

RulemakingComments Resource

From: Michel Lee <ciecplee@verizon.net>
Sent: Monday, March 09, 2015 4:51 PM
To: RulemakingComments Resource
Subject: NRC-2014-0233. Public Comment of Michel Lee in opposition to NRC proposed spent fuel rule

March 9, 2015

RE: Public Comment of Michel Lee re Proposed spent fuel rule NRC-2014-0233

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemakings and Adjudications Staff

Via e-mail to: rulemaking.Comments@nrc.gov

Dear Nuclear Regulatory Commission:

I write to strongly oppose the NRC's proposed spent fuel rule NRC-2014-0233.

Near and long-term high level nuclear waste – or “spent fuel” – accumulation presents a grave threat to the safety and financial viability of the nation. Protection of the public from the very long term dangers posed by reactor fuel needs to be strengthened, not weakened.

The proposed new rule change, amendment 8, rev 1, states that "reactor fuel affected by certain corrosion mechanisms with specific guidelines to be classified as undamaged fuel."

Putting aside the fact that “certain corrosion mechanisms” is very loose and vague language, the clear effect will be another reckless reduction in already weak safety standards.

One would think the NRC is dealing with manure, not materials which are lethal for millennia.

Perhaps it would be helpful for the Commission to give some consideration the following realities.

UNDISPUTED FACTS

Nuclear waste is among the most hazardous materials on the planet.

A man exposed to a spent fuel rod which has come out of a reactor will be delivered a fatal dose of radiation within a matter of seconds.

Nuclear waste remains highly toxic for hundreds of thousands of years.

Since the Eisenhower era, the nation has struggled, unsuccessfully, to determine how to dispose of nuclear waste.

The taxpayers of this nation have been forced to assume costs and liability for this waste that runs in the hundreds of billions.

The safety, security, health and environmental dangers involved in nuclear power are of such potential magnitude, that neither the commercial nuclear industry, nor the insurance industry, will accept more than a fraction of the potential liability. And thus through laws like the Price-Anderson Act of 1957 and the Nuclear Waste Policy Act of 1982, most of the risk burden has been placed on the American public.

The NRC itself has taken the position that it cannot be held responsible for cleanup in the event of a major accident.

The NRC has allowed nuclear power plants to be owned and run by LLCs, limited liability corporations and other legal constructs which would allow the multi-billion parent corporations to walk away from a major liability, not just in the future, but today.

All nuclear power plants release radiation and other pollutants into the environment as a matter of course throughout operation.

Accidental releases of radiation into environment have already occurred at the majority of nuclear plant sites.

The Chernobyl disaster, in 1986, resulted in the permanent relocation of 300,000 people, the severe contamination of over 1000 square miles of land, and a sizable geographical region being deemed uninhabitable for centuries. The Fukushima accident, in 2011, resulted in the evacuation of over 150,000, with ultimate numbers of displaced uncertain. But both Chernobyl and Fukushima accidents occurred in relatively unpopulated areas. Both disasters involved the release of radiation from reactors, whereas spent fuel pools contain more radioactivity than reactors. In the U.S., there are nuclear plants and nuclear waste sites such as Indian Point which sit in densely and highly populated areas.

The majority of climate scientists around the globe have warned that climate change is occurring and that it brings risks of warming and extreme weather. Regardless of whether the "cause" is anthropogenic activity or not, events in recent decades such as hurricanes Katrina, Irene and Sandy, the prolonged droughts and forest fires that have plagued the Southwestern U.S., powerful tornadoes, earthquake activity, flooding, and numerous severe wind and snow storms have severely stressed the nation's infrastructure.

Many of these events have caused prolonged and wide-scale electric outages due to downed power lines, substation flooding and transformer explosions. Difficulties in power recovery have resulted in areas challenged by downed trees, flooding, damaged bridges, impaired rail lines and obstructed roads. Deteriorated infrastructure conditions add other challenges.

Nuclear power stations and spent fuel pools need electricity for safe operation. Indeed the root cause of the Fukushima disaster was loss of electric power.

Nearly 70,000 metric tons of high-level nuclear waste (or MTU) are being stored at commercial nuclear power plants and that amount is expected to increase at a rate of approximately 2,000 a year or 20,000 MTU each decade.

The typical spent fuel pool at a light water reactor now holds the equivalent of about 6 reactor core loads of spent fuel, about 700 MTU.

Low-burnup fuel can be transferred from cooling pools into dry casks after 5 years, but high-burnup fuel may need to remain within pool cooling for over 20 years, and the use of high-burnup fuel has been increasing.

Transfer of fuel from pool to pad or from wet to dry storage (and back and forth) is an abrupt change of environment for used spent fuel assemblies.

Transfer of fuel also involves varying degrees of mechanical stress and dropping risk.

Aging effects/mechanisms include: degradation of toughness and strength of materials due to irradiation, including degradation of neutron absorber materials; changes in a mechanical property of materials, including change in dimensions or reconfiguration due to creep and effects of freeze-thaw; loss of preload due to stress relaxation; crack initiation and growth; loss or weakening of material due to corrosion; loss of strength and modulus due to elevated temperature.

Aging effects/mechanisms applicable to high-burnup fuel remain to be determined, but the current engineering consensus is that high-burnup fuel is more subject to cladding radial hydride formation and embrittlement 20-25 years after the high-burnup fuel assemblies are placed in dry storage. And casks for high-burnup fuel are still under development.

America's existing nuclear fleet and the on-site spent fuel pools where most of the high-level spent fuel waste remains stored are aging.

It is a fundamental of engineering that as machines and structures age they become subject to age-related deterioration.

Spent fuel pools at Indian Point and elsewhere have already shown evidence of age related deterioration and deterioration of fuel cladding.

Aging effects/mechanisms apply to spent fuel pools and their associated structures.

When the spent fuel pools were originally constructed they were planned to hold spent fuel for a very short term – less than a year.

Unlike the reactors, the spent fuel containments are not hardened. The roofs are similar to the roofs commonly built at box top stores.

The spent fuel pool structures at nuclear plant sites were never designed, nor built, with the intention of holding large quantities of nuclear material for a decade, much less a century.

Data on dry cask performance has been collected for a matter of decades.

All attestations as to the containment of large quantities of nuclear waste for 60 years, 70 years, a century, and beyond are hypothetical, based on limited collections of experiential data, and untested by reality.

The U.S. government, intelligence and security experts have identified nuclear power plants to be terrorist targets.

CLIMATE CHANGE WILL CONSTITUTE AN ADDITIONAL STRESSOR

The NRC disregards the strong likelihood that climate change will exert a multiplier effect on the aging mechanisms applicable to spent fuel assemblies, spent fuel pools, and ISFSIs.

For a wide assortment of risks – flooding risk, dam failure risk, earthquake risk, site structure hazard risk, construction accident risk, landslide risk, hurricane risk, tornado risk, site fire risk, wildfire risk, malevolent insider risk, terrorism risk, human error, acts of nature, you name it – small risks can grow pretty exponentially when combined and when the time periods are long.

Take just seismic risk. Accepting that the seismic risk is numerically (albeit not qualitatively) small for any given year to the current *existing* nuclear plant infrastructure, that does not mean risk will remain small as more spent fuel is created, more nuclear sites are built, and the decades and centuries pass.

Most astonishingly, given the nuclear events of recent years, there is no analysis which connects the potential consequences of a protracted station blackout (or SBO) to the risks presented by extreme weather, other

infrastructure vulnerabilities, earthquakes, terrorism, sabotage, the aging transmission grid and just plain inept operation.

The entirety of problems which may impact spent fuel both during and after reactor license periods is particularly relevant to sites with multiple reactors where continuing reactor operation overlaps with the “short-term” storage period. Sites with more than one spent fuel pool also mandate scrutiny because of the multiplier effects which inevitably result should several pools be affected by one event.

NATIONAL SECURITY MUST BE A MAJOR CONSIDERATION

The NRC seems oblivious to the added and long-term risks presented by terrorism and sabotage. The risk presented by spent fuel has repeatedly been identified by numerous nuclear and national security experts.

Now the NRC wants to make spent fuel protection even *less* robust?

CONCLUSION

The American people are now stuck with massive quantities of high level nuclear waste at sites throughout the nation. This waste will remain dangerous for generations to come.

The NRC should – at the very least – require operators of commercial nuclear power plants to provide the strongest possible storage for nuclear fuel; both new and spent.

Simply reclassifying damaged nuclear fuel as “undamaged” so nuclear power operators can make their profit margin would be an egregious abrogation of duty on the part of the NRC.

Sincerely,

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