

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

**SUBJECT: Docket ID NRC-2011-0196: Comments on Near Term Task Force Recommendations 2, 4, 5, 7, 8, and 9**

**Written Comments of the Natural Resources Defense Council (NRDC) on the NRC Near-Term Task Force Recommendations Being Considered For Implementation “Without Unnecessary Delay”**

**Submitted by Christopher Paine  
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*(Please Note): NRDC Nuclear Program Director Christopher Paine provided extended oral comments on this same subject matter at a Commission staff dialogue conducted with external stakeholders at NRC headquarters on August 31, 2011)*

**I. Comments on the Public Involvement Process to Date.** Before providing these short-notice written comments on certain of the Near-Term Task Force Recommendations, it is highly relevant to note that NRDC and six other organizations wrote the Commissioners on May 9, 2011, regarding the need to promptly initiate a public involvement process for establishing the scope of and commenting upon the results of the NRC’s review of the Fukushima disaster and its implications for ensuring the safety of US nuclear plants. This request was ignored. Now, three months later, the Commission has abruptly directed the staff to obtain “public input” during the prime summer holiday month of August, within a narrow 10-day window ending September 2<sup>nd</sup>.

It has been almost six months since the inception of the Fukushima accident. We are more than a month past the release of the *Near-Term Task Force Report*. But now, in the space of a less than two weeks and with no opportunity for meaningful public review, the Staff is taking up the issue of regulatory requirements with ostensible “public” input. The NRC announced only August 23 that it would have an August 31 public meeting, with comments due on September 2<sup>nd</sup>, in preparation for a final recommendation to the Commission on September 9. Moreover, in preparation for this meeting, the Staff has not disclosed its own thinking on how and when the Commission should proceed on the various Task Force recommendations for near-term actions, but merely solicited public comment on these prospective actions.

By contrast, when NRDC filed its eighteen 2.206 and rulemaking petitions in mid July, 2011, based entirely on the Near-Term Task Force report, we sought thereby to ensure that there would at least be some meaningful vehicle for public involvement and comment. We cannot imagine that this week's truncated public process is what the Chairman had in mind when he suggested prompt, transparent action on the meaningful recommendations submitted by the Near-Term Task Force.

The Commissioners could and should have taken these matters up themselves, held public hearings and solicited public comments, and formulated a course of action on each of the proposed recommendations in the Task Force Report. Indeed, the scope of that report, or at least the Commission's current review of that report, could also have been informed by a public involvement process begun months ago. But the Commission chose (by majority vote), to do neither of these things.

While it represents a commendable effort with which we largely agree, the reality is that the Near-Term Task Force report was prepared without any outside stakeholder input, and in certain areas it suffers from that deficit. The Commission's hasty delegation of its own public involvement responsibility to the staff, after having had months to contemplate the issue, is regrettable and even dysfunctional. Even at this late date, the public involvement responsibility should be exercised in a thoughtful, transparent manner, with due regard for involvement of all interested parties and the public.

But at the staff-stakeholder dialogue on Aug. 31, only three "stakeholder" representatives were seated at the table, and one of them was from another government agency (FEMA). The other was from industry, and I was the third. Despite having a seat at this hastily organized table, NRDC wishes to register its strong objection to the way the Commission has organized public involvement in this process to date. Doing nothing on this front for five months, and then suddenly purporting to solicit "public" comments within 10 days at the height of the summer vacation season, represents erratic, arbitrary, and capricious behavior.

In this instance, we do not fault the Staff, which was directed to conduct the commission's business on this compressed schedule, but the Commission itself. But the NRC Staff accentuated the lack of equitable stakeholder representation by first establishing ground rules restricting a more than two hour systematic review of the Task Force recommendations to those few seated at the table, and then randomly violating these ground rules by calling on nuclear industry representatives seated in the audience to add their two cents without allowing a similar opportunity to the dozens of others in the room who may have held a different view. We regard this casually capricious and obviously one-sided and prejudicial behavior as

symptomatic of an agency that after more than 35 years still doesn't take its public consultation responsibilities seriously.

Having previously declined to discuss and act publicly and transparently on the Near-Term Task Force's recommendations within 90 days, as proposed by the Chairman, on August 19 the Commission suddenly directed the staff to propose a "prioritization" of the recommendations and provide a paper by September 9<sup>th</sup> that identifies recommendations that, "in the staff's judgment, should be implemented, in whole or in part, without unnecessary delay." We note that even before soliciting public input, the staff decided to defer public discussion of Task Force recommendations 1, 3, 6, 10, 11 and 12.

According to the meeting notice, the recommendations to be discussed in connection with submission of the Sept 9<sup>th</sup> Staff paper were recommendations 2, 4, 5, 7, 8, & 9. We observe that selecting these particular recommendations is easily interpreted as including those that the Task Force specifically stated needed to be addressed as soon as possible. We note, however, that members of the public and independent experts may have a different view regarding which priorities are the most fundamental for nuclear safety and therefore most urgent to address. Just because an issue *can be* readily addressed within the existing bureaucratic framework does not mean necessarily that it is more important than *other issues which the existing regulatory framework has long failed to address*. The Staff's initial triage of these issues appears to preempt near-term public discussion and Commission consideration of some very important issues, which we discuss briefly below.

The Task Force Recommendations have a certain structure that includes subparts that address various aspects of the overall goal of a recommendation. These subparts also follow a repeated 2-stage scheme that has implications for their timeframe: (1) initiate a rulemaking that addresses the issue and (2) issue orders that in some capacity deals with the issue in the meantime.

We note in passing that NRDC has previously filed petitions for orders and rulemakings that closely track all the safety recommendations raised in the Near-Term Task Force report, so we are left wondering whether this sudden *ad-hoc* process for considering the Near-Term Task Force recommendations has sidelined or possibly supplanted the NRC's long-established procedural means for publicly vetting and implementing proposed nuclear safety improvements. We note for the record that since this new process was suddenly announced in the middle of the August summer holiday period, we have made repeated inquiries, as recently as yesterday, September 1, and at the staff-stakeholder dialogue on August 31, regarding how the NRC process pursuant to the August 19 *Staff Requirement Memorandum* (SRM 11-0093)

relates to the long-established NRC petition processes and our pending petitions, but to date we have not received a response.

## ACRONYMS

EDMG	Extensive Damage Mitigation Guideline
EOP	Emergency Operating Procedure
EPZ	Emergency Planning Zone
IPEEE	Individual Plant Examination of External Events (1991)
LOCA	Loss-of-Coolant Accident
NTTF	Near-Term Task Force
PMF	Probable Maximum Flood
SAMG	Severe Accident Mitigation Guideline
SBO	Station Blackout
SEP	Systematic Evaluation Program (1977)
SSE	Safe Shutdown Earthquake
SSC	Systems, Structures, and Components

## II. General Observations on the Near – Term Task Force Report

As good as this Task Force Report is, we nonetheless have some serious concerns with several of its broad conclusions, and with its omissions. So before commenting specifically on the Task Force recommendations of immediate interest to the staff, let me briefly state what those concerns are:

- The Task Force’s over-arching conclusion that a Fukushima-like sequence of events “is unlikely to occur in the United States -- and therefore “continued operation and continued licensing activities ... do not pose an imminent risk to public health and safety,” is actually not supported by the evidence and analysis in the main body of the report, including the statement *in the very next phrase* that only “some appropriate” (rather than “all necessary”) mitigation measures have been implemented to reduce the likelihood of core damage and radiological releases.
- There appears to be some conceptual confusion about the meaning of “imminent risk” when applied to what are believed to be low-probability, high consequence events, such as severe flooding, powerful earthquakes, or large terrorist induced explosions and fires. By definition, such triggering events for a severe nuclear accident are always

“imminent” – they can occur tomorrow, or 20, 60, or 100 years from tomorrow – and therefore if the Commission cannot conclusively demonstrate that every US nuclear power plant is fully prepared to withstand such events without a core melt or radiological release, then it cannot legitimately extend the reassurance that “continued operation and continued licensing activities do not pose an imminent risk to public health and safety.”

- The flawed performance of BWR Mark I hydrogen venting systems in the Fukushima accident, the absence of these systems on functionally similar U.S. BWR Mark II containments, and the Commission’s decision not to inspect and enforce the continued operability of such systems, alone gives the lie to this overarching reassurance of “no imminent risk,” to say nothing of: the initial post-Fukushima plant walk-down inspection results, which were disturbing; the 36-year failure to implement adequate fire protection; and the continuing number of unusual events that are traceable to operator errors and/or failures to properly maintain aging safety-related systems and components.
- We side with Commissioner Apostolakis in believing that predicating the efficacy of a nuclear safety system on what was correctly anticipated within a nuclear plant’s historical “design basis,” while consigning the response to “beyond design basis events” primarily to voluntary licensee initiatives -- is not an effective way to achieve the Commission’s statutory mandate of statutory requirement of “adequate protection of public health and safety.” The Task Force Report also adopts this view, and calls for the creation of a “more coherent and transparent” enhanced regulatory framework to cover “extended design-basis” requirements. NRDC strongly supports this approach, but at the same time we doubt the Task Force’s conclusion that “voluntary industry initiatives” should serve “as a mechanism for facilitating and standardizing implementation of such requirements.” This sounds to us like a formula for multiplying complexities and delays rather than a clear and prompt path to industry-wide standardization of requirements. And indeed, some of the Task Force’s specific short-term recommendations reflect the ambiguities and confusion that this licensee-driven approach to the problem necessarily entails.
- The Task Force Report omits careful consideration of some very key issues. One of these is *the obvious relationship of its recommended orders and rulemakings to the ongoing Commission processes for granting power uprates and license extensions* to operating reactors. Instead, it offers the bland assurance that “continued licensing activities” will not adversely affect the maintenance of reasonable assurance that public health and

safety will be continue to be protected. NRDC strongly dissents from this conclusion, which is purely *ex cathedra* and wholly unsupported by the analysis in the main body of the report.

- To take but one specific example, the absence of proven reliable SBO-operable hydrogen venting systems, combined with what we believe is the Commission's flawed technical understanding of the onset and rate of hydrogen production in a LOCA, obviously points to a suspension of both power uprates and relicensing for, at a minimum, the BRW Mark 1 and 2 reactors, and probably other reactor types as well. Indeed, in these circumstances maintenance of public health and safety points in exactly the opposite direction, to the *de-rating* rather than up-rating of the Mark 1's and 2's.
- The same could be said of all the other so-called "beyond design basis" shortfalls identified in the report. Why should old reactors with known design weaknesses and uncertain capacities for safely enduring severe events be cleared willy-nilly for license extensions and/or power uprates, *without* considering the cumulative impact of these safety shortfalls on the assessment of a unit's overall viability, which assessment necessarily includes required upgrades to mitigate environmental impacts, and the cumulative economic impacts on ratepayers from all the necessary improvements. The simple, common sense rational answer is that these issues should *not* be excluded from these proceedings. NRDC strongly endorses the call on the Commission by dozens of national and regional environmental and other public interest organizations to suspend these proceedings until post-Fukushima safety requirements can be fully integrated into the calculus for making uprate and license extension decisions.
- The Task Force report unfortunately omits any discussion of changes to future reactor siting criteria, or the establishment of reactor closure criteria, based on *objective changes in the external environment that could make "defense in depth" strategies untenable*, such as increases in population density, the present and projected future capacity of transportation infrastructure, time dependent traffic flows and bottlenecks, the value of economic activity and property in the affected emergency planning and contiguous zones, the available cooling capacity of already thermally-loaded lakes and waterways, rising sea levels, land subsidence, protracted drought risk, and the plausible availability of an ultimate heat sink under post-earthquake or other disaster conditions. The extent of damage inflicted on the seaside Fukushima Daiichi power station, and the extent of the resulting plume of radioactivity, which could have been far worse had the winds in the early days of the accident been blowing consistently onshore, raise all these questions and more in

connection with US nuclear power plants in far more populated areas that are also subjected to severe flooding, tornado or seismic risks.

### III. Specific Comments on the Staff-Selected Recommendations

#### Recommendation 2 (p. 30)

- *2.1 Order licensees to reevaluate the seismic and flooding hazards at their sites against current NRC requirements and guidance, and if necessary, update the design basis and SSCs important to safety to protect against the updated hazards.*
- *2.2 Initiate rulemaking to require licensees to confirm seismic hazards and flooding hazards every 10 years and address any new and significant information. If necessary, update the design basis for SSCs important to safety to protect against the updated hazards.*
- *2.3 Order licensees to perform seismic and flood protection walk-downs to identify and address plant-specific vulnerabilities and verify the adequacy of monitoring and maintenance for protection features such as watertight barriers and seals in the interim period until longer term actions are completed to update the design basis for external events.*

We support both the general intent and prompt implementation of the measures called for in Recommendation 2, but we have a number of concerns regarding its potential effectiveness if certain regulatory clarifications and enhanced NRC staff involvement are not accomplished beforehand. We note that:

- Previous attempts to reevaluate these hazards were far less than comprehensive with little to no requirements on previously licensed reactor sites
- Either the methods and scope of the review were limited by available data and models (as in the 1997 Systematic Evaluation Program (SEP)) or the proposed vulnerabilities and improvements offered by the industry were met with limited review by the NRC (as in 1991 Individual Plant Examination of External Events (IPEEE))
  - In the case of the IPEEE, the NRC did not validate or verify the results offered by licensees nor did they require that plants report to the NRC on the completion of proposed improvements
- The current set of regulations and requirements placed on existing and future reactor sites can be seen as a complicated collage of reviews, industry initiatives, and varied response from both licensees and the NRC

- In some cases, the design basis does not cover the probable maximum flood (PMF) for a given site and in other cases, the PMF is calculated differently for co-located units due to different licensing times (NTTF Report, p. 29)
- A comprehensive reestablishment of the design basis for existing plants should be conducted that reflects the current state of knowledge regarding seismic and other severe natural phenomena. The current lack of seismically-hardened and flood-proof structures to protect critical safety equipment and emergency response capabilities at many sites should be a particular focus of attention.
- *From a May 2011 NRC Report on Indian Point Unit 2 - "The licensee identified a number of potential vulnerabilities regarding firefighting following a safe shutdown earthquake (SSE). The potential vulnerabilities stem from the fact that the fire protection system in non-safety related buildings, buried / underground fire headers, fire pumps, and the city water makeup supply are not seismically designed which could result in a loss of portions of the fire protection system following a SSE. The licensee documented these vulnerabilities in CR-IP2-2011-1681."*
- *From NUREG-1742, "Almost all licensees reported in their IPEEE submittals that no plant vulnerabilities were identified with respect to seismic risk (**the use of the term "vulnerability" varied widely among the IPEEE submittals**). However, most licensees did report at least some seismic "anomalies,.... outliers," and/or other concerns. **In the few submittals which identified a seismic vulnerability, the concerns were comparable to concerns identified as outliers or anomalies in other submittals.**" [emphasis added]*

We have a number of concerns about Recommendation 2:

- Why is the near-term "reevaluation" in 2.1 limited to seismic and flooding hazards? What about tornadoes? What about increased fire risk stemming from such events? Will existing *siting criteria* be reviewed in this reevaluation? For example, the wisdom of continuing to locate a nuclear power plant -- Fort Calhoun comes to mind -- in the floodplain of the Missouri River?
- 2.1 appears to assign primary responsibility for these near term assessments to the licensees. But a major problem identified in the Task Force Report is that licensees are using inconsistent and dated design basis criteria and other more informal criteria to evaluate these threats, even within the same multi-unit plants. So why is this review pegged to a licensee *self-assessment* of its *existing* licensing basis, when the immediate problem seems to be known and egregious lack of plant readiness to withstand severe events outside of or beyond the current licensing basis?



- It seems obvious that the seismic reviews will have limited value until the prevailing gap in seismic protection levels required for new versus existing reactors is resolved via commission action to resolve Generic Issue 199 (GI-199).
- What role will NRC inspectors and independent scientific experts, including the ACRS, play in this inspection process and in formulating the technical criteria that will guide it? The current Task Force recommendations are too weighted toward a licensee-initiated and licensee-directed process. We believe NRC special inspection teams as well as resident inspectors should be directly involved in the 2.3 walk downs and the resulting seismic, flooding, and other hazard preparedness assessments.
- Are 2.1 and 2.3 supposed to be conducted concurrently? Or is one necessarily informed by the other, i.e. Doesn't the licensee walkdown process in 2.3 logically precede the licensee self-assessment in 2.1)?
- What does the need for this additional walkdown process say about the effectiveness of the NRC's current inspection system for protecting reactors against such severe natural events? How and why did the NRC lost track of these threats and the capacities its licensees to meet them? The public is owed an explanation.
- What level of NRC oversight will there be in this whole process? Who makes the judgment on adequacy of inspection/evaluation criteria and methods?
- Recommendations 2.3 and 2.1 should include fire protections in their compliance updates. It seems grossly inefficient to address these seismic/flooding vulnerabilities independent of the need to abate the ensuing fire risks, considering that these are still largely unresolved even within the current regulatory framework.

#### **Recommendation 4 (p. 37)**

- *4.1 Initiate rulemaking to revise 10 CFR 50.63 to require each operating and new reactor licensee to (1) establish a minimum coping time of 8 hours for a loss of all ac power, (2) establish the equipment, procedures, and training necessary to implement an "extended loss of all ac" coping time of 72 hours for core and spent fuel pool cooling and for reactor coolant system and primary containment integrity as needed, and (3) preplan and pre-stage offsite resources to support uninterrupted core and spent fuel pool cooling, and reactor coolant system and containment integrity as needed, including the ability to deliver the equipment to the site in the time period allowed for extended coping, under conditions involving significant degradation of offsite transportation infrastructure associated with significant natural disasters.*
- *4.2 Order licensees to provide reasonable protection for equipment currently provided pursuant to 10 CFR 50.54(hh)(2) from the effects of design-basis external events and to add*

*equipment as needed to address multiunit events while other requirements are being revised and implemented.*

NRDC supports the initiation of a rulemaking to revise 10 CFR 50.63 through the suggested expansion in the scope of mitigation efforts during a newly established system of coping times. While we generally support the SBO measures in Recommendation 4 as far they go, why leave all of these very important issues to subsequent attention via rulemaking?

- Why not require an immediate extension of SBO coping capability to 8 hours given the rulemaking will eventually require it? The current regulations leave a gap in that some reactors only consider a 4-hour window (with the regulations possibly allowing anything from a 2- to 16-hr. coping time). This situation should be cleaned up immediately by means of a commission order to all licensees to extend battery backup or equally reliable on-site coping capability to a minimum 8 hours.
- Commission action on the SBO issue, whether by orders or by rulemaking, should also ensure that both emergency on-site and off-site equipment to be used within and beyond the 72 hour coping period be subject to the same maintenance, availability, training and inspection rules as apply to SSC's. Mere proof-of-purchase and stashing of equipment in some seldom-visited warehouse should not be accepted as evidence of meeting SBO requirements.

#### **Recommendation 5 (p. 41)**

- *5.1 Order licensees to include a reliable hardened vent in BWR Mark I and Mark II containments.*
- *5.2 Reevaluate the need for hardened vents for other containment designs, considering the insights from the Fukushima accident. Depending on the outcome of the reevaluation, appropriate regulatory action should be taken for any containment designs requiring hardened vents.*

NRDC supports this recommendation, with the clear caveat that we do not believe that inclusion of "reliable" hardened venting of older BWR Mark I and II reactors *alone* is sufficient to render these obsolete designs adequately safe given the risk they pose to dense surrounding urban populations numbering, in some cases, in the several millions.

- We realize that the information concerning the execution of containment venting (and its effectiveness in various scenarios) at Fukushima is still forthcoming and will hopefully shed further light on how to improve these systems

- However, there is enough information to determine that the vent systems as a whole were not robust enough to provide operators with information regarding their successful actuation, or failure to do so.
- The suggested improvements do not make any claims that dispute the fundamental validity of a venting system:
  - Contrary to assertions by electric utility industry representative, previous NRC reports and recommendations have already established that installing these hardened vents improve the safety and reliability of these reactors
  - NUREG CR-5225, *“Despite possible negative effects and qualifications, there appears to be significant benefit in the proper utilization of containment venting. Besides turning an uncontrolled and possibly unfiltered release into a controlled and filtered one, a quantifiable benefit in terms of reducing core melt frequency is also attainable. By reducing the probability of inadvertent or unnecessary releases (by establishing the containment vent pressure as high as possible, installation of a hard pipe with a rupture disk, and incorporation of venting strategy into an overall accident management strategy), the downsides of venting should be minimized.”*
- The Task Force concludes that “because Mark II containment designs are only slightly larger in volume..., it can reasonably be concluded that a Mark II under similar circumstances would have suffered similar consequences.” *We agree.*
- The Task Force notes that great effort should be made in prescribing what constitutes a reliable vent:
  - These efforts should stress the reliability in the context of control room monitoring and operation in any situation, with redundancy being provided through the implementation of passive venting methods in the event operator control cannot be provided
  - Previous industry initiatives have resulted in varied approaches to supplying containment venting of uncertain operational effectiveness.
  - These methods should be assessed for common best practices and a standardized approach should be adopted based on these findings. *We agree.*

Our concern with Recommendation 5 is mainly to note that it is not a one-stop cure-all for the safety concerns posed by continuing to operate aging GE BWR Mark 1 and 2 reactors with seismically weak undersized containments near large centers of population.

A related concern is the deferral of Task Force Recommendation 6 (Hydrogen control and mitigation inside containment). There are several petitions already pending for rulemaking and enforcement actions with respect to this issue (PRM 50-93 and PRM 50-95). The ACRS should

immediately be tasked to examine the technical issues raised in these petitions and asked to formulate recommendations regarding the conduct of further cladding oxidation experiments to resolve these issues, which appear serious to us, *and* any necessary conservative operating protocols that should be implemented at existing reactors *while these technical issues are under review*. As we noted, this is a critical issue for safety analysis of loss of coolant accidents and the safety of power uprates, especially those involving BWR Mark 1 and Mark 2 designs.

#### **Recommendation 7 (p. 46)**

- *7.1 Order licensees to provide sufficient safety-related instrumentation, able to withstand design-basis natural phenomena, to monitor key spent fuel pool parameters (i.e., water level, temperature, and area radiation levels) from the control room.*
- *7.2 Order licensees to provide safety-related ac electrical power for the spent fuel pool makeup system.*
- *7.3 Order licensees to revise their technical specifications to address requirements to have one train of onsite emergency electrical power operable for spent fuel pool makeup and spent fuel pool instrumentation when there is irradiated fuel in the spent fuel pool, regardless of the operational mode of the reactor.*
- *7.4 Order licensees to have an installed seismically qualified means to spray water into the spent fuel pools, including an easily accessible connection to supply the water (e.g., using a portable pump or pumper truck) at grade outside the building.*
- *7.5 Initiate rulemaking or licensing activities or both to require the actions related to the spent fuel pool described in detailed recommendations 7.1–7.4.*

NRDC believes the actions to implement Recommendation 7 are fairly self explanatory and their usefulness is apparent in most, but not all instances:

- Provide sufficient instrumentation to monitor key spent fuel pool parameters
- Provide safety-related AC power for spent fuel pool makeup system
- Revise technical specifications to remove a rather ridiculous exception that currently does require a separate train of onsite emergency power for spent fuel pool makeup/instrumentation when the associated reactor is not operating.
- Require seismically qualified means to spray water into the pools with easily accessible connections to supply water at grade outside of the building.
- Initiate rulemaking/licensing activities to require these actions
- Numerous problems were seen at Fukushima concerning the monitoring of spent fuel pools and what the response should be
  - Coolant levels

- Radiation levels
- These monitoring efforts should be accessible from the control room
- Not only should these equipment requirements be mandated but all instrumentation should be designated as safety-related and be seismically robust

Our primary concern about this recommendation, which in general we support, is that we would like to see *a more balanced approach to reducing the risk of spent fuel stored in vulnerable pools*, one that reduces both the risk of fuel damage through assured cooling in an emergency *and* the radiological consequences should loss of cooling nonetheless occur:

- While the heat load emanating from recently irradiated fuel placed in a pool is obviously a key factor, we disagree with the Task Force’s technical claim that increased pool loads do not contribute to pool cooling issues. The ability of the water in the pool to dissipate heat and resist boiling is proportional to its volume relative to the volume of spent fuel, and its ability to flow through the pool. Both are adversely affected by the amount of spent fuel packed into the pool.
- Additionally, in the event of an accident the source term for the spread of radioactive material is directly related to the amount of material in the pool. In parallel with ensuring adequate pool cooling under emergency conditions, further attention needs to be given to pool unloading and ways to reduce the hazards associated with spent fuel pools through accelerated dry cask storage.
- A further concern is that in the case of spent fuel pools co-located inside the secondary containment with key safety systems that may be at a lower elevation, spraying make up water into a boiling pool in an accident scenario could increase condensation inside the containment and result in flooding and disabling critical safety equipment.

#### **Recommendation 8 (p. 49)**

- *8.1 Order licensees to modify the EOP technical guidelines (required by Supplement 1, “Requirements for Emergency Response Capability,” to NUREG-0737, issued January 1983 (GL 82-33), to (1) include EOPs, SAMGs, and EDMGs in an integrated manner, (2) specify clear command and control strategies for their implementation, and (3) stipulate appropriate qualification and training for those who make decisions during emergencies.*
- *8.2 Modify Section 5.0, “Administrative Controls,” of the Standard Technical Specifications for each operating reactor design to reference the approved EOP technical guidelines for that plant design.*
- *8.3 Order licensees to modify each plant’s technical specifications to conform to the above changes.*

- *8.4 Initiate rulemaking to require more realistic, hands-on training and exercises on SAMGs and EDMGs for all staff expected to implement the strategies and those licensee staff expected to make decisions during emergencies, including emergency coordinators and emergency directors.*

The proposed recommendation aims to align the various strategies for emergency response (emergency operating procedures (EOPs), Severe Accident Mitigation Guidelines (SAMGs), EDMGs) in an integrated manner.

- While each program contributes, the various programs were created for different reasons at different times so they are often inconsistent with one another in how they are handled under regulations, inspections, etc.
- SAMGs in particular are a voluntary initiative and, after inspections, were found to be inconsistently implemented among licensees
- Another concerning aspect is the level of training that exists for each of these programs
- Some licensees include extensive classroom training, simulators, and testing on SAMGs while others do not
- Task Force claims “all US plants have addressed all of the elements of onsite emergency actions that need to be accomplished by reactor operators” which may be true considering how limited their enforcement is on voluntary industry initiatives
- NRC Report, Summary of Observations – Temporary Instruction 2515/183, “*some equipment (mainly pumps) would not operate when tested or lacked test acceptance criteria*”, “*in some cases plant modifications had rendered strategies unworkable*”, “*fuel for pumps was not always readily available*”
- The wording of the Task Force throughout their evaluation of this issue is that they think this is a rather important issue of good housekeeping (providing support functions in a logical and coherent manner) while noting that they have little to no regulatory control over how these protections are implemented.

While agreeing with this recommendation, NRDC believes that its primary orientation toward rationalizing paperwork and “guidance” does not go nearly far enough in ensuring that the NRC actually *accomplishes* its mission of *ensuring* that on-site emergency response capabilities *are adequate* to the task of protecting plant staff and the public and remain so on any given day decades into the future. We would prefer to see a much more hands on role by the NRC in establishing hard and fast performance criteria for emergency response capabilities and realistic methods for verifying on a recurring basis that licensees are able to meet them.

**Recommendation 9 (p. 56). NRDC supports this recommendation**

- *9.1 Initiate rulemaking to require EP enhancements for multiunit events in the following areas:*
  - *personnel and staffing*
  - *dose assessment capability*
  - *training and exercises*
  - *equipment and facilities*
  
- *9.2 Initiate rulemaking to require EP enhancements for prolonged SBO in the following areas:*
  - *communications capability*
  - *ERDS capability*
  - *training and exercises*
  - *equipment and facilities*
  
- *9.3 Order licensees to do the following until rulemaking is complete:*
  - *Determine and implement the required staff to fill all necessary positions for responding to a multiunit event.*
  - *Add guidance to the emergency plan that documents how to perform a multiunit dose assessment (including releases from spent fuel pools) using the licensee’s site-specific dose assessment software and approach.*
  - *Conduct periodic training and exercises for multiunit and prolonged SBO scenarios. Practice (simulate) the identification and acquisition of offsite resources, to the extent possible.*
  - *Ensure that EP equipment and facilities are sufficient for dealing with multiunit and prolonged SBO scenarios.*
  - *Provide a means to power communications equipment needed to communicate onsite (e.g., radios for response teams and between facilities) and offsite (e.g., cellular telephones, satellite telephones) during a prolonged SBO.*
  - *Maintain ERDS capability throughout the accident.*
  
- *9.4 Order licensees to complete the ERDS modernization initiative by June 2012 to ensure multiunit site monitoring capability.*

The above recommendations address concerns that during a Fukushima-scale event the existing framework would present challenges to personnel and their safety

- The Task Force points out that regulations currently require adequate on-shift staffing levels but gives no clear definition of “adequate”
- The overlapping responsibilities of on-shift emergency response personnel could limit their effectiveness in an emergency situation

- Multi-unit events create a “nuance” in command and control structure that is “not yet fully developed”
- Providing a backup method for alerting the public within the plume exposure pathway emergency planning zone (EPZ)
  - Reliable and timely notification of an emergency event is crucial to reduce public exposure risks through efficient, focused, and expedient evacuation
  - Any lost time due to communications failures could result in unnecessary contamination
- Emergency Response Data System (ERDS) should be enhanced to handle prolonged SBO scenarios
  - Ensuring this capability during an event similar to Fukushima would allow accurate and much needed reconstruction of the events
  - Provides a valuable resource to responders in monitoring multiple sites and remaining efficient in prioritizing the aspects of the response effort
- ERDS modernization initiative has already seen an extension
  - Needs to be updated soon
  - Licensees have been afforded enough time and resources to achieve modernization
  - Installation of new Virtual Private Network (VPN) devices to replace obsolete analog modems
  - Older modems are becomingly increasingly difficult to replace and do not provide the current technological protection required by Federal networks against cyber threats
  - Having accurate real-time data is a must for a coordinated response and making the transmissions automatic relieves the burden from personnel that are needed during an event
    - Also increases transparency of the event to government authorities and public so that we can be confident that the response being taken is commensurate
- Current EP drills/exercises do not currently consider prolonged SBO or multi-unit accident scenarios

The only objectionable aspect to the suggested orders needed to implement this recommendation is that the Task Force has to ask for them in the first place:

“Determine and implement the required staff to fill necessary positions or responding to a multi-unit event”, “Provide a means to power communications equipment needed to communicate onsite and offsite during a prolonged SBO”-- these gaps are wildly obvious in their importance following Fukushima and should never have been allowed to evolve



in the first place. The Commission's dereliction in never requiring them is never explained.

Needles to say, having several layers of redundant communication does not preclude the necessity for keeping these communications operable during a prolonged SBO.

Our concern from the treatment of emergency planning issues in the Task Force Report, and by NRC generally, is that it ignores large changes in a power plant's external environment over time that affect the plausibility and effectiveness of reliance on emergency planning as a last ditch defense to prevent unacceptable damage to surrounding areas. Such factors include:

- Population density of surrounding areas; capacity of transportation infrastructure; time dependent traffic flows and bottlenecks
- Value of economic activity and real estate in the affected emergency planning zones
- There is no discussion is this recommendation of what would be considered intolerable or unacceptable consequences if the worst case happens. In other words, the problem is much broader than keeping the dose to the maximally exposed individual below a certain level by a combination of expedient accident mitigation and timely evacuation measures. *What the Commission must now consider is the sum total of economic damage and social disruption that might be inflicted by a Fukushima scale accident occurring in a much more densely populated area.* This is a critical near-term question, for example, for communities in the New York City (Indian Point) and Philadelphia, and Los Angeles areas (the Indian Point, Limerick, and SONGS reactors, respectively). The Task Force Report does not touch upon or consider recommendations relating to this fundamental issue, and this represents a yawning gap in the Commission's response to date to the Fukushima disaster.