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Submitter Information

Name: Thomas Gurdziel

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General Comment

Item 16 Refueling

After running a BWR for about 2 years, you will notice that you can't get full licensed power from it any longer. We used to run it this way for a bit more time. We called this "coastdown". Today the practice seems to be to stop for refuelling before coastdown begins.

How do you get fuel into (or out of) a BWR nuclear reactor?

The first step is to use the Reactor Building overhead crane to lift and move massive "logs" of concrete that, during plant operation, span across and above the (primary containment) drywell head. With them out of the way the next step is to unbolt the drywell head and lift it up and out of the way, too. (As soon as you start loosening those bolts, you lose primary containment integrity: a Technical Specification requirement for some plant operating conditions.)

So now, you are standing on the Refuel Floor of the Reactor Building and looking down. What do you see? You are looking at the top ot the installed reactor vessel head. It needs to be unbolted and removed next. The opreators will bring reactor vessel water level up to just below the reactor vessel flange to provide some radiation shielding (from all the nuclear fuel inside the reactor vessel) before this begins.

Mechanics are now sent down into the reactor head cavity but, before they start unbolting the reactor vessel head, they remove some ventilation ductwork and cover holes they pass through with shiny, round, silver-colored aluminum disks. (At our plant, these were known as the "silver dollars".)

Then unbolting of the reactor vessel head begins. Just as the last group of nuts is looseded, suppose an across the site Station Blackout occurs.

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Add = P. Santiago (PAS2)
J. Barr (JXB7)

Has the amount of risk at this condition been determined to be less that that from 100% full power? Or, is it even more?

A realistic BWR study needs to consider that one on-site-nuclear plant is in this type of condition with only secondary containment to rely on to protect the public.