

NRR-PMDAPEm Resource

From: Michael Mulligan [steamshovel2002@yahoo.com]
Sent: Wednesday, May 21, 2014 2:11 PM
To: Chawla, Mahesh
Subject: Addendum to Palisades Broken Impeller 2.206

Salem

“Sheehan said the bolts are about 4 inches long and about 1 inch wide. Sheehan said one of the main concerns was having the bolt heads damage or stop the impeller at the bottom of the pump which spins and draws the water into the pump in then sends it into the reactor vessel. Also, Sheehan said, there could be the possibility of the impeller, moving at such a high rate of speed, striking and disintegrating a bolt head and sending tiny pieces of metal circulating throughout the cooling system and possibly causing damage.”

Think of the speeds and power he is talking about there: “impeller, moving at such a high rate of speed, striking and disintegrating a bolt head”. There is a lot more weight and metal in the Palisades blade than the bolts and nuts.

Palisades

So the worst Palisades broken impeller blade is 5 inches wide by 12 inches long...by one inch thick.

Despite the application of approximately 3,000 pounds per square inch (psi) of force, the piece did not move. You know the velocity of the water caused that.

Though both IR 2012-03 and the current IR there has been no mention of an equivalent evaluation by Palisades as in Salem's PCP event. The operability of the PCP is a untouchable.

I request the NRC enforce a similar evaluation on the Palisades and I request a OIG inspection on why there is different analysis criteria for similar PCP events between the NRC regions.

Again, I request the Palisades plant be shut down until they replace their PCP with a safer design.

- 1) How many times did that large Palisades blade spin around in the pump casing before it was spit out? The size of the large broken blade found in Palisades challenges a sheared or frozen impeller accident that severely threatens fuel damage from reduced cooling as mention in Salem and IN 85-03.
- 2) Certainly the speed of the remaining impellers could shatter a broken blade or pieces and spew small metallic pieces throughout the coolant.
- 3) Palisades over the years should have carefully documented all the damage to the impellers and evaluated the size of the missing pieces. I am certain many small metallic pieces did get past the flow skirt impeller blade filter, indeed entered the fuel channel and circulated endlessly in the coolant. Why has there been no analysis on this?
- 4) There is a worry about all these blades pieces found at the bottom of the core upon inspection...there could have been eddies before entering the fuel channel and much erosion throughout the area in all the structures as the material was spinning around in the material.
- 5) The metal blade particles in circulation could have cause erosion of the coolant piping walls throughout the system and also cause flaws in the coolant piping.
- 6) It certainly looks like larger and larger pieces of blades over time are breaking off impeller. Has there been an internal evaluation on this?
- 7) Let's face facts, in a 30 foot high 4000 hp motor and pump, with a large blade breaking off or more, it could shatter the impeller itself and also the pump casing.

If possible, I would like another chance to speak to the board.

Sincerely,

Mike Mulligan
Hinsdale, NH

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