Joosten, Sandy

From: Dave Lochbaum [DLochbaum@ucsusa.org]
Sent: Friday, August 10, 2012 8:09 AM
To: CMROSTENDORFF Resource
Cc: CHAIRMAN Resource; CMRSVINICKI Resource; CMRAPOSTOLAKIS Resource; CMRMAGWOOD Resource; Leeds, Eric
Subject: Relative risk of spent fuel pool vs. dry storage
Attachments: 20120810-ucs-nrc-spent-fuel-relative-risk.pdf

Dear Commissioner Ostendorff:

If it's true that a picture's worth 1,000 words, the picture included in my attached letter are the best 1,000 words articulating the relative risks between irradiated fuel in spent fuel pools and in dry storage.

It's the chart used at the Ginna nuclear plant to determine emergency classification levels based on plant conditions - a chart typical of those used at every U.S. nuclear power reactor (and at the NRC's training center - I know, I used to teach from them when I worked for the NRC as an instructor).

A spent fuel pool issue can trigger a General Emergency - the worst possible emergency classification.

A dry storage issue can trigger, at worst, an Unusual Event - the least severe emergency classification.

A General Emergency will likely involve evacuation and sheltering of persons offsite for their protection.

An Unusual Event will likely involve a letter to the NRC 60 days later explaining the event and its resolution.

If the NRC really doesn't know the relative risks between spent fuel pools and dry storage, how is it then possible that the NRC willingly accepts such disparate treatment in EP space?

Sincerely,
Dave Lochbaum
Director, Nuclear Safety Project
UCS

Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

August 10, 2012

William C. Ostendorff, Commissioner
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Commissioner Ostendorff:

During the August 7 briefing on Fukushima lessons learned, you asked me if the Nuclear Regulatory Commission (NRC) possessed sufficient information regarding the relative risks of irradiated fuel in spent fuel pools and dry storage to act upon regarding our recommendation that spent fuel that has been out of the reactor core for five to six years should be transferred from pools to dry storage. The answer has been yes for decades.

The most vivid example among the mountain of evidence supporting this answer involves the emergency procedure guidelines for the Ginna nuclear plant, which are typical of those used for every operating U.S. nuclear power reactor since the early 1990s. I extracted portions of the Emergency Action Level (EAL) chart from Ginna's emergency procedures in the attached graphic. The ADAMS Accession Numbers for the original source documents are also provided to dispel any thoughts that I cut & paste image segments via PhotoShop, Across the top of the graphic in decreasing order of severity are the NRC's four emergency classifications: General Emergency, Site Area Emergency, Alert, and Unusual Event. Below these headings are plant conditions that trigger the emergency levels to be declared.

I highlighted in red a condition requiring declaration of a General Emergency; namely loss of spent fuel pool cooling with fuel damage likely to occur. That condition results in a General Emergency. No more serious emergency can occur at a U.S. nuclear power reactor.

I also highlighted a condition requiring declaration of an Unusual Event; namely damage to a dry storage confinement boundary. Note that the EAL contains no provision for this least-severe emergency escalating to an Alert or more serious emergency.

The NRC is fully aware of these EALs. As recently as December 6, 2011 (see NRC inspection report under ADAMS Accession No. ML113410128), the NRC reported on its evaluation of emergency procedures and their use at Ginna.

If the relative risk of spent fuel pool and dry storage were equal, this EAL would be wrong. Damage to irradiated fuel in spent fuel pools or in dry storage would have comparable consequences in emergency planning space, not the disparate treatment they receive.

The EALs are right. And countless other times when NRC's actions have treated spent fuel pools as being more hazardous than dry storage were also right.

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If the NRC staff truly did not know the relative risk between spent fuel pool and dry storage, what is their justification for accepting the spent fuel pool issues invoking a General Emergency but dry storage issues invoking – at worst – an Unusual Event? If the relative risks are truly un known, then there's also no known basis for such disparate treatment and the NRC staff would be acting irresponsibly to tolerate these EALs.

The NRC staff knows which risk is higher. For decades, the NRC staff's actions and decisions have consistently demonstrated they know spent fuel pools pose higher hazards than dry storage (or that they are the luckiest guessers in the world). They simply refuse to publicly admit what Thomas Jefferson would have described by now as self-evident truths. Yet another study is simply not needed for the NRC to now take the obvious step based on these known relative risks and compel the transfer of irradiated fuel from the higher hazard spent fuel pools into lower hazard dry storage.

Chairman Macfarlane asked me during the briefing about the nuclear industry's "concern" that accelerating transfer of irradiated fuel from spent fuel pools to dry casks would expose workers to higher radiation exposures. As I answered the Chairman, neither the industry nor the NRC provided even lip service to this "concern" when the industry reduced refueling outage durations by discharging irradiated fuel from reactor cores to spent fuel pools within hours rather than days as had been the practice. This is the very same irradiated fuel that the industry acquires "concern" about when there's talk about transferring it from the spent fuel pools to dry storage more than 5 years later. The worker dose issue is much more significant when irradiated fuel is moved within hours of reactor shut down rather than many years later, yet it is ignored then and drummed up later.

The NRC staff provided the quintessential evidence of the lameness of this bogus "concern" just last month with the amendment issued July 13, 2012 (ADAMS Accession No. ML121230011) for Indian Point. Indian Point has two operating reactors. But only Unit 2 has the crane capacity and infrastructure necessary to handle a fully-loaded standard dry cask weighing nearly 100 tons. Rather than spend the money to upgrade Unit 3, the licensee requested – and the NRC approved – an alternate plan. Workers will load up to 12 fuel assemblies from the Unit 3 spent fuel pool into a smaller cask that weighs only around 40 tons when loaded. Worker will move this cask-lite into the Unit 2 spent fuel pool and unload it. Workers will later load the irradiated fuel into a standard, larger cask and move this standard cask to the Independent Spent Fuel Storage Installation (ISFSI) at Indian Point.

Neither the licensee in its amendment request nor the NRC staff in its safety evaluation approving the amendment expressed concern about increased worker doses during this inter-unit transfer scheme, but in a very odd and bizarre way. Instead, the 12-assembly cask was evaluated against using a single-assembly cask for the inter-unit transfers. The single-assembly cask required more cask transfers that increased worker dose, which made the 12-assembly cask look best by comparison. Neither the licensee nor the NRC staff examined the worker radiation dose reduction that would result from the Unit 3 crane being upgraded to eliminate the need for the Unit 3 to Unit 2 to ISFSI path. Instead, an artificial option was contrived so as to make the desired plan appear the most palatable. The option of doing dry storage transfers conventionally

(i.e., Unit 3 directly to ISFSI without the Unit 2 way point) was not evaluated in terms of worker dose by either the licensee or the NRC staff.

So, when licensees boosted profits by shortening refueling outages, the associated increase in worker radiation doses was not a concern to them, or the NRC staff.

When the Indian Point license avoided spending the money to upgrade its Unit 3 crane, the associated increase in worker radiation doses was not a concern to them, or the NRC staff.

But when licensees face spending a few dollars transferring irradiated fuel from spent fuel pools to dry storage, then and only then do worker radiation doses concern them. That's shameful. Nuclear workers must not be used as pawns by plant owners seeking to maximize profits. It's a telling indictment of the industry's claims of placing safety ahead of profits.

If the NRC staff must look into the worker radiation doses associated with transferring 5-plus year old spent fuel into dry storage, then consistency and decency demands that it also look into worker radiation doses associated with shortened refueling outages and the two-step being contemplated at Indian Point.

Without doubt, irradiated fuel is safer and more secure in dry storage than in spent fuel pools. Given a choice between experiencing a General Emergency or an Unusual Event, I trust every nuclear professional would choose the latter. Let's take steps to better manage spent fuel risks.

I concede that worker radiation doses will be higher when transfers occur after 5 to 6 years instead of after 15-plus years. But the regulations and practices that protect workers from excessive doses when moving irradiated fuel during shortened refueling outages[1] and ISFSI detours at Indian Point Unit 3 are equally effective and viable in protecting them during transfers to dry storage.

Sincerely,

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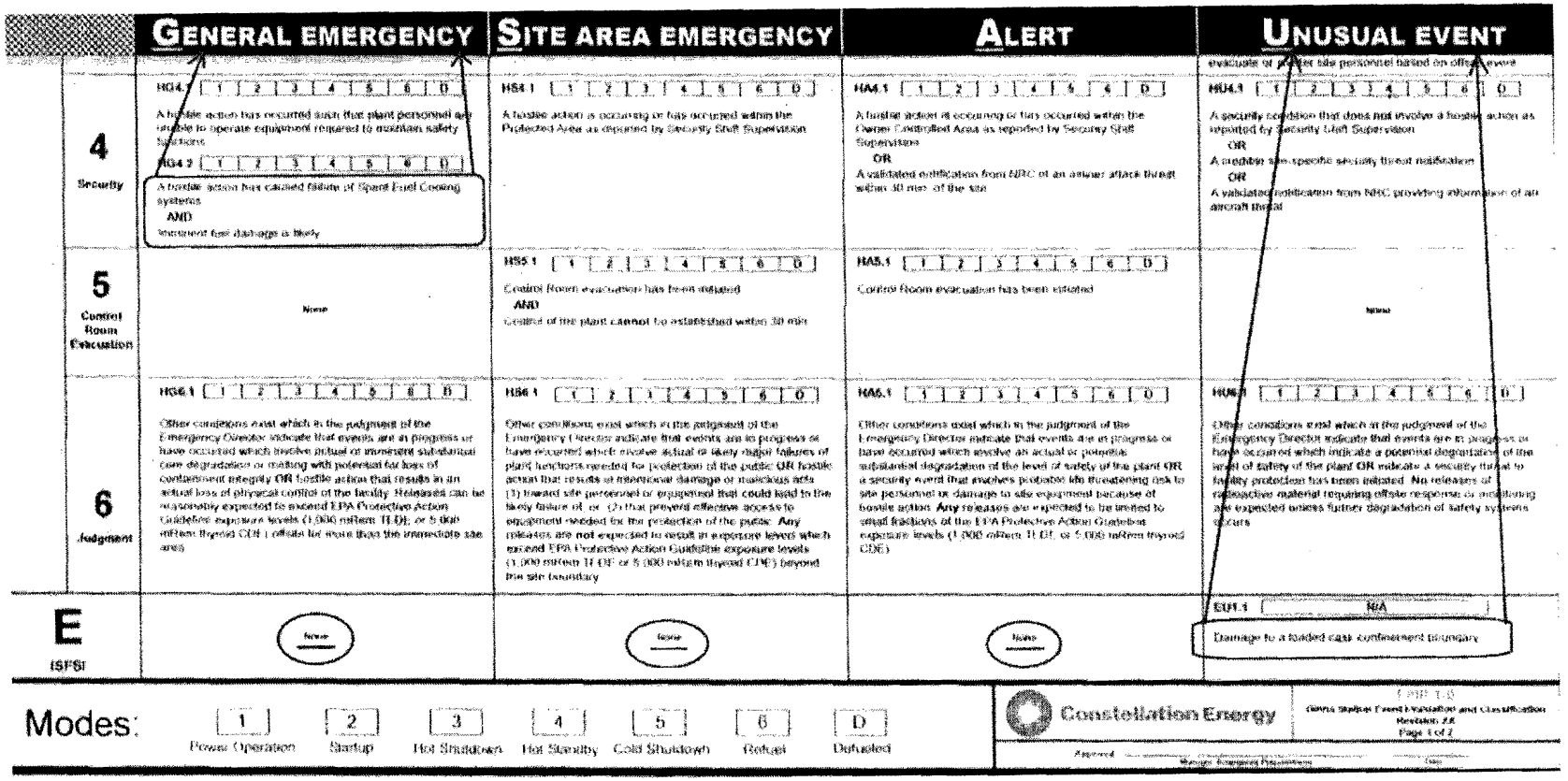
[1] I hasten to point out that UCS is not contesting the legality, morality, or rightfulness of shortened refueling outages. The NRC's radiation protection regulations protect workers from excessive doses, just as they'd protect workers during dry storage transfer activities.



Source: ADAMS Accession Nos. ML12037A117 and ML12037A118