15 fell off during the biennial control rod inspections that were conducted on November 13. This is based on the fact that it was found resting on the top grid plate in plain view, but was not noticed until after the maintenance was concluded and a final visual inspection of the core was conducted. A visual inspection of the reactor top is required in our daily startup procedures, and it would most certainly have been noticed due to its conspicuous location on the top grid plate.

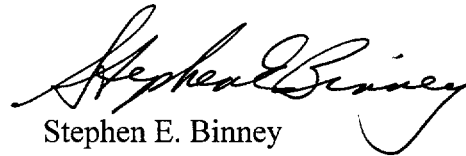
We do not know when the missing dashpot cover became detached. The scram times for all four control rods for the last several years were reviewed, but no significant change was found. Also the previous Reactor Supervisor did not remember ever seeing such an object.

There are a few locations in the primary tank where the missing dashpot cover could be, but it would take a considerable effort to eliminate these possibilities. For instance, there is a small gap between the thermal column and the reflector but getting into this area would require defueling and removal of the reflector assembly. At present, although it is unaccounted for, we have verified that it is not in any location that could restrict coolant flow or movement of the control rods or fuel.

If you have any questions or comments, please do not hesitate to call me.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,


Stephen E. Binney
Director

Executed on: 2/23/01



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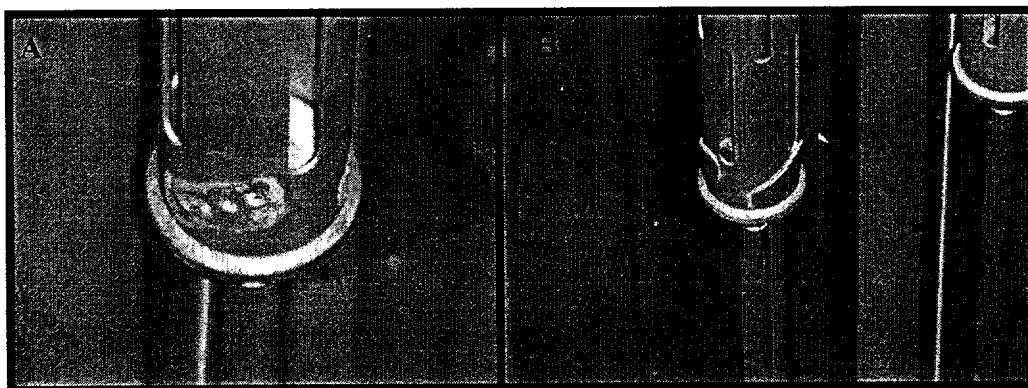


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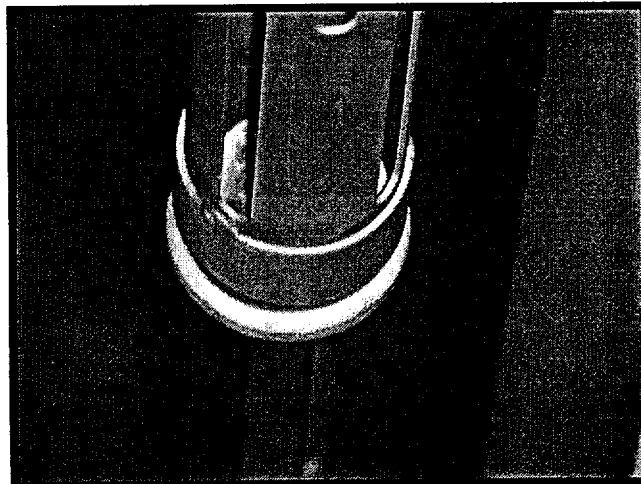


Figure 2 – Repaired dashpot cover on the shim barrel.



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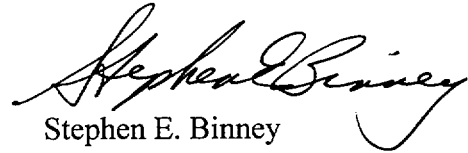
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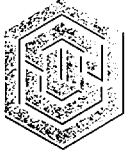
I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,



Stephen E. Binney
Director

Executed on: 2/23/01



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