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OF NUCLEAR INTEREST: Pilgrim Juno scram linked to history of prior failures

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On Tuesday, Jan. 27, when winter storm Juno hit Entergy's Pilgrim Nuclear Power Station (PNPS) in Plymouth, it caused an emergency "scram," also called a "reactor trip" and more simply known as an unplanned shutdown. Unplanned shutdowns present a risk to public safety, especially when efforts to control reactor temperature and pressure during an unplanned shutdown are complicated by multiple critical equipment failures, as was the case at PNPS during Juno. Juno knocked out Pilgrim for 11 days while Entergy was making repairs to failed equipment.

Pilgrim was no sooner coming back online when winter storm Neptune hit on Valentine's Day. This time, Entergy shut down Pilgrim as a "precautionary" measure – an explicit acknowledgement that public safety would be at risk if there was another emergency at Pilgrim. Pilgrim was offline for three days, taking an additional five days during restart to reach full power. The U.S. Nuclear Regulatory Commission (NRC) spokesman Neil Sheehan reported that during the restart Entergy was "working through some non-safety related, balance-of-plant equipment problems. These are new issues and not problems from the 1/27 storm. Such issues are not unusual following two shutdowns and start-ups in a short period of time."

Entergy's Jan. 27 Pilgrim scram raised alarms not only with the public, but at the NRC too. The agency sent a six-member special inspection team to PNPS for a week to figure out what went wrong this time. Their report is due by the end of March.

It's no surprise that Pilgrim's aging facilities could not handle Juno and were forced into shut down. In 2013, Pilgrim had four emergency scrams, which put it in the "degraded category" under NRC rules. In the fall of 2014, the NRC investigated the degraded conditions at Pilgrim, and one day before Juno, on Jan. 26, issued a report. The NRC found that Pilgrim failed its inspection because Entergy had not fixed all the problems that caused the four scrams in 2013. One thing the NRC found that Entergy had not addressed was how to handle severe weather events like Juno. Juno proved the NRC right – PNPS was forced to shut down.

The NRC's Jan. 26 report also found that in 2013 Entergy had failed to deal with a recurrent switchyard performance failure called a "flashover," which is electricity arcing between two points causing a fault. A failed insulator in the Pilgrim switchyard was identified as a contributing cause of the flashover during a storm in 2013. Five years earlier, a nor'easter in December 2008 caused a loss of offsite power at Pilgrim, which was accompanied by switchyard flashovers and then an unplanned scram. Entergy was supposed to have determined the root cause and corrected the switchyard flashover problem back in 2008 and again in 2013. Obviously they hadn't. Instead, in 2013 Entergy had just stored the failed insulator in a warehouse, where the NRC inspectors found it 21 months later. Entergy had deferred the funding for the investigation of the failed insulator 11 times, causing the NRC to determine that Entergy "failed to investigate a deficient condition."

Since the Blizzard of 1978, switchyard flashovers at Pilgrim have been a recurrent equipment performance failure. Now, Pilgrim has had at least eight unplanned scrams all provoked by Nor'easters delivering blizzard conditions. Pilgrim's switchyard equipment is located outside, totally exposed to wind-driven salt air, spray, rain, ice and snow. The Juno 2015 loss of offsite power, flashovers and unplanned scram was predictably just one more time.

The NRC's Jan. 26 report speaks directly to the predictability of recurrent failures during nor'easters: "Inspectors determined that the inadequate guidance for pre-storm actions represented a condition adverse to quality that was reasonably within Entergy's ability to identify and correct by execution of corrective actions identified in the RCE" (Root Cause Evaluation). Additionally the NRC said Pilgrim has "safety culture" issues and faulted Entergy for "overconfidence and complacency" in the face of safety operations. The NRC says that Entergy's failure to correct problems is a "significant programmatic deficiency that could lead to worse errors if uncorrected."

Entergy has had enough chances to fix the many problems that plague Pilgrim. It is time to put public safety first and stop playing Russian roulette with a nuclear reactor having a troubled history of recurrent performance failures.

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