

Nov. 23, 2015 - "A little Nukie never hurts" - Flight to the St. Lucie County Airport

I always got a kick out of the TV media, when they cover a story about nuclear power, showing an image of a cooling tower to depict the generating plant. While it is true that some nuclear facilities do use cooling towers to turn expended turbine steam back into water condensate before returning it back through the reactor again, and again, and again ...many do not. When I was working in my thermal imaging, testing and consulting business, I had the opportunity to perform a myriad of inspections at many of the country's nuclear power generating stations. In fact I have been into 18 pressurized water reactors and 3 boiling water reactors, or just over 20% of the US's on-line nuclear facilities. It was always an exciting part of my testing business and accounted for a sizeable portion of my revenue.



Today's lunch flight was over to nearby Fort Pierce and the St. Lucie County Airport. On the way back I flew south along the inter-coastal waterway, low at 800 feet, so as to enjoy a view of the expensive mansions and large private yachts that make up this part of South Florida. That brought me alongside the Florida Power & Light's St. Lucie Plant, which contains two nuclear units, each capable of generating up to 1,000 mega-watts. Seeing them out my pilots window brought back memories of the days that I spent in their reactor containment buildings undertaking a series of safety inspections to help maintain the plant's operational status. By the way, these are just two of the five Florida nuclear generating units, none of which utilize cooling towers. All are either on the ocean or the Gulf, and use those waters to pump coolant into the reactor's heat exchanger system.

One of the more interesting of my nuclear plant disciplines was to verify the integrity of the reactor's emergency cool down system, should there be a complete failure of those reactor cooling pumps and all of their redundant systems. This has only happened once in the United States. In 1979, at Three Mile Island's Unit 2, a partial reactor core meltdown occurred after a pressure relief valve malfunctioned immediately following an automatic trip. This went undetected, and resulted in the reactors cooling water being drained away from the core and into a "holding tank". While the events that followed are too lengthy and involved to go into here, suffice to say that the emergency cool down system, consisting of hundreds of overhead spray nozzles, did successfully deploy, thus showering the containment building with thousands of gallons of water, keeping the event from becoming much more serious than it was. It is that emergency cool down system that I was entrusted, by the NRC, to certify, every five years, at each of the nuclear facilities that I examined in the 10 years or so that I performed these tests. Here is a photo, probably taken back in the early '80's, of me, in containment, with my infra-red imaging equipment. Note that everything, including me, is wrapped to prevent radioactive contamination. Below it is another photo of work around the reactor's spent fuel holding pool with its "glowing" turquoise water. The glow is actually from the built in pool lighting, and not from the radioactive fuel rods.

