

UCS views on backfitting and the role of the CRGR

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UCS position on backfitting

- "Backfit" should not be seen as a dirty word
 - Timely and effective strengthening of safety and security requirements to address new information, improved analyses, and changing circumstances is not only good practice, but **essential**
 - Most other industries believe in the value of continuous improvement; but some nuclear plant licensees fight to preserve licensing basis decisions that were made decades ago
 - Using the word "discipline" in a backfitting context is patronizing and diminishes the value of the staff's technical judgment
- The Backfit Rule is confusing, too subjective, and too often invoked to block important safety enhancements
 - "Adequate protection," "substantial increase," "costs ... are justified"
 - UCS bears some responsibility for this (*UCS vs. USNRC*, 1987)

The problem with adequate protection

- Adequate protection "is what the Commission says it is" – a vague and potentially arbitrary standard
- But the NRC insists that any requirements beyond adequate protection need to be justified in precise, quantitative terms: this is a double standard
- Although the NRC has rejected its primary recommendation, UCS still agrees with the Fukushima Near-Term Task Force on the need to establish a "logical, systematic, and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations."

Bad decisions

- UCS disagreed with the NRC's decisions to reject new requirements to mitigate severe accidents/terrorist attacks by reducing the size of large radiological releases and strengthening defense-in-depth
 - Expedited transfer of spent fuel to dry casks
 - Filtered vents/CPRR rulemaking
 - Regulatory treatment of SAMGs
 - Containment protection for PWRs and Mark III BWRs (hydrogen control)
- In all these cases, the NRC determined that the changes did not satisfy the Backfit Rule's "cost-justified substantial safety enhancement" criterion
- Based on flawed regulatory analysis guidelines

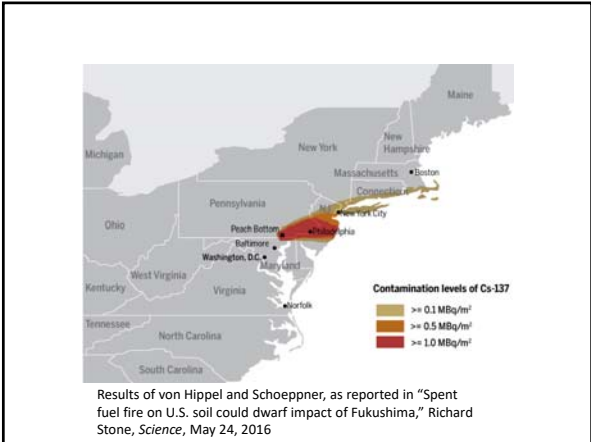
Flawed analysis

- Problems with regulatory analysis guidelines:
 - Rely too heavily on PRA without sufficient consideration of uncertainties and parametric sensitivities
 - Terrorist attacks not considered
 - Defense-in-depth not given adequate weight
 - Safety goals based only on individual risk and not societal risk
 - Generic analyses do not adequately account for site-specific geographic and demographic factors
- It is unclear to what extent the current revision of the regulatory analysis guidelines will improve them
 - But recent Commission policy does not provide reason for optimism

Example: Expedited transfer of spent fuel to dry casks

- In COMSECY-13-0030, the NRC concluded that expedited transfer of spent fuel was neither a substantial safety enhancement nor cost-justified, even though the number of relocated people would drop by a factor of 50
- Cost-benefit analysis was based on MACCS calculations that*
 - Limited radiological consequences to 50 miles
 - Used an outdated value of a statistical life (\$2000/person-rem)
 - Assumed effective decontamination within 1 year
 - Gave credit for shielding in evaluating the need for population relocation, contrary to EPA guidance
- Using more reasonable assumptions would increase the calculated benefit of expedited transfer by a factor of 11-18, making it clearly cost-beneficial (von Hippel and Schoeppner, *Science and Global Security* **25** (2017))
- Magnitude of safety enhancement was compared to individual risk Safety Goals: does not reflect the reduction in collective harm metrics such as the risk of long-term population displacement

*See E. Lyman, M. Schoeppner and F. von Hippel, "Nuclear safety regulation in the post-Fukushima era," *Science*, 26 May 2017



**Example:
Evolving terrorist threats**

- Regulatory DBT description (10 CFR 73.1):
 - Well-trained (including military training and skills)
 - Active and/or passive knowledgeable inside assistance
 - A single land- and/or a single water-borne vehicle bomb, which may be coordinated with an external assault
- More detailed NRC adversary characteristics (numbers, weaponry, equipment, transportation, tactics) are described in non-public documents
 - Adversary Characteristics Document (ACD)
 - Regulatory Guide 5.69 (currently under revision)
- Force-on-force (FOF) inspections required to assess compliance
- The NRC has not revised the DBT or issued new guidance since 2007, but threats continue to evolve
 - e.g. use of multiple land vehicle bombs is a common tactic

Security backfits

- Question: How should changes to staff positions on licensee compliance with the DBT rule based on new threat information be classified?
- NEI has maintained that changes to guidance and FOF tactics, techniques and procedures represent implicit changes to the DBT that require backfit analysis (NEI letter to NRC, February 25, 2016, ML16056A531)
- But the Statement of Considerations for the 2007 DBT rule
 - Makes clear that the ACD and related RGs are not part of the legal requirements of the DBT rule and that the NRC can update them without changing the DBT provided they stay within the scope of rule text
 - However, this does not resolve the backfit question
- In our view, such changes are not backfits provided they are consistent with the DBT (in particular, the "well-trained" criterion)
 - Alternatively, they can be regarded as adequate protection backfits

Transparency and the CRGR

- UCS supports greater transparency for CRGR activities, including public meetings and other mechanisms for meaningful public input
 - A process is needed for timely public notification of pending matters
- UCS thanks the CRGR for the opportunity to present our views in a (closed) meeting in January 2018
