



Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

License Renewal Concerns

The following concerns were prepared for the NRC's public meeting scheduled for May 9, 2012, in Rockville, Maryland on potentially renewing reactor licenses to allow operation past 60 years. This meeting's agenda covered three areas: (1) license renewal process issues, (2) safety issues, and (3) environmental issues. UCS's concerns are presented below in these three categories. There are overlaps between Category 1 and the other two categories in that the primary reason for a process concern would be its associated implications for safety and/or the environment.

1) License renewal process issues

- a) The process fails to apply revised license renewal standards adopted by the NRC to previously relicensed reactors (see ML12061A079 and the UCS letter dated 02/07/2012 it answered). Ginna and Point Beach are very similar reactors in terms of design and operating history. NRC relicensed Ginna on May 19, 2004, and Point Beach on December 23, 2005. In between, the NRC revised its license renewal standard review plan and generic aging lessons learned report. NRC required the Point Beach licensee to explicitly address its aging management program for Alloy 600 parts of the reactor coolant system – the NRC did not require that from the Ginna licensee. UCS believes NRC failed to properly apply either 10 CFR 50.100 (by failing to require Ginna to formally incorporate an Alloy 600 aging management program) or 10 CFR 50.109 (by requiring Point Beach to meet a requirement not necessary at Ginna). What if both plants fail to implement aging management programs for Alloy 600 components within the reactor coolant system? NRC has a regulatory hook at Point Beach that it lacks at Ginna.

UCS Recommendation: NRC simply must abide by 10 CFR 50.100 and 10 CFR 50.109 by having ALL reactors conform with ALL safety requirements – not just reactors late in the license renewal queue.

- b) The process fails to consider the effects from new regulations from which an aging reactor was grandfathered, exempted, or waived. For example, in the mid 1990s the NRC revised seismic hazard levels for new reactors if built in the central and eastern United States but did nothing about the 27 reactors already operating in this region. As a result, the proposed Unit 3 reactor at North Anna must be designed for significantly greater earthquake magnitude than the operating Unit 1 and 2 reactors. As another example, the NRC resolved USI A-43 by imposing different containment sump screen blockage criteria for new reactors without taking any action for reactors already operating. (See http://www.ucsusa.org/assets/documents/nuclear_power/20031029-ucs-regulatory-malpractice.pdf). As yet another example, the NRC requires vendors of new

reactors to formally evaluate their designs for aircraft impacts – not so as to be immune from such threats, but to implement reasonable design changes to reduce vulnerabilities. But NRC did not require operating reactors to perform such evaluations (this example is linked to a concern under the Environmental Issues section regarding failure to formally evaluate the pros/cons of a new reactor design more resistant to aircraft hazards instead of continuing to operator the older reactors without such protection).

UCS Recommendation: The license renewal process should formally evaluate all regulatory decisions where an operating reactor was grandfathered, waived, exempted, or otherwise not required to meet new and revised regulatory requirements to either confirm that such decisions remain justified for the extended license period or make appropriate fixes.

- c) The process fails to properly value human lives in cost benefit analyses. According to an article in the New York Times (“As U.S. Agencies Put More Value on a Life, Businesses Fret,” Binyamin Appelbaum, February 16, 2011), the Office of Management and Budget warned federal agencies that using less than \$5 million per life would be difficult to justify, yet NRC uses a significantly lower value.

UCS Recommendation: NRC must not undervalue human lives when performing and accepting cost benefit analyses.

- d) The process fails to implement safety upgrades judged to be cost beneficial by the licensees. Many applicants for license renewal have identified cost beneficial safety upgrades that were not implemented (e.g., Dresden in ML041890266, Quad Cities in ML041880213, and Indian Point in ML11223A480).

UCS Recommendation: NRC must either require safety upgrades deemed to be cost beneficial to be implemented or have its story ready following a nuclear plant disaster that could have been prevented or mitigated by the identified safety upgrade that was not implemented (i.e, be prepared to explain why a sea wall known to too short was not heightened until after the disaster).

- e) The process allows “bait and switch” antics by licensees. Vermont Yankee is a classic example. The NRC staff, while reviewing the license renewal application, had reservations about the licensee’s manual calculations of thermal cycles. So, the licensee made License Renewal Commitment No. 6 to use a computerized method (FatiguePro) for this aging management task. The NRC renewed the license. And almost immediately, the licensee revised its commitment to use manual accounting methods instead of FatiguePro – in other words, to revert to the method expressly opposed by the NRC staff (see ML12079A031).

UCS Recommendation: While licensees must retain the ability to revise commitments for appropriate reasons, the NRC's license renewal process simply cannot allow licensees to renege on their commitments and revert to practices considered inadequate by the NRC staff.

- f) The license renewal process fails to properly and fully consider changes occurring outside the plant's fences. The issues typically covered in Chapter 2 of the Final Safety Analysis Reports are not formally evaluated to see if changes over the decades in populations, infrastructure, nearby airports and air traffic use, etc. adversely affect safety and environmental conclusions reached by NRC in originally licensing the plant.

UCS Recommendation: The license renewal process should formally evaluate all the issues in FSAR Chapter 2 to either confirm that safety and environmental conclusions are still applicable or make appropriate fixes.

2) Safety issues associated with license renewal

- a) One-time inspections are not revisited to verify their continued applicability. In other words, what assurance exists that the results from a one-time inspection conducted at Year 39 remain valid in Year 74 of a twice-renewed operating license?

UCS Recommendation: The license renewal process must either justify results from one-time inspections remaining valid over time or replace them with two-timing or three-time inspections.

- b) "New" accidents are not being captured in design and licensing space. For example, Final Safety Analysis Report Chapter 15 typically considers the only accident involving irradiated fuel outside the reactor to be a fuel handling accident. Other accidents – such as loss of spent fuel pool water inventory, loss of spent fuel pool cooling, and criticality of irradiated fuel in the spent fuel pool – are not covered. The technical specifications for Browns Ferry Unit 1 (ML052780019) only requires water to be in the spent fuel pool when irradiated fuel is being moved (Tech Spec 3.7.6). If the water level is too low or entirely gone, Action A.1 only requires that movement of irradiated fuel be stopped. There's no requirement to put water back in the pool. Likewise, the BWR/4 standard technical specifications issued by the NRC last month (ML12104A192) only requires water in the spent fuel pool when irradiated fuel is being moved (Tech Spec 3.7.8). Similarly, the technical specifications do not require secondary containment, onsite power, offsite power, and many other safety features except when irradiated fuel is being moved. Fifty years ago when reactors were being contemplated, the guiding notion was that irradiated fuel would remain onsite for a handful of months after removal from the reactor core and then shipped offsite for reprocessing or disposal. With none of these options available, spent fuel pools were reroaked to maximize their storage capacity. But

the attendant accidents introduced by this significant philosophy change were not rolled into the applicable design and licensing bases. When regulatory decisions are made (including 10 CFR 50.59 evaluations), the incomplete design and licensing bases for spent fuel storage yield improperly derived answers.

UCS Recommendation: NRC must use license renewals as opportunities to catch and correct safety oversights rather than to sustain continued overlooks. When safety frameworks change, as they have with respect to onsite residency periods for spent fuel, the license renewal process must formally determine whether the status quo still provides adequate protection.

3) Environmental issues associated with license renewal

- a) The license renewal process contradicts the initial licensing process with respect to National Environmental Policy Act (NEPA). In the past, “new” reactors had to incorporate cooling towers instead of using once-through cooling in order to satisfy NEPA. Classic examples include Artificial Island where the two older Salem reactors lack cooling towers and the single newer Hope Creek reactor has a cooling tower (as would Hope Creek Unit 2 if it had been finished) and upstate New York where the newer Nine Mile Point Unit 2 has a cooling tower while the older Nine Mile Point Unit 1 and FitzPatrick reactors do not. The initial licensing process caused “new” reactors to rely on cooling towers to minimize the impacts on the environment per NEPA. But the license renewal process fails to apply the same rigor and requirements when “old” reactors get to run for 20 or more years without cooling towers. If the “old” reactor was not relicensed and a “newer” reactor built to replace it, it would very likely require a cooling tower (e.g., North Anna Unit 3 will have a cooling tower if built while North Anna Units 1 and 2 lack cooling towers).

UCS Recommendation: The NRC’s license renewal process must provide equal protection of the environment as its initial licensing process.

- b) Evaluations of alternatives to relicensing a reactor fail to consider building and operating a new reactor. Advocates of Small Modular Reactors and other proposed reactor designs contend that they are so safe as to justify reducing or even eliminating the emergency planning zones (see ML12111A067). If so, would not a 21st century reactor likely fare better than a 60-plus 20th century reactor in a real alternatives analysis?

UCS Recommendation: The formal evaluation of options to renewing the operating license of an aging nuclear reactor should also consider building and operating a new nuclear reactor instead.

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