

**Community Engagement Panel  
Spent Fuel Storage and Management Workshop**

Tuesday, May 6, 2014 from 6:00-8:30 p.m. PDT in San Juan Capistrano, California  
Meeting Notes and Action Items

**I) Community Engagement Panel Member Attendance**

- a) Present: Dr. David Victor (Chairman), President John Alpay (Capistrano Unified School District Board of Trustees), Rich Haydon (California State Parks), Larry Rannals (Camp Pendleton), Mayor Lisa Bartlett (Dana Point), Valentine "Val" Macedo (Laborers' International Union of North America Local 89), Dan Stetson (Ocean Institute), City Council Member Jerome M. "Jerry" Kern (Oceanside), Garry Brown (Orange County Coastkeeper), Donna Boston (Orange County Sheriff's Department), Supervisor Pat Bates (Orange County), Gene Stone (Residents Organized for a Safe Environment), Jim Leach (South Orange County Economic Coalition), Dr. William Parker (University of California, Irvine), Richard McPherson (alternate to Ted Quinn/American Nuclear Society)
- b) Absent: Ted Quinn (American Nuclear Society, San Diego Chapter), Mayor Tim Brown (San Clemente), Supervisor Bill Horn (San Diego County), Mayor Sam Allevato (San Juan Capistrano)
- c) Guest Speakers: Per Peterson (University of California, Berkeley), Dr. Marvin Resnikoff (Radioactive Waste Management Associates) as recommended by Mr. Stone, Dr. Michael McMahon (AREVA TN), Drew Barto (Nuclear Regulatory Commission)

**II) Opening by Dr. David Victor, CEP Chairman, at 6:00 p.m.**

**III) Tom Palmisano (VP and CNO of San Onofre) – SONGS Decommissioning Project**

- a) Summary of current used fuel situation and refresher from last meeting
- b) Existing SONGS ISFSI must be increased to accommodate approximately 100 additional containers
- c) Seismic design significantly higher than California Building Code
- d) Questions/Comments/Concerns:
  - i) Dan Stetson (Ocean Institute) asked for a Richter Scale comparison, and Mr. Palmisano responded that a comparison is not easily made – see VIII)
  - ii) Council Member Jerry Kern requested the dimensions of the ISFSI and Ed Avella, Director of SONGS decommissioning, responded:
    - (a) Currently 200' by 400'
    - (b) Expand to 400' by 600'
  - iii) Chairman Victor asked for the dimensions of the ISFSI expansion if 24-assembly canisters are used instead of 32-assembly canisters – see VIII)

**IV) Per Peterson (UC Berkeley, Department of Nuclear Engineering; member of the Blue Ribbon Commission on America's Nuclear Future) – Current Status for U.S. Nuclear Waste Policy**

- a) Blue Ribbon Commission conducted a two year study to evaluate current strategy and recommended changes for managing the back end of the nuclear fuel cycle; summarize the 8 recommendations from the Blue Ribbon Commission:
  - i) A new, consent-based approach to siting in which state and local government to enter into legally binding agreements in which the federal government grants proper regulatory authority to the states willing to store spent fuel
  - ii) The responsibility for managing spent fuel should be transferred from the Department of Energy to a new organization dedicated solely to spent fuel management

**Community Engagement Panel**  
**Spent Fuel Storage and Management Workshop**

Tuesday, May 6, 2014 from 6:00-8:30 p.m. PDT in San Juan Capistrano, California  
Meeting Notes and Action Items

- iii) Money collected by the Department of Energy should be placed in a special fund only for managing spent fuel; an appeals court has stopped the collection of fees but that will make it easier to restart
- iv) Need effort to develop more than one geologic repository; need another one besides Yucca Mountain
- v) Use consolidated storage through which spent fuel from multiple shut-down reactors is stored regionally such as on the West Coast using shared resources including maintenance and security
- vi) Prepare for the eventual large-scale transport of spent fuel and high-level waste
- vii) Continued investment in continued innovation and workforce development; we have consensus that we want to have competent people available to work on managing spent fuel
- viii) U.S. needs to take a leadership position internationally to help small countries safely manage small amounts of spent fuel
- b) Questions/Comments/Concerns
  - i) Chairman Victor poses a question about whether it might be of some value for either the CEP to put together or encourage others to put together the elements of a California strategy on spent fuel management; such as through the Western Governors Association; something that could lead to some legislative action or pressure for legislative action (see VIII)
  - ii) Gene Stone asked if it might be useful for the State of California to take the initiative to consolidate spent fuel into one spot to lower cost; Dr. Peterson responded that within the legal framework, he's pretty sure it's not possible for California to do it by itself and that it would be more difficult than getting the federal government to take action
  - iii) Jim Leach asked about the experience gained transporting nuclear fuel from Washington to Idaho; Dr. Peterson responded that it was favorable
  - iv) Dr. William Parker asked if the Blue Ribbon Commission technical recommendations were specific to on-site dry storage; Dr. Peterson responded that it was a wide perspective regarding transportation
  - v) Mr. Stone asked Mr. Thompson whether SCE would support the development of a California strategy; Mr. Thompson responded that SCE supports getting the fuel off-site. Would await the panel's input before assessing.
  - vi) Chairman Victor would like the panel to identify the appropriate government agency to address these issues; However, the panel has more pressing near-term priorities and this matter should be deferred 6 – 9 months
  - vii) Larry Rannals asked Dr. Peterson's opinion on the most difficult issue to resolve: transportation or repository; Dr. Peterson responded that a comprehensive Federal program is needed and suggested discussions with Senator Feinstein

**V) Dr. Marvin Resnikoff (Radioactive Waste Management Associates) – Issues Involving Storage and Transportation of High Burnup Nuclear Fuel**

- a) Believes transportation of high burnup fuel is a major concern and discussed potential for cladding defects and recommends separate container (canning) for each high burnup fuel assembly

**Community Engagement Panel**  
**Spent Fuel Storage and Management Workshop**

Tuesday, May 6, 2014 from 6:00-8:30 p.m. PDT in San Juan Capistrano, California  
Meeting Notes and Action Items

- b) Believes there is insufficient data on the impact of salt water environment on long term fuel storage and subsequent shipping of that fuel; long term storage in a salt environment may not be possible
- c) Believes that NRC hypothetical accident testing is insufficient; presented a variety of low probability hypothetical transportation accidents; added that train fires are a major concern, for example, oil tankers on the same tracks as nuclear fuel (Nevada is looking into this)
- d) Questions/Comments/Concerns:
  - i) Mr. Stone asked if canning is in fact safer and Dr. Resnikoff responded that it was (discussed later during Dr. McMahan's presentation)
  - ii) Chairman Victor asked if we were concerned about shattered fuel in a cask; Dr. Resnikoff is concerned that the cask would shatter and be open to the environment
  - iii) Council Member Kern expressed a concern regarding the impact of rail vibration on fuel cladding to which Dr. Resnikoff responded that this was a concern but analysis has not been done; Council Member Kern believes this is more probable than the hypothetical train accident scenarios presented
  - iv) Chairman Victor asked Dr. Peterson about the Blue Ribbon Commission findings and Dr. Peterson responded that the experience in Europe has been good; the thermal stress in the reactor is far greater than transportation stress; opened canisters show no detectable degradation but further study on aging fuel is needed (DOE is conducting a study)
  - v) Donna Boston asked whether first responders had radiation monitoring equipment on hand and whether it would be of assistance in an accident. Chairman Victor deferred to McMahan's upcoming presentation.

**VI) Dr. Michael McMahan (AREVA TN) – Safe Used Fuel Solutions for SONGS**

- a) AREVA is the manufacturer of casks currently in use at SONGS and AREVA has 48 years of experience; has transported more than 10,000 casks loaded with used fuel worldwide; has transported more than 15,000 high burnup fuel assemblies worldwide
- b) No AREVA dry fuel storage systems have ever leaked radioactive material; some have been in use for 25+ years
- c) Dr. McMahan addressed the two field events that were mentioned at the 3/25 Regular Meeting, neither of which resulted in the release of radioactive material.
  - i) Peach Bottom – Leak of secondary seal that occurred with a bolted canister of a design that is different from that used at San Onofre.
  - ii) Idaho National Lab NUHOMS storage of core material. Cracking in a concrete module.
- d) Clarified that the function of canning is to facilitate handling of used fuel assemblies at some future date (used for damaged fuel); cans are not leak tight [in fact have holes to drain water during transfer from SFP] and therefore do not contain the release of radioactive material; they do not provide an additional layer of radiation protection
- e) NUHOMS is the most robust system in the world; the seismic design basis for the SONGS system is more than double that of the plant; designed to withstand flood, tornado, and aircraft impact; designed and licensed to store and transport high burnup fuel
  - i) Design life is 100+ years with NRC renewals in 40-year increments.
  - ii) Effective service life may be extended almost indefinitely through inspections, aging management programs, and maintenance.

**Community Engagement Panel**  
**Spent Fuel Storage and Management Workshop**

Tuesday, May 6, 2014 from 6:00-8:30 p.m. PDT in San Juan Capistrano, California

Meeting Notes and Action Items

- iii) As an analogy, the Department of Motor Vehicles requires drivers to renew their driver license every few years. Similarly, the NRC issued initial licenses for 20 years and will reissue them in up to 40-year increments.
- f) Questions/Comments/Concerns:
  - i) Dr. Parker asked if the canister loading process is reversible and Dr. McMahon responded that the process is very straight forward and is an NRC requirement ; Dr. McMahon further stated that opening a dry cask requires a pool or a hot cell, although the pool does not have to be at the site
  - ii) Chairman Victor asked about the casks that go to reprocessing in Europe and Dr. McMahon confirmed no sign of degradation has been seen to date
  - iii) Chairman Victor asked if there has been any evidence of salt corrosion; Dr. McMahon explained that there is an active aging management program and data is being collected on canisters stored in marine environments
  - iv) Dr. Parker noted that safety records are perfect until the first accident happens and asked what features would allow a response to a leak that had yet to occur; Dr. McMahon discussed Standard Operating Procedures for repairing leaks on-site and that transfer equipment must be available – see VIII)
  - v) Mr. Stetson asked if there is an optimal number of fuel assemblies per cask; Dr. McMahon discussed improvements in technology and materials that render the newer models (32- or 37-assembly capacity) to be better than the older models holding fewer assemblies
  - vi) Supervisor Pat Bates commented that this is a very convincing argument that what we have now for spent fuel storage is really safe but in a political arena, this is a great way for the feds to kick the can down the road; we need to make the argument that it's just not good enough; it's safe but long-term storage is something that communities should not be responsible for even if it can last one million years
  - vii) Mr. Rannals asked at what point is the ISFSI-stored spent fuel considered safe enough to be moved from the ISFSI and transported to another location; is it simply a function of time stored; and Dr. McMahon responded that the NRC makes that call

**VII) Drew Barto (NRC) – NRC Regulation of Spent Nuclear Fuel Storage and Transportation**

- a) Reviewed regulations 10 CFR Part 71 (Packaging and Transportation) and Part 72 (ISFSI), and discussed disciplines covered by technical review
- b) NRC testing bounds all accident scenarios to the best of their ability, including 30 minute fully engulfing fire simulation
- c) Baltimore tunnel fire (liquid petroleum being transported via rail) studied to determine what would have happened if nuclear fuel had been on that train; NRC website has results of the study
- d) Continued research is being done on high burnup fuel for both storage and transportation; study will be released this year – see VIII)
- e) Inside cask monitoring continues to be researched; cladding vibration instrument under development and in testing stage
- f) Questions/Comments/Concerns:
  - i) Mr. Stone asked about a recent fire at the Waste Isolation Pilot Plant in New Mexico, however, Mr. Barto was not familiar with the incident – see VIII)

**Community Engagement Panel**  
**Spent Fuel Storage and Management Workshop**

Tuesday, May 6, 2014 from 6:00-8:30 p.m. PDT in San Juan Capistrano, California

**Meeting Notes and Action Items**

- ii) Chairman Victor asked how we know if we're doing the right research and the right strategy; Per Peterson responded that we must continue to improve over the next 10 to 20 years and thus our confidence will increase
- iii) Dr. Resnikoff expressed concerns about the NRC's approach to design approval and questioned their process; Mr. Barto responded that the NRC is not seeing the cladding issues that Dr. Resnikoff is concerned about
- iv) Dr. McMahon added that in Europe canisters are opened for reprocessing and so far no damage has been seen, however, further analysis is needed on fuel stored for long periods of time – the real question is, when the fuel gets very cool, does it become more brittle
- v) Dr. Peterson added that we're trying to understand the aging process and the degradation process that may have an impact on how fuel is transported
- vi) Mr. Stone asked Mr. Barto if he was aware of the new release distributed by Senator Boxer and others asking the NRC to stop exempting decommissioning nuclear reactors from emergency planning, and whether Mr. Barto knew how the NRC might respond; Mr. Barto was unaware of the NRC's position on the matter; Chairman Victor recommended that SCE track the matter and circulate a response to the panel – see VIII)

**VIII) Meeting concluded at 8:34 p.m.**

**Community Engagement Panel**  
**Spent Fuel Storage and Management Workshop**  
 Tuesday, May 6, 2014 from 6:00-8:30 p.m. PDT in San Juan Capistrano, California  
 Meeting Notes and Action Items

**IX) Action Items:**

	Action Item Description	Comments	Approach
1	Mr. Stetson: Richter scale comparison to peak ground acceleration	SCE will preview comparison with Dr. Parker and Chairman Victor in preparation for the 5/22 Regular Meeting	Verbal update by SCE at 5/22 Regular Meeting
2	Council Member Kern: Size of existing and eventual size of the ISFSI pad; Chairman Victor: Added it would be helpful to know how fewer assemblies per cask would impact the size of the ISFSI pad	SCE to provide ISFSI pad implications of 24- versus 32-canister configurations	Verbal update by SCE at 5/22 Regular Meeting
3	Chairman Victor: Suggested the panel consider forming a California fuel management strategy, white paper, or action plan to prompt legislation; would like panel to identify which state agency needs to act regarding off-site storage; indicated there are more pressing matters to be addressed in the near term and this matter should be deferred 6 to 9 months	Deferred 6 to 9 months; flag for Q1 2015	Verbal update by SCE at 5/22 Regular Meeting
4	Mr. Stone: Would we be safer if all nuclear fuel were to be canned? Chairman Victor added that it would be helpful to know more about the implications of individually canning all fuel assemblies, including costs and impact on the San Onofre ISFSI, for next meeting	Discussion noted that the function of canning is to facilitate handling of damaged used fuel assemblies; cans have holes to drain water during transfer from SFP and therefore do not contain the release of radioactive material; SCE to analyze cost and ISFSI pad implications of canning all fuel	Verbal update by SCE at 5/22 Regular Meeting
5	Dr. Parker: Fuel handling equipment to remain on site to support the ISFSI post decommissioning	SCE will outline the fuel handling equipment that would remain on site to support the ISFSI after decommissioning is complete	Verbal update by SCE at 5/22 Regular Meeting
6	Mr. Stone: Recent fire at a New Mexico DOE facility and relevance to the SONGS environment	SCE will track matter and provide materials to CEP when available	E-mail materials when available
7	Chairman Victor: NRC's study on high burnup fuel (Oak Ridge Study)	Mr. Barto said the study should be ready in summer/fall 2014. SCE will monitor and provide the study to the CEP when available	E-mail materials when available
8	Mr. Stone: Letter to NRC on emergency planning exemptions for decommissioning plants co-signed by senators including Senator Boxer	Once the NRC responds to the letter, SCE will help circulate the co-signed letter and the NRC response	E-mail materials when available