

## San Onofre Decommissioning Community Engagement Panel

### REGULAR MEETING

Thursday, September 14, 2017, from 5:30-9:00 p.m. PDT in Oceanside, California

#### Meeting Minutes and Action Items

#### 1) Community Engagement Panel (CEP) Member Attendance

- a) Present: Dr. David Victor (CEP Chairman/University of California, San Diego), Dan Stetson (CEP Secretary/Nicholas Endowment), Hon. Pam Patterson (Mayor Pro Tem, San Juan Capistrano City Council), Hon. Jerome “Jerry” M. Kern (Oceanside City Council), Rich Haydon (California State Parks), Tom Caughlan (Camp Pendleton), Donna Boston (Orange County Sheriff’s Department), Ricky Smiles (filling in for Val Macedo, Laborers’ International Union of North America, Local 89), Hon. Martha McNicholas (President, Capistrano Unified School District Board of Trustees), Marni Magda (Sierra Club), Hon. Bill Horn (Supervisor, San Diego County), Ted Quinn (American Nuclear Society), Hon. Paul Wyatt (Mayor Pro Tem, Dana Point City Council), Garry Brown (Orange County, Coastkeeper), and Hon. Cathy Ward (Mayor, City of San Clemente – Alternate for Hon. Tim Brown)
- b) Absent: Valentine “Val” Macedo (Laborers' International Union of North America, Local 89), Hon. Lisa Bartlett (Supervisor, Orange County, 5<sup>th</sup> District), Hon. Tim Brown (CEP Vice Chairman/ San Clemente City Council), and Ken Shultz (Alternate for Ted Quinn)
- c) Guests: Lisa Edwards (Senior Project Manager, Nuclear Chemistry, Radiation Safety, and HLW Programs, Science and Technology Division, Electric Power Research Institute)
- d) Southern California Edison (SCE) Representative: Tom Palmisano, Vice President Decommissioning & Chief Nuclear Officer

#### 2) Meeting Convened by Chairman Victor at 5:40 p.m.:

- a) Chairman Victor reminded the audience that the CEP is an engagement panel created to improve communications with the communities and open a two-way flow of information between SCE and the public; the CEP is not a decision-making body nor an oversight body
- b) The presentations from tonight can be found on [SONGScommunity.com](http://SONGScommunity.com), as well as live streaming, meeting documents, links for signing up for public walking tours of the plant site, and more
- c) SCE information booths, staffed by SCE personnel, are available before the meeting and during the break, as well as two community booths
- d) A structured public comment period follows the presentations. Comments may be submitted any time to [nuccomm@songs.sce.com](mailto:nuccomm@songs.sce.com)
- e) Chairman Victor welcomed guest Lisa Edwards, a Senior Project Manager from the Electric Power Research Institute (EPRI) and explained that Lisa is centrally involved in a program looking at new technologies for monitoring and evaluating the integrity of dry cask storage canisters as they age
- f) Chairman Victor discussed the topic of tonight’s meeting, Defense-in-Depth (DID), which will help to answer questions such as: how does the public know the spent fuel in these canisters is secure, what are the monitoring programs, what are the layers of defense in place to protect their integrity, and if something is found, what could be done about it

***NOTE: VIDEO OF THIS MEETING, SPEAKER PRESENTATIONS, AND TRANSCRIPTS ARE AVAILABLE ON [SONGScommunity.com](http://SONGScommunity.com) AND THEREFORE DETAILED CONTENT IS NOT REPEATED IN THIS DOCUMENT***

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### 3) Decommissioning Update, Tom Palmisano [Please refer to the *Decommissioning Update* presentation on [SONGScommunity.com](http://SONGScommunity.com)]

- a) Tom Palmisano provided an update regarding a recent security event at the plant. An individual in a delivery van was intercepted and detained by San Onofre Nuclear Generating Station (SONGS) Security officers after driving past the initial checkpoint without authorization. SONGS Security officers detained the individual and isolated the vehicle until the San Diego County Sheriffs arrived. This event was neither a bomb threat nor an attack against the plant. Tom stated that SONGS Security handled the event very well and that he was pleased with the response by the San Diego Sheriff, Orange County, Camp Pendleton and the FBI
- b) Marni Magna discussed the Price Anderson Nuclear Industries Indemnity Act and levels of SONGS insurance liability, which decreases as the plant status changes. Marni asked Tom to talk about the amount of money associated with each of the levels and why the amount is determined that way
  - i) Chairman Victor added that the Price Anderson Act is the act of legislation that caps the liability of the nuclear industry in case of a major accident
  - ii) Tom Palmisano explained that the major change is that once the reactors are defueled and the spent fuel has been in the spent fuel pools long enough (SONGS fuel has been cooling for 5 years), the NRC will consider insurance level changes. All of the other decommissioning plants in the country have been approved and have reduced their insurance. Tom will provide a table at the fourth quarter meeting to show what the other plants are doing and show the public what SONGS may do. Tom added no decisions have been made at this point and he would check with the American Nuclear Insurers (ANI) to verify if the insurance information can be shared with the public
- c) Ted Quinn referred to moving all the fuel in a year and a half and asked if the construction of the canisters is moving along as expected, and will everything be done in the required time frame
  - i) Tom Palmisano responded, yes. Tom stated the key is to have the pad construction done and the NRC inspections complete by November 2017. There are eighteen months allotted in a December 2017 to mid-2019 time frame, with 73 canisters to load independently. Tom discussed the Zion Nuclear Power Station having 57 canisters and completed in one year time frame. Tom expressed that loading canisters and moving canisters is a very deliberate activity and should not be rushed
- d) Ted Quinn asked if Tom Palmisano would, to the best extent possible, coordinate with the CEP panel when retaining his expert team to advise them on a spent fuel relocation
  - i) Tom Palmisano explained that SCE is assembling the list of team members. He already has some names, and is looking for additional interest
- e) Hon. Pam Patterson asked if the 50 AREVA canisters that are lying horizontally will be moved
  - i) Tom responded no and explained that the 50 AREVA canisters will stay exactly where they are in a horizontal storage system
- f) Hon. Pam Patterson asked what the total number of spent fuel canisters will be
  - i) Tom Palmisano explained that there will be a total of 123 spent fuel canisters, 73 from Units 2 & 3, plus 50 from Unit 1
- g) Hon. Pam Patterson asked about the plan for the spent fuel pools and if it was advisable to keep the pools until all the spent fuel is moved to a different location
  - i) Tom Palmisano explained that decision hasn't been made, but would be part of the California Environmental Quality Act (CEQA) process. The current thought is the spent fuel

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- pools would be dismantled, but that would be a subsequent discussion in the CEQA process. Tom added there are 10 to 12 decommissioned commercial plants and none have kept their pools intact because keeping the pools is not a practical option. There are much better ways to perform mediation strategies. Tom added he would be presenting mitigating strategies later in the presentation
- h) Chairman Victor stated there are a lot of people watching what is going on with Diablo Canyon and asked Tom Palmisano to provide an update in the future as he looks at the extension of the Memorandum of Understanding (MOU) and how it benchmarks against San Onofre

#### **4) CEP General Updates, Chairman Victor [Please refer to the presentation on [SONGScommunity.com](http://SONGScommunity.com)]**

- a) Marni Magna added that the Nuclear Energy Institute (NEI) has provided an update on the Shimkus Bill (H.R.3053 - Nuclear Waste Policy Amendments Act of 2017, sponsored by House Representative John Shimkus). Marni explained that a summary has been added. The air quality and water rights have been reinstated in Nevada. Marni explained that this is a huge change, but the public needs to keep watching the connection of the bill to Yucca Mountain and interim storage, how that works, and making sure that the Department of Energy (DOE) will take possession of the fuel, which still hasn't been decided. Marni added that the public needs to know if the bill will allow the DOE to prioritize the stranded fuel and reverse the standard contract, which gives priority to the oldest fuel

#### **5) Defense-in-Depth, Tom Palmisano [Please refer to the presentation on [SONGScommunity.com](http://SONGScommunity.com)]**

- a) Chairman Victor added that the whole nuclear industry is now facing the need to monitor these kinds of canister systems. Chairman Victor is on the board of EPRI and is interested in the new technologies as a researcher. Chairman Victor explained that he thought the public would like to see the presentations being provided, including the types of technologies being used and developed to monitor the aging canisters.

#### **6) Advanced Technology Research on Aging Management (EPRI), Lisa Edwards [Please refer to the presentation on [SONGScommunity.com](http://SONGScommunity.com)]**

- a) Chairman Victor asked what the EPRI report will look like
- i) Lisa Edwards explained that the EPRI report has been published and available to the public. The document can be downloaded. She added that this is a guidance document. EPRI performs the research to inform those bodies who will use the information
- b) Dan Stetson asked for a description of the eddy current array
- i) Tom Palmisano described eddy current as being similar to a medical ultrasound. Eddy current is a way to look at metal using an electromagnetic field which doesn't go through the metal but will penetrate the surface enough to identify and characterize the size and shape of a crack or pit
- c) Hon. Pam Patterson asked how long the inspection technologies have been in the works
- i) Lisa Edwards responded that it was difficult to quantify the time regarding sensor development because some of these technologies have been used in other applications for many years. EPRI has been actively engaged since 2014 and has been looking at the inspection technologies for the specific environments of different types of dry cask canister systems

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- d) Hon. Jerry Kern asked if EPRI has statistics on false negatives and false positives
  - i) Lisa Edwards responded, yes. She could not talk to them specifically without her notes, but the information is available
    - (1) Chairman Victor will ask if EPRI could send him the information regarding the false negative and false positive statistic rates for non-destructive evaluations from the other inspections so he could share that information with the panel.
- e) Chairman Victor discussed the benefits of using similar technologies and materials as the rest of the industry and asked if there are things that need to be done to get a baseline before the canisters are put in the over-packs. Was this already being done automatically and what information has to be obtained so people can see changes over the years?
  - i) Lisa Edwards explained that a pre-service inspection is documented by SONGS when a canister is received and before the canister is put into use. EPRI recommends that the most susceptible types of canisters be monitored over time

#### **7) Development and Implementation of Aging Management Programs for San Onofre, Tom Palmisano [Please refer to the presentation on [SONGScommunity.com](http://SONGScommunity.com)]**

- a) Chairman Victor asked if SCE was inspecting not just the canisters that need to be relicensed at the end of 20 years, but the other canisters at the San Onofre nuclear plant
  - i) Tom Palmisano responded not yet, but will do so as part of the relicensing effort. Tom explained that under the current license, SCE is performing the inspections that are required for the outside of the facility, including monitoring the temperature and radiation levels. Tom added the internal monitoring will start as part of the license renewal process
    - (1) Chairman Victor asked if other nuclear sites are doing exactly this type of internal monitoring
    - (2) Tom Palmisano stated that is correct
- b) Hon. Pam Patterson asked when would be the right time to perform inspections at San Onofre
  - i) Tom Palmisano explained that the required time is 2022 and will be part of the license renewal (which is five years from now) for the currently loaded canisters. Tom added that the work has already been commissioned with AREVA. AREVA is the license holder and is responsible for preparing the license renewal and the aging management plan. SCE will assist with the process. The process takes about a year and will determine when to perform the first inspection
- c) Pam Patterson asked what the warranty is on the canisters
  - i) Tom Palmisano stated the warranty period was 10 to 20 years and he would verify that information during the break
- d) Pam Patterson asked about radiation and if there was a crack, could the radiation be detected
  - i) Tom Palmisano responded yes, radiation could be detected. Tom described the phenomena called stress corrosion cracking, which has a very tight release path and there is no driving force to dispel a radiation release. Tom also explained that this would not be the same type of radioactive release phenomena that occurred at Fukushima
- e) Pam Patterson asked about redundancy and how the spent fuel rods would be moved and properly stored if a crack was discovered in a canister
  - i) Tom Palmisano explained that if a crack was identified in a canister there would be no immediate release path. The canister continues to remove heat and cool the fuel. The

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- methods the plants are working on are to mitigate the cracks or put the canister in an over-pack. The consensus today would not be to unload a canister, but to re-pack a canister
- f) Hon. Martha McNicholas asked if the AREVA ring inspection assembly was something that had to be built into the canister or could the assembly unit be added later
    - i) Tom Palmisano explained that the ring inspection assembly is added to the canister and can be deployed when needed. The ring inspection assembly is a tool that can be used for periodic inspections or visual inspections. Tom added that an indication of a crack is not an acute or a crisis situation. A potential crack does not pose an immediate hazard. There is time to evaluate and characterize inspection results more thoroughly using eddy current or some other method
      - (1) Chairman Victor added that people have been concerned about what fraction of the canister can be inspected
        - (a) Tom Palmisano explained the ring inspection assembly is a second or third tier inspection tool and capable of inspecting 100 percent of the canister. AREVA has a system where only part of the canister can be inspected. Holtec is working on other robots to see the most susceptible parts, but the ring inspection assembly allows 100 percent of the canister to be inspected
  - g) Pam Patterson asked about the warranty on the canisters
    - i) Tom Palmisano responded that inspections are required by the NRC at the 20-year point and is part of the license renewal. Tom encouraged Pam not to think of the canisters in terms of warranty, which is a commercial term, because the inspections will need to be performed for many years, long after the warranty has expired
      - (1) Hon. Pam Patterson asked why inspections not being performed now, if the technology is available and the contents are ultra-hazardous
        - (a) Tom Palmisano explained that determining the inspection process is exactly what SCE is preparing to do as part of the license renewal process. The canisters throughout this country and worldwide have not posed a problem nor had a crack or a leak. Tom disagreed that the identification of a crack was ultra-hazardous and stated that the spent fuel is well contained
          - 1. Hon. Pam Patterson asked if SCE would use the technology that is already available to perform the inspections
            - a. Tom Palmisano stated he would accept the feedback, take it into consideration, and come back to the panel with what can be done
  - h) Hon. Pam Patterson asked if Holtec had developed a ring inspection assembly and if so how long the Holtec inspection ring been in place
    - i) Tom Palmisano explained that Holtec has developed a ring inspection assembly. Holtec entered the market later, so their ring inspection assembly is a fairly new development. Tom stated he would have to verify, but estimated the assembly was developed within the last two to three years
    - i) Chairman Victor asked Lisa Edwards to help the panel understand inspection fault analysis and the probabilities of a through-wall crack going undetected. Chairman Victor stated Tom had mentioned that there hasn't been a through-wall crack in a dry cask canister, and reminded the panel that the whole point of the canister inspections is to prevent getting to that point
      - i) Lisa Edwards explained that the guidance produced by EPRI recommends starting inspections at the 20 year mark. The reason that time period was selected is that the

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- analysis indicated chloride-induced stressed corrosion cracking is the most likely mechanism to challenge the integrity of the canisters. EPRI evaluated how long it would take for that mechanism to breach or create a through-wall crack in canisters. The base case came out to approximately 26.5 years for the most severe postulated combination of climate and canister temperature conditions. The idea is to start these inspections before that time period, use the inspection technologies first to perform visual inspections, and if there is indication of degradation, then use the more advanced technologies to identify the crack. Pitting is easy to identify and precludes cracking, which is a slow developing process. Lisa added that moving canisters to perform inspections should be avoided unless there are indications of degradation
- j) Hon. Jerry Kern asked Tom Palmisano if the inspection robots will be on site to perform inspections and to check for damage following a seismic event
    - i) Tom Palmisano explained that the robots would not necessarily be on site, nor are the robots required to be by the NRC. Generally, if a seismic event occurred a visual inspection is performed on the outside of the dry cask storage units. The temperatures and radiation levels are checked to make sure nothing has changed. Depending upon the size of the seismic event, a more intrusive inspection can be performed. The design of these two systems is so robust that there is more than adequate time to make that determination and the NRC would be involved
  - k) Dan Stetson asked what the canister inspection intervals will be after inspections begin at 20 years.
    - i) Tom Palmisano explained that the inspection intervals are based on the aging management plan and the susceptibility evaluation, which includes the type of environment the canisters are in. The inspection process and frequency are based on the conditions. Typically, the NRC inspections are every five years to ten years, but the frequency is based on the canister and the conditions, and can be site specific
  - l) Pam Patterson asked what the seismic rating is for a cracked canister
    - i) Tom Palmisano explained the canisters are designed for 1.5g peak acceleration. If there was a crack in a canister, the crack would have to be evaluated to see if the canister still meets the structural integrity requirements. The current experience with stress corrosion cracking or through-wall cracks in piping is the canister maintains the structural integrity. This is a leakage issue, not a structural issue. The crack would have to be evaluated, but typically, a crack does not affect the seismic ratings. Tom suggested adding mitigation strategies to the agenda for the next meeting.

#### 8) Chairman Victor Facilitated the Public Comment Period

- a) Public Comments were made by the following individuals:
  - i) Roger Johnson: radiation
  - ii) Charles Langley (Public Watchdogs): canister inspections
  - iii) Sharon Hoffman (Concerned Citizens): canister inspections
  - iv) Ace Hoffman (Concerned Citizens): canister inspections
  - v) Karl Aldinger: contingency planning and EPRI's efforts with canister inspections
  - vi) Gary Headrick (San Clemente Green): canisters
  - vii) Laurie Headrick (San Clemente Green): canisters
  - viii) Patricia Borchmann (Citizens Oversight): settlement agreement

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- ix) Mel Vernon (San Luis Rey Band): Native American Environmental Concerns Tour and natural disasters
  - x) Julia Chunn-Heer (Surfrider Foundation): timing of canister moves
  - xi) Nina Babiariz (Public Watchdogs): settlement agreement
  - xii) Robert Pope (Public Watchdogs): nuclear plants and natural disasters
  - xiii) Katie Day (Surfrider Foundation): canister integrity
  - xiv) Erica Rose (Concerned Citizens): transfer of nuclear waste and canisters
  - xv) Arleen Hammerschmitt: Holtec storage monitoring
  - xvi) Daryl Gale: legislature/lobbying
  - xvii) Andrew Ellis (Climate Reality Project): storage systems
  - xviii) Targen Johnson (Samuel Lawrence Foundation): Fukushima and canisters
  - xix) Ray Lutz (Citizens Oversight): settlement agreement
  - xx) Peter McBride: long term storage
  - xxi) Denise Erkenoff (Surfrider Foundation): settlement agreement, the timeline and decommissioning process
  - xxii) Eva Meies: storage of nuclear waste
  - xxiii) Madge Torres (Citizen's Oversight): spent fuel pools
  - xxiv) Donna Gilmore (San Onofre Safety Org.): EPRI report
  - xxv) Rita MacDonald: engineering lesson – the unexpected happens
- b) Dan Stetson and Hon. Jerry Kern facilitated dialogue based on themes conveyed during the Public Comment Period:
- i) Public would like to know what happens after a canister crack has been identified and the canister is placed in an over-pack container
    - (a) Chairman Victor suggested carving out additional time in the next agenda to spend time going over the mitigation options, including the question of transportation of a cracked canister
  - ii) Public asked about current monitoring for radiation, the types of monitoring that will be performed during decommissioning, and when that information will be available to the public
    - (1) Tom Palmisano explained that monitoring of the dry cask storage facility is performed regularly and reported to the NRC. SCE files an annual report. Tom added, there are very few releases as a non-operated plant. There may be some releases during decommissioning and SCE will continue to monitor under the same requirements and to report annually
  - iii) Public asked if the results of the dry cask storage inspections will be available to the public
    - (1) Tom Palmisano explained that the inspection results are kept on site. The results are typically not released by utilities, but the results are shared with INPO and entered into the INPO data base. Tom added, he would take the action to determine if the canister inspection results can be shared with the public
  - iv) Public asked if a cracked canister will be transportable
    - (1) Tom Palmisano explained that transportation of a cracked canister is an important question and the decision depends on whether the canister contains high burn-up fuel or non-high burn-up fuel. Tom thought the NRC requirement does not allow a canister

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with a through-wall crack to be transported. Tom added he would come back and discuss the current requirements in a future meeting

- v) Public asked about the security staffing of the Independent Spent Fuel Storage Installation (ISFSI) once the fuel is in place
  - (1) Tom Palmisano explained the number of operators and maintenance personnel is smaller because there is less equipment operating, but there is a large security force working twenty-four hours a day. Tom added that SCE has never had an NRC exemption for security and continues under the same requirements as when the plant was operating. Security exemptions will come in the future. Tom added there will be a different security force for the ISFSI because security will be responsible for protecting something different than the spent fuel pools, but there will be adequate security staffing and the staffing will be approved by the NRC
- vi) Public asked how is rain water handled for the partially buried canisters and do all the safety elements still apply
  - (1) Tom Palmisano explained that the subterranean nature of the design is acceptable to the NRC under the license for the UMAX system. The Callaway and Missouri plants are at grade level. The SONGS system is partially above grade, which according to Holtec and the NRC is an acceptable installation. The vents on the system are designed to preclude rainwater and the whole system is designed to be submerged and still function. Tom added he can bring more information and elaborate during a future meeting
- vii) Chairman Victor discussed his visit to Zion. Chairman Victor shared his account of at least ten to fifteen heavily armed security people, layers of penetration devices, similar to the White House, and their correlation to the characterization regarding security described by Tom. Chairman Victor explained the differences between the Zion Nuclear Station and SONGS and explained the difference in hazards. The purpose of the visit to Zion was to witness a plant further along in the decommissioning process. The members of the tour were there to see the process and see what the issues are regarding the railcars. Chairman Victor reminded the audience that Clive, Utah, is not a carbon copy of San Onofre
- viii) Hon. Pam Patterson asked if her question regarding the seismic rating of a cracked canister had been answered
  - (1) Tom Palmisano explained that the canister system is designed for 1.5g peak ground acceleration. If there was a crack in a canister, the crack has to be analyzed. Tom added that there is not a seismic rating for a cracked canister. The canister has to be analyzed with the crack to determine if the canister still has the structural integrity to withstand a seismic event

**9) Meeting adjourned at 9:00 p.m.**

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#### 10) Action Items:

	<b>Action Item Description</b>	<b>Comments</b>
1	Determine if the NEI Insurance Tables can be shared or are available to the public	Video: 0:16:02
2	Discuss the Diablo Canyon Nuclear Plant in a future meeting	Video: 0:36:23
3	Send a note/email to the CEP panel regarding false negative rates for canister inspections	Video: 1:20:43
4	Provide the warranty for AREVA canisters (10 or 20 years) to Pam Patterson	Video: 1:38:55
5	Discuss inspection frequency and basis at a future meeting	Video: 1:47:20
6	Discuss Mitigation Strategies at the next CEP meeting	Video: 1:59:03 - Tom added he would come back and discuss the current over-pack requirements in a future meeting
7	Determine if canister results can be shared with the public	Video: 3:17:53
8	Provide information on the Dry Cask Storage design and prevention of rain water intrusion	Video: 3:20:02
9	Chairman Victor asked Surfrider Foundation to submit questions via email	